ROLE OF INSTITUTIONS IN RURAL POLICIES AND AGRICULTURAL MARKETS

Guido Van Huylenbroeck

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Preface

This book collects a selection of papers presented during the 80th seminar of the European Association of Agricultural Economists (EAAE) in Ghent, Belgium (September 2003). The seminar topic was 'new policies and institutions for European agriculture'. The objective was to look from a neo-institutional economic (NIE) point of view to the development of agricultural policies, agro-food markets and rural environment. The seminar was also an occasion to honour Prof. Martens, professor in agricultural economics at Ghent University and former secretary-general of the EAAE at the occasion of his retirement. As exemplified by the contributions in the liber amicorum presented at that occasion[*], the Ghent Department of Agricultural Economics has always been oriented towards understanding the complex phenomena of social changes in the agricultural and rural sector.

From an agricultural economists' point of view, it is difficult to find a more appropriate and timely topic, given the approval of the midterm review of European Common Agricultural Policy, the dawning enlargement of the EU and the failure of the Fifth WTO Ministerial Conference held in Cancun one week before the seminar. All these points indicate that agricultural policies are still high on the agenda. General trends are that direct market support is decreasing and incentives are gradually given for a more environmental friendly production, food safety and quality, animal welfare and for meeting newly emerging consumer and citizen concerns.

The seminar provided a platform to present and discuss new ideas about the future organisation of the agricultural sector. Using the neo-institutional framework as a main focus, the seminar was structured around three main areas of interest: policy implementation, market and supply chain organisation and management of natural resources. They form the main topics of this book.

Out of 102 abstracts received, 42 contributed papers were selected after a blind review process and presented orally during the contributed sessions. Together with the 20 poster presentations, they offered a comprehensive picture of the state-of-the-art in this new research area. From these presentations, 25 contributed papers were selected after a referee process for publication in this book. Along with the introduction and the three invited papers by Williamson, Eggertsson and Hobbs, they offer a nice overview of current research looking from the NIE perspective towards the complex reform processes in the agriculture and the agro-food sectors. Hopefully this volume may contribute to the further development and application of neo-institutional economic theories in agricultural economics.

Compiling this volume was only possible with the help of a whole lot of people. First of all we gratefully acknowledge the advice of the international programme committee and

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[*] Van Huylenbroeck, G., Verbeke, W., Lauwers, L., Vanslembrouck, I. and D'Haese, M. (eds) (2003). Importance of policies and institutions for agriculture. Gent: Academia Press, 243 p.

the chairpersons of the organised sessions in selecting the papers for this book (see the list below). We also want to thank all authors of this volume for respecting deadlines and meeting often strict requirements. Furthermore we would like to express our gratitude to the local organising committee and in particular the seminar secretariat chaired by dr. Marijke D'Haese, who assisted us in organising the seminar and this book volume. Without her help and that of many others we would not have succeeded.

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CHAPTER 1

Analysis of Institutions: A New Lens to Rural Policies and Agricultural Markets

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Abstract

This introduction chapter questions why institutions matter for the organisation of the rural policies and agricultural markets and why the sector is an interesting case for institutional economics. Given decreasing market support, new consumer concerns and the widening of policy scope to rural development, it is stated that the interplay between policies and institutional arrangements becomes more important. The complex institutional system of multi-agency, government interaction and the specificity of its goods makes the sector attractive for new institutional economics research. Three main areas of interest structure the book: policy implementation, market and supply organisation and management of natural resources and rural systems.

1.1. DO INSTITUTIONS MATTER FOR THE ORGANISATION OF THE AGRO-FOOD SECTOR?

The agro-food sector is always being confronted with major challenges. This book presents new analyses and reflections about the future organisation of the sector. The link between the political, rural and social systems on the one hand and market organisations on the other is placed within a neo-institutional economics (NIE) point of view. Neo-institutional theory presents an alternative lens to look at economic realities and allows, according to Williamson (2000), to distinguish between social rules (formed by tradition, old organisations, …), the legal and policy framework and the institutional arrangements

that are formed to organise transactions. Within this framework, public governance or policy can be defined as finding the right balance between the institutional environment created by formal and informal rules and the institutional arrangements that emerge as a result. Both levels interact and result in the specific organisation of a sector or social system. Further in this book, Mittenzwei and Bullock, Chapter 7, explicitly and formally deal with the interaction between institutional environment and arrangements.

With less market support and more emphasis on new consumer concerns, this interplay between policies and institutional arrangements becomes even more important. An example is the evolution in food safety control over the last few years. In the past, food safety was seen in most countries as a major State responsibility. The State had to set up the rules and standards and to organise the control itself. After the recent food safety crises, the State became aware of the fact that command-and-control measures alone do not work sufficiently to avoid problems, but that incentives needed to be given for the sector to control itself. Gradually, a shift has occurred towards auto-control and traceability systems, established and managed within the sector. This has of course a major influence on the contractual arrangements between the different stakeholders in the food chain and for the role of public authorities, which has been increasingly shifting to a "control-on-the-control" system (see also Hobbs (2003) and Chapter 13). The fact that the social environment also influences this process is indicated by the difference in approach between the Nordic and southern EU member States, for example.

Liberalisation of trade is another driving force changing the rules of production, trade and marketing. This will also lead to new organisational forms, which already become apparent in the emergence of new contractual forms between the production, processing and retailing sectors, new market organisation instruments and new ways for channelling support to the rural sector (e.g., for the provision of public goods).

NIE provides theories looking through a specific lens to problems of organisation, whether they are economic, political, social, legislative or informal. Williamson (Chapter 2), one of the founder fathers of transaction costs economics (TCE), an important branch of NIE looking specifically to contractual problems, also uses the lens metaphor. He states that TCE is one (and he clearly indicates that it is not the only one) of the lenses to look at economic organisation, as a departure from what others may consider as "proper course paradigms". NIE and TCE allow a better understanding of the development of organisation of sectors or society because they address fundamental issues of governance that are central to an understanding of complex economic organisation and good public policy. Eggertsson (Chapter 3) uses the term "subtle art" when speaking about institutional reform to indicate that it is the interplay of transaction costs, political economy and incomplete knowledge that shapes major institutional reform. NIE looks at the facts, sometimes starting from micro-analytic details (Williamson, Chapter 2) and employing a rapidly increasing set of theoretical and practical tools fruiting from a multi-disciplinary fecundation. According to Klein (2000), NIE is therefore seen as a broadly sensed discipline, covering economics, law, organisation theory, political science, sociology and anthropology.

Aoki (2000) approaches NIE as a tool to analyse the economic "game" with his multiple agents as players, each searching for their own interests given their institutional (rules) and non-institutional (technologies and factor endowments) factors, but seeing new

rules, new equilibria emerging from their strategies and decisions. "Game boy" playing kids are indulgent in reaching as many "levels" as possible; NIE players always commute between the levels of institution-as-rules and institutions-as-equilibria. The outcome of the one is the input of the other and do not necessarily coincide with the static description mentioned above of institutional environment and arrangements.

As indicated by North (1994, 2000) and Ménard (1996) institutions really do matter and can make the difference for development and economic change. This has also been recognised for world agriculture by inter alias Kydd et al. (2002); World Bank (2002) and Dorward et al. (2003). Based on empirical evidence, Cherchye and Watteyne (2003) even conclude that institutions are a more fundamental determinant for economic development than other factors such as the integration of a country within the world economy. Agricultural development is not possible without providing stakeholders with some basic certainties embedded within a self-controlling local society and property rights structure. Farming, hunting and fishing rely on clearly defined property rights enforced through formal and informal institutions. Technical progress, scale enlargement, increased risks and overall industrialisation of the agricultural process need —and set— new conventions. In Western societies, where agriculture is entering the post-industrial era, agricultural development will mainly depend on the ability to respond to new consumer concerns and citizens' claims vis-à-vis the rural area, in what is also proven to be a mainly institutional issue (see inter alias Ménard, 2000; Van Huylenbroeck, 2003). From the perspective that the matching of economics and organisation theory caused a major breakthrough in the understanding of how economic systems work, the question is no longer: "does organisation matter?", but "why and how does organisation matter?" (Ménard, 1996).

1.2. AGRICULTURE: AN INTERESTING CASE FOR INSTITUTIONAL ECONOMICS

Because institutions do matter for agricultural development, it is not surprising that agricultural economics (in the broad sense covering disciplines such as rural sociology, farm and chain management, agricultural policy,…) and some adjacent disciplines (such as political economy and resource economics) start to pay increased attention towards them. Agriculture is indeed a complex sector with important societal implications (food and amenities supply) embedded within a broader rural system. Furthermore, the agricultural sector is a multi-agent sector with a complex chain of inputs, intermediates and output markets. Finally, due to its societal implications, it is a highly regulated sector. There has been a strong normative belief that government could intervene and correct market distortions and, thus could shape the economic (safeguard the food supply) and social (income guarantee) reality.

Multi-agency and strong government regulation bring forth a complex institutional system. As a consequence, agriculture has become the playground for important changes within the institutional environment. Shifts from market interventions to rural policies, internalisation of external effects and co-governance of resources have triggered the need

for new economic approaches, complementary to the orthodox way of thinking in terms of full information, rationality and market efficiency. As explained in the first section, NIE is a comprehensive tool that enlarges understandings of current developments in agriculture and its surroundings.

The aim of this volume is to bring a selected state-of-the-art of the conceptual and empirical NIE-inspired research by European agricultural economists. The chapters are mainly selected from two perspectives. The first one is to demonstrate that institutional economics can contribute to the understanding of how rural policies, the rural social system and agricultural markets are organised. The second objective is somewhat more ambitious and is to illustrate that analysis of rural institutions can contribute towards the development of the NIE framework and theory.

Agricultural economics and policy analysis have mainly relied, so far, on what Williamson (Chapter 2) calls the orthodoxy of the neo-classical framework. Agriculture in the past has often been presented and used as an ideal observation field for testing hypotheses derived from this theory. The work of the main authors of the (neo-) classical school often refers to agricultural products or markets. The number of NIE applications to agricultural development problems today is increasing. This book is an illustration of this growing field. There are two reasons why this increase in interest is not surprising. One is that agricultural products have a number of characteristics different from industrial products requiring specific contractual arrangements and institutional frameworks. Williamson refers in his contribution to the perishable nature of agricultural products, but other contributions refer to credence or other unobserved features of products, which make special market arrangements necessary. The second reason is one indicated by Eggertsson (Chapter 3) and many others in this book: the high complexity of policies and property rights structures within the agricultural and fishery sector. The fact that the rural sector has many small producers, often with weakly defined property rights with respect to natural resources and high transaction costs to change the policy system, makes it an ideal observation field for verifying and testing new hypotheses and theories in NIE. This is particularly true with current major changes such as the one from a collective to a more market-oriented system in transition countries, the implementation of the mid-term review of the common agricultural policy (CAP), the difficult shift to trade liberalisation and the emphasis on new roles of agriculture. Many contributions in this volume are, therefore, at the edge of conceptualisation of NIE concepts, theory application and pure empirical analysis. Verification of these theories is very important for a discipline where a mass of evidence is waiting to be lined up by a theory, or "waiting for a fire" (Coase, 1984). Agricultural economists may bring a lot of empirical evidence, and in this sense contribute towards the further expansion of the theory.

1.3. STRUCTURE OF THE BOOK

1.3.1. Policies, markets and rurality

The title of the book tries to capture the main subjects. Besides the social environment, the two main components of an actor's institutional environment are policies and markets. For

a farmer, as an economic producing actor and social agent, his environment comprises politics, markets and rurality, of which the first is seeking to get more ordering in the two others. Furthermore, the term "rural" in the title tries to capture, both in policies and markets, the usual agricultural activities as well as the new ones, more oriented to the rural social system. Rural has thus a double connotation, referring both to the policy and market environment and to the geographical and social area where agriculture traditionally exerts its property rights. The title should hence not only be interpreted as an unidirectional link with institutions tailoring policies and markets. The implicit idea is that also policies and markets are continuously changing and, therefore, need new or other institutions. As has already been indicated, the perspectives on institutions-as-rules and institutions-as-equilibria are closely inter-related.

The book is thus oriented to three main areas of interest in institutions: policy implementation, market and supply chain organisation and management of natural resources and rural systems. These three areas are used as the first entrants for structuring the book, but as they still cover broad interests, they are further divided in sub-parts. Within each block, other structuring elements have shaped the book structure, as will be explained.

In the first area of interest, policy implementation, a great deal of attention is paid to formalising insights within policy formation and application, complemented with more empirical work. Additionally, a part is dedicated to knowledge production and exchange in policy analysis: how to deal with the actor inter-relationships and organisation in policy analysis. This can be illustrated with the following example of the dairy sector. Although all EU countries fall under the same quota policy, highly different systems among EU countries can be observed with respect to the practical application rules, the transfer of quota, for example. Countries such as the Netherlands or Great Britain have a very liberal system of quota transfer while countries like Belgium or Ireland have a highly restrictive quota transfer system. The rules have a high impact on the development of the dairy sector in these respective countries with large-scale farms in the first and much smaller farms in the second group of countries. It is also clear that the different arrangements among countries can only continue because of the policy decision to keep fixed quota shares per country. This is in turn the result of political institutional decision and enforcement rules. Different examples in the policy block illustrate the complex interplay of different institutional levels and rules.

New rules may also act as a catalyst for the development of new markets, a second area of interest: institutions in marketing and supply chain management. New arrangements in the food sector established for food quality and safety reasons have already been referred to above. The growing interest of consumers in more sustainable forms of farming and food production have also created new market outlets. The problem is that a lot of the desired attributes are credence attributes that can not be readily observed or experienced by consumers. In situations where product differentiation is relatively low and increasingly based on credence quality, issues like information and consumer trust prevail. Market segmentation and product differentiation on the basis of such attributes require new arrangements and mechanisms such as certification, quality assurance, labelling and traceability systems. Such systems are often too costly for individual farmers and controversy prevails as to its potential rent for producers and food

chains. Keeping up with these demand-led evolutions requires new kinds of institutions and organisations, aimed at improving market conditions and lifting potential market failure. Besides the applications of NIE aimed at understanding what is happening in the food chain, like contracting, risks, vertical alliances, a number of contributions deals with capital and land market arrangements, or in other words with the organisation of the input markets.

The third area where institutions play an important role is in the field of natural resource management. It is clear that property rights and transfer rules play an important role in access to land, water and other natural resources and may lead to under- or over-utilisation of them. A lot of externality problems in EU agriculture have to do with the lack of definition of property rights or of institutional arrangements allowing proper use of common pool resources, for example. Public authorities have also in this case to find the right balance between on the one hand legislation and command-and-control measures and giving incentives to stakeholders to find their own solutions on the other. New rules may also create new property rights. License policies or management agreements, e.g., may have as an unintentional effect that practices previously applied by farmers for free are receiving a price which can be capitalised on. Uptake of management agreements will also be completely different depending on the rules and requirements to be fulfilled. The capacity of self-organisation will highly depend on collective action and social capital. Incomplete social models may lead to inertia and resistance to the changing environment, but social capital can be exploited when appropriately recognised (bottom up approach) as is illustrated in a number of contributions.

In the following sections is explained how the different chapters contribute to the structure of the book.

1.3.2. Part 1: TCE, a state-of-the-art

The book opens with a contribution by Olliver Williamson who offers an excursion into the wonderful world of transaction cost economics (TCE). If the child who we call TCE is coming from Coase (1937), Williamson has given it a name and allowed it to grow up. He is, therefore, the right person to remind us of the principles of TCE. His excursion starts by reflecting on some points of criticism in orthodoxy and on the inter-disciplinary ideas, which are at the basis of TCE. Then it turns to the TCE conceptualisation and operationalisation and ends with the links to agriculture. Williamson not only invites the agricultural economists to use NIE and TCE, but also to contribute to its further development, reminding us of the major scope of this volume.

1.3.3. Part 2: Policy reform, institutional determinants and outcomes

One of the most important features of new institutional economics is that it provides a complementary lens to economic science, a viewpoint that structures a mass of empirical evidence. This is also the case when trying to understand policy reforms and their implications. As opener to this part, Eggertsson gives a comprehensive analysis, using the

Iceland fishing industry as a case study. The process of changes might be so dramatic and multi-dimensional that coping with it requires major social reform. The outcomes of major institutional changes may remain uncertain. Eggertsson ascribes this to the fact that policy models are based on incomplete social models. But, incomplete social models would be of minor importance when social experiments yield reliable data. This is mostly not the case, so knowledge may stay incomplete due to unreliable feedback. In his chapter on property rights introduction within the Icelandic fisheries, the country's key industry, Eggertsson illustrates how transaction costs, political economy and incomplete knowledge may shape major institutional reform.

In this sense and staying in fishery terms, Eggertsson's contribution can be seen as a flag-ship for the three chapters that follows. These are dealing with major institutional changes in agricultural and rural policies: the accession of East European countries to the EU, the reinforcement of the decisive power of the EU parliament (EP) and the modulation of direct payments in the EU CAP. These contributions describe the institutional determinants of the change process, but from sheer necessity, must remain speculative on the outcomes. The role of existing institutions in policy reform is treated in two contributions. Erjavec (Chapter 4) analyses the role of national and multi-national institutions in the EU accession negotiations while Chatzopoulou (Chapter 5) wonders what the effect may be of changing the EU decision rules (the co-decision instead of the consultation decision-making procedure) on future CAP reform.

The institutional framework, used by Erjavec to describe the role of European and national institutions on the negotiation process and outcomes, entails three political science models: the inter-governmentalist theory, the multi-level governance and the European bureaucratic politics concept. The analysis, illustrated with the main negotiating issues (quota, direct payments and rural development funds) suggests that as negotiations were incorporated in the usual decision-making system, the candidate countries gradually took over the typical EU organisation and functioning methods. With respect to the shift in the EP role from a consultative to a more decisive actor, Chatzopoulou concludes that an EP with more decisive power in CAP matters would bring more transparency, democracy, acceptance by stakeholders and dynamism to CAP reforms. Applying co-decision to CAP will, however, also increase complexity and competition with other EP responsibilities, but the author does not really pronounce on a possible decreasing effect on agricultural protection. Henning (see further in Chapter 9) find other intrinsic features of the decision-making process that allow to judge that protection may remain high (or at least that changes will be limited in relation to the status quo).

Henke and Sardone (Chapter 6) treat the re-orientation process of the CAP support towards modulation of direct payments. This new policy instrument channels funds from the usual market support (first CAP pillar) to the provision of public goods (second CAP pillar). Compared to the two previous contributions, not only is the impact of existing institutions on the reform process demonstrated, but also the need for new arrangements is highlighted as a process outcome. On the one hand, some institutional aspects of the change process are given, in particular those with respect to the introduction of an innovative policy instrument. On the other hand, the new policy implementation will also cause a shift in managerial responsibilities at various institutional levels.

1.3.4. Part 3: Formalisation of the links between institutions and policy

The new institutional approach can also be formalised. While existing political economy models mainly focus on economic and political determinants of policies, formal and informal political institutions have until recently been neglected, in attempts to clarify, for example, differences in agricultural protection. Moreover, formal models explaining these empirically observed differences in terms of institutional determinants are scarce. In this book, this gap is covered by four contributions, among them two that use game-theoretic models. Stylised or formal modelling of political institutions and their role on policy outcomes helps to understand phenomena like status quo and inertia in institutional change. Furthermore, if one really wants to trigger changes in the institutional environment, models may help to get insights in those factors that hamper or stimulate institutional change.

One game-theoretic model is given by Mittenzwei and Bullock in Chapter 7, and starts from a two-level framework reflecting the two dominant views on institutions: institutions-as-rules formalised as the institution-dependent level on the one hand, and the institutions-as-equilibria view formalised as the institution-forming level on the other. The model is applied to the specific situation of Norwegian agricultural policy making, in which the farmers' organisations have a direct role. For more than 50 years, the agricultural policy decision-making in Norway grants the farmers' organisations the legal and exclusive right to negotiate with the government about direct budget support and administrative prices. This chapter not only provides theoretical evidence that viewing institutions as both rules and equilibria facilitates comparative institutional analysis, but also identifies, on the applied side, several reasons for the persistence of agricultural policy formation in Norway.

The other contributions look at the more unidirectional role of institutions (in particular voting rules) on policy making. The persistence of an inefficient CAP is the main research topic and leads to questioning what the determining factors behind this institutionally complex problem might be. Pokrivcak and Swinnen (Chapter 8) have worked out a formal model including the two stages of the CAP decision-making: the stage of determining the states' preferences and the joint decision-making stage at EU level. The model is used to analyse the dependency of the final policy decision under different institutional assumptions, such as the voting rule. The authors conclude that the power of the EU Commission increases under the qualified majority vote system, but at the same time the risk of a stalemate becomes high. In order to get out this status quo situation, package deals may be used, which again may extend the EU Commission power. Henning (Chapter 9) looks at the impact of the legislature organisation on the level of agricultural protection. This is first supported with a literature overview, then worked out with a simple game–theoretic model and finally tested against empirical evidence. In particular, the different decision-making rules in the EU and USA are analysed. The model approach gives a framework to analyse different future situations, e.g., the increasing legislative power of the European Parliament would have no impact on agricultural protection, which provides a more precise completion to the more empirical conclusion of Chatzopoulou in Chapter 5. A similar work on the role of political institutions in shaping agricultural policy is given by Olper en Raimondi in Chapter 10. Using econometrics, they test some

theoretical hypotheses on the possible effects of electoral rules and government forms on dairy policies. They found that the transfer level to the dairy sector is significantly lower in majoritarian and presidential regimes than in proportional and parliamentary systems. Because agricultural policy choice can be seen as an example of narrow target programs, Olper and Raimondi also concentrates on the impact of the geographical concentration of farms on the observed institutional links with the policy choice outcomes.

1.3.5. Part 4: Institutions in policy analysis

As Eggertson stated in his contribution, uncertainties about outcomes influence the institutional reform process, both on the government decision-making side as well as on the public perception side. Decreasing uncertainties when preparing a new policy can be obtained through a more agent-based or agent-oriented policy analysis. This is possible through two approaches. One takes into account the occurrence of agents and institutions in a neoclassical policy analysis framework. The other looks at the institutional arrangements in which the inputs and results of policy analysis can be exchanged. The argument is that these two pathways have to be followed simultaneously if one really wants to deal with institutions in policy analysis. The two contributions give practical examples of both approaches. Happe et al. (Chapter 11) use an agent-based model with focus on the possible outcomes at the level of the individual actors and co-ordinating institutional interactions. Whereas the more traditional policy analysis is interested in optimal resource allocation and profit maximisation at an aggregated level and ignores the existence of institutions, the methodology presented by Happe et al. has a strong micro-analytic nature and the potential to describe inter-agent relationships. The model is applied on simulations of the land market. The method also allows for inter-disciplinarity, in particular how to cope with expert knowledge. Fernagut et al. (Chapter 12) go one step further and question how expert knowledge and policy analysis interfere and what kind of institutional arrangements can favour this integration. They describe the embedment of their agent-based sector modelling in the knowledge exchange arrangements between researchers and policy makers. From the various theoretical knowledge exchange models or paradigms, a highly participatory approach is recommended. A communication facilitator is proposed as a vehicle to increase the actual participation of stakeholders in the policy process.

1.3.6. Part 5: Market metamorphosis and chain dynamics

One of the most important topics in NIE with respect to agriculture is the organisation of the exchange of agricultural commodities. As Williamson states in his opening chapter, the individual farms are too small for forward integration into processing. Moreover, new consumer concerns necessitate new batteries of control and market institutions.

This part is opened by Hobbs (Chapter 13) who presents a state-of-the-art chapter, taking newly emerging consumer concerns, growing interest in credence attributes, and the reality of increased information asymmetry as the starting points for investigating the role of TCE and NIE. Food safety issues, food quality issues and technological change

are discussed as catalysts for institutional adaptation. Firstly, cases in safety pertain to BSE, food-borne pathogens and zoonotic agents. Secondly, grading systems and quality assurance programmes are discussed as food quality cases probing institutional adaptation. Thirdly, genetic modification performs as the ideal showcase for analysing institutional adaptations in response to technological change in agriculture and food chains. The contribution ends by stressing and challenging the role of policy institutions and policy making to create and facilitate optimal conditions for the flexible adaptation of the institutional environment to newly emerging market demands.

Weaver and Wesseler (Chapter 14) build further on the issue of food quality standards and the emergence of food system value chains and analyse their implication for policy. With a conceptual model, transactions through a traditional competitive market are compared with those through a value chain with contractually formalised quality standards. The conclusion is that introducing the value chain system is not scale-neutral, which has major implications for agricultural policy making.

In a similar vein, Balmann and Mußhoff (Chapter 15) model and analyse transactions using spot markets versus vertically integrated chains in a real options framework, with the specific objective of assessing effects in terms of investment reluctance. The conclusion from an empirical investigation using pork price data is that the sport market and the closed chain system lead to the same production dynamics at least in case of sufficient investment strategy and production capacity awareness among producers operating on the spot market. The authors explain how this finding is in accordance with the real options theory and what the implications are for policy intervention.

Réviron et al. (Chapter 16) explore specific producer benefits of vertical alliances versus conventional markets. The specific case at hand pertains to the Gruyere cheese protected designation of origin (PDO) alliance in Switzerland. The authors start with a critical analysis of theoretical economic models for the analysis of real markets and further verify whether the assumptions of the neo-classical model for a conventional and PDO supply chain are correct. They show that this is not the case and that the NIE lens is more powerful to understand the emergence of vertical alliances. Their analysis shows that vertical alliances, on top of contributing to multi-functionality in rural areas, allow the removal of certain imperfections of conventional agricultural markets.

Kuwornu et al. (Chapter 17) apply the classic agency model to investigate risk shifting and chain reversal in the food supply chain. The empirical application to the Dutch marketing channel of ware potatoes shows that risk has been shifted over time from intermediary chain participants, e.g., retailers, to the potato growers themselves. This analysis stresses the importance of incorporating several stages of the marketing channel into future analyses, and extending the classic agency model accordingly.

1.3.7. Part 6: Arrangements in input markets

Orthodox neo-classical economics, looking to optimal resource allocation given technology and factor endowments, ignore the institutions behind the decision making unit. In agriculture, it is in particular family farms that are facing a changing economic environment. What holds with respect to scale economies towards the output, i.e., the

processing and marketing side, also applies for input markets. Arrangements become necessary to provide farmers with adequate access to resources like capital, land and technology. These questions are particularly relevant when formal rules are or have been changing as exemplified by recent evolutions in Central and Eastern European Countries.

Petrick (Chapter 18) investigates the role of government intervention on local agricultural credit programmes in Poland. After reviewing theoretical controversies regarding government intervention on markets with agency relations, a micro-econometric analysis of the Polish agricultural credit programme is performed. The analysis highlights current imperfections in the arrangements, more specifically a mismatch between the policy instrument and the actual problems on the loan market drawing important lessons that policy advice must take current political constraints into account.

Foreign investment may bridge the gaps left by local agricultural credit programmes, as shown by Dries and Swinnen (Chapter 19). They analyse the induction of institutional restructuring after the opening of the Polish economy to inflows of foreign investment, know-how and technology. Their empirical survey-based analysis shows that foreign companies have introduced farm assistance programmes along with investments, as part of a process of vertical integration. This has resulted in rapid vertical and horizontal spill-over effects with a beneficial impact on access to finances, investment, productivity and product quality among small local suppliers.

Vranken and Swinnen (Chapter 20) discuss institutional arrangements in the land market. Their empirical analysis of farmers' choice between renting or buying land indicates that the existence of a rent market has allowed less-endowed but well-educated farmers to have access to land and increase their farm size. Nevertheless, transaction costs are still high, in particular for farmers who do not have strong links with former (and still heavily influential) co-operatives. Hence, the institutional environment still needs improvement in order to allow a good functioning of the land market.

1.3.8. Part 7: New institutions in agro-environmental policies and public good delivery

NIE not only provides an extra lens to political economy, policy analysis, chain dynamics and factor demand, but in particular becomes very useful when analysing agro-environmental issues or elaborating institutions for public goods delivery by agriculture (multi-functionality). Externalities and public goods are associated with high transaction costs. Incomplete property rights and serious institutional failure are the keywords that Eggertsson uses when he describes the mismanagement of the open-seas fisheries. Internalising external effects, favouring multi-functional development of agriculture and the co-habitation of the agriculture sector with other functions in areas where agriculture had almost exclusive property rights, need new rules and enforcement (Hagedorn, 2003). However, different forms of inertia may slow down these evolutions.

Two more general chapters show there is still a long way to go. With the lessons of Williamson about the different lens of TCE in mind, Fahlbeck (Chapter 21) shows how the characteristics of non-excludability and non-rivalry receive another meaning when

analysed from NIE and TCE perspective. He also emphasises the inertia in agro-environmental policies caused by the asset specificities created by old policies in bureaucracy and existing institutions. This explains why politicians in most cases prefer regulative policies rather than policies that give incentives to explore the jointness in production of commodity and non-commodity goods and to modify the excludability of public goods. This requires important institutional change and a re-orientation of agro-environmental policies.

Ortiz-Miranda et al. (Chapter 22) analyse the role of agro-environmental measures in both the definition and characterisation of property rights. Depending on the position taken, different interpretation can be given as to how agro-environmental policies define property rights. A first interpretation accepts that farmers in the past had unlimited rights to use natural resources because there was no legislation preventing it, hence each extra constraint put on it is regarded as a limitation of the property rights of farmers. In a second interpretation, putting limits on natural resource use is regarded as a first time definition of the rights of farmers and thus issues property rights that in the past where non-existent. It is clear that the interpretation followed is important for agro-environmental policies; are they allowed to set environmental standards without compensation or must they be based on remuneration of activities regarded as positive contributions to society. New agro-environmental policies must therefore be carefully selected because they implicitly establish a new property structure, which may become a restriction for future treatment of environmental problems. A balance must be found between private and social security (or certainty) on the one hand and private and social flexibility to react on new developments on the other.

The interaction of current institutions and agro-environmental policies—or the low flexibility of policies to allow for new arrangements—is illustrated with three other contributions. Deuninck et al. (Chapter 23) describe a new policy instrument in the Flemish nitrate policy, the buy-out of livestock production capacity. The problem in this case is that the government, besides its role as rule-setting actor has become a transaction partner in the nitrate market. This has triggered the emergence of new competing arrangements between pig holders and feed companies that have turned out to be more efficient, making the original policy instrument non-effective and more or less redundant.

In Chapter 24, Gatzweiler and Hagedorn show that the implementation of agro-environmental policies in the new member states of the EU poses major challenges. The mere adaptation of national legislation to EU rules and directives is insufficient. The implementation of such highly complex policies and regulations also requires sufficient human and social capital and adapted formal and informal institutions. The examples show that this capacity is lacking in these countries, a thesis that is further illustrated by the case study described by Ratinger et al. (Chapter 25). They analyse the weaknesses of the current institutional arrangements to protect biodiversity and landscape in the White Carpatian area in the Czech Republic. Their discussion and analysis of different policy options to improve this protection indicates that the outcome depends on a redefinition of the role of public authorities. If property rights are given to the public authorities, other arrangements than under private property rights are necessary. In this last case, new institutional arrangements will emerge with a higher need for collective action and social capital.

1.3.9. Part 8: Role of social capital and bottom-up approaches in rural development

The chapters about agro-environmental policies already indicate the importance of social capital for adequate institutional change, in particular in the case of complex policies. Part 8 is about social capital and the possibilities of social-capital-based institutions. When the assumption holds that institutions, people and the organisations behind economic activities matter, social capital becomes important in leading the reform process. This requires new methods for guiding and structuring changes in economic and social systems and in particular in complex rural systems involving many stakeholders. Growing evidence on the important role of social capital had led to an expansion of participatory or bottom-up approaches in various development or change processes.

The four contributions in this last part of the book can be read in a logical order. Valentinov concentrates on social capital and describes "what it is" and "what it can do". Wolz et al. further explore the "what it can do" question while Korf critically reflects on the possibilities of participatory approaches. Finally, Delgado et al. illustrate the existing tension between official top-down and bottom-up created institutions.

Valentinov (Chapter 26) defines social capital and investigates whether its incorporation in existing political economy, property rights and TCE theories may increase their explaining power. He defines social capital as the shared knowledge, trust and culture embodied in structural networks and other inter-agent relationships. The assignment of property rights influences the allocation of resources and any given assignment can result in different allocations depending upon how much social capital is available within a community. He, therefore, introduces the term "social-capital-based institutions" (all forms of collaboration among farmers) as opposed to "authority-based institutions". Valentinov argues that because of the existing tradition of co-operatives in CEE countries, social-capital-based institutions may prove to be a better solution than authority-based institutions in these countries.

Wolz et al. (Chapter 27) agree with the hypothesis of social capital as an important factor of institutional change. He defines social capital as the ability to co-operate. This has not only to do with available human capital (education, knowledge) but also with the existence and possibilities of self-organisation. This was lacking in transition countries in the past, which may explain their poor performance in terms of social capital, although empirical evidence provided clearly indicates a relation between the participation in organisations and farm income. Transition countries should therefore increase possibilities for self-organisation both by creating a legal environment for such organisations and by stimulating participation.

Korf (Chapter 28) makes a critical analysis of the possibilities of bottom-up approaches in rural development. Based on experiences both in less developed countries (LDCs) and in Western Europe, critical success factors for participatory approaches are identified such as institutional embeddedness, low transaction costs of participation, equal distribution of outcomes of negotiations and a local impact radius. If participation is understood as negotiated institution building, then from a theoretical point of view the legitimacy of such approaches can be questionable, in particular when transaction costs and other factors have an influence on participation. While formal State institutions derive

legitimacy from the constitution, this is not the case for open forums. Therefore, Korf argues that the dilemma of bottom-up approaches is that in theory they can only be advisory, but reducing their binding character decreases participation levels and thus legitimacy.

Delgado et al. (Chapter 29) also focus on that point by analysing, for Andalusia, by analysing the co-existence within the same territory of bottom-up created institutions for the development of rural areas and top-down official rural development organisations. They speak about a leadership conflict between institutions. By looking at the differences in territorial boundaries and working area between both types of institutions, they analyse whether they are co-ordinated. This is not always the case and indicates that there are still major difficulties in harmonising both approaches.

1.4. EPILOGUE

Utilising Williamson's metaphor of an excursion, we hope this book may be as an interesting journey for all readers throughout NIE and TCE research applied to the complex rural world. Hopefully the book provides for many readers a new lens on this complex reality. We are convinced that an NIE approach contributes to our understanding of this reality and can enrich other explanations given. Whether the book succeeds in its double mission mentioned in this introduction is up to the reader. As editors, we hope that it at least contributes towards the understanding of the complex social phenomena in the rural sector because we are convinced that the further development of the agricultural and rural sector will also depend on our ability to analyse, develop and construct new institutional responses and social models.

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PART I

Transaction Cost Economics, a state-of-the-art

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 2

Transaction Cost Economics and Agriculture: An Excursion

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Abstract

As a state-of-the-art introduction to the main discipline in the book, Williamson presents transaction cost economics (TCE) as one of the lenses through which to examine economic organisation. By comparison with the neoclassical theory of the firm, which is a price theoretic construction, TCE focuses on alternative modes of contracting, of which the firm is one. The TCE project is interdisciplinary and operates at a more microanalytic level of analysis. The contribution ends with some ideas for possible applications in agriculture and some concluding remarks.

2.1. INTRODUCTION

This contribution starts with an excursion into the wonderful world of transaction cost economics (TCE). The text presumes that readers have heard about TCE, are somewhat familiar with its strengths and limitations, have maybe used it in their work, and may have adopted it as one of the lenses to be routinely applied to problems of contract and economic organisation. It is important to say one of the lenses rather than the lens. TCE is neither at present nor expected to become the all-purpose lens for studying contract and economic organisation. Rather, complex phenomena are usefully examined through several lenses, of which namely three are orthodox price theory, agency theory, and TCE.

Defining excursion as a "departure from a…proper course" will appeal to those economists who regard the resource allocation paradigm as the "proper course" for economists to follow (Reder, 1999). My position is that, its great pedagogical and analytical strengths notwithstanding, the resource allocation paradigm also has its limitations. Rather than deny or ignore them, we are better advised to uncover them with candour and equanimity.

Of particular importance in this connection is that TCE is both a more microanalytic and more interdisciplinary project than is orthodoxy. By contrast with those who believe that to expound "the details…would serve only to obscure the basic issues" (Posner, 1972: 98), TCE holds that much of the relevant action resides in the details. Inasmuch, however, as the details proliferate, a focused lens is needed to know where to look and why. If any issue that arises as or can be reformulated as a contracting problem can be examined to advantage in TCE terms, and if many phenomena can be so construed, then the lens of contract, with emphasis on transaction cost economising, will have wide application.

TCE is also an interdisciplinary project, in that it moves beyond economics to draw on both law and organisation theory. This is to be contrasted with those who regard economics as a self-contained enterprise—which view is widely held and explains why many good economists are well-trained in economics but know (and have an interest in) little else. The uncritical acceptance of the economic theory of socialism in the 1940s is illustrative. Thus although Lange (1938: 109) conceded that bureaucracy was a greater threat to socialism than was the problem of implementing efficient resource allocation through marginal cost transfer pricing, he dispensed with the complications of bureaucracy by observing that these belonged to "the field of sociology rather than to economic theory". Most economists continued to ignore bureaucracy for the next 50 years, when socialism collapsed under the burdens of bureaucracy. A second illustration, to which I shall return, is the propensity to interpret contract and organisation in a strictly price theoretic way, which contributed to the crisis in industrial organisation in the 1960s.

The contribution is organised into six parts. For purposes of perspective, it starts with orthodoxy, and then turns to the challenges posed by new ideas in law, economics, and organisation theory over the period 1930–1970. Next, TCE is described in two parts: conceptualisation and operationalisation. Finally, some applications to agriculture are briefly discussed followed by some concluding remarks.

2.2. ORTHODOXY

Orthodoxy stands here for textbook intermediate microeconomic theory, especially the neoclassical theory of the firm. The purpose is neither to praise nor bury orthodoxy but to State three points: orthodoxy is (1) self-limiting, (2) overused, and (3) relief is in progress.

2.2.1. Orthodoxy is self-limiting

The three self-limiting features of orthodoxy are: (1) the limits of the neoclassical theory of the firm, (2) uncritical recourse to hyperrationality, and (3) the disconnect from the contiguous social sciences.

2.2.1.1. The theory of the firm

Harold Demsetz (1983: 377) observes that "it is a mistake to confuse the firm of [orthodox] economic theory with its real world namesake. The chief mission of neoclassical

economics is to understand how the price system coordinates the use of resources, not the inner workings of real firms". Those who wish to understand the modern corporation, including public policy pertinent thereto, frequently need to come to terms with the firm in organisational rather than merely technological terms. To be sure, the neoclassical theory of the firm as a black box, whereby inputs are transformed into outputs according to the laws of technology, has its purposes. But it is also a narrow and self-limiting construction. There is increasing agreement that the ways in which organisation matter need to be uncovered and the comparative institutional ramifications worked out (Matthews, 1986; Dixit, 1996).

2.2.1.2. Hyperrationality

Although most economists are persuaded of the merits of studying economic phenomena in a "rational spirit" (Arrow, 1974:16), that does not imply that hyperrationality everywhere applies. Rather, hyperrationality is a simplifying assumption and should be reserved for circumstances where the requisite supporting conditions apply. Invoking the backstop assumption that economic natural selection will reliably eliminate non-maximising behaviour is convenient and sometimes suffices. But as Koopmans (1957: 141) reminds us, the efficacy of natural selection varies. Specifically, we should "expect profit maximisation to be most clearly exhibited in industries where entry is easiest and where the struggle for survival is keenest". Additionally, uncritical reliance on optimisation can not only lead to fanciful constructions but discourages curiosity over the interpretation of non-standard and unfamiliar contracting practices and organisational structures. Faced, as we are, with enormous complexity and variety, we should entertain the possibility that some of what we are observing has the purpose and effect of economising on mind as a scarce resource. That possibility is unlikely to register among those who treat hyperrationality as an all-purpose construction, irrespective of the circumstances.

2.2.1.3. Insularity

Another simplifying move is to treat economics and the contiguous social sciences as disjunct. Thus Samuelson (1947) distinguished between economics and sociology in terms of their rationality orientations, with rationality being the domain of economics and non-rationality being the domain of sociology. Duesenberry (1960) subsequently quipped that economics was preoccupied with how individuals made choices, whereas sociology maintained that individuals were a product of their experience and did not have any choices to make.

This disconnect has since given way as behavioural economics and institutional economics have taken shape. Old issues are being revisited and new questions are being asked as interdisciplinary social science plays out and "the black boxes get opened" (Dixit, 1996; Pinker, 2002: 70).

2.2.2. Overuse of orthodoxy

Whereas orthodoxy—the resource allocation paradigm, with its emphasis on prices and output, supply and demand—is well-suited to some purposes, it is poorly suited to others. Going beyond simple market exchange, what is to be made of complex contracting and hierarchical forms of organisation?

Working out of the theory of the firm as production function set-up, Joe Bain (1968: 381) held that vertical integration that lacked a "physical or technical aspect" to which technological cost savings could plausibly be ascribed was presumptively anticompetitive. Non-standard contractual practices, such as customer or territorial restrictions, that lacked a technological basis were likewise held to have monopoly purpose. The bandwagon of monopoly reasoning during the 1960s became an antitrust steam roller (Coase, 1972: 67):

… if an economist finds something—a business practice of one sort or another—that he does not understand, he looks for a monopoly explanation. And as in this field we are very ignorant, the number of understandable practices tends to be very large, and the reliance on a monopoly explanation, frequent.

As Stewart put it in his dissenting opinion in United States Von's Grocery (1966), the "sole consistency that I can find in [merger] litigation under Section 7 [is that] the Government always wins."

Government regulation was also overused in the 1960s. Such overuse was supported by the mistaken idea that every resource allocation distortion in the market could be corrected by government regulation, which was presumed to be both efficacious and benign (Krueger, 1990: 172; Dixit, 1996: 8). The need to ground public policy analysis in a comparison of feasible alternatives, all of which are flawed, government regulation included, had yet to register.

The upshot is that in both antitrust and regulatory respects, public policy toward business was careening out of control by the late 1960s. A crisis was building for which relief was wanting.

2.2.3. Relief

One of the features that Kuhn (1970: 57) associates with a new paradigm is the uneasiness, even in the sense of crisis, with the existing and prevailing paradigms. But growing dissatisfaction does not suffice: you do not beat something with nothing. Awaiting a new paradigm, a science will limp along, doing the best that it can with the paradigm in place.

With the benefit of hindsight, many of the relevant pieces with which to fashion a new paradigm had been taking shape. For our purposes here, I focus on those pieces that were especially relevant to TCE.

2.3. NEW IDEAS

Although TCE rests on interdisciplinary foundations, this does not require that every user of TCE become an interdisciplinary social scientist. It is nonetheless useful for all users to

be mindful of where the ideas originate. TCE owes its origins to a series of good ideas—in law, economics, and organisation theory—many of which were laid down during the interval 1930–1970. With the benefit of hindsight, these three fields were wrestling with overlapping issues.

2.3.1. New ideas in law

The need here was to challenge the fiction, in both law and economics, that contracts were well defined and in a costless way enforced by well-informed courts. This fiction of legal centralism was disputed by Llewellyn in 1931, who perceived the need to move beyond a legal rules conception of contract and introduced the idea of "contract as framework". As Llewellyn (1931: 736–737) puts it, the "major importance of legal contract is to provide…a framework which never accurately reflects real working relations, but which provides a rough indication around which such relations vary, an occasional guide in cases of doubt, and a norm of ultimate appeal when the relations cease in fact to work". The last one is important, in that recourse to the courts for purposes of ultimate appeal serves to delimit threat positions. But the key idea is: the legalistic view of contract that applies to simple transactions needs to make way for a more managerial conception of contract as complexities build up.

What Galanter (1981) refers to as "private ordering" is especially pertinent. As he puts it, the "legal centralism" tradition maintains that "disputes require 'access' to a forum external to the original social setting of the dispute [and that] remedies will be provided as prescribed in some body of authoritative learning and dispensed by experts who operate under the auspices of the State" (Galanter, 1981: 1). The facts, however, disclose that in "many instances the participants can devise more satisfactory solutions to their disputes than can professionals constrained to apply general rules on the basis of limited knowledge of the dispute" (Galanter, 1981: 4). Accordingly, most disputes, including many that under current rules could be brought to a court, are resolved by avoidance, self-help, and the like (Galanter, 1981: 2).

2.3.2. New ideas in economics

The two legs of the TCE project—transactions and governance—were prefigured by Commons (1932), who had long contested the all-purpose reliance on the efficient resource allocation paradigm. But there was more than mere criticism in Commons. As against simple market exchange between "faceless buyers and sellers who meet for an instant to exchange standardised goods and services at equilibrium prices" (Ben-Porath, 1980: 4), Commons had an abiding interest in "going concerns" and reformulated the problem of economic organisation as follows: "the ultimate unit of activity…must contain in itself the three principles of conflict, mutuality, and order. This unit is a transaction" (Commons, 1932: 4). Not only does TCE take the transaction to be the basic unit of analysis, but governance is the means by which to infuse order, thereby to mitigate conflict and realise mutual gain.

Ronald Coase's classic 1937 paper "On the Nature of the Firm" specifically called attention to three lapses in the orthodox theory of firm and market organisation: (1) the distribution of transactions between firm and market were taken as given, whereas these should be derived; (2) going beyond production costs, there was a need to recognise that transaction cost differences were often responsible for the choice of one mode rather than another; and (3) orthodoxy had no good answers for the puzzle of what is responsible for limits to firm size.

Coase's subsequent critique of the market failure literature in his equally famous paper on "The Problem of Social Cost" (1960) (Coase, 1960) identified additional lapses of logic. Upon reformulating the tort problem (or, more generally, the externality problem) as a problem of contract, he showed that externalities vanished when the logic of zero transaction costs is pushed to completion. As Coase put it in his Nobel Prize lecture (Coase, 1992: 717; emphasis added):

> Pigou's conclusion and that of most economists using standard economic theory was…that some kind of government action (usually the imposition of taxes) was required to restrain those whose actions had harmful effects on others (often termed negative externalities). What I showed…was that in a regime of zero transaction costs, an assumption of standard economic theory, negotiations between the parties would lead to those arrangements being made which would maximise wealth and this irrespective of the initial assignment of property rights.

Kenneth Arrow's examination of "The Organisation of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation" (Arrow, 1969) likewise made a prominent place for transaction costs, both in general and with reference to vertical integration. The general argument is this (Arrow, 1969: 48; emphasis added):

> I contend that market failure is a more general condition than externality; and both differ from increasing returns in a basic sense, since market failures in general and externalities in particular are relative to the mode of economic organisation, while increasing returns are essentially a technological phenomenon.

Current writing has helped to bring out the point that market failure is not absolute; it is better to consider a broader category, that of transaction costs, which in general impede and in particular cases completely block the formation of markets…[T]ransaction costs are the costs of running the economic system.

Organisational considerations now take their place alongside of technology, which had previously been treated as determinative. Upon recognising that organisation matters, transaction cost differences, as between internal organisation and market exchange (where both are now regarded as alternative modes of contracting), have obvious ramifications for vertical integration: "An incentive for vertical integration is replacement of the costs of buying and selling on the market by the costs of intrafirm transfers; the existence of vertical integration may suggest that the costs of operating competitive markets are not

zero, as is usually assumed by our theoretical analysis" (Arrow, 1969: 48; emphasis added).

The need to place the study of positive transaction costs on to the agenda was clearly posed. That would entail more than adding a perfunctory transaction cost term to production cost or utility function expressions. If, as Buchanan (2001: 28) puts it, "mutuality of advantage from voluntary exchange is…the most fundamental of all understandings in economics", then a contractual approach—more generally, a "science of exchanges" approach—to economic organisation has much to recommend it.

As perceived by Buchanan, the principal needs for a science of exchange were in the field of public finance and took the form of public ordering: "Politics is a structure of complex exchange among individuals, a structure within which persons seek to secure collectively their own privately defined objectives that cannot be efficiently secured through simple market exchanges" (Buchanan, 1987: 296; emphasis added). Inasmuch as the preconditions for simple market exchange are not satisfied when problems of collective choice are posed, a new "calculus of consent," so to speak, was needed (Buchanan and Tullock, 1962; Brennan and Buchanan, 1985). The field of public choice took shape in response to the perceived needs.

Public ordering is not, however, the only or even the predominant way of dealing with complex market exchange. On the contrary, huge numbers of private sector transactions do not qualify to be described as simple market transactions between "faceless buyers and sellers". Given that anticompetitive interpretations for non-standard and unfamiliar contracting practices and organisational structures are frequently bankrupt, and since mutuality of advantage is the fundamental purpose of exchange, why not interpret the governance of contractual relations as an effort to implement the Commons Triple of conflict, mutuality, and order?

Complex contracting and organisation would thus be construed mainly (but not exclusively) as self-help efforts by the immediate parties to a transaction to align incentives and craft governance structures that are better attuned to their exchange needs. The study of private ordering (with reference to industrial organisation and microeconomic exchanges more generally) thus takes its place along side of public ordering.

Figure 2.1 sets out the main distinctions. The initial divide is between the science of choice (orthodoxy) and the science of contract. The latter then divides into public (constitutional economics) and private ordering parts, where the second is split into two related branches. One branch deals with ex ante incentive alignment (mechanism design, agency theory, the formal property rights literature), often with reference to efficient risk bearing. The second features the ex post governance of contractual relations (contract implementation, with emphasis on the mitigation of contractual hazards).

2.3.3. New ideas in organisation theory

Wherein do positive transaction costs arise? What added or different purposes are served upon taking a transaction out of the market and organising it internally? Although the organisation theory literature did not specifically focus on either of these issues, it was

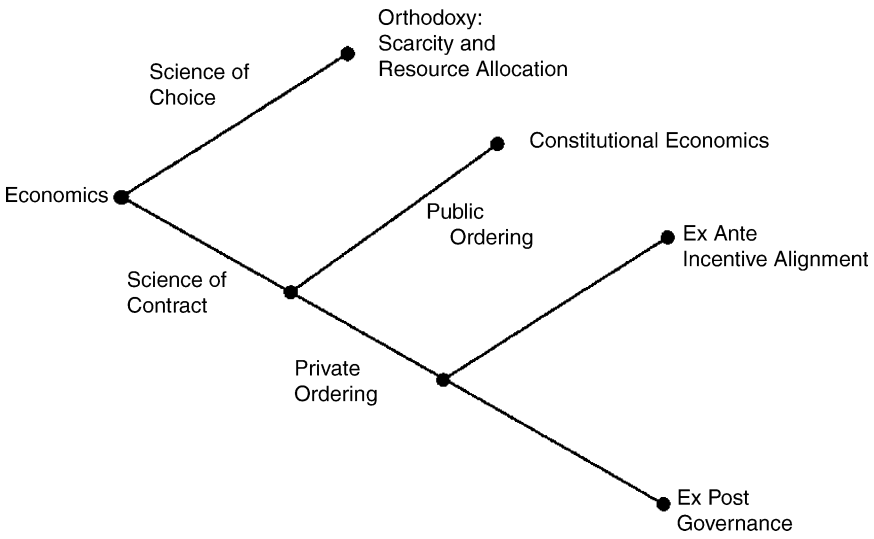

Figure 2.1: The sciences of choice and contract.

developing ideas that were pertinent to both. Simon's (1957) concept of bounded rationality and Barnard's (1938) emphasis on cooperative adaptation were especially important.

Simon (1957: xxiv) explicitly took exception with the readiness with which economists invoked hyperrationality and proposed that bounded rationality—behaviour that was "intendedly rational but only limitedly so"—was a more veridical description. Thus although both tic-tac-toe and chess are board games, the former is a trivial game (always ends in a draw) whereas the latter is complex precisely because chess poses added demands on limited cognitive competence.

To be sure, bounded rationality is a broad concept and manifests itself in many ways. In the context of complex contracting, the fundamental problem posed by bounded rationality is that all complex contracts are unavoidably incomplete.

Additionally, organisation theorists expanded our understanding of the purposes served by economic organisation. Interestingly, there was agreement between the economist Friedrich Hayek and the organisation theorist Chester Barnard that adaptation was the central problem of economic organisation. But there were important differences as well. Hayek focused on the adaptations of economic actors who adjust spontaneously to changes in the market, mainly as signaled by changes in relative prices: upon looking "at the price system as…a mechanism for communicating information," the marvel of the market resides in "how little the individual participants need to know to be able to take the right action" (Hayek, 1945: 526–527). By contrast, Barnard featured coordinated adaptation among economic actors working through administration (hierarchy). The latter is accomplished not spontaneously but in a "conscious, deliberate, purposeful" way (Barnard, 1938: 9) and comes into play when the simple market exchanges on which Hayek focused break down.

Table 2.1: The challenge of new ideas: from choice to contract.

	Orthodoxy	**New ideas in TCE**
Analytical lens	Choice	Contract
Concept of contract	Simple with costless court ordering	Complex contract as framework with private ordering
Efficiency focus	Resource allocation	Mutual gain
Transaction cost	Zero	Positive and variable
Unit of analysis	Composite (goods and services)	Microanalytic (separable transactions)
Cognition	Omniscience (complete contracting)	Bounded rationality (incomplete contracting)
Adaptation	Autonomous (market)	Coordinated (hierarchy)

Thus whereas the adaptations to which Hayek refers are autonomous adaptations in which individual parties respond to market opportunities as signalled by changes in relative prices, the adaptations of concern to Barnard are cooperative adaptations accomplished through administration within the firm. Because a high-performance economic system will display adaptive capacities of both kinds, provision for both—whence an understanding and appreciation for both markets and hierarchies—is needed.

Table 2.1 sets out the main differences between TCE (lens of contract/private ordering/governance) and orthodoxy (lens of choice) that reside in the new ideas referred to above.

2.4. TRANSACTION COST ECONOMICS: CONCEPTUALISATION

The growing crisis in industrial organisation together with the new ideas referred to above invited a response. Older style institutional economics had insights and ambition but failed for lack of operationality. Managerial theories of the firm introduced greater realism in motivation but remained neoclassical in their production function orientation (Baumol, 1959; Marris, 1964; Williamson, 1964). Behavioural theories of the firm dealt with realism in process, but the analysis was entirely internal to the firm, hence did not address issues of comparative economic organisation (Cyert and March, 1963). Incentive theories made provision for asymmetric information in the ex ante incentive alignment stage of contracting but made little or no provision for ex post mal-adaptation and governance responses thereto. Early efforts to implement TCE foundered on the shoals of tautology. There were simply too many degrees of freedom on which ex post rationalisations could be based (Fischer, 1977: 322, n. 5).

Part of the problem is that the good ideas—from law, economics, and organisation sketched above—were compartmentalised: the work of Carnegie aside, each field spoke to its own rather than engage in a cross-disciplinary exchange. The real promise of interdisciplinary analysis, however, resides in "connecting or unifying" the fields (Pinker, 2002: 70). Additionally, and related, a contractual logic of economic organisation needed to be worked up. In principle, this could be done in the abstract. Chronic complaints, however, with transaction cost reasoning were that it operated at too high a level of generality and was tautological. Grounding TCE in the specifics of vertical integration was consequential both because logical lapses and public policy errors in prevailing lens

of choice reasoning were uncovered and because vertical integration became a paradigm for breathing operational life into the TCE enterprise more generally.

Upon drawing together the good ideas referred to above, gaps in the logic would appear for which the crafting of missing pieces was needed. Among the more important missing moves were opportunism, bilateral dependency, and forbearance law. Three other pieces that were needed to complete the logic but are passed over here are the impossibility of combining replication with selective intervention (Williamson, 1985: 132–144), the welfare criterion of remediableness (Williamson, 1996, Chapter 8), and the exercise of feasible foresight.

2.4.1. Opportunism

Absent opportunism, contract as mere promise, unsupported by credible commitments, would be self-enforcing. That is because surprises that arose during contract execution, for which either no provision or incorrect provision had been made (by reason of bounded rationality), could always be worked out and mutual gains fully realised if the promises by each party to behave in a candid and cooperative way were self-enforcing (Williamson, 1985: 43–67).

Perhaps because opportunism is an unflattering behavioural assumption, social scientists have been loath to introduce it. Simon (1957: 305), for example, eschews the strategic concept of opportunism in favour of the benign concept of "frailty of motive". To admit to opportunism, however, does not imply that opportunism is the rule to which cooperation is the exception. On the contrary, most people will do what they say and some will do more most of the time. What opportunism has reference to is not to routines but to outliers. Strategic behaviour that had been largely suppressed by economists over the interval 1870–1970 (Makowski and Ostroy, 2001: 482–483, 490–491) makes its appearance.

Such behaviour is especially relevant in the context of unanticipated disturbances to which significant mal-adaptations prospectively accrue. These are the outlier disturbances that pose the hazard of defection. The general argument here is that when the "lawful" gains to be had by insistence upon literal enforcement of an inter-firm contract exceed the discounted value of continuing the exchange relationship, defection from the spirit of the contract can be anticipated (Williamson, 1991; Klein, 1996).

To admit to opportunism, however, is not to celebrate it. On the contrary, any cost-effective lessening of opportunism is desirable. Sometimes such lessening will occur at the societal level, where institutional differences of both formal (laws, polities, judiciaries) and informal (customs, conventions, mores) kinds inspire differential confidence among trading parties. Such societal influences are properly made part of the governance calculus. But there is more. The immediate parties to a transaction can also make private ordering efforts to mitigate opportunism by deploying governance structures appropriately. To paraphrase Michels (1962: 370) on oligarchy, nothing but a serene and frank examination of the hazards of opportunism will permit us to mitigate these hazards. The cost-effective mitigation of contractual hazards through the mechanisms of ex post governance is what TCE is all about.

2.4.2. Bilateral dependency

What I have referred to as the Fundamental Transformation is a manifestation of the proposition that contract, like the law, has a life of its own. Specifically, although many transactions have large numbers of qualified suppliers at the outset, some of these are transformed into what, in effect, are small numbers supply relations during contract execution and at the contract renewal interval. The key factor here is the characteristics of the assets. Transactions that are supported by generic assets are ones for which there are large numbers of actual and potential suppliers throughout. Because such assets can be redeployed to alternative uses and users with negligible loss in productive value, each party can go its own way with little cost to the other. Where, however, significant investments in transaction specific assets are put at risk, bilateral dependency sets in, the small numbers exchange relation referred to above takes effect, and continuity is important. It is elementary that transactions of the latter kind will pose contractual hazards if organised as simple market exchange. The need for ongoing relations in the "going concerns" to which Commons referred makes its appearance.

2.4.3. Contract laws plural

TCE advances the argument that each generic mode of governance is defined, in part, by a distinctive form of contract law. As Llewellyn (1931), Galanter (1981), and other contract law scholars have emphasised, the concept of contract as legal rules, which applies to simple market exchange, gives way to the more elastic concept of contract as framework as contractual complexities build up. But what is the applicable law of contract for the firm?

TCE advances the argument (Williamson, 1988, 1991) that the implicit contract law for governing exchange within the firm is that of forbearance. Thus whereas courts routinely grant standing to firms engaged in inter-firm exchange should there be disputes over prices, the damages to be ascribed to delays, failures of quality, and the like, courts refuse to hear disputes between one internal division and another over identical technical issues. Access to the courts being denied, hierarchy becomes its own court of ultimate appeal.

That is consequential in its own right: markets and hierarchies are discrete structural modes of governance that differ in kind rather than degree—in part because of contract law differences between them. But the proposition that hierarchy is its own court of ultimate appeal also has relevance for the (Alchian and Demsetz, 1972: 177) argument that it is a delusion to claim that the firm has "the power to settle issues by fiat, by authority, or by disciplinary action superior to that available in the conventional [i.e., neoclassical] market". Plainly, if the firm is its own court of ultimate appeal whereas the market is not, then the firm has access to fiat that the market does not. Entertaining the idea that "internal structure [of firms] must arise for some reason" (Arrow, 1969: vii) is plainly a productive way by which to get to the essence of economic organisation.

By way of summary, the added features of which TCE works are these: (1) it pushes beyond a benign view of self-interest (frailty of motive) to include opportunism (strategic behaviour); (2) it moves beyond differential risk aversion (agency theory) to introduce the

contractual hazard of bilateral dependency (by reason of asset specificity); (3) contract law (singular) is supplanted by contract laws (plural), to include forbearance law as the contract law of internal organisation; (4) rather than scant bureaucracy, the inter-temporal burdens of bureaucracy are featured; (5) efficiency is judged not with respect to a hypothetical ideal but in terms of the remediableness criterion; and (6) feasible foresight supplants both omniscience (orthodoxy) and myopia (behavioural economics).

2.5. TRANSACTION COST ECONOMICS: OPERATIONALISATION

As indicated, TCE is an interdisciplinary project in which law, economics, and organisation are joined. Combining these ideas and adding and extending upon them leads to a very different conceptualisation of the purposes served by economic organisation than that afforded by orthodoxy. Many would-be theories, however, never move beyond would-be status. They founder for lack of operationalisation.

2.5.1. The main case

TCE holds that economising on transaction cost is the hitherto neglected main case. The two core constructs out of which it works are transactions and governance. Specifically, the discriminating alignment hypothesis holds that transactions, which differ in their attributes, are aligned with governance structures, which differ in their cost and competence, so as to effect a (mainly) transaction cost economising result. Testing this hypothesis requires that the key attributes that define both transactions and governance structures be named and the ramifications worked out.

2.5.2. Dimensionalising

TCE identifies three attributes of transactions that have pervasive ramifications for governance: asset specificity (which takes a variety of forms—physical, human, site, dedicated, brand name—and is a measure of non-redeployability), the disturbances to which transactions are subject (and to which potential mal-adaptations accrue), and the frequency with which transactions recur (which bears both on the efficacy of reputation effects in the market and the incentive to incur the set-up cost of specialised governance). The absence of asset specificity describes the ideal transaction in law and economics. Albeit important, TCE treats this not as the general but as a polar case.

Turning to governance, TCE holds that each generic mode of governance is defined by a syndrome of internally consistent attributes to which different adaptive strengths and weaknesses accrue. The three attributes of principal importance for describing governance structures are: (1) incentive intensity, (2) administrative controls, and (3) contract law regime. Spot markets and hierarchy differ with respect to these attributes as follows: spot markets have stronger incentives, fewer administrative controls, and are more legalistic than hierarchies. Specifically, the high-powered incentives of markets are supplanted by lower-powered incentives when transactions are organised within firms; the spontaneous

Table 2.2: Attributes of leading generic modes of governance.

	Governance modes		
Governance attributes	Market	Hybrid	Hierarchy
Incentives	High-powered	Less high-powered	Low-powered
Administrative support by bureaucracy	Nil	Some	Much
Contract law regime	Legalistic	Contract as framework	Firm as own court of ultimate appeal (fiat)

control mechanisms of spot markets (Hayek, 1945) give way to hands-on administrative involvement in firms (Barnard, 1938); and whereas the contract law of markets is legalistic and relies on court ordering, courts refuse to hear (most) internal disputes, whereupon the firm becomes its own court of ultimate appeal.

Governance, moreover, is not restricted to polar forms. All modes of organisation within which (or with the support of which) transactions are managed come under scrutiny. Hybrid modes of contracting to which credible commitment supports have been crafted (penalties against premature termination are introduced and specialised information disclosure and dispute settlement mechanisms are devised) are especially important. Table 2.2 summarises the key attributes of (spot) markets, hybrids, and hierarchies.

2.5.3. Heuristic models and refutable implications

Although TCE aspires to achieve full formalism, the formalisation of incomplete contracts turns out to be very difficult. Awaiting further developments, semi-formal (often reduced form) models will remain the principal means by which to work out the ramifications of discriminating alignment.

Both cost and price interpretations of efficient alignment are sketched here. The cost rendition of efficient governance focuses on how the costs of governance increase as complexity (of an asset specificity kind) builds up. It will be convenient to focus on three modes: spot markets, hybrid modes of contracting into which contractual safeguards have been introduced, and hierarchies. The basic arguments are: (1) markets are well-suited to making autonomous adaptations, firms enjoy the advantage for cooperative adaptation purposes, and hybrids are located in between; (2) the needs for adaptation vary with the attributes of transactions; and (3) bureaucratic cost burdens increase as transactions move from market, to hybrid, to hierarchy.

In a heuristic way, the transaction cost consequences of organising transactions in markets (M), hybrids (X), and hierarchies (H) as a function of asset specificity (k) are shown in Figure 2.2. As shown, the bureaucratic burdens of hierarchy place it at an initial disadvantage ($k = 0$), but the cost differences between $M(k)$ and $H(k)$ narrow as asset specificity builds up and eventually reverse as the need for cooperative adaptation becomes especially great ($k \gg 0$). As indicated, moreover, the hybrid mode of organisation $X(k)$, is viewed as a market-preserving credible contracting mode that possesses adaptive attributes located between classical markets and hierarchies. Incentive

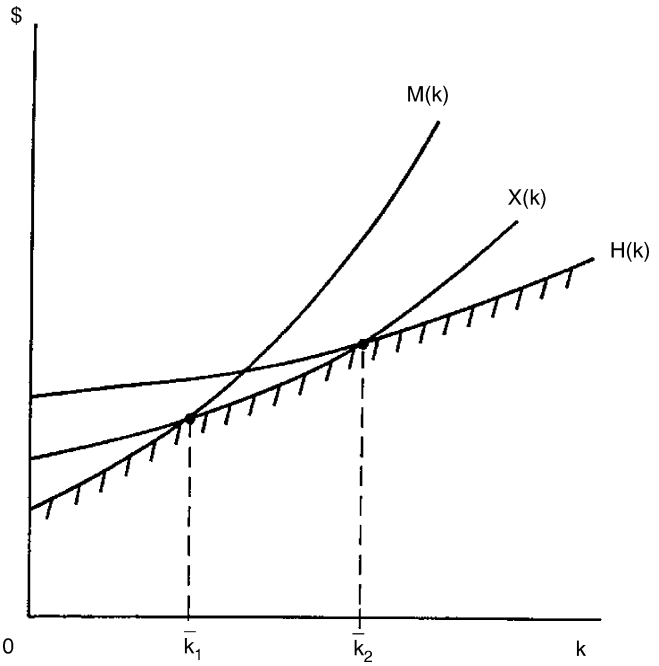

Figure 2.2: Transaction costs and asset specificity.

intensity and administrative control take on intermediate values and Llewellyn's (1931) concept of contract as framework applies. As shown in Figure 2.2, the intercepts $M(0) < X(0) < H(0)$ (by reason of bureaucratic cost differences) while the slopes $M' > X' > H'$ (which reflects the differential ability of these three models to implement coordinated adaptation, the needs for which increase as asset specificity builds up). The least cost mode of governance is thus the market for $k < \bar{k}_1$, the hybrid for $\bar{k}_1 < k < \bar{k}_2$, and hierarchy for $k > \bar{k}_2$.

The simple contracting schema shown in Figure 2.3 provides a price interpretation of efficient governance. For purposes of simplicity, the supply side of the market is assumed to be competitively organised, whence the implicit price at each node reflects an expected break-even condition (to include a fair rate of return on investment).

Assume that a buyer can either make a component or procure it in the market. Assume also that the component can be produced by either a general-purpose technology or a special-purpose technology. Again, let k be a measure of asset specificity. The transactions in Figure 2.3 that use the general purpose technology are ones for which $k = 0$. In this case, no specific assets are involved and the parties are essentially faceless. Those transactions that use the special purpose technology are ones for which $k > 0$. Such bilaterally dependent parties have incentives to promote continuity and safeguard their specific investments. Let s denote the magnitude of any such safeguards, which include penalties, information disclosure and verification procedures, and specialised dispute resolution (such as arbitration). Unified ownership (vertical integration of successive stages) appears as the limits of interfirm credible contracting become severe. An $s = 0$

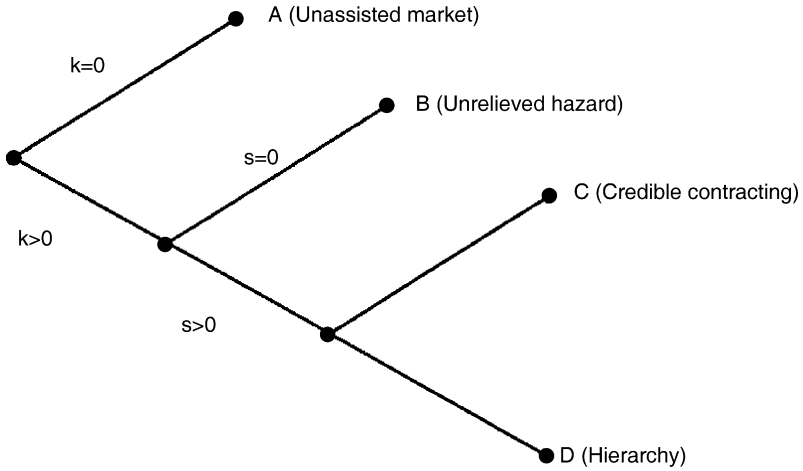

Figure 2.3: Simple contracting scheme.

condition is one for which no safeguards are provided; a decision to provide safeguards is reflected by $s > 0$.

Node A in Figure 2.3 corresponds to the ideal transaction in law and economics. There being an absence of dependency, order is accomplished through simple market exchange to which competition continuously applies. This is a generic good or service for which the break-even price is p_1 and disputes are settled in court. Node B poses unrelieved contractual hazards, in that specialised investments are exposed ($k > 0$) for which no safeguards ($s = 0$) have been provided. Such hazards will be recognised by farsighted players, who will price out the implied risks of contractual breakdown. The break-even price at node B is $\bar{p}$.

Added contractual supports ($s > 0$) are provided at nodes C and D. At node C, these contractual supports take the form of the aforementioned credible contracting safeguards. In consideration of the added security that results from such safeguards, the break-even price at node C will be lower than at node B ($\hat{p} < \bar{p}$).

Finally, should costly contractual breakdowns continue in the face of best bilateral efforts to craft safeguards at node C, the transaction may be taken out of the market and organised under unified ownership (vertical integration) instead. Because added bureaucratic costs accrue upon taking a transaction out of the market and organising it internally, internal organisation is usefully thought of as the organisation form of last resort: try markets, try hybrids, and have recourse to the firm only when all else fails. Node D, the unified firm, thus comes in only as higher degrees of asset specificity and added uncertainty pose greater needs for coordinated adaptation. Because of the cost differences between hybrid and hierarchy shown in Figure 2.2 at high levels of k, the implied full cost transfer price at node D ($\tilde{p}$) is less than the corresponding break-even price at node C.

Figures 2.2 and 2.3 can be given a somewhat more rigorous interpretation by recasting the issues in stochastic terms in which credible contracting is featured (Williamson, 1983, 1991). It suffices here to observe here that the basic arguments (with added nuances) survive.

2.5.4. Empirical testing

As stated elsewhere and repeated here, TCE is an empirical success story. A number of instructive surveys have been prepared, the most recent of which is by Boerner and Macher (2001), which discusses over 600 empirical TCE papers (including applications to agriculture) and includes references to earlier surveys. From early and tentative beginnings in the 1980s, the growth of empirical work in TCE has been exponential.

This growth is especially noteworthy when TCE is compared with other economic theories of contract and organisation, where empirical testing is the exception rather than the rule. Partly that is because empirical testing of would-be theories is always demanding. And partly it is because it is demoralising to discover that predicted effects are weak, of second-order importance, or are contradicted by the data.

To be sure, TCE also requires more and better empirical testing. Joskow's (1991: 81) remarks are nonetheless noteworthy: empirical work in TCE "is in much better shape than much of the empirical work in industrial organisation generally."

2.6. APPLICATIONS TO AGRICULTURE

It is no accident that many of the illustrations of variable proportions production technologies come from agriculture. Important and instructive as these resource allocation applications have been, agriculture also poses contractual and organisational problems for which the lens of contract/private ordering can be brought to bear. I am not the first to recognise this, nor am I the best qualified to speak to the applications.

Lens of contract applications of two kinds have been made: ex ante incentive alignment (mainly agency theory) and ex post governance (mainly TCE). An obvious question, from an ex ante incentive alignment perspective, is how to accomplish efficient risk bearing in the rental of farmland. Although Allen and Lueck's (1999) empirical investigation of farmland sharecropping contracts discloses that the predictions of agency theory are not borne out by the data, their failure to correct for endogenous matching may explain the results (Ackerberg and Botticini, 2002).

Empirical applications of TCE to agriculture generally fare well, although the number of such studies in the survey by Boerner and Macher (2001) are few (15). Be that as it may, the empirical research to date is broadly corroborative.

That there are not more such studies may be because the application opportunities are limited, but Masten (2000: 190), in his paper on "Transaction Cost Economics and the Organisation of Agricultural Transactions", concludes that "agricultural transactions provide a rich and largely unexplored area for application and refinement of transaction cost theory".

Note Masten's reference to refinements as well as applications. As I remarked earlier, TCE is an unfinished enterprise. Agricultural economists are invited not merely to use it—try it; you'll like it—but also to contribute to the development of TCE. Both novel modes of governance as well as new contractual hazards need to be addressed.

Masten (2000: 187) observes with reference to the latter that "the most conspicuous attribute distinguishing agricultural goods from other commodities is their perishability".

Whether it qualifies as "most conspicuous" or not, perishability poses contractual hazards for which comparative contractual reasoning is sorely needed.

The hazard posed by perishability seems to be obvious: given that timing is of the essence (Masten, 2000: 187), producers of perishable fruits, vegetables, dairy products, seafood and the like are vulnerable to opportunistic processors. By defecting from the spirit of the contract (possibly by feigning obstacles to timely responsiveness), the latter can gain a bargaining advantage, thereby to renegotiate the contract.

This seems to be a straightforward application of transaction cost reasoning from manufacturing to agriculture. In fact, however, there are consequential differences, the most important being: (1) the logic of "outliers" does not really carry over to agriculture and (2) the appearance of a new organisational form, namely, the cooperative.

2.6.1. Outliers

The principal mal-adaptation problem to which TCE refers in manufacturing arises not with reference to routine disturbances but to outliers, in that the normal presumption of interfirm cooperation in pursuit of mutual gain is placed in jeopardy when the stakes are great. In agriculture, however, perishability is not properly described as an outlier. It is a recurrent, foreseeable hazard that appears with every harvest. To be sure, the timing varies, but the need for real time cooperation when the crop is ready for processing is apparent to the parties ex ante.

So the puzzle is why should a recurrent, foreseeable hazard experience opportunism. Given that the parties will meet in the marketplace as successive crops are harvested, producers will presumably price out the hazard (treat it as a node B transaction) if processors behave opportunistically. In that event, processors who recognise that reputation effects will catch up with them (Kreps, 1990) will forego the opportunity to take advantage (end games aside). If, moreover, unilateral restraint does not suffice, why do not appropriate bilateral mechanisms appear? Credible contracting mechanisms would then serve as a check on costly deceits, whereupon mutual gains would accrue.

One possibility is that entry is easy and new entrants are naïve. Not only do they fail to learn from the experience of others (in the mistaken belief that they are more clever, hence less vulnerable), but they misinterpret the high price (due to the hazard premium) as an invitation to enter. In that event, processors continuously thrive on the mistaken beliefs of a succession of naïve producers. If, however, the set-up costs for many perishable crops are great and if farmers are hard-headed rather than naïve, then such an explanation strains credulity. Something else must be at work.

A second explanation is that the efficacy of reputation effects is undermined not by naïveté but by scepticism. If producers view processors with suspicion and cannot verify processor claims that they really have made best efforts to respond to exigencies (the relevant information cannot be costlessly and persuasively disclosed), then adverse outcomes are interpreted as bad behaviour. Since everyone knows that "big guys always push little guys around," bad behaviour is what our intuitions would have told us from the outset.

Here as elsewhere, however, our intuitions can be mistaken. Especially if we are accustomed to thinking in terms of one-shot rather than recurrent contracting, the conventional wisdom can be faulty. Consider, for example, the logic (Williamson, 1985: 35–38) and evidence (Fishback, 1992) on "company towns." This deals with recurrent contracting between a big guy (the company) and a collection of little guys (the workers) to which the logic of credible contracting applies and, moreover, seems to be borne out by the data. So the question is: is the company town logic and evidence apropos to agriculture? The research challenge for agricultural economics is to work out the logic and evidence on recurrent contracts for perishable crops. If there are breakdowns, where do they reside?

2.6.2. Cooperatives

Because backward integration from processors into farming would have detrimental effects on the incentives of farmers and pose added control costs (Williamson, 1985, Chapter 6), and because forward integration out of farms into processing is often impracticable (because individual farms are small in relation to the minimum efficient scale for a processor; and horizontal integration among farms, thereby to reach the requisite scale, poses problems of its own), vertical integration is a deeply problematic answer to the real or imagined hazards of perishability. What to do?

Collective organisation (which falls short of unified ownership and thus preserves the individual ownership and operation of farms) has obvious attractions in such circumstances. Such collective organisations could take the form of bargaining cooperatives or could entail forward integration from production into processing and distribution. Knoeber (1983: 339) describes the bargaining cooperative as follows:

> Bargaining cooperatives do not generally handle growers' crops, provide processing service, or sell farm supplies. Their only function is to contract with processors for the sale of members' crops. Membership is voluntary and no control is exercised over the quantity of produce grown by their members…. Besides the market for processing fruits and vegetables, [bargaining cooperatives] are important only in the markets for milk to creameries and sugar beets to refiners (also perishable products).

Bargaining cooperatives also, however, experience problems of their own. Not only may individual members subvert the bargain, but processor compliance may be as well suspect (Knoeber, 1983: 339–341). A more ambitious form of cooperative is for the collection of growers to own the processing (and, possibly, distribution) stages.

Cook (1995) distinguishes between cooperatives that have been organised for resource allocation purposes (to manage excess supply induced prices) and those that have contractual purposes (to deal with perceived market failures). Whereas the former are short-lived, the latter have done better (Cook, 1995: 1156). Cook (1995: 1158–1159) also advises that the latter are usefully examined from a TCE perspective and calls for more concerted work of this kind.

TCE being a relentlessly comparative exercise, comparisons of the governance of cooperatives with capitalist firms, to include an examination of ownership, oversight, contract law, and democratic decision making differences, are pertinent. One ownership difference is that the members of the cooperative have both a direct stake in the performance and more nuanced knowledge of the circumstances of the cooperative than is the case for the diffuse and disengaged owners of the capitalist firm. Because, however, there is no market for shares in the cooperative except as these are acquired through the purchase of a farm, whereas there is a market for shares in the capitalist firm, the cooperative is less subject to the discipline of competition in the capital market.

The more democratic nature of decision making in the cooperative presents the need to examine how the formal and informal rules of collective decision making influence leadership, control, real-time responsiveness, executive compensation, and career rewards for executives. Also, what is the implicit contract law for cooperatives? These and other comparisons are beyond the scope of my knowledge but are very much in the spirit of TCE. More generally, Masten's view that agricultural economics poses novel and important challenges to which the lens of contract/governance is well suited is one with which I agree. We have barely scratched the surface of interesting and important contract/governance issues in the agricultural arena.

2.7. CONCLUSIONS

The excursion is completed. To those who remain sceptics, I say fine: TCE needs good critics. I nevertheless hope that many are persuaded that: (1) TCE is an interdisciplinary project that draws together a series of pathbreaking contributions in law, economics, and organisation theory; (2) the lens of contract approach to economic organisation addresses fundamental issues of governance that are central to an understanding of complex economic organisation and good public policy; (3) the action resides in the microanalytic logic and mechanisms out of which transaction cost economising works; and (4) TCE is an unfinished project, both in general and with respect to agricultural economics in particular.

From its early beginnings in industrial organisation, where vertical integration served as the paradigm problem, TCE has progressively moved out to consider contractual phenomena more generally—in labor, finance, franchise bidding for natural monopoly, public bureaus, and the like. It is always satisfying to provide better explanations for puzzling phenomena, especially if the data are corroborative. I am confident that agricultural economics will not disappoint.

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PART II

Policy reform, institutional determinants and outcomes

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 3

The Subtle Art of Major Institutional Reform: Introducing Property Rights in the Iceland Fisheries

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Abstract

This chapter treats the introduction of individual transferable fishing quota in Iceland as an illustration of a major institutional reform. Transaction costs, political economy and incomplete knowledge are seen as the main determinants of the reform process. The following propositions regarding major institutional change are introduced and questioned how they fit the Iceland individual transferable quota experiment: social equilibrium, political economy, transaction costs, incomplete social models and reliable feedback from social experiments. Mixed feedback signals interfere with overall conclusions to be made from the institutional reform experiment.

3.1. INTRODUCTION

When governments use large-scale institutional change as instrument of policy, the outcomes tend to be uncertain because their measures are based on incomplete social models—models of the social system. As reliable general theory of institutional reform is lacking, unexpected outcomes and side effects inevitably emerge, requiring adjustment in strategies (Eggertsson, 2004). In their work on institutional reform, many economic theorists still underestimate the importance of transaction costs, enforcement mechanisms and political economy, while the role of incomplete social models and uncertain feedback in the reform process receives even lesser attention. In the last decade of the 20th century, the Icelandic government introduced a new form of property rights in the country's ocean fisheries, the country's key industry. In this chapter, the institutional change in the Iceland fisheries is used to illustrate how transaction costs, political economy and incomplete knowledge shape major institutional reform.

Nowadays, both in developed and developing countries, mismanagement of open-sea fisheries is probably, besides the problem of industrial pollution, the most important example of incomplete property rights and serious institutional failure. Growing demand for fish products and technical advances on the supply side have put pressures on marine resources world-wide, requiring new forms of property rights and regulations to avoid open-access behaviour and serious negative externalities. Nevertheless, governments around the world have, by and large, been singularly unsuccessful in their attempts to meet the challenge at this remaining frontier: for example, fisheries regulations in the United States have a mixed record and fisheries policies of the European Union have generally had little success.

At a time of crisis in 1983, the Icelandic legislature took a decisive step toward a new system in the fisheries by introducing individual transferable quotas (ITQs) for the important demersal species. A *grandfather clause* transferred quasi-exclusive property rights to owners of fishing vessels that had been active during a previous 3-year period. In 1990, a new legislation extended the arrangement and it became the general principle for managing fisheries in the 200-mile fisheries zone, regulating some 95% of the fish harvested in Icelandic waters. The 1983 law only permitted quota holders to rent their quotas on an annual basis to other authorised vessels, but the 1990 law extended these rights and allowed sale of quotas (without requiring the owners also to sell their the vessels along with the fishing rights). Still, until 1998 the right to buy or rent individual quotas was severely limited. Legitimate transactions were limited to owners of licensed vessels with grandfather rights, so the only way for an outsider to enter the industry was to buy one of the original grandfathered vessels (or replacement thereof) and its quotas. These restrictions have been lifted, following a ruling by the Supreme Court that eased the entry conditions in the fisheries: the government will now license any seaworthy vessel and permit its owners to buy ITQs from other vessel owners.

A vitriolic debate has raged in Iceland about the legitimacy and the technical properties of the ITQ system. Opponents claim that it was an immoral and even illegal act to give free fishing rights to industry insiders, rights that in many cases are now worth millions of US dollars. Casual observations, such as examination of the opinion pages of Icelandic newspapers, suggest that opposition is widespread. The stakes are high. Some 40–50% of Iceland's exports of goods and services (and 60–70% of goods exports) come from the fisheries sector, and the potential rent from well-managed fishing grounds is high relative to the country's GDP. The lack of industrial diversity in Iceland, which is relatively unusual for a high-income economy, is partly explained by the small size of the population (little less than 300,000 inhabitants).

Iceland is in the unusual position for a high-income OECD country to rely heavily on an industry with a history of uncertain property rights. Open-sea fisheries have characteristics that make it exceptionally difficult to establish effective governance. Gylfason and Weitzman (2002) list four such features: (1) The high costs of monitoring an industry operating offshore; (2) "the large number of outputs being jointly regulated or managed and the extreme degree of independence among their cost and production functions"; (3) the severe instability of these independent cost and production functions; (4) the "technological inability of fishermen to control exactly the 'product mix' of jointly produced species caught…".

As problems mounted in commercial ocean fisheries worldwide, many economists put their hopes in a new social technology—ITQs. The two most extensive experiments with ITQs are found in Iceland and New Zealand. The following section introduces a few propositions regarding major institutional change. Subsequent sections analyse how these propositions fit Iceland's ITQs experiment.

3.2. SOME PROPOSITIONS CONCERNING MAJOR INSTITUTIONAL CHANGE

3.2.1. Social equilibrium

As institutional analysis assumes that the behaviour of actors in all domains, not only in the economic domain, is intendedly rational and goal oriented, it follows that institutions reflect optimising decisions by key players and resulting social equilibria. These leave little scope for reforms by well-intending economists (Bhagwati et al., 1984). However, incomplete knowledge and exogenous shocks sometimes create opportunities for reforms (Eggertsson, 2004). When unexpected external impulses or endogenous developments destabilise the social equilibrium, pivotal actors often become uncertain about prevailing social models and show readiness to experiment with new social technologies.

3.2.2. Political economy

Unless external events and unexpected internal developments utterly transform the political structure of a country, its reform path will be rooted in the political realities of the past. Property rights usually reflect the distribution of economic and political power but ideas or social models describing legitimacy and function also shape the ownership structures. In the context of prevailing social models, the intended wealth consequences of major changes in economic institutions usually reflect perceived interests of key players, implying that the famous Demsetz (1967) theory of the evolution of property rights is a special case. According to Demsetz, property rights tend to be efficient (joint wealth is maximised): when their environment changes, communities (somehow) adjust their system of property rights in an efficient manner.

The real world is less efficient than what Demsetz visualises. Governments often tolerate property rights that undermine efficiency and do not create incentives for maximising joint wealth. The direction of institutional policy depends on the structure of government coalitions and on the strength of special interest groups (lobbies) requesting measures that help or hinder effective governance. Libecap (1989) documents the influence of small inefficient operators, for instance, on government regulations in the Texas oil fields. Higgs (1982) shows how the influence of small salmon fishers in the US Northwest brought on technical regress and decimated the stocks.

3.2.3. Transaction costs

Leaving political problems aside, high transaction costs are the cause of destructive open-access or common property failures in the governance regimes of ocean fisheries.

The terms "open access" and "common property" are used equivalently to signify absence of exclusive rights and to distinguish common property from communal property. Under communal property, several independent economic actors, *insiders*, share exclusive rights to a resource. A frequent feature of traditional common property regimes is that insiders are not allowed to permanently transfer ownership rights to outsiders (Eggertsson, 2003). High transaction costs exclude alternative arrangements. In the course of time, however, new social and physical technologies might eventually enable efficient delineation and enforcement of property rights in the ocean.

ITQs are a step in that direction. Exclusive property rights to a resource involve transaction costs in two domains: *exclusion* and *governance*. Excluding outsiders gives rise to exclusion cost, whereas monitoring insiders is the source of (internal) governance cost. Internal governance is necessary for efficient operations when two or more independent economic units share the same resource (Scott, 1955). For common pool resources, physical features of the resources, social characteristics of the traders, and types of exchange define the governance problem (Ostrom, 1990). When it is economically infeasible to divide a resource between individual owners, the resource is a common pool resource and some form of communal usage is the most efficient governance method. Successful solutions to complex governance problems in common pool resources require a measure of self-enforcing co-operation among the insiders, which depends on their incentives. According to Ostrom (1990) primary reliance on third-party enforcement (e.g., central government enforcement) is unlikely to succeed in complex communal environments.

3.2.4. Incomplete social models

Policymakers and reformers have better knowledge of the operational aspects of stable social structures than of their underlying social technologies (or structural properties). Typically, institutional policy depends on incomplete social models. More is known, for instance, about the properties of well-functioning markets than about requirements for establishing markets in a Soviet-type transition economy. Incomplete social models influence not only government decisions about institutional reform but also the public perception of reform measures. In retrospect, both governments and the general public make mistakes in the process of institutional reform.

3.2.5. Unreliable feedback from social experiments

The incompleteness of social models is of little consequence, except in the short-run, when social experiments rapidly generate reliable data that enable the authorities and the public to correct their models. In many instances, however, social experiments remit ambiguous signals and random shocks or unexpected values of neglected variables become indistinguishable from fundamental system flaws. Uncertainty about social technologies creates opportunities for reform entrepreneurs of various shades, strategic falsification of beliefs, and even self-deception.

3.3. SOCIAL DISEQUILIBRIUM IN ICELAND'S FISHING SECTOR

Readiness to experiment with a little-known social technology in the country's key industry emerged during times of deep economic crises that threatened the economic future of Iceland. Initially, individual quotas were introduced in the herring fisheries in 1975, and trading in herring quotas was allowed in 1979. A startling collapse of herring stocks in the late 1960s, which reduced Iceland's per capita GDP by 4.5% in 1967 and by 6.2% in 1968, was met with a moratorium in 1972. When herring fishing was resumed in 1976, the boats that previously had operated in the fishery were issued individual quotas.

The important demersal fisheries were also in trouble. In 1975, the country's Institute of Marine Biology issued an alarming report announcing the immanent collapse of the crucial cod stock and possibly other demersal species in Icelandic waters. The authorities responded in two fronts: by redoubling their claims for an exclusive economic zone in the waters around Iceland, and by expanding the regulatory regime for the fisheries. Prior to 1975, the catch by foreign trawlers, mostly British and German vessels, in Icelandic waters was about equal to that of Icelanders. The country acquired an exclusive 200-mile fisheries zone in 1976, following a difficult struggle ("Cod War") with Great Britain. It was, however, less successful in managing the insiders by using various direct restrictions—involving types of fishing gear, days at sea, number of vessels, permitted fishing areas, and total allowable catch (TAC). Demersal stocks continued their downward trend.

Why did this regime of direct restrictions or regulations fail to halt the decline in fish stocks? Critics of such fisheries regimes usually explain their failure, which is fairly universal, in terms of technical problems (and high costs) in enforcement: the fishers can evade the regulations on countless margins. In addition, direct restrictions, such as a ceiling on total fishing days per year, typically encourage wasteful competition that raises costs and dissipates rents. Finally, direct restrictions often fail because the authorities find it political expedient to enact rules and then not fully enforce them. In Iceland, for instance, the authorities have at times set ceilings for TAC higher than recommended by government biologists, and even then allowed the industry to exceed the inefficiently high ceilings. Similarly, in the 1970s, the Icelandic government did not strictly enforce a law that forbade any expansion of the country's fishing fleet, except for replacement. The law actually sparked a race between parliamentary representatives of the various districts to provide them with modern fishing trawlers. Currently, the fisheries policy of the European Union is based mostly on direct restrictions. Fish stocks are declining rapidly in many EU fisheries and serious political obstacles seem to prevent the enactment and enforcement of effective governance systems.

In sum, the *politics* of alternative fisheries regimes are no less important than their microeconomic properties. Yet relatively little is known about the political aspects of fisheries regimes and many questions remain unanswered. For instance, are some governance structures less transparent than others and therefore favoured by governments that lack the political will to limit excessive fishing efforts but prefer to hide their lack of will? Alternatively, do certain governance systems (or variants thereof) lessen the political costs of those who implement the measures, better enabling them to seek efficient

utilisation of the resources? These are issues that deserve a closer look (Eagle and Thomson Jr., 2003).

In Iceland, the failure of direct restrictions to stop the decline in fish stocks was compounded at the beginning of the 1980s by sharply falling export prices. Per capita GDP shrank, and the industry, encumbered by an excessively large fishing fleet, showed huge losses. For their part, the country's marine biologists published gloomy reports on the State and future of fish stocks. Memories of the herring disaster at the end of the 1960s were still fresh, and a collapse of the cod fisheries was a frightening prospect. These were conditions that often make a government, an industry, as well as the public ready to risk experimenting with a new system.

An ITQ system for codfish and other demersal species was activated in 1984 but immediately modified in 1985 to allow vessel owners to choose between two types of arrangements: (a) ITQs and (b) a regime of fixed fishing days per year. Problems with grandfathering temporarily slowed down the move toward a unified system of ITQs. The 1985 law permitted vessel owners to choose between effort control and ITQs, and about half of them preferred direct restrictions. Those who opted for ITQs were given shares in TAC based on their fishing history in 1981–83. The 1985 amendment gave vessels that had been relatively inactive during the 1981–83 period an opportunity to collect future ITQ points while operating under a fishing-day system. A 1990 law eliminated this dichotomy.

The 1990 law took the final step and installed individual, exclusive, divisible, and transferable quotas as the general system of fisheries management for the country. Almost as an afterthought, the fisheries legislation also declares that the fishing grounds belong to the people, stipulating individual fishing quotas are not inviolable exclusive property, but temporary rights granted by the State that can be withdrawn without compensation. A schizoid system of property rights was born.

3.4. ICELAND'S ITQS AND PROPERTY RIGHTS

3.4.1. Debate on people's property

The main distinction between ITQs and direct restrictions, many ITQ supporters argue, is that ITQs introduce exclusive property rights, which eliminate the open access element inherent in most systems of direct regulations. The Icelandic system of ITQs, however, is a hybrid: a mixture of State property, government regulations, and private property, with a dash of people's property (or a national commune), creating mixed incentives and considerable uncertainty about who owns what. Those who possess individual quotas have rather weak incentives to maintain and protect the resource, except to avoid third-party punishment.

A heated debate over ownership rights in Iceland's fisheries has rather suddenly put the notion of *people's property* and *national communes* high on the political agenda. Many people would like to see most of the country's natural resources held as public property. In the year 2000, a prestigious government committee recommended that the Icelanders put

ownership of the wind (wind energy) in the "custody of the people" (the step before people's property) to ensure its availability if it is decided to use windmills for generating electricity. In 1998, a committee of high-level civil servants and experts was installed to study the utilisation of natural resources that already are owned by the people or may soon be owned by the people. In particular, the committee was asked to recommend ways of charging for user rights to these resources. The committee recommends that the legislature declare as people's property all natural resources that currently are not strictly under exclusive ownership in the conventional sense (including much of the highlands in central Iceland). Furthermore, the government should put non-owned and currently abundant natural resources in the custody of the people to prevent surprise appropriation by private actors. The country's constitution should be changed to explicitly recognise these two new forms of property. Perhaps the only humorous feature is the recommendation that wind energy, notoriously abundant and bothersome in Iceland, be put in the custody of the people. The reason being that the wind may eventually be used as a source of power for electricity-generating windmills. The report identifies three types of public property: *State property* (such as banks) that can be sold; and *national communal property* as well as *resources in public custody* that cannot be sold (Auðlindanefnd. Álitsgerð, 2000). So far, no attempt has been made to incorporate the recommended changes in the country's constitution.

3.4.2. Rights and duties in the ITQ system

The division of rights and duties in the Icelandic system of ITQs is as follows. The fisheries' minister annually determines TAC for each species after receiving recommendations by government scientists. The right to share in TAC is restricted to vessels that possess individual quotas, which are expressed as a percentage of TAC for each species. Those who hold ITQs are allowed to rent out their quotas on an annual basis or alternatively (from 1990) sell them outright to the owners of other authorised vessels. Supporters of the new system make two key efficiency arguments. According to Coase (1960), allowing free trade in ITQs will transfer the rights to their most efficient users, unless the trade is hampered by high transaction costs. Second, the introduction of ITQs will terminate wasteful competition that characterises both pure open access and direct restrictions.

Prior to the ITQ system, the structure and location of Iceland's fishing industry bore the mark of regional politics and political favouritism rather cost minimisation. In the intervening years, vigorous trade in quota rights has pushed the industry in the direction of Coasean efficiency, but also brought economic hardship to fishing towns in various parts of the country. As will be discussed in the last section, other important factors than ITQs have contributed to these developments. Price in the quota trade was low initially but then sharply increased, creating windfall gains for the original recipients of "free quotas", sometimes equivalent to millions of US dollars. For various reasons, these windfall gains have angered many people, not the least people in fishing towns that have lost their fishing quotas through trade. The authorities have made an effort to protect vulnerable fishing communities. For a while, the consent of local labour unions and civic authorities was

required before quotas could be sold to a buyer outside the community, but this clause from the 1990 legislation was repealed in the late 1990s. The law permits the government, however, to allocate (on a limited scale) new quotas to disadvantaged local communities as economic aid.

ITQs are sometimes described as a new social technology that effectively overcomes the high costs of using *standard* individual property rights to manage common pool resources, while delivering comparable results. Yet ITQs, at least in their present form in Iceland, are an imperfect substitute for exclusive private property rights. One of the key efficiency characteristics of exclusive ownership is that proprietors have a strong incentive to maintain and augment their assets. In Iceland, the national government itself has assumed the owner's traditional maintenance and monitoring roles. The authorities, for instance, inspect and weigh the catch of each vessel at the time of landing to ensure that skippers do not exceed their quotas or go fishing without quotas. The government also sets and enforces various rules for sustaining the resources that involve, for instance, permissible fishing gear, protection of nurseries and young fish, temporary closures of fishing banks, and control of dumping fish at sea.

The idea of involving the industry in protecting the resource has not been high on the agenda in the acrimonious debate about the merits of the ITQ-system Iceland. Yet, empirical work, for instance by Ostrom (1990), indicates that rules and enforcement procedures that emerge through trial and error within a user group are especially likely to result in efficient self-enforcing internal governance. Operational rules imposed by a third party, especially a central government, are more likely to fail (Ostrom, 1990). In Iceland, however, leading critics of the ITQ-system propose to give the government a larger role than it now has in managing the industry and deliberately weaken exclusive ownership rights. The most popular modification proposed by the opposition parties in parliament allows the government to recall every year, without compensation, a fixed percentage of total outstanding ITQs until all previous rights are withdrawn. The authorities would then rent the quotas to the industry. The distributive justice of recalling the quotas has become, however, more ambiguous with the passage of time. Many of the original owners have already sold their quotas and collected their windfall gains, which means that most operators would end up paying twice for the same rights, once to private owners and then, following a recall, to the government. Moreover, the biggest firms in the industry are now owned by a large number of shareholders, which was not the case when the system was introduced.

The current status of the system reflects a compromise. In an attempt to appease the critics, the government proposes new levies on the fisheries to cover its costs of managing the industry, both costs of exclusion and internal governance. Special taxes on the industry have increased in recent years and in 2002 they covered about one-half of the government's management costs. In response to criticism and several court cases, in 1999 the government appointed a committee to revise the 1990 ITQ legislation for the purpose of creating a consensus over the fisheries management system but without sacrificing its efficiency properties. Although divided, the majority of the committee suggested as a compromise that the industry be made to pay for at least the cost to the government of operating the fisheries (monitoring, enforcement, scientific research).

3.4.3. Why the critics were surprised

Since Iceland gained its independence in 1944, few domestic issues have caused such intense and widespread anger in many quarters as the free quotas. Yet in 1984, the introduction of free quotas for cod and other demersal species was a peaceful event that did not create a storm of protest. The current critics were caught off guard due to asymmetric distribution of knowledge: most players, with their incomplete social models, were unaware of the long-term dynamics of an ITQ-system but they were well informed about recent heavy losses in the fishing industry and declining fish stocks. Therefore, most people were unaware that the free quotas were a potential gift of millions of dollars to select individuals. At the time, the introduction of user charges and fishing fees would have looked like an absurd solution for a failing industry. Why ask a bankrupt industry to pay for access to natural resources it has used without charge for generations? And of course, the politically powerful industry itself would never have agreed to fees, even with a lag.

A few reformers, industry leaders, specialists and others had more knowledge. They viewed the crisis in the fisheries through the lens of (informal or formal versions of) the classic sustainable fisheries model (Gordon, 1954), shown in Figure 3.1. The model illustrates why the industry was in a bad fix in 1984 and also how the reformers hoped to rescue it. Yet, the actual outcome has not been exactly what (many of) the reformers planned.

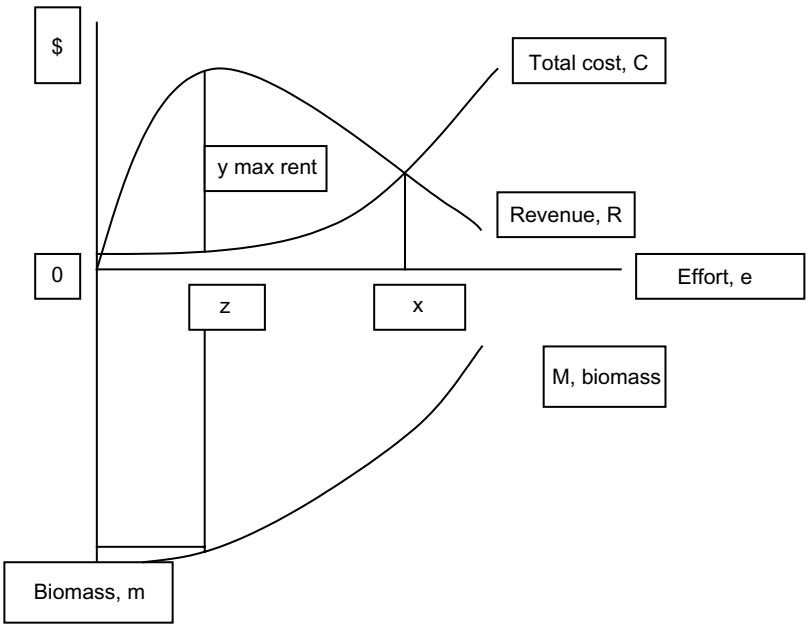

Figure 3.1: The classic sustainable Fisheries model.

The diagram in Figure 3.1 traces the relationship between fishing effort, e, and three variables: total revenue, R, total cost, C, and sustainable fish stocks (biomass), m. As the crisis mounted in the early 1980s, the fishers, driven by the logic of open access, had taken fishing effort to point x in the diagram, where total cost and total revenue are equal and the entire rent from the fisheries is dissipated. In the diagram, the rent is measured by the vertical distance between R and C. Actually, the industry apparently did overshoot point x. Official statistics show that in the mid-1980s, the industry was making large losses. In 1984, the correlates of point x were common knowledge: namely, fish stocks at critically low levels, excessive effort, zero or negative industry profits. The dynamics of the model, however, were not common knowledge. Not many people understood that the aggregate value of ITQs in a successful ITQ program would roughly equal the present value of future maximum rent from the Iceland fisheries.

To maximise the rent, Figure 3.1 shows that fishing effort must be reduced to point z where the gap between revenue and cost is at maximum, equalling y. Equivalently, efficient management requires that total catch be constrained to a level that corresponds to effort level z. Conventionally, the cost function in the sustainable fisheries model represents minimum cost, but we expect C to shift down with the introduction of ITQs as the Coasean trade in fishing rights rationalises the structure of the industry. A downward shift in C, therefore, can improve profits in the fisheries even when effort continues to be at x (or fish stocks do not recover). As the recovery of fish stocks since 1984 has for most species been negligible or non-existent but the profitability of the industry has improved, it is reasonable to conclude that C, the cost line, has drifted down.

3.4.4. Political economy and overshooting the total allowable catch

According to the conventional wisdom, big operators in the fisheries and their national associations are the most influential lobby in Iceland, but owners of small boats and their fishers, through their numbers and strategic locations in electoral districts, are not without political influence. In fact, governance in the Iceland fisheries consists of *two systems*: one for medium size and large vessels, the other for small boats. The regime governing small boats is changeable and complex, at one point involving five different sub-regimes. Usually, small boats have been allowed to choose between quotas and direct restrictions (maximum fishing days) and rules governing entry have been lax. Both the numbers of small boats and their share in the total catch have grown rapidly, providing a remarkably clear demonstration of economic incentives at work. The share of small boats in total catch in Iceland, measured in value terms, increased from 1.4% in 1977 to 4.7% in 1997 (National Economic Institute of Iceland, 1999). The number of small boats doubled in 1984–90, and in recent years the share of small boats in the total cod catch has risen to 15–20% (Agnarsson, 2000). In the 1990s, the government was relatively successful in enforcing its limits for TAC of medium and large vessels while failing to enforce TAC targets for the industry as a whole because small vessels exceed their limits. Small vessels often are seen as symbolising the social cost of the ITQ system. Many fishing communities have lost their quotas in the main ITQs system because of Coasean re-allocation of fishing rights. These communities, victimised by economic rationalisation, have tried

to cope and get back into the industry by relying on small boats and simple gear. In this context, it is not surprising that the government finds restricting the fishing efforts of small vessels to be a politically sensitive issue. Weak enforcement, of course, has also attracted operators of small boats that represent well-to-do communities.

3.5. EXCLUSION AND INTERNAL GOVERNANCE: ITQS AND DUMPING AT SEA

Any regime for regulating ocean fisheries must cope with exclusion and internal governance. Exclusion is not a serious problem in the Iceland fisheries. Incursions by foreign vessels are rare and illegal fishing by unlicensed domestic vessels is not a big issue. The main operational difficulties concern internal governance—preventing vessels from exceeding the permitted quota or abusing the resource, for instance by excessively dumping fish at sea, using illegal gear, or fishing in restricted areas. Disputes over the legitimacy of the system may have increased enforcement costs.

The government's monitoring of "insiders" is a complex operation. When vessels return to harbour for unloading, their catch is weighted and inspected by a network of government agents, but efforts to monitor operations at sea are sketchier. The government occasionally puts inspectors at random on board fishing vessels for short time periods to monitor their compliance with regulations, which is not an effective approach. As they assume that fishers with quota rights lack proper incentives for protecting breeding grounds and immature fish, the authorities use direct regulations to control behaviour on these margins. The vessels, for instance, are required to stop fishing when young fish is abundant in the catch (as defined by the government).

Among the various ways of abusing the resource, the problem of dumping fish at sea has caught the popular imagination. Fishers are punished for showing up with a substantial portion of immature fish in their catch, which gives them an incentive to dump at sea in order to continue fishing and avoid moving to new fishing grounds. The fishers also have a general incentive to bring valuable fish ashore and discard less valuable fish. The problem is further complicated by the fishers' limited control of what they haul in. Hair-raising stories about dumping at sea regularly erupt in the news media, but hard facts are scarce. Various studies, including questionnaire surveys, suggest that illegal dumping is a problem, but the estimates are not shockingly high. Figures of less than 10% of total catch have been mentioned (Agnarsson, 2000). Incentives for dumping can be weakened by giving the quota system greater flexibility and some such adjustments have been made or are planned for the ITQ system. For instance, in ocean fishing the vessels lack full control of their output mix—the variety of species that they catch. By allowing a vessel with quota for species X to land a small quantity of species Y, for which it has no quota, the incentive to dump Y at sea is diminished. The Icelandic system has incorporated a few such features.

However, the relevant question, when evaluating the ITQ system, is whether dumping at sea is more frequent under ITQs than under other arrangements, especially Iceland's previous fishing-days system. Vessels constrained by limits on total fishing days per year obviously dump some of their catch when it is more profitable to do so than landing the

fish. A selfish rational agent would compare, on the one hand, output price ashore minus the cost of landing, and, on the other hand, the cost of discarding the fish. With ITQs, however, the price (the opportunity costs) of the quota becomes the reference point rather than the expected price of the catch, which creates special incentives to only land high-quality (value) fish. Highly valued ITQs can also have the opposite effect. Valuable quotas create incentives for vessels to avoid areas where they expect to find low-quality fish, invest in adjusting their gear, and try to locate relatively valuable fish. In the old system, the fishers were more likely to race to the fishing grounds and catch whatever they could find before their permitted fishing days were over (Agnarsson, 2000). The relative effects of the two systems on dumping are not known, but various measures can be taken in either case to discourage the practice.

3.6. INCOMPLETE MODELS AND GOVERNANCE IN OCEAN FISHING

The problem of inefficient governance in ocean fisheries is not only the fault of special interest groups that block attempts to introduce effective regimes; imperfect knowledge also plays a role. Even if the problem of dealing with special interests is ignored, reformers need reliable models of industrial organisation and marine biology to build effective management systems. In both areas, knowledge is seriously incomplete.

A non-specialist might believe that the economics of renewable resources, particularly fisheries economics, has provided an important source of knowledge about the design of governance systems for fishing industries, but that has not been the case, except perhaps until lately. During its initial phase and until some 15–20 years ago, fisheries economics was strictly a conventional neo-classical affair, elegant but ignorant of incomplete knowledge and transaction costs, and having a dangerous potential for misleading policymakers. The chief purpose of the field was to derive optimal solutions for harvesting fish, given various assumptions about fish stocks and capital assets. In the beginning, fisheries economics build static models that were followed by comparable but more complex dynamic models with two stock variables, fish and capital (Árnason, 2001b). The theory was silent about the role of institutions in effecting incentives, and it offered no insights into effective implementation, not unlike contemporary work on optimal pollution taxes. Basic studies of this kind probably affected the mindset of policymakers, making them unduly optimistic about the effectiveness of direct controls. Recently, fisheries economists have become receptive to political economy, economics of property rights, and other relevant branches of the social sciences (Árnason, 2001b).

Similarly, incomplete models in marine biology have limited success in fisheries management. Until recently, most theories of fisheries management have assumed a monotonic and stable relationship between fishing effort and fish stocks, as shown in Figure 3.1. Accumulating evidence indicates that other important variables intervene and confound the relationship between effort and stocks. Marine species feed on each other and various environmental factors have strong impact. Weak correlation between fish stocks and effort has opened a Pandora's box of homespun theories about fisheries management, which often gain popularity when the authorities attempt to reduce effort. One school of thought that is relatively popular among fishers and others directly involved

in the industry finds a *negative* relationship between effort and sustainable stocks. According to this view, the proper way to restore fish stocks is to *increase* effort; otherwise crowding will deprive the fish of nutrition. Others argue that the protection of young fish is ultimately counterproductive. A policy that allows capture of individuals only above a certain size will initiate genetic drift that reduces the average size of the species. In short, uncertainty about biological relationships and conditions in the ocean has practical implications by affecting the quality of management and voluntary compliance.

Compliance with a new system of property rights depends in part on its legitimacy in the eyes of those involved: how the system relates to their (normative) models of legitimacy. The critics of the "free quota system" equate grandfathering of fishing rights to grand larceny: the nation was robbed of its most valuable asset. In Iceland, norm entrepreneurs have created cascades of beliefs concerning centrality of communal ownership by the nation of its natural resources and for this purposes re-interpreted the country's history and its ancient law codes. Actually, the fisheries have a long history as an *open access resource* and have never been Ostrom-type communal property. To make their case for communal fisheries, many commentators have compared the fishing grounds to Iceland's traditional communal mountain pastures, which the farmers in each district shared. The pastures, however, were not national property. The rights were associated with the farms in each district in proportion to their value, and a farmer was allowed to rent his or her pasture rights to outsiders. Finally, the local owners managed the pastures collectively in a classic Ostrom (1990) manner (Eggertsson, 1992). Foreign fishers first visited Icelandic waters toward the end of the Middle Ages. While decked vessels from many European nations exploited the fishing grounds, until the late 19th century Icelandic fishing efforts were limited primarily to farmer–fishermen in small open boats that usually returned to shore within 24 h (Eggertsson, 1996). In the 20th century, improved technology and greater effort threatened to deplete open access fisheries, and the Icelanders pushed hard and were successful at excluding foreign vessels from the fishing grounds and in enclosing them. As it became apparent in the late 1970s that the Icelandic fishing fleet alone might deplete the resource, if unconstrained, the government introduced increasingly elaborate direct regulations.

In the years immediately prior to the ITQ system, the government blocked entry to the industry, thus privileging the insiders. Closed entry and free use of the fishing grounds for the insiders represents a free transfer of rights, but in a less transparent manner than free ITQ rights. Admittedly, enforcement of the entry restrictions was somewhat porous (permission to enter required superior political connections), but at the time these free transfers and political allocations did not raise serious protest. In fact, the protest and surge of interest in communal ownership did not coincide with the original allocation of free quotas but came later with sharp increases in the price of quotas. The idea that the citizens receive the fisheries rent either directly or indirectly through lower taxes and better public services is an important proposal. My point here is simply to illustrate how ideas gain legitimacy through the efforts of norm entrepreneurs.

Criticism of ITQs in Iceland is often justified with reference to social norms. Several people, clergymen among them, have expressed horror at the rampant commercialism of selling fish (via transfers of quotas) *still alive* and swimming in the ocean. Yet Iceland's

farmers and other owners of the country's rivers and lakes have for generations sold fishing licenses for trout and salmon in the country's rivers and lakes. As the ITQ-system appears to favor large-scale operations, many critics claim that the new system will destroy valuable lifestyle associated with small-scale fishing, a deplorable development. Yet an inability of the Icelanders in previous centuries to develop beyond small-scale fishing brought the nation to the brink of extinction in the 18th century (Eggertsson, 1996). In the first part of the 20th century, urbanisation and the move out of agriculture met strong ideological resistance drawing on beliefs about moral decline associated even with small-scale fisheries and villages. Traditional Iceland was entirely made up of scattered farmsteads; villages and towns were unknown.

Finally, planners of the new ITQ system implicitly recognised the problem of incomplete models. The law of 1990 calls for periodic re-evaluations of the system in terms of what has been learned so far during the experiment. The chapter's last section discusses the imperfect feedback for the ITQ experiment in Iceland. Other countries besides Iceland have experimented with ITQs. Limited experiments have been conducted in fisheries in several countries, but only New Zealand has done so on a national scale. ITQs in fisheries obviously were inspired by the use of transferable quotas in pollution control (and by the Coase theorem). Models of ITQs as a management tool for fisheries were first developed at the University of British Columbia in Vancouver (Scott, 1955). According to some estimates, 5% of the aggregate ocean harvest in the world is regulated with ITQs (Árnason, 2001a).

3.7. THE FEEDBACK: MIXED SIGNALS

When a social experiment generates *unambiguous* signals, rational actors interpret operational properties of the new system in a similar manner, even though they may disagree on its legitimacy or social justification. The feedback generated by the Icelandic ITQ system during its rather short lifetime is open to multiple interpretations. The lessons have not created a consensus about the objective properties and consequences of the system. As is usual in social experiments, all other things have *not* been equal; several social experiments have overlapped in time and various variables intervened. This section considers whether the ITQ-system in Iceland has met its two official goals: to restore and maintain fish stocks, and to ensure profitability in the fisheries. The exact contribution of the new system is not clear.

The ITQ-system has not restored fish stocks to levels that correspond to point z or even moved stock sizes anywhere close to z (Figure 3.1), with the exception of the volatile surface species capelin and herring that have recovered nicely. Stocks of the important demersal species, which include cod and haddock, have either continued on a path of decline or stabilised somewhat. Cod available for harvesting, traditionally the most valuable species in the demersal fisheries, was estimated at 1.5 million tons in 1980, only 0.5 million tons in 1992, and 0.75 million tons in 2000. Yet, Iceland's experience with its cod fishery is favorable compared with the collapse of many cod fisheries around the world.

The success of a management tool such as ITQs in restoring fish stocks to their desired levels depends on two factors: first, the ability of scientists to calculate what changes in total effort or catch are needed to reach particular goals for sustainable stock levels and, second, the ability and willingness of the government to set and enforce the recommended catch or effort levels. When evaluating the Icelandic case, the glass is either half-full or half-empty depending on the drinker. In the 1990s, the authorities frequently set TAC levels for various species well in excess of levels recommended by the government's Institute of Marine Biology and then allowed the industry to exceed these inflated levels. The possibility cannot be excluded that the science advisers acted strategically and recommended ATCs that were lower than their true targets, knowing that the government was under pressure to exceed the targets of the scientists. In the period 1991–1999, there are 3 years when the important cod catch exceeds the recommendations of the biologists by 25–30%, and other 3 years when the overshooting is in the 6–9% range (Agnarsson, 2000). Finally, the marine biologists themselves have often been wide off target in their estimates of fish stocks.

It is important to note that outcomes under the ITQ system are closer to the TAC recommended by government experts than the outcomes under the previous system of limited fishing days and direct regulations. The explanation may lie with some features of ITQs that makes enforcement relatively easy either in a technical or political sense. Alternatively, the dangers of excessive fishing may have gradually dawned upon the government and the bureaucrats, leading them over time to give higher priority to enforcement. These issues need further scrutiny.

What then have been the economic consequences so far of ITQs in the Iceland fisheries, given that the recovery of fish stocks has been modest? The logic of the system suggests that irrespective of what happens to fish stocks, trade in quotas could rationalise the industry. Also, an ITQ-system will eliminate wasteful races that characterise regimes of direct restrictions. These thoughts are consistent with several recent studies that conclude that productivity in the industry has increased since 1990 (Agnarsson, 2000). In terms of Figure 3.1, the increase in productivity is represented by a downward shift of the total cost curve, C.

Two factors, however, confound attempts to estimate the productivity consequences of the ITQ-system. First, *technological change* in the industry has substantially lowered costs. In particular, the introduction of large trawlers that process and freeze fish products at sea have had a revolutionary impact on productivity. Second, the new fisheries management system coincides in the 1990s with a *major reform of the country's financial system*. The financial reform liberalised a State-owned banking system, dismantled politicised government investment funds, and freed international capital movements. Iceland's excessive inflation of the previous 40 years was brought under control and chronic unrest in the labour market died down. The old financial system was closely linked to electoral politics, with seats for representatives of major political parties on the board of all banks and investment funds. In this environment, the fishing industry received various forms of support. State banks and politicised credit organisations helped fund inefficient operations. Even the country's fiscal end exchange policy was aimed at keeping the fisheries going. The financial reforms of the 1990s put heavy pressure on the fisheries to re-organise at the same time as the strong impact of the ITQ-system.

The willingness to re-organise both the fisheries management system and the financial system was preceded by severe destabilising shocks. Five years after the 1982–83 crisis, the national economy entered a phase of economic stagnation and negative GNP growth for a period of 6 years, 1988–1993. The coincidence of a full-scale ITQ-system with major economic reforms makes it virtually impossible to estimate the net effects of ITQs on higher productivity in the fisheries industry.

Finally, the development of rental and sales price for fishing quotas is something of a puzzle. The price has increased steeply irrespective of: (a) speculations that future governments may decide to recall the quotas and (b) little success in restoring demersal fish stocks. Additionally, government reports on economic conditions in the industry do not explain the rapid increase in the price of quotas. In a recent study, for instance, the National Economic Institute found no signs of excess profits in the fishing industry relatively to other Icelandic industries (Agnarsson, 2000).

Trying to explain an almost irrational increase in the price of quotas, the National Economic Institute (1999) suggests that high annual rental price for fish quotas reflect short-term marginal profit opportunities rather than average returns in the industry. Nearly all observers agree that using rental price to estimate total quota values will grossly overestimate the total fisheries rent.

The sale price of fishing quotas is also surprisingly high. Matthíasson (2000) relates purchase price of quotas to the valuation of individual fishing firms on the Icelandic Stock Exchange. The stock market value of listed fishing firms is compared with the value of their physical assets and fishing rights, net of debt. The net value of physical assets and fishing rights as estimated on the quota market, are 2.5 times higher than the stock market value of the firms. Matthíasson (2000) concludes, "it is quite obvious that buyers and sellers of stocks on the stock market indirectly value fishing rights at a much lower rate than do the buyers and sellers of fishing rights on the quota market." According to Matthíasson (2000) both the Central Bank of Iceland and the National Economic Institute have recognised this discrepancy.

These issues require further inspection. The very high rental prices and purchase price for fishing quotas has fuelled an angry debate about the just distribution of the fisheries rent even before the fish stocks have recovered substantially. Moreover, Matthíasson's findings bring out the possibility that speculative bubbles or anomalies in the quota market created an illusionary world that the unsuspecting Icelanders have been debating.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 4

The Role of Institutions in the Negotiations for Accession to the European Union

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Abstract

On the basis of an institutional framework applied to decision-making in agricultural policies and European integration, this chapter determines the role of national and multi-national organisations on the accession negotiations in agriculture for the Central and Eastern European (CEE) candidate countries. Negotiations, formally conducted through the exchange of negotiating documents, have shown typical features of EU multi-level decision-making. The role of large States was limited to confirming previously drafted decisions and to timing the process with strategic decisions. This only partly confirms the concept of inter-governmentalist theory. In accordance with the multi-level governance model and the bureaucratic political view, the role of EU institutions and agrarian bureaucrats has strengthened.

4.1. INTRODUCTION

After five years of the intensive process of negotiations and harmonisation, the accession negotiations for the countries which are to join the European Union (EU) in the next enlargement were wrapped up, in December 2003. The negotiations in the agriculture chapter were politically sensitive, because their results will not only have serious financial consequences for both present and new Member States, but will also affect the future common agricultural policy (CAP). Negotiations were also that comprehensive and intensive due to the extensive common legislation (*acquis*) within agriculture. There have been numerous studies dealing with the economic consequences of accession (Baldwin et al., 1997; Münch, 2000; Commission, 2002b), but what is missing is the research of the political-economic and institutional context of the accession negotiations and enlargement. As the institutional framework determines to a large extent the processes and final

policy solutions, the research of the decision-making processes within accession negotiations may widen the horizon of agricultural policy analysis.

The goal of this chapter is to describe the process and issues of accession negotiations in agriculture and to determine the weight and role of individual national and multi-national agricultural institutions. To achieve this goal, first, the processes, mechanisms and consequences are described and, second, the analytical framework of decision-making in agricultural policies and European integrations is used (Peterson and Bomberg, 1999; Moyer and Josling, 2002).

The chapter starts with enumerating the alternative political science approaches for studying complex multi-level decision-making. Selected theoretical models, along with some specific questions they have issued, lead to the analytical framework. Section 4.3 focuses on the process of accession negotiations in agriculture, which were substantially determined by the formal procedures of negotiations, the national and multi-national institutions involved and the wide spectrum of issues. The issues can be divided into three parts: the implementation of the *acquis*, the transitional periods and derogations from the *acquis* and the financial issues of CAP (quotas, direct payments and financial resources for rural development). In order to come to some conclusions (Section 4.5), the applicability of various theoretical concepts in explaining the process and results of accession negotiations is evaluated (Section 4.4).

4.2. THE ANALYTICAL FRAMEWORK

The accession negotiations are a complex decision-making process involving national and multi-national agents in a specific institutional environment. To describe and understand the process, the main task is to develop an analytical framework of institutions, rules and negotiated issues. The framework in this chapter builds mainly on Moyer and Josling work (Moyer and Josling, 1990, 2002) that has focused on farm policy reforms in 1980s and 1990s in the EU and USA. Based on this approach, the assumption is made that accession negotiations had most of the characteristics of EU multi-level decision-making.

Should the assumption that the accession negotiations are EU multi-level decision-making prove correct, then a number of questions can be formulated based on the theoretical concepts of decision-making, in particular of CAP. None of these approaches, however, provides a full explanation of the negotiating process. Like Mojer and Josling (1990, 2002), a heuristic approach is used for a more integrated insight into some of the selected models.

To study multi-level decision-making, the political science dealing with the European integration has produced a number of models that try to determine the most significant and powerful actors and explain the mechanism and patterns of policy decision. Weber (1999) identifies seven, Mojer and Josling (2002) used four. Three of these models are selected, which could be useful for further analysis: *inter-governmentalist theory, multi-level governance model and European bureaucratic politics*.

The inter-governmentalist theory believes that governments of the Member States remain the dominant actors in any international relations system. With respect to the EU,

the theory argues that the EU institutions are still dominated by the representatives from the largest Member States. The theory focuses on bargaining between the Member States and their ability to influence decision-making within EU institutions. With respect to the accession negotiations, the question then becomes to what extent the negotiating decisions actually are a compromise between large members and large candidate countries such as France, Germany and Poland?

In opposition to the inter-governmentalists, the theorists of *multilevel governance model* believe that the EU integration process has a significantly reduced national sovereignty. According to this theory, the EU institutions exercise an independent influence on decision (policy) outcome. Change in power balances is predominantly ascribed to the advantages that the EU institutions have in the formulation of the "rules of the game" as well as in legislative procedures (Moyer and Josling, 2002). In this regard, the following questions may be posed: what are the bargaining resources of the EU institutions and how does the structure of accession negotiations enhance the influence of certain actors?

The European bureaucratic politics see the EU decision-making as de-politicised, decentralised and fragmented by sectors. The dominant policy actors are not elected politicians, but rather officials from national ministries and the European Commission. The real decision-making results depend on the interaction between administrations (bureaucrats) and their bargaining. EU bureaucrats mainly represented in the European Commission as well as national administration have their own goals, are quasi-autonomous and do not favour any changes in the policy and institutional rules. The links between DG Agriculture and national ministries can be seen as a special case of quasi-autonomy and sector linking (Peterson and Bomberg, 1999). In the analysis of accession negotiations, the following question can be raised: to what extent the EU institutions, especially the European Commission and national ministries are really quasi-autonomous actors?

The analysis is based on the study of negotiating materials obtained from the published and unpublished records of the Ministry of Agriculture, Forestry and Food and Governmental Office for European Affairs of the Republic of Slovenia. This was supplemented by personal information and in-depth interviews with various participants in the negotiating process from the European Commission (DG Enlargement in different units in DG Agriculture), Member States (national ministries for agriculture in Austria, Germany, Spain, Ireland, the Netherlands, Italy, Great Britain, Sweden) and candidate countries (national ministries in Poland, Hungary, Estonia, Cyprus and especially Slovenia). The interviews were conducted by the author between September 1998 and December 2002.

4.3. PROCESS, ISSUES AND ACTORS OF NEGOTIATIONS

4.3.1. Formal and technical levels of accession negotiations

Negotiations in the case of the upcoming enlargement were conducted at the Accession Conferences, in accordance with an accession negotiation process that had been

formalised since its first EU enlargement. These conferences took place two to three times a year at the level of foreign ministers—formal chief negotiators, and at least twice as often at the level of deputies—heads of negotiating teams, who de facto coordinated negotiations in the candidate countries. These meetings were short and of a very formal political nature. The negotiating process was formally based on the exchange of negotiating documents through the Accession Conference. The procedure started with a candidate country submitting its *negotiating position*, which was prepared after the screening of the *acquis* in the relevant chapter of negotiation. In response, the EU prepared a *Common Position*, whereby it provided its opinion concerning individual requests of candidate countries, asked for additional argumentation of positions and raised new issues. Candidate countries responded to the Common Position by *Additional Clarifications to Negotiating Position*, which they officially submitted to the Accession Conference. By means of the clarifications, the candidate countries answered the questions, persisted in, modified or withdrew their requests and also raised new issues. For the first group of candidate countries (the "Luxembourg group"—the Czech Republic, Hungary, Poland, Estonia, Slovenia and Cyprus) the European Union prepared five Common Positions in the chapter on agriculture. The number of additional clarifications varied across candidate countries, but they exceeded the number of Common Positions. Slovenia, for example, officially submitted 13 Additional Clarifications.

Each negotiating side had to undergo a relatively intensive process of internal formulating and coordinating the positions. Draft Common Positions were prepared by the European Commission. They were discussed and coordinated in the enlargement working group at the Council, comprising Member States representatives. Some strategic decisions in the chapter on agriculture were also taken at the level of Heads of State or Government at the European Councils. In the meantime, a politically demanding process took place within the candidate countries, as the government representatives had to reach a consensus among political parties, within government administration and also with non-governmental organisations.

Both negotiating sides had their own specific institutional organisation. On the side of the European Union, the main responsible institution was DG Enlargement and for the chapter on agriculture, the special Unit for Enlargement at DG Agriculture.

DG Enlargement was the coordination and information body serving the Member States as well as the candidates. When dealing with substantive issues in the chapter on agriculture this DG was, as in other chapters, entirely dependent on the opinions and procedures of DG Agriculture, which also established—through its special unit—direct links with agricultural ministries of candidate countries. On the side of the candidates, government negotiating teams were formed, generally comprising senior government officials.

A large part of the drafting of negotiating documents was carried out at technical meetings. They were usually arranged on the initiative of DG Agriculture. The technical meetings were of information nature, had various forms, but common conclusions were not obligatory. Informative meetings between diplomatic representatives of candidate countries and the responsible persons from DG Enlargement and DG Agriculture were quite frequent.

4.3.2. The negotiations issues

The accession negotiations in the agriculture chapter started in 1998 were concluded by the final agreement at the Copenhagen European Council on 13 December 2002. This period can be divided into three stages:

1. 1998–1999: drafting of negotiating positions by the Luxembourg group of candidate countries;
2. 2000–2001: negotiations on the implementation of the *acquis* and "catching up" process for the Helsinki group of candidate countries (Lithuania, Latvia, Slovakia and Malta);
3. 2002: negotiations on financial issues.

The first stage (1998–1999) started with *screenings* of the *acquis* in individual chapters of negotiation. Bilateral meetings allowed the candidate countries to present their legislation, to describe the steps to harmonise their legislation with the *acquis* and at the same time to point out the areas where they might have special requests. This was followed by technical meetings and internal coordination within the candidate countries, in particular with respect to the implementation of the *acquis* and the necessary changes. The formulation of implementation solutions was a demanding part of negotiations. The agricultural ministries had to negotiate internally, inside the State administration primarily then also externally, with the European Commission. By incorporating the planning and monitoring of the implementation of the *acquis* in the accession negotiations, the European Commission had gained time before the financial negotiations issues matured. But the fact that the candidate countries made commitments to Brussels did, undoubtedly, contribute to faster integration and easier understanding and transposition of the *acquis*.

During the second stage (2000–2001), the negotiations of the Luxembourg group proceeded mainly in the form of the exchange of Common Positions and Additional Clarifications and the number of technical meetings was dropped to only a handful a year. The candidates of the Helsinki group, on the other hand, went rapidly through the first stage of negotiations. Throughout this period, in which enlargement became increasingly realistic, however, financial issues of agricultural negotiations were not raised.

The financial part of negotiations began when the Commission (2002a) on 30th January 2002 published its enlargement strategy, with main elements:

- quotas and reference quantities were based on the 1995–1999 statistical data, which led to a gap between the candidates' demands and the EU offer;
- gradual rising of the direct payments level from 25% in 2004 to 100% in 2013;
- a possibility of topping up the direct payments from the national budgets;
- "a simplified scheme" of direct payments due to implementation problems;
- the distribution of rural development funds (Guarantee section) according to objective criteria.

This proposal triggered fierce reactions from the candidate countries. The European Commission's proposal, which applied equal criteria for all candidate countries

(horizontal approach), lowered the expectations of the candidate countries. It also ignored the opinion of Member States who supported the CAP reform (Great Britain, Germany, Sweden and the Netherlands) and who did not wish that the agricultural support system should also be applied to candidate countries. The reforming countries objected to any direct payments for candidate countries with the argument that this was not agreed upon in the EU budget plan for the period 2000–2006. On 19th March 2002, the expanded Council of Ministers convened, along with the ministers from candidate countries, to discuss the Commission's proposals. At the same time, DG Agriculture presented a study (Commission, 2002b) showing that the economic position of agriculture in candidate countries, except for Cyprus and Slovenia, would be improved after accession even without direct payments. In several versions of the Draft Common Position, the politically sensitive issue of direct payments was excluded, whilst in the meantime an intensive political debate took place. In the majority of issues, the European Commission succeeded in defending its original proposals.

In the candidate countries, the national debates focused largely on the issues of quotas and reference quantities. They got a symbolic meaning of an EU attempt to limit production and discriminate against their agricultural sectors. The requests for quotas and reference quantities were based on production potentials rather than the existing statistical data, as was the rule when these measures were introduced into the CAP. Candidates hoped that these "justified requests" could be fulfilled in the negotiations. The first offer of the European Union was thus received with great disapproval in the candidate countries. A particular problem was increased production in certain sectors after the expiry of the reference period (sugar for Poland, milk for Estonia and Slovenia). The European Union first succeeded in lowering the expectations and then opened a technical discussion about the data, reference years and definitions, which put together led to results that were eventually much more favourable than the original offer. It should be stressed that the basic methodological frameworks for setting the quotas were not changed (Table 4.1). Member States were rather sensitive to this issue. Because of their own problems (for example, Italy and Spain in the area of milk quotas), they never allowed the candidates, regardless of strong technical arguments, to be given greater concessions than themselves. In the area of quotas and reference quantities one cannot speak of any real negotiations in the accepted meaning of the word. This was an area where the role and the power of sector experts were decisive, both on the sides of the EU and the national ministries.

The area of rural development was given much less attention than the other two financial issues, even though the EU offered relatively the most funds for this area. The reason for less attention could be that the most candidate countries had no tradition of typical EU rural development policy or similar measures. Adding to this the fact that these measures require an adequate implementation infrastructure, programmes and competent beneficiaries, as well as own resources, one can easily understand why most candidate countries were not very eager to expose this policy in negotiations. The Commission based the distribution of the proposed funds on objective criteria such as economic development and the role of agriculture. The protests of a few (Slovenia and Czech Republic in particular) were so strong that DG

Table 4.1: Selected requested, offered and agreed quotas and reference quantities in negotiations for certain candidate countries.

	Unit/year	Poland	Hungary	Estonia	Slovenia
Milk (A + D quota)					
Candidate's request	1000 t	13176 + 654	2600 + 200	810 + 90	556 + 139
European Commission's first offer	1000 t/ 1997–99	6956.3 + 1918.7	1638 + 308.3	484.8 + 77.8	422.7 + 40.6
Agreement	1000 t	8500 + 464	1782.7 + 164.6	537.1 + 87.4	467.1 + 93.4
Sugar (A + B)					
Candidate's request	1000 t	1650 + 216	400 + 80	65 + 10	67.5 + 7.5
European Commission's first offer	1000 t/ 1995–99	1590.5 + 74.5	378.8 + 1.2	/	48.1 + 4.8
Agreement	1000 t	1580 + 91.9	400.5 + 1.2	/	48.2 + 4.8 + 19.6[a]
Area payment for arable crops-reference yield					
Candidate's request	t/ha	3.6	5.2	3.5	6.1
European Commission's first offer	(t/ha)/ 1997–99	3.0	4.3	1.8	5.3
Agreement	t/ha	3.0	4.7	2.4	5.3
Suckler cow—premiums					
Candidate's request	1000 heads	1500.0	300.0	2.0	150.0
European Commission's first offer	1000 heads/ 1998–2000	453.3	133.2	0.6	49.1
Agreement	1000 heads	325.6	117.0	13.4	86.4

Sources: Negotiating Positions (2000), European Commission (2002a), and Accession Treaty (2003).
[a]Including the right to imports of raw sugar.

Agriculture eventually set apart some funds as a special reserve for solving critical cases. These reserve funds were of particular interest to Slovenia, the Czech Republic and Slovakia, who in the end got them. DG Agriculture tackled the distribution of rural development funds autonomously and confirmed its predominant role in accession negotiations.

The final stage of negotiations, in fact, ended before it actually began. Denmark, the presiding Member State, in agreement with the Commission and on the basis of individual meetings with candidate countries, prepared a compromised final offer containing solutions in all the remaining issues. This offer altered limited number of the points where candidate countries disagreed the most. The original EU offer concerning the payments level did not change, but the level of topping up was raised. It also brought about some horizontal solutions in the area of quotas and reference quantities. Institutionally, the exchange of offers and their responses took place in four bilateral meeting rounds between individual candidate countries and EU representatives. The candidate countries gradually and quietly agreed with most of the options that had been offered. In these last days of negotiations, which took place in Copenhagen on 12 and 13 December at the level of Heads of State or Government, some slight corrections were made in the offer for agriculture, for example a possibility being offered to shift the funds from rural development to direct payments.

4.4. EVALUATION OF THE DECISION-MAKING PROCESS

4.4.1. Accession negotiations within the EU multi-level decision-making

Accession negotiations were a complex process, which took place in a specific multi-level institutional environment. In accordance with the rules and norms of the EU, a particular relationship was established between the EU and the candidate countries on the formal, technical-expert, diplomatic and political negotiation level. These levels interacted in a synchronised manner in order to achieve simple goals and to enable the accession. The negotiations were not so much about bargaining in the usual sense of the word, but more about the candidates' integration into the EU legal system and decision-making. In the area of agriculture, this process was particularly intensive as it meant a gradual integration into the politically and economically sensitive CAP.

The negotiations between candidate countries and the EU were conducted by the exchange of negotiating positions, by convening technical and formal meetings of the Accession Conferences. To give an idea of this formal "paper work", Slovenia submitted around 500 pages of negotiating documents for agriculture, previously approved by government bodies and the National Assembly. A special Council working group was set up where the Member States could deal with positions prepared exclusively by the European Commission. The system had the major characteristics of the EU decision-making process and formed part of the usual functioning of the EU institutions and Member States. This organisation was upgraded by additional institutions (DG Enlargement, Enlargement Unit at DG Agriculture, working groups, special teams at the line ministries of Member States), although all with the characteristics of the EU institutional system.

The organisation of negotiations on the side of the candidate countries reflected the organisation on the EU side. Candidate countries gradually organised themselves in a manner compatible with the organisation of EU institutions. Special government coordination bodies were established, as well as special EU units within the national ministries. Some ministries even went through thorough reorganisation in order to comply with the EU system. This was especially the case in agriculture, where the integration into CAP and the veterinary and phyto-sanitary issues required new staffing and functional structure of ministries. In Slovenia, around 150 people participated in the negotiations for agriculture. Around 40 of them were full-time civil servants who gradually took over the implementation of the *acquis*. Although candidate countries started from different backgrounds, which originally deviated from typical methods of EU decision-making and State functioning, by the end of negotiations "the opposite side" also had all the characteristics of EU multi-level decision-making.

The negotiations, however, were not only conducted between the EU and candidate countries, but also among and within the Member States and on the side of candidate countries, among and within the candidate countries. These negotiations were largely conducted on the political-diplomatic level, which made them less evident and more difficult to cover objectively. The diplomatic network also played a role in the formal and technical part of negotiations. Among the Member States, the political negotiations regarding direct payments for candidate countries also contained elements of negotiations

on CAP reform and on the timing and quality of enlargement. In certain Member States (Germany and Austria), public opposition to enlargement was raised by the representatives of agricultural professional organisations, who warned against "dangerous competition from the East". These fears gradually calmed down and had no significant influence on the outcome of the negotiations. On the side of the candidates, a constant tension was observed between the candidates who decided for tactically tough relations with the EU (especially Poland) and the others. In response to fierce reactions of certain candidate countries, the EU left no room for manoeuvre in negotiations, but rather proposed horizontally compromised solutions, without taking into account the specific features of candidate countries. Thus, in fact, it pursued the factual interests of the largest and the loudest countries!

Something else that was typical for the process were the internal activities in candidate countries. However, these had less pronounced effects on the final outcome of negotiations. The agricultural non-governmental organisations exerted constant and very strong pressure on the governments of candidate countries to protect their agricultural sectors, to assure equal treatment in negotiations and to achieve the best possible results in quotas and reference quantities. They chose various forms of demonstration of power. Political representatives of the agricultural ministries and the government negotiators were thus under pressure in their communication with the EU institutions. Regardless of how insignificant this influence was in the final outcome of negotiations, the relations between government and non-government organisations within the candidate countries had all the characteristics of parallel relations in Member States. In this regard too, the candidate countries experienced a gradual integration into an EU-typical organisation of interests and multi-level decision-making. There were, however, great differences among the candidate countries in the manner of conducting the negotiating process internally.

Despite the fact that, formally, these accession negotiations were bilateral, the institutional organisation of the accession negotiations lead to the conclusion that the general assumption made at the beginning of the chapter was correct. The accession negotiations in agriculture had all the characteristics of EU multi-level decision-making. They were pursued in a manner to assure the most efficient possible integration of a candidate country into a legal and institutional system of the EU, which in turn led to similar methods of acting and decision-making too.

4.4.2. The role of institutions

4.4.2.1. The inter-governmentalist theory—the rule of large countries

According to the inter-governmentalists, the results of accession negotiations would have to be decisively related to the decision-making process of the larger countries, particularly Germany and France on the Member States side and Poland on the side of candidate countries. This theory only partly explains the complex process of negotiations. The answer can only be affirmative with respect to the main strategic decisions about enlargement and perhaps for the issue of direct payments. The agreement made between

the French President and the German Chancellor in October 2002 had a decisive influence on the negotiations conclusion but was less decisive on the substance of the negotiating agreement. Political agreements and decisions at the highest levels in this process served as a kind of traffic signal, opening and closing the issues, thus dictating the tempo and dynamic of negotiations. The role of Poland as the largest candidate country is also difficult to define, but it should by no means be overestimated. The fact that Poland persisted so long in its unrealistic demands and thus raised the expectations in the domestic political arena shows that the political leadership overestimated the role of its country in negotiations for too long or was in fact unaware of their actual limitations or possibilities. It seems, however, that the interests of this largest candidate were to some extent taken into account in the proposals of the European Commission. On the other hand, substantive negotiations and the very execution of the process were left to the EU institutions.

4.4.2.2. Multi-level governance model—the bargaining resources of EU institutions

Unlike the inter-governmentalist concept, the accession negotiations can to a large extent be explained by a multi-level governance model. This model does not deny the role of large Member States but stresses that decision-making abilities are shared and that EU institutions, through strong bargaining resources, increase their power and abilities. In particular, according to the primary EU legislation, the European Commission has the role of a negotiator for international treaties. The Commission has fully exploited and exposed this role. This has largely been built on the power conferred to the Commission's function in the procedures, especially in the leading procedures and the formulation of proposals for negotiating documents as well as in the norms of operations. Through DG Enlargement in the sense of negotiating procedures and through DG Agriculture in the sense of the substance of agricultural negotiations, the European Commission was the one that controlled the process and imposed its proposals. This also applies for the more politically sensitive issues, which were already in the first phase designed as compromises between the interests of large (important) Member States and somehow the candidates too. As a master of the "rules of the games", the Commission greatly affected the decision-making within the accession negotiations.

The negotiating positions of candidate countries, in fact, played no significant role in negotiations. Negotiations were conducted instead on the Commission's proposal, fully approved in almost most cases by Member States. Furthermore, a direct influence of Member States on the actual substance of negotiations was not highly significant. This can be derived from a comparison between the draft common positions as proposed by the European Commission and the Common Positions as confirmed by the relevant bodies of the Council. The differences lie mostly in technical details and hardly in the actual substance or solutions of negotiation issues. According to the information obtained from certain participants of the Council Enlargement working group, the Member States opened a very limited number of issues, most of which were aimed at protecting their own interests and avoiding any concrete, substantive change that could modify the proposals. In the EU institutional system, the Commission also acted as a guardian of the interests of

candidate countries. The latter neither had the possibility of advocating their interests in a direct formal contact with the working group nor were they informed about the contents of discussion in the working group. Therefore it was only the Commission that could protect their interests, which significantly strengthened its role within the accession negotiations.

4.4.2.3. European bureaucratic politics—agricultural administrations as quasi-autonomous actors

The concept of *European bureaucratic politics* allows the role of agricultural administration in the accession negotiations and certain levels of decision-making in negotiations to be explained. The negotiations strengthened the role of agricultural bureaucracy on both negotiating sides. On the EU side, DG Agriculture, which is an autonomous decision-making authority in the case of CAP (Swinbank, 1997; Tracy, 1997), came out as the key negotiating decision-maker in relation to candidate countries, Member States, other EU institutions and other DGs within the Commission. Additionally, it established special technical and political links with national ministries, directly through exclusive communications and indirectly through formulating of negotiating issues. This strengthened DG Agriculture's role in agricultural decision-making during accession negotiations. This leads to the conclusion that accession negotiations also possibly strengthened the role of DG Agriculture in CAP decision-making.

On the side of the candidate countries, an important change occurred in the autonomy and role of national agricultural bureaucracy during the negotiations. Before the accession, agricultural policy decision-making was shared by several ministries. The ministry of agriculture usually only had weak legal, financial and political competencies. The agricultural *acquis* called for changes within the institutional organisation and a new distribution of power and rights among the ministries. Before the accession negotiations began, the issues of foreign trade fell within the compass of economic ministries, whereas the issues in the area of finance and safety of food were shared. The *acquis*, on the other hand, required one competent authority for these various areas, which largely meant a shift of powers to the agricultural ministry. In many cases, finding proper solutions and reaching a consensus about certain issues of the *acquis* required a lot of coordination, which often made this process particularly politically sensitive. In the opinion of some participants in the process, internal negotiations were often tougher and more exhaustive than negotiations with the European Union. These were conducted according to well-established mechanisms and by the principle that the most conflicting issues should be put off to the end of the process. Internal tensions within the government administration often remained hidden from the public. The fact is that transposition of the *acquis* in the area of agriculture required a changed role and tasks of the State and thereby a redefined role of individual decision-makers, which in turn caused conflicts of interests within the administration. Moreover, the role of national ministries was enhanced by the growing importance of non-governmental organisations, who in their search for one common interlocutor usually turned to their sector ministry.

4.5. CONCLUSIONS

Some new lessons about EU decision-making could be learned from the accession negotiations. The process acquired the typical features of EU multilevel decision-making. On the EU side, negotiations were incorporated in the usual decision-making system whilst the candidate countries only gradually took over the organisation and functioning methods typical for the EU.

The role of larger States in accession negotiations was limited to the confirmation of previously drafted decisions and the timing of the process. This only partly proves the concept of *inter-governmentalist theory*, but is very likely a sign of a further division of decision-making power.

More profound explanations on decision-making can be given with *multi-level governance model*. This helps to understand how the European Commission (in particular DG Agriculture), by guiding the process and giving proposals, took advantage of its strong bargaining resources in negotiations. Although taking into account appropriate political moments given by large Member States, the negotiating process was fully led by the European Commission. Furthermore, as a result of less pronounced interest of Member States, the decision-making power of DG Agriculture grew beyond its usual powers.

Finally, the accession negotiations confirmed the validity of the *European bureaucratic politics* concept in explaining decision-making. Apart from the decisions of strategic political importance, negotiations were mostly an interaction between agrarian bureaucracy on the EU side (DG Agri) and in candidate countries (national ministries), which as a consequence considerably strengthened their roles.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 5

The European Parliament: From a Consultative to a Decisive Institution in the CAP Making Process

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Abstract

The introduction of co-decision (CD) has upgraded the role of the European Parliament (EP) in the European Union (EU) policy-making process. However, CD does not apply to the common agricultural policy (CAP). This chapter treats the possible implications of EU legislative procedures on the institutional and policy development within the CAP. This is done through a comparison between the activities of the agricultural and the environmental committees. The analysis shows that a decisive EP could contribute to the reform, the transparency and to a more democratic process for the CAP.

5.1. INTRODUCTION

The European Parliament (EP) is one of five European Union (EU) institutions, playing a role in the EU governance system. The 1992 Maastricht Treaty and the 1997 Amsterdam Treaty transformed the EP from a purely consultative assembly into a legislative body, exercising powers similar to those of a national parliament. The role of the EP in EU policy making was increased through the introduction of the co-decision (CD) legislative procedure within the EU governance system. The Maastricht Treaty provided veto power to the EP. The CD procedure became the norm for Community legislation with the EP on equal footing with the legislative role of the Council. Although the CD procedure became increasingly applied to many policy areas, it did not come into effect for the common agricultural policy (CAP) (Wallace and Wallace, 2000). This chapter examines the possible implications for CAP reform if, with respect to the CAP, the existing consultation (CNS) legislative procedure would be replaced by the CD.

The hypothesis is that the introduction of CD procedure would not only upgrade the role of the EP as an EU institution within CAP decision-making but also speed and strengthen the CAP reform process on a democratic basis. Attempts have been made to show that the EP can influence the CAP reform in a constructive way so that the CAP becomes common EU policy under a democratic and transparent process that represents the interests of producers as well as consumers and tax payers.

The amount of scientific work referring to the role of the EP in the EU integration process and policy making in general has considerably increased with the introduction of the CD legislative procedure in 1992 (Corbett, 1999; Corbett et al., 2000; Shackleton, 2000; Hix, 2002; Roederer-Rynning, 2003). This chapter intends to contribute further to this work by examining the CAP, a policy area where the EP has no decisive power.

The potential effects of the CD legislative procedure on the CAP are not apparent, as CD has not been applied to CAP until today. Therefore, instead we will make a parallel comparison with relevant policies where CD applies in order to find out the possible differential effects of CD on policy outcomes. Since the EP operates through the specialised standing committees, we chose two of them that are directly relevant to agriculture and the CAP. These are the Agriculture and Rural Development committee (AGRI) and the committee for Environment, Public Health and Consumer Policy (ENVI).

The analysis consists of an empirical and a theoretical part. In the empirical part, the number of the dossiers examined under CNS and CD, with respect to the CAP and the environmental policy, as well as the development of the composition of the two chosen committees are statistically analysed. The analysis provides an outlook of the legislative procedures followed in the two policy areas and the implications on policy outcomes when CD replaces CNS. From this analysis, inferences are made in order to speculate on the potential impact of CD on the CAP. Further on, the discussion advances into the potential implications that CD will have on the role of the EP as an institution. Institutionalism theory and policy network approaches are used to analyse the role of the EP as a formal and informal structure in lieu of the adaptation of the CD procedure.

The structure of this chapter is as follows: Section 5.2 is a descriptive section, comparing the two legislative decision making procedures (CNS and CD) and highlighting some specification of CAP and the concerned committees. In Section 5.3, data and methodology are presented. In Section 5.4, the potential role of the EP under CD is analysed and discussed. Finally comes the conclusion in Section 5.5.

5.2. DECISION-MAKING PROCESS IN THE CAP

The EU does not follow the same legislative decision making procedures with respect to all policies. Moreover, these procedures are different and much more complex than those in individual States because of the larger number of interacting actors and institutions. Different decision-making rules and procedures were formulated under the Treaty of Rome (1957). They have changed through time in relation to political and economic

environment, to the perceptions by key actors of their needs and to the perceptions of the EU potential to act as a problem-solving organisation (Nugent, 1999). Two important elements differentiate these legislative decision-making procedures (CD and CNS): the EP's right to exercise veto powers and the number of readings by the Council and the EP. Two major internal variations to the procedures also exist: the *qualified majority voting* rule and *unanimity* (Nugent, 1999).

5.2.1. The consultation legislative decision making process (CNS)

The CNS legislative procedure gives the Commission alone the formal authority to introduce a legislative proposal at the initiation stage. However, the Council or EP can also unofficially propose that the EU should act on a matter. The proposal is then submitted to the Council of Ministers who refers it to the EP. In praxis, many actors (various committees, interest organisations) try either to influence or facilitate the decision-making process by providing sectoral expertise information (Nugent, 1999). EU policy formulation and implementation are usually scrutinised closely and repeatedly by national officials, via Council working groups and the "arcane" comitology system, with committees at different levels performing different functions and having different but overlapping memberships (Peterson, 2003). Once a proposal is formalised, changes are more difficult to come by. Interested parties (professional lobbyists, politicians, various committees), therefore, try to influence the commission at the initiation stage. The initiation stage is thus highly significant for the formulation of the final proposal (Edgell and Thompson, 1999).

The official decision-maker for the CAP is the Council of Agricultural Ministers. They represent the EU member States interests that have to be reconciled in an intergovernmental bargaining process (Wyn, 1997). The EP does not have full legislative powers under the CNS procedure, but can ensure that its views have been taken into consideration. The EP can assert influence by voting for amendments to the Commission's proposal, but cannot vote on the draft legislative resolution. Furthermore, the EP opinion must be known before the Council can formally adopt the proposal. If the Commission accepted the amendments accepted by the Commission, a favourable opinion is issued and the amended text becomes the one that the Council considers. If not, the EP can pressurise by not issuing an opinion and causing delay. Delaying does not mean, however, that the EP has power of veto. The EP is obliged to issue opinions but by delaying it gains time for bargaining and pressurising. However, the Council often sympathises with EP opinion and accepts its amendments likewise. When the Commission does not agree, there is little the EP can do if the Council rejects its opinions (Nugent, 1999).

Although in many respects agricultural policy decision-making is much the same as in other policy sectors, there are significant variations from the 'standard' EU model. Because of the importance, the range and the complexity of the CAP, plus the ever-changing nature of the world's agricultural markets, more actors are involved in the CAP making process compared to other policy areas, such as many Council working parties, Commission management and advisory groups (European Commission, 1999a,b; Nugent,

1999). The agricultural committees are management, regulatory and advisory committees. The Commission initiates a proposal mainly based on a policy that already exists (Nugent, 1999). Once some agreement on the main issues has been reached, references are made upwards to the Special Committee on Agriculture (SCA). At this level, the political implications rather than the technical details of a proposal are important. If an agreement has not been reached, the proposal is referred back to the working party for detailed consideration or forwarded to the ministers for political resolution. All the proposals must be formally approved by the Council of Ministers. When no agreement can be reached, the ministers may settle an agreement during lengthily Council sessions. Another possibility is that a vote, under the Treaties, is allowed to proceed by consensus. Finally, if no agreement is reached, a vote is either not possible under the Treaties or is judged to be inappropriate. However, if an agreement is not reached at all in the Council, either by consensus or qualified majority, the legislative process does not necessarily fail. This may lead, in fact, to the proposal being referred back to the Council and to the Commission for changes. If an agreement is reached, the text is adopted by the Council (Nugent, 1999).

5.2.2. Co-decision (CD)

The Maastricht Treaty introduced the CD procedure, and since the Treaty of Amsterdam the CD procedure is applied to most of the fields of Community legislation (Hix, 2002). CD applies to those areas where the Council makes a decision through qualified majority voting, such as internal market rules, free circulation of workers and so on, and to the new areas of competence such as consumer protection (Lintner and Mazey, 1991). However, it is not extended to agriculture. Although the EP has certain rights to participate in the enactment of Community legislation, its influence continues to be limited. The EP seeks to simplify the legislative process and has made proposals to replace the present system of legislation by an improved, more transparent and more manageable system.

The first stages of CD procedure are similar to those of the CNS procedure (see above). If the Council and the EP reach agreement at the first reading, the Council considers the EP opinion to adopt a common position with qualified majority. The Council and the Commission must explain the common position, including whether or not EP amendments are accepted. If the EP does not act within 3 months, the Council can adopt its common position as a legislative act. In the case where the EP disagrees by an absolute majority and proposes amendments, the proposal fails (Nugent, 1999). The EP can wield power by refusing to take its final position. When the Commission shows willingness to compromise on proposals of importance to the committee, this can happen. The Council cannot decide until the EP has voted, so the Commission has no other choice but to negotiate informally with the relevant EP committee. If this leads to a confirmed common position between the Commission and EP, the Council has to vote unanimously against the proposal in order to defeat it. The Council has to read for the second time and if it does not accept the amendments a third stage follows. At the third stage, the contested proposal is referred to a Conciliation Committee, composed of an

equal number of representatives from the Council (15) and the EP, 6 weeks later. This is very common for CD procedure (40% of the proposals), therefore the role of the Conciliation Committee is very important. If the Conciliation Committee agrees on a joint text, the proposal is referred back to the Council and the EP for adoption within 6 weeks. The Council uses qualified majority and the EP majority voting. Failure of an agreement on a position in the Conciliation Committee means that the proposal cannot be adopted (Nugent, 1999). The important element of CD procedure is that the Commission has to count the EP's extended power of veto (for 37 articles under the Amsterdam Treaty), which was not given by the CNS procedure.

5.2.3. The special characteristics of CAP decision-making

The actors in CAP decision-making participate in diverse policy networks. This may involve sub-national actors (regional governments representing the farmers' interests in Brussels or at the implementation stage involved regionally), interest groups (environmental and agricultural lobbying groups), and supranational actors (the Commission and the advisory committees) (Marks et al., 1996). Moreover, the role of the Commission and the SCA is bigger in the CAP compared to the other policies. These actors, representing the same interests at the regional, national and EU level, interact and often have overlapping qualifications, which makes the process more complicated. The agricultural organisations have a larger influence on the policy outcome in comparison with other organisations because they are not counter-balanced with strong and vigorous groups who advance contrary attitudes and claims. Natural opponents do exist, most notably consumers and environmentalists, but they are relatively weak. In terms of access to decision-makers, the farmers' "rivals" do not, as a rule, enjoy the "insider status" granted to the agriculture lobby (Nugent, 1999).

5.3. DATA AND METHODOLOGY

The Treaty on EU grants the EP a right to initiate legislative proposals that are prepared by the standing EP committees. The EP has 17 committees, whose composition reflects that of the Parliament, as much as possible. The duties of the committees lead to differentiation. Firstly, standing committees examine questions according with their competence, referred to them either by the EP or on behalf of the Conference of Presidents. The duties of temporary committees and committees of inquiry, on the other hand, are defined when they are set up. These committees are not entitled to deliver opinions to others. Should two or more standing committees be competent to deal with a question, one committee should be named as the committee responsible and the others as committees whose opinions are asked for. However, a question shall usually not be referred to more than three committees simultaneously.

For the analysis in this chapter, it is necessary to understand the powers and responsibilities of the EP standing committees in the two policy areas with links to CAP, agriculture and environment. The interests of the policy areas that the two committees are

Box 1. Powers and responsibilities, according to the EP Rules, of:

* **the Committee on Agriculture and Rural Development (AGRI):**

(1) the operation and development of the CAP and forestry policy (Articles 32–38 and, where appropriate, 95 and 152 of the EC Treaty);
(2) rural development, including the activities of the EAGGF–Guidance Section;
(3) legislation on:
  (a) veterinary and plant-health matters;
  (b) animal feeding stuffs; in cases covered by the first and second indents, provided that the agricultural aspect of these matters is predominant, by comparison with any risks to human health which may stem from them;
  (c) animal husbandry and welfare;
(4) supplies of agricultural raw materials;
(5) the Community Office for Plant Varieties;
(6) the monitoring accompanying the implementation of current expenditure for which it has responsibility, on the basis of periodic reports provided by the Commission.

* **the Committee on the Environment, Public Health and Consumer Policy (ENVI):**

(1) environmental policy and environmental protection measures (Article 174 of the EC Treaty), in particular:
  (a) air, soil and water pollution;
  (b) climate change;
  (c) classification, packaging, labelling, transport and use of dangerous substances and preparations;
  (d) fixing permissible noise levels;
  (e) treatment and storage of waste (including recycling);
  (f) international and regional measures and agreements aimed at protecting the environment;
  (g) protecting fauna and its habitat;
  (h) provisions of the Law of the Sea regarding the environment;
  (i) the European Environment Agency;
(2) public health (Article 152 of the EC Treaty), in particular:
  (a) programmes in the field of public health;
  (b) labelling and safety of foodstuffs;
  (c) veterinary legislation concerning protection against dangers to human health arising from bacteria and residues in animal products; public health checks on foodstuffs and food production systems;
  (d) pharmaceutical products, including veterinary products;
  (e) the European Agency for the Evaluation of Medicinal Products;
  (f) medical research;
  (g) cosmetic products;
  (h) civil protection;
(3) consumer policy, in particular:
  (a) protection of consumers against risks to their health and safety;
  (b) appropriate CNS and representation of consumers during the preparation of decisions which affect their interests, in particular their economic interests;
  (c) improvement of consumer information and education;
  (d) the monitoring accompanying the implementation of current expenditure for which it has responsibility, on the basis of periodic reports provided by the Commission.

Source: www2.europarl.eu.int

dealing with are considered relevant to the CAP since the agricultural policy directly influences and is influenced by the environmental policies. Since the AGENDA 2000 and the BSE crisis, the impact of consumer interests and the environmental issues on agricultural policies has become even more significant. Those committees are characterised by the two different legislative procedures, the CNS for agriculture and CD for the environmental policy area. According to the Rules of Procedure of the EP, the powers and responsibilities of the AGRI and the ENVI are given in Box 1.

Some features of the committees' composition, their responsibilities and number of dossiers are given in Tables 5.1–5.3. The number of the dossiers examined by the two EP committees, AGRI and ENVI, are compared. The indicators derived are the number of dossiers examined by the committees, the composition of the committees and their corresponding level of responsibility in preparing the EP's amendments and opinions to the EU policies.

The data used for the empirical analysis are provided by the EP database. These data present information about the dossiers that are examined by the two EP committees. The database contains all the procedures still under way, irrespective of when they began, and all procedures concluded since the beginning of the fourth legislative term in July 1994, including resolutions on topical and urgent subjects. The decisions are first divided according to two legislative procedures that have been followed, CNS and CD. The two categories are then divided according to the stage they are in the process: "concluded", "awaited", "still under way" or "lapsed".

5.4. THE ROLE OF THE EP UNDER CD

In this section, firstly Section 5.4.1, the formal and informal structures relevant to the EP and their role on the agricultural policy formulation under the EU governance system are examined in order to get insight in the EP's position in the decision-making process. Next, in Section 5.4.2, quantitative and qualitative indicators are developed in order to examine:

(1) the evolution of the composition of the EP standing committees, the AGRI and the ENVI, after the introduction of CD (it is expected that the size and demografic composition of the EP committees depend directly on the legislative procedure applied);
(2) an analysis of the distribution of the dossiers processed by these committees. The number of dossiers and the final outcome of the decisions (concluded, lapsed, etc.) is also determined by the decision-making process;

Table 5.1: Composition of AGRI and ENVI committees.

	Number of members + substitutes	**Number of members**	**Average age of members**	**Average age of members + substitutes**	**Variance in age of members + substitutes**	**Variance in age of members**
Agriculture	74	39	57.9	56.9	68.8	58.2
Environment	116	60	51.7	52.9	76.01	85.3

Table 5.2: Distribution of the decisions dossiers by the EP committees, AGRI and ENVI, under CNS and CD (1994–2003).

	Total number of dossiers examined under CNS and CD	**Consultation**	**Co-decision**	**Percentage of lapsed under CNS of CNS total**	**Percentage of lapsed under CNS of the total decisions**	**Percentage of lapsed under CD of CD total**	**Percentage of lapsed under CD of the total decisions**	**Under way CNS**	**Under way CD**
Agriculture	634	540	94	7.8	6.6	14.9	2.2	34	27
Environment	815	415	400	5.5	2.8	13.2	6.5	33	90

Table 5.3: Level of responsibility by AGRI and ENVI of the dossiers examined by the EP.

	Agricultural policy			Environmental policy		
	Total number of concluded dossiers by EP	**Number of dossiers under the responsibility of AGRI**	**Number of dossiers under the responsibility of ENVI**	**Total number of concluded dossiers by EP**	**Number of dossiers under the responsibility of AGRI**	**Number of dossiers under the responsibility of ENVI**
Consultation	540	365 (67.6%)	28 (5.12%)	415	180 (43.4%)	93 (22.4%)
Co-decision	54	11 (20.4%)	29 (53.7%)	261	3 (1.1%)	156 (59.8)

(3) the introduction of CD affects also the responsibilities and the powers of those committees.

Finally, the potential impact that the CD may have on further reform of the CAP is investigated. The results are extended in order to examine the potential impact of the introduction of CD to the policy outcomes in the CAP and the institutional development of the EP.

5.4.1. The role of the EP as formal and informal structure

Firstly, the role of the EP as a formal institution in the EU governance system with respect to the CAP is examined. New institutionalists argue that the EU institutions may develop their own agendas and act autonomously upon allied interest organisations playing an autonomous role in the policy-making process (March and Olsen, 1989; Peterson and Bomberg, 1999). The bureaucratic agency, the legislative committee or the court are arenas for contending social forces, but are also collections of standard operating procedures and structures that define and defend values, norms, interests, identities and beliefs (March and Olsen, 1989). "They are political actors in their own right" (Bulmer, 1993; Rhodes, 1995). Nevertheless, although institutions may shape the pattern of political behaviour, they do not generate it of their own accord and thus should not be seen as the determinants of policy (Bulmer, 1993).

Despite the fact that the EP constitutes a formal institution in EU policy making, its role has been diminished in the CAP making to a consultative body under the CNS legislative procedure. According to the CNS legislative procedure the only formal decisive institution in the process is the Council that votes behind closed doors. The EP has no legislative power to intervene in the process nor to fight for the interests of the voters. The Council votes for the text prepared by the members of the Commission. The Commission can have an indirect impact on the process by setting the policy agenda and preparing the proposals to be discussed. However, the college of Commissioners is not directly elected by the people, but rather appointed by the national governments. Thus the process involves a lot of bargaining among appointed Ministers by the national governments and has been characterised as non-transparent (EP, activity reports). Moreover, despite the wishes of the Council to exchange information with the EP, in order to facilitate decision making, the Council is interested in trying to ensure that the EP does not vote down items

of legislation and that it has minimal impact for its own internal (consensual) forms of decision making. The Council wishes that the EP does not create any precedent for EP-Council relations at a broader level (Farrell and Heritier, 2002). The diminished role of the EP has attracted a lot of criticism about the 'democratic deficit' which characterises the EU system (EP, 2002a).

Contrarily, the introduction of the CD in certain policy areas (i.e., environmental policy) has created a new dynamic within the EU legislative arena. The impact of the EP is not just a question of completed procedures. Both in quantitative and qualitative terms, there is strong evidence that the EP has made a significant difference to the shape of Community legislation, a difference that goes beyond what could have been achieved under the CNS procedure.

The EU agricultural sector faces the problems resulted by the CNS, since CNS still applies to the CAP, namely an undemocratic and non-transparent process and lack of representation of diverse interests. Contrarily, this is not the case for the environmental policy decided under the CD legislative procedure, as shown by the analysis below.

Although the EP cannot participate as a formal decisive body in the CAP, it influences the process at an informal level along with other informal institutional structures. The informal institutions have not received the necessary attention from new-institutionalists, however, they have been often considered very influential actors in the European policy-making literature by the policy network and other theoretical approaches (Marks et al., 1996). As Farrell and Heritier (2002) indicate, the dynamic interaction between formal and informal institutions has important consequences for legislative outcomes and the relative decision-making power of European political actors. Furthermore, "institutional change is not driven by the preferences of actors who remain off stage but rather results from a dynamic process of bargaining, in which the creation of formal institutions cannot be examined in isolation from a continuous process of reiterated social interaction between the relevant actors" (Farrell et al., 2002).

The formal rules governing CD under the Maastricht Treaty gave rise to a process of informal institutionalisation, which then affected the next round of formal institutional revisions in the Amsterdam negotiations. Since the changes at Amsterdam, a new phase of informal bargaining started, where both Council and EP seek to secure their long advantage. This bargaining process can explain how the formal rules governing the CD procedure have led to the creation of informal institutions, and how these in turn have affected the course of constitutional change.

Part of this EU institutionalisation process and the development of the EP constitute the development of the EP standing committees along with other informal institutional structures (EP, 1998). In the CAP making, a very complicated and expensive EU policy with a great variety of issues, these informal institutions play a significant role. Technocratic specialists are empowered by the fact that the CAP is understood by very few. The great number of product-specificity advisory committees to the Commission is striking, with 50% of these committees' members representing the farmers' interest organisations. These committees provide a valuable opportunity for institutionalised participation in the development and implementation of the policy (Nugent, 1999).

5.4.2. Quantitative and qualitative indicators

5.4.2.1. Development of the composition of the EP committees

The establishment and development of the EP standing committees shows the significance of informal institutional structures within the EU system. Moreover, the examination of the composition of AGRI and ENVI before and after the introduction of CD reveals that the EP committees can grow differently under different legislative procedures (Table 5.1). The AGRI was one of the first committees founded, while when the ENVI was set up in 1973 it was the twelfth specialist committee. During the 1979–80 parliamentary term, the ENVI had 26 members while today the number has increased to 60. The respective numbers for the AGRI committee are 39 for both periods resulting in a smaller number of members for the AGRI than the ENVI today. When the non-full members are included, the AGRI has 74 while the ENVI has 116 MEPs. The average age of the members and substitutes is 56.9 years with a variance of 68.8 while that of the members is 57.9 (variance 58.2). The average age of the members and substitutes is 52.9 years (variance 76.01) and that of the members is 51.7 (variance 85.3) (Table 5.1). Although, the average age of the members is similar in both committees there is a greater variance in the age of the members in the ENVI committee.

The extension of the CD procedure to most areas of environmental and consumer protection, food safety and public health under the 1999 Amsterdam Treaty upgraded the role of the ENVI committee in the EU policy-making process. The ENVI needs for specialised and accurate knowledge has increased due to the fact that the EP proposals contribute decisively to the environmental policy-making process where the EP participates as a co-legislator under the CD. Thus, the increase in the number of the ENVI members could be attributed to the extended responsibilities of the EU on environmental matters and through greater sensitivity to electoral demands for environmental and consumer protection. If the argument is accepted that the constitution of the membership (size, age, responsibilities) within EP committees plays a significant role in EU policy making as well as the relative degree of institutionalisation (Wessels, 1999) then the ENVI committee will have an increased potential influence.

5.4.2.2. Distribution of dossiers

The difference in the number of the dossiers examined by the two EP committees during a certain time period constitutes another indication of the different role of the EP committees. The statistical analysis aims to estimate the involvement and the level of influence of the EP in the final outcome of the decided dossiers concerning agricultural and environmental policy. The results of the distribution of the dossiers dealt with by the two EP committees, the AGRI and the ENVI, show that the number of examined dossiers is larger when the EP plays a consultative role compared to those where the EP plays a deciding role. In Table 5.2 is shown that the total number of decisions for agriculture dealt with by the AGRI committee since the fourth term in 1994 is 634 dossiers, 85% of which have been decided under CNS and 15% under CD. During the same time period, the EP

handled 815 decisions for environment, 51% under CNS and 49% under CD. In the case of agriculture, decisions are thus mainly decided under CNS while for environment the number of dossiers is analogous to that decided under CD. This shows that the EP plays a mainly consultative role with respect to agriculture, although it is a formal EU institution. Contrarily, its role is more upgraded and influential in the case of the environment due to the EP participating as an equal actor in the decision-making process.

Otherwise, the level of activity between the AGRI and ENVI is not the same. The number of decisions under CD and CNS for environment during the same time period is comparable (400 and 415, respectively). Moreover, the number of decisions that are "under way" is very similar for both committees with respect to CNS procedure while it is larger for the environment committee under CD. Thus, despite the fact that dossiers decided under CD require greater involvement and responsibility by the EP, the ENVI committee examines four times more dossiers than AGRI (400 and 94, respectively) during the same period.

Furthermore, the argument that decisions examined under CD take a long time is not necessarily valid. It does not appear that the introduction of the CD led to serious delays in the final adoption of legislation. The average duration of CD fell dramatically from 769 days to 344 for proposals published in 1997 (EP, 1998). The content of the decisions can have an effect on the duration of the examination. As far as the percentage of lapsed decisions for agriculture under CNS is 7.8% out of the CNS total and the percentage of lapsed under CD of the CD total 14.9% and for environment it is 5.5% and 13.2%, respectively (Table 5.2). These numbers show that the number of lapsed decisions is larger when the EP is more involved in the decision-making process, as under CD. Consequently, when the EP is involved in the decision-making process, the policy outcome can be differentiated.

5.4.2.3. Responsibilities and powers of EP committees

The different impact of the AGRI and ENVI committees in policy making is also pointed out by the difference in the distribution of their responsibilities by the EP. The role and responsibilities of EP committees is not always clear and various committees are involved in more than one policy decision. For example, AGRI and ENVI both have interest in policies that involve producer and consumer concerns, and are involved in decisions to relevant policies. The way the EP distributes the responsibility to the committees with respect to agriculture and environment policies is as follows (Table 5.3). From the total number of the dossiers examined under the CNS and refer to agriculture (540 dossiers—100%) the AGRI committee receives the main responsibility (67.6%). ENVI is responsible for 5.2% and the remainder (27.2%) is distributed to other EP committees. With respect to environmental issues treated under the CNS, AGRI is responsible for 43.4% and the ENVI for 22.4%. Contrarily, for the same policy area under CD, AGRI receives only 1.1% and ENVI 59.8%. The ENVI committee has the responsibility for a larger number of dossiers than AGRI, especially when the EP has deciding powers under CD and consequently plays a more influential role in the policy-making process. Thus, it can determine the policy outcome since it

can impose veto when it does not agree with a great number of policy proposals. As shown in Table 5.3, the responsibility of the AGRI committee with respect to the dossiers relevant to the environment is even smaller.

This supports the argument that AGRI is mainly dealing with dossiers that are decided under the CNS legislative procedure and is a consultative not a decisive actor in the decision-making process. The ENVI committee has more legislative powers and is also given many more responsibilities by the EP, which results in becoming more active than the AGRI and also influencing more the policy outcomes. As the overview of the EP for 2001–2002 (EP, 2002a,b) presents, the main "user" of CD dossiers (25% of total number of dossiers) is the ENVI.

Finally, the role of the EP committees should be taken into account when policy reforms and their causalities are examined. Roederer-Rynning (2003) argues that despite the perception of parliamentary powerlessness, the EP, through the committees, can steer change by manipulating the institutional parameters that define their actions. The EP committees characterise the political salience in Parliament and their embeddedness (Roederer-Rynning, 2003). The competition among the interests of those EP committees can also affect the policy-making process and the policy outcomes through the proposals they prepare for the EP, especially when the committees act under different legislative procedures (CNS vs.CD). When the EP has a decisive role (under CD), the interests of the respective committee can be voted, which is not the case when the EP has a consultative role (under CNS).

The two EP committees, the AGRI and the ENVI, represent the interests of both the farmers and the consumers along with the environmentalists. However, it has been argued that the lines of division that structure the political debate on producer consumer concerns require special attention (partisan dimension, geographic lines, objective, functional differences, ideological, cultural understanding) (Roederer-Rynning, 2003). Although the farmers' interests can be similar to those of the consumers and environmentalists (nice and safe environment, alive and active rural areas) they can also be contradictory when it comes to EU budget or individual expenditure. This will often affect what these committees propose, and consequently the policy outcomes. The fact that the AGRI and ENVI deal with two policy areas decided by different legislative procedures, the CNS and CD respectively, has different implications on the level of influence of the EP on policy decisions. When the decisions to be made have a negative effect on the environment and the health and satisfaction of the consumers, the EP can use the veto power and reject the examined dossiers. Consequently, the environmental and consumers' interests are better and more fairly represented at the EU formal decision-making process in comparison with those of the farmers. For example, the consumers are mainly interested in safe, good quality food at low prices while safe, high quality food could mean high cost and low profits for the farmers. Additionally, one could argue that the empowerment of the EP through the CD in the environmental policy making process (among other things: BSE; MCD, etc.) has an impact on the move of the CAP towards consumer satisfaction as indicated by the AGENDA 2000, the Mid Term Review (MTR) or even by the last reform proposal by the Ministers of Agriculture in Strasbourg (June, 2003).

5.4.3. Impacts on further CAP reform

What could now be the impact of the introduction of CD to further reform of the CAP? Reform can be stimulated by the circumstances within the policy area or originated by external factors. In the case of the CAP, internal factors have pressed strongly for a reform of the CAP (budget limitations, overproduction, differentiation of needs and interests—rural development, food safety scandals, enlargement), as have external factors too (WTO, other policies). The internal factors have resulted in the formulation of a CAP that intensifies the multifunctional role of agriculture. However, external factors such as the development of new common policies and the increase of interests towards environmental and health issues also press for a reform of the CAP. As has already been discussed in the case of agriculture, the EP has long been viewed as a consultative institution endorsing the proposals of the Commission (Wessels, 1997). Roederer-Rynning (2003) suggests that the EP has been left out because it has a simple consultative role in agricultural policy and because it has control over agriculture expenditure, which is considered "compulsory".

Based on the results presented earlier in Sections 5.4.1 and 5.4.2, the impact of change in the legislative procedure in the CAP from the CNS to CD could be 2-fold: at the institutional level of the EP and at the CAP outcome level.

At an institutional level and with respect to the development of the EP and EP standing committees, if agriculture was determined under CD the AGRI could grow stronger and attract younger and more active deputies who are interested in participating in the decision-making process. Since deputies wish to persuade their voters to re-elect them, participation in the decision-making process could be used by the EP members as an influential power for the policy outcomes during election campaigns. Moreover, CD has a significant impact on the "professionalisation" and "specialisation" of MEPs as they have to provide expert knowledge in technically complex matters like the CAP (EP, 1998).

At the policy outcome, shown in the environmental policy, when the EP has voting powers, the number of conclusive decisions is not the same as when the EP is a consultative body. Moreover, the percentage of lapsed dossiers is larger under CD, which implies that when the EP has decisive powers the policy outcome is not the same. Consequently, if the CD is also introduced in the CAP, it could be expected that the policy developments would be different. The proposals prepared by the AGRI would be taken in account more by the Council and the Commission since the EP under the guidance of the AGRI would participate in the decision-making process. Thus, when the proposed issues were against the interests of the farmers it would become harder to go through influencing the policy outcomes.

Is the introduction of CD to the CAP then desirable? The introduction of CD to the CAP can have a decisive impact on the improvement of the process. If CAP decisions were to be decided under the CD legislative procedure, they will be based on the democratic and transparent process. This process would include the representatives of the peoples of Europe, the MEPs; instead of being the result of the negotiations behind closed doors (one member State – one vote), between the Ministers of the national governments, or regulated by the Commission and the committees (comitology). Consequently, any CAP reform would be based on solid democratic procedure and thus could be stronger, better

accepted by the farmers and more easily presented by the national governments. Finally, a more transparent process would be strengthened and more trusted by the consumers and tax payers.

Is CD in the CAP realistic? The introduction of CD is considered inevitable if the EU is to become a democratic governance system. However, in order for such an introduction to be realistic and effective, it is necessary for the CAP to be simplified before CD will be introduced because the existing CAP constitutes a highly complex policy. The introduction of CD and thus of more actors (EP committees) could add to that complexity.

One more of the weaknesses that the introduction of CD could add to the CAP is that it could create more competition among the various policies at the EP committee level. The MEPs would perhaps have to vote at the same time for proposals that contradict with the interests of the different policy areas resulting in a greater competition among the different interest groups for favourite votes. Since the MEPs are interested in being re-elected, they would most probably support the policy areas with a larger number of supporters. In the past, agricultural organisations had a greater influence compared to other groups. However, in recent years, consumers and environmentalists have become more and more influential, especially after BSE and MCD. So what will the situation be in the future?

5.5. CONCLUSIONS

In this chapter, the role of the EP in the CAP making today and in the future is analysed. The role of the EP as a formal institution has diminished with respect to the CAP because of the consultation legislative procedure applied to the CAP today. The EP remains a consultative actor in the CAP-making process although the CD legislative procedure has been introduced in the Maastricht Treaty (1992) that provides the EP with legislative powers. CD applies to the environment policy. The future of CAP is discussed, with CD as a new factor.

For this, the study examined the implications of the EP committees in the policy-making process. Through comparing the composition, the responsibility level and the dossiers of the AGRI and the ENVI committees, it is shown that when the EP becomes a decisive actor by the CD legislative procedure, as in the environmental policy, it can contribute and influence both the democratisation of the policy-making process and the CAP policy outcome. Under CD, the decision-making process includes the votes of the MEPs that represent the EU people, and so the policy outcome is not based on the agreement between the national governments and the pressure of the political cost of dissatisfying the voters at the national level. Thus, if CD applies to the CAP, it could contribute to the reform of the CAP on a democratic basis. Additionally, policy outcomes could be better accepted by the farmers. Such an introduction is considered positive because it will develop the institutional role of the EP in the EU governance system and can solve the democratic deficit and lack of transparency that characterises the CAP today. A significant element for the introduction of CD to be effective, and not to add to the complexity problems, is the simplification of the existing CAP.

However, there is more room for research, since the content and duration of the decided dossiers are important factors that should be examined because the introduction of CD

could delay the decision-making process when the content of the policy proposals is very complicated or has significant implications on various EU aspects (share of the budget, contradicting interests, etc.).

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 6

The Reorientation Process of the CAP Support: Modulation of Direct Payments

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Abstract

The chapter deals with the modulation of the common agricultural policy (CAP) direct payments and focuses on its evolution from a voluntary to a compulsory tool for reducing direct support to farmers and reinforcing the rural development pillar of the CAP. The modulation proposals discussed during the mid term review debate show different objectives, mechanisms of implementation and consequences in terms of net losers and beneficiaries. Nevertheless, modulation remains a powerful flexible tool and a clear message for farmers: payments are not granted forever and the amount of money will be limited and coupled to a sustainable resource use.

6.1. INTRODUCTION

During the 1990s, the common agricultural policy (CAP) shifted from unconditional support to more selective instruments. The 1992 Mac Sharry reform introduced two main innovations: direct payments (DP) and accompanying measures. DP aimed at the compensation for lowering the institutional prices, accompanying measures support a more environmentally sound agriculture, the care of rural landscape, forestation and early retirement. Agenda 2000 followed on the same path, turning compensation payments into "direct aids" and stressing the importance of rural development (RD) policies in order to make them the "second pillar" of the CAP. RD policies are meant to sustain agriculture together with the traditional common market organisations (CMO) policies, the "first pillar" (Commission of the EC, 1997, 1998; Lowe et al., 1999; Henke, 2002). Agenda 2000 also introduced the so-called horizontal regulation, in which, on a voluntary basis, two brand new instruments were offered to Member States, at a voluntary level: DP modulation to reinforce the second pillar and conditionality of direct aids to meet

minimum environmental standards. With respect to institutional changes, modulation tends to modify the relationships between supra-national, national and local support management and to redesign the financial planning at these levels.

With the mid term review (MTR), of Agenda 2000, the horizontal regulationinstruments became compulsory and substantially different from the voluntary version. During the reform process proposals changed the scope and the rationale of modulation, not only in terms of the mechanisms of implementation but also in terms of resource distribution, institutional roles and net beneficiaries. Changes are significant not only compared to the voluntary version but also among the different proposals themselves, included the one finally approved in June 2003. Changes in shape, objectives and effects happened in a relatively short amount of time (between 1999 and 2003), so it is still too early to estimate their real on distribution of direct aids and reinforcement of the second pillar.

Modulation represents the only tool currently able to shift resources from the first to the second pillar. This has been emphasised in the debate on the first MTR proposals, which featured a revised scheme of modulation, the so-called *dynamic modulation*. Three innovative aspects were introduced: the mandatory reduction of aids, the ceiling of total direct aids received by a single farm (*capping*) and, finally, the enlargement of the set of RDP measures that can be financed from modulation revenues. In January 2003 a new formal regulation version of modulation was proposed. Compared to the previous one, it was more articulated in terms of objectives and probably also in its functioning (degressivity plus modulation). It partially reconsidered the basic scope of modulation as a vehicle for the second pillar reinforcement and proposed to keep a large part of resources raised with the DP degressivity within the first pillar. In other words, modulation (and especially DP degressivity) was to be used to redirect resources within the first pillar. In this way, expected reforms (dairy products, sugar) could be afforded within the financial constraints imposed by the Agreement of Brussels (Council of the EC, 2002). This also effects the institutional impact of modulation, in terms of financial resource management and administrative levels involved in the process. In the final June 2003 version of the CAP reform modulation changed again: a very simplified mechanism was approved, featuring a linear cut of DP over the 5000 euro ceiling and a total shift of resources to the second pillar. Resources for first pillar CMO reforms were made available through modifying the financial dimension of some of the policies approved with the MTR.

The continuous change in the rationale and the implementation of the modulation highlights the innovative character of the modulation. On the other hand, it shows the conflict between supporters of modulation, that are in favour of the reinforcement of the second pillar at the expenses of the first one, and those who prefer the management of agricultural support within the first pillar rules.

This chapter aims at tracing the evolution of the direct aids modulation from its first appearance on scene with Agenda 2000 in 1999 up to the reform approved in June 2003. First, some ideas behind the introduction of the modulation principle are described (Section 6.2). Then, Section 6.3 gives more details on the process of reforming the compulsory modulation within the MTR of Agenda 2000. Finally, some data analysis illustrates the reinforcement of the second pillar of the CAP (Section 6.4) and the redistribution effect of modulation among Member States (Section 6.5). Although it is too

early to estimate how modulation will actually turn out, some conclusions are given in Section 6.6.

6.2. VOLUNTARY-BASED MODULATION IN THE HORIZONTAL REGULATION

The Regulation n. 1259/1999, also known as "Horizontal Regulation" since it is meant to act crosswise CMOs and RD policies, can be considered as one of the most innovative elements introduced with the CAP reform in Agenda 2000 (De Filippis et al., 1999; INEA, 2000). It establishes a framework of rules under which Member States may intervene on DP matters. Such an intervention provides for conditionality (cross-compliance) and for limitations to the total amount according to a series of criteria (modulation). Revenues obtained through the application of the regulation have to be channelled towards additional intervention within the former "accompanying measures" (Regs. 2078/92, 2079/92 and 2080/92) and allowances for the disadvantaged areas, all included in Regulation 1257/99 on RD with Agenda 2000. This is to be considered as an effort in the direction of the re-balancing of agricultural expenditure by shifting resources away from the traditional market support towards RD policies, and particularly in favour of environment and disadvantaged areas (Buckwell, 1997a,b, 2002; Sotte, 1997; IEEP, 2002). Moreover, modulation is still the only current instrument implemented that positively shifts resources from the first to the second CAP pillar and this in spite of the tremendous emphasis put on this matter by the Commission and by CAP scholars and experts.

Voluntary modulation supplied a legislative framework for the DP reduction on the basis of parameters connected with farm employment, total farm income and total amount of DP received by a single farmer, but in any case not exceeding 20% of the total amount. The Regulation fixed these basic criteria, but each Member State was allowed to choose whether, which and how to apply them (Dwyer and Bennet, 2001; Lowe et al., 2002).

Modulation, as formulated in the Horizontal Regulation, raised a series of questions worth considering:

- firstly, the consistency of modulation with objectives it was supposed to address: reduce the support unbalance among beneficiaries and products and raise resources for the reinforcement of RD policies;
- secondly, a possible conflict among territories and agricultural products (and also between economic sectors), which are connected to the criteria of modulation and to the mechanisms regulating the destination and use of revenues generated with it;
- finally, the relationship between institutions involved (central versus local governments) and problems associated with the management of revenues at the local level.

Modulation was the first attempt of the Commission to find a balance between new societal functions assigned to agriculture and the positions by EU partners and by agricultural lobbies in terms of securing agricultural support. The compromise was to set

aside the objective of correcting the uneven distribution of DP (among farms and Member States), in favour of re-balancing resources among pillars (Henke and Sardone, 2002).

About possible conflicts, the central issue is that modulation affects only DP, while it has no consequences on the whole set of "indirect" support enjoyed by farmers via prices and trade control. Further more, conflicts may raise from the territorial redistribution of revenues from modulation, since it would take away resources from the most productive areas and re-distribute them in the most marginal and disadvantaged ones. This is a legitimate goal, especially in social terms, but probably not really welcomed by the most efficient and "entrepreneurial" part of the primary sector. Moreover, there is also a risk of creating a (false) competition between the more market-oriented part of the agricultural sector and that part of primary activity that does not enjoy any acknowledgement from the market (multifunctionality). Finally, referring to the more general question of subsidiarity, modulation raises a problem of relationships among institutional levels of CAP management. With modulation, in fact, financial resources, generated at the EU level, are managed at the national level and redistributed on rural development programmes (RDPs) that are managed at the regional level. Furthermore, in line with the management of expenditure for the RDPs, revenues of modulation might be destined for those regions with a more developed expenditure effectiveness, increasing the gap with not-as-much efficient regions.

At this stage, it is worth noting that DP do not need any additional co-financing from Member States, while agri-environmental measures and compensation allowances, like all the intervention in the RDPs, need to be co-financed. This means that agri-environmental measures and disadvantaged areas subtract resources to non-agricultural sectors. This strengthens the idea that the primary sector is clearly disproportionately sustained, certainly much more than its contribution, in terms of occupation and wealth, to the economic and social system. In this case the conflict would be shifted outside the primary sector, between agriculture and the rest of economy (Henke and Sardone, 2002).

6.3. DESIGNING COMPULSORY MODULATION

Voluntary modulation was implemented only in United Kingdom and, for a limited time, in France (INEA, 2000; Chatellier and Kleinhanss, 2002). These scarce results in terms of State involvement pushed the Commission to go on with the process of reform of modulation along two different paths: from one side making modulation compulsory, on the other side rethinking the mechanisms of implementation. This process took place within the proposals of the MTR of Agenda 2000. In one year time, three different proposals were evaluated, presented to Member States and discussed.

In Table 6.1 the process of reform of modulation is presented. With respect to the products involved, modulation affects all CMOs providing DP. In the approved modulation within the MTR reform, the list includes the "new" DP, and it involves DP *independently* from the de-coupling process.

Already from the first proposal in July 2002, modulation was intended as mandatory. This shift from a voluntary based to a mandatory implementation of modulation can be seen as a specific strategy of the Commission: firstly, to test the effects and reactions to a

Table 6.1: Comparison among modulation proposals.

	Voluntary modulation (Agenda 2000)	**Proposal MTR I (July 2002)**	**Proposal MTR II (January 2003)**	**Approved MTR (June 2003)**
Main products (DP beneficiaries)	COPS, olive oil, tobacco, rice, beef, sheep and goats, dairy products, seeds, Special Programmes	Same products as in the voluntary modulation	All products receiving DP (included the "new" ones and independently from Single Payment)	Same as in Proposal II
Application	Facultative	Mandatory, from 2004	Mandatory, from 2006	Mandatory, from 2005
Criteria	GSM Labour intensity Ceilings	Cuts from 3 to 20% in 7 years *Capping* at 300,000 euro	Cuts from 1 to 19% in 7 years	From 3 to 5% in 3 years
Franchise	Facultative	5000 euro up to 2 full time LU 3000 euro per each additional LU (option)	Total restitution up to 5000 euro Partial restitution $>$ 5000 $<$ 50,000 euro No restitution $>$ 50,000 euro	5000 euro
Resource distribution	Within the MS	3–20% cuts redistributed according to objective criteria *capping* in the MS	All back to EU, partially for RDR, partially for new CAP reforms (according to objective criteria)	All for RDP, 1% stays in the MS, the rest goes to EU and redistributed (according to objective criteria) At least 80% returns to the MS
RDR reinforcement	Accompanying measures, DA allowances (additional measures)	All measures in the RDP (included new ones proposed by MTR) (reinforcement of the planned ones)	All measures in the RDP (included new ones proposed by MTR)	Same as in Proposal II (included new ones approved by MTR)
Cofinancing	Mandatory (as in Reg. 1259/99)	No obligation	No obligation?	Expected?

new instrument of which the application is left to the Member States' will and then to proceed to the compulsory enforcement within a common framework. The resulting pressures of Member States in favour or against modulation resulted also in a continuous shift of the implementation horizon: from 2004 in the first proposal to 2006 in the January 2003 proposal and 2005 in the approved version.

It is difficult to trace a consistent logic from the criteria and objectives of the proposed modulation versions. In the voluntary modulation scheme, each Member State could

choose among three different criteria aimed at an equitable reduction of DP. The first proposal of MTR was based on a double action: a cut from 3 to 20% of total DP in 7 years and a capping at 300,000 euro. The second proposal was based only on a cut from 3 to 19% in 7 years. Finally, the approved proposal is based on a rather reduced cut, only from 3 to 5% in 3 years. The franchise in the case of voluntary modulation was left to the discretion of Member States. With the first two proposals under MTR the Commission considered criteria such as labour intensity and a more equitable restitution of resources. These proposals were abandoned in favour of a very simple solution of a franchise at 5000 euro, with the more direct and realistic objective to exclude little farmers from modulation. Regulation n. 1782/2003 talks about a "supplementary aid" to farmers, calculated as a "restitution" to farmers after the modulation cut and tied to the threshold of DP under 5000 euro. Nonetheless, it could be easily turned into a simple "franchise", with no big effect on the quantity of resources modulated for each farm. Looking at the resource distribution, criteria are quite different among proposals: modulation was progressively intended as a tool to shift resources from one pillar to the other according to equity criteria. This shift implies different institutions involved and redistribution criteria: should revenues remain within the Member State where they were raised or should they go back to EU and redistributed according to fiscal equity? And, within each Member State, should money stay in the area where raised, or should it be redistributed according to "solidarity" criteria? The Commission tried to find a compromise between the two different views. In the first proposal, revenues from capping stay in the Member State and progressive cuts were supposed to go back to EU. The second proposal featured a full return to EU. Finally, the Commission chose to fix a ratio of return to the Member State (1% point of the cut) and a threshold at 80% of the total cut.

6.4. THE REINFORCEMENT OF THE SECOND PILLAR

Given the picture drown in the Section 6.3, the next step is to focus on the main objective of modulation: the reinforcement of the second pillar at the expense of the first one. Even this original objective of shifting resources has been debated in the course of the reform debate. For example, in January 2003, the Commission proposed to keep within pillar 1 part of the resources coming from modulation in order to finance urgent CMO reforms (Commission of the EU, 2003).

It is not easy to analyse the effect of the different modulation versions on resource shifts. A proxy can be obtained from the ratio of resources saved with modulation to the total amount of resources planned for RD Regulation (RDR). Given the voluntary nature of current modulation, information on its effectiveness can be taken only from the implemented cases and some preliminary country-based studies, such as England, Wales and Italy. The case of France is rather specific since France was supposed to use modulation revenues to finance the territorial contracts. For this, a goal of 1 million euro to be raised with modulation was established.

The English RDP for the 2000–06 planning period assigns resources raised with voluntary modulation to agri-environmental measures. As reported in Table 6.2, resources seem quite significant when compared to the total amount of resources of the plan and

Table 6.2: Ratio of modulation revenues to RDR resources (%).

	England	**Wales**	**Italy**[a]
Total RDP	36.1	40.6	27.1
Financed measures	57.2	80.0	35.7

Source: national RDPs and INEA.
[a]Not implemented, simulation based on most effective hypothesis.

even more when compared to the resources planned only for agri-environmental measures. The same is for Walsh RDP, where the ratio of modulation revenues to measures financed within the plan is 80%. As for Italy, modulation was not implemented but studies on its implications show that the share of funds coming from different (hypothetical) applications of modulation was in any case quite significant compared to the total resources planned for RDPs.

The first proposal of modulation in MTR (July 2002) was certainly the most effective in reinforcing the second pillar: the whole revenues were devoted to RD policies and the cut of DP was the highest ever proposed (capping, plus 3–20% cut). Analysis has been done on the database provided by the EU in 2002. The database refers to DP in 2000. It does neither take into account the MTR, nor the full implementation of Agenda 2000. However, this database is the only one circulating at the official level with a reliable distribution of DP per class of direct aids.

As shown in Figure 6.1, there is a striking difference between the first proposal and the others in terms of resources shifted from pillar 1 to pillar 2. Besides, given the double mechanism of reduction of DP through capping and progressive cuts, this proposal was also the most effective in terms of changing resource distribution among Member States. The January 2003 proposal was rather weak in terms of RD reinforcement, not only in the amount of money raised, but especially in the definition of the tasks and the utilisation of resources. As said before, for the first time a new objective of modulation was introduced: the need to set aside financial resources in order to face new CMOs reforms. Especially after the Agreement of Brussels about the budget perspectives of the new enlarged EU

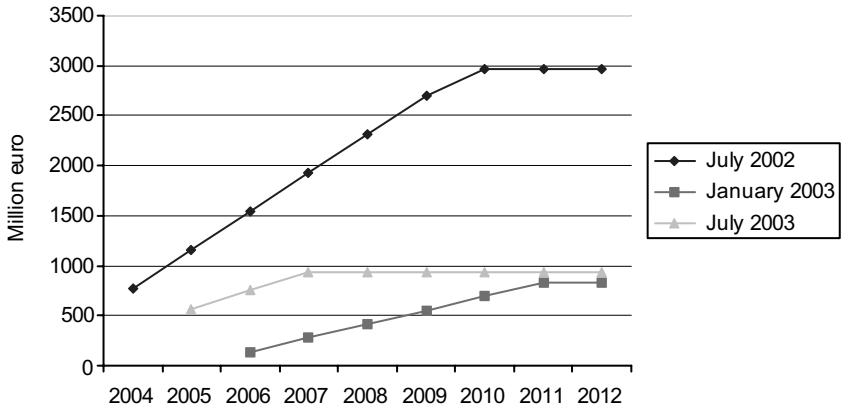

Figure 6.1: RDR reinforcement according to modulation proposals.

(2007–2013), the financial constraints of the CAP were clearly highlighted, so that it was necessary to cut expenses somewhere to finance new—rather expensive—reforms, like in case of milk and sugar.

With the finally approved reform, which is quite simple and direct, the EU Commission went back to the original purpose of modulation, giving up the idea of saving money for reforms. Compared to the complicated January 2003 proposal, the path is quite flat and straightforward: modulation starts one year earlier, cuts go from 3 to 5% and from 2007 on it will stabilise at that level.

In Table 6.3 the average annual amounts of planned resources for RDP by Member State are compared to the revenues that the approved modulation may shift to the second pillar (Mantino, 2003a,b). A rate of 5% of the DP amounts has been assumed. Data projected at 2006 have been used (originated by the Commission), fully including Agenda 2000 and the MTR reform. On average for the EU-15, modulation raises funds for pillar two that equal to 25% of the total amount the EU spending on RDPs coming for EAGGF-Guarantee, that is national top ups and co-financing are not included. This average value hides a huge variability within Member States: it goes from 6% in the case of Finland up to 73% in the case of UK.

It is important to underline that compulsory modulation, in all its versions, intends to reinforce all measures in the RDP, not only accompanying measures and allowances for disadvantaged areas. This opportunity to add resources coming from modulation to the whole set of 22 measures available in RDP is, in fact, offered only to Non-Objective 1 Regions. Objective 1 Regions can still add resources only to the former accompanying measures and allowances for disadvantaged areas, so basically for them the menu has remained the same.

Table 6.3: Contribution of approved modulation to RDPs (EAGGF-Guarantee).

	RDPs 2000–06 (million euro)	Annual RDPs (million euro)	Modulation (million euro)	Mod/RDPs (%)
Belgium	360.2	51.5	12.7	24.7
Denmark	336.4	48.1	22.9	47.7
Germany	5269.4	752.8	158.3	21.0
Greece	993.4	141.9	56.9	49.8
Spain	3481.0	497.3	198.4	39.9
France	5086.6	726.7	246.8	34.0
Ireland	2388.9	341.3	32.2	9.4
Italy	4512.3	644.6	136.5	21.2
Luxembourg	91.0	13.0	1.1	8.8
Netherlands	417.0	59.6	24.9	41.8
Austria	3208.1	458.3	40.4	9.0
Portugal	1516.8	216.7	47.0	21.7
Finland	2199.3	314.2	19.0	6.1
Sweden	1130.1	161.4	23.3	14.4
UK	1167.5	166.8	121.3	72.7
EU-15	32,157.9	4594.0	1141.8	24.9

Source: elaboration on European Commission and INEA data.

6.5. REDISTRIBUTION EFFECTS AMONG MEMBER STATES

In this section, the redistribution effects of the approved modulation among Member States is analysed. Data refer to the projection of the EU Commission for 2006, that is both Agenda 2000 and the de-coupling of DP included in the single payment scheme fully implemented. Data in Table 6.4 and Figure 6.2 show that, generally speaking, Mediterranean Countries such as Greece (70% of total DP), Portugal (62%) and Italy (52%) have the highest ratio of farms touching less than 5000 euro of DP, followed by Austria (57%) and Finland (51%). This is due to either the relatively small dimension of farms in these countries and the production structure, which is less oriented to products leading to DP support. On the other extreme, UK shows only 15.4% of its DP under the threshold of 5000 euro, France 21%, Germany 24.8%.

According to the July 2003 agreement, the amount of resources equal to 1% point of the modulation rate will be kept in the Member State. The rest will return to the EU and will be redistributed to Member States following "objective criteria" indicated by the Commission. The criteria are the share of agricultural employment (35%), the share of UAA (65%) and the per capita GDP. This means that, since modulation rate will increase in the first 3 years (from 3 to 5%) the share of resources kept in the Member State will proportionally decrease, from 33 to 20%, in favour of the share redistributed by the EU (Table 6.5). In 2007 (and following years), revenues form modulation should amount to slightly less than 1200 million euro, of which about 228 million will stay in Member States and the rest (around 913 million euro) will return to the EU and distributed according to the objective criteria.

Given the franchise at 5000 euro, and because of the highly heterogeneous distribution of DP among Member States, the actual rate of modulation will be constantly lower than

Table 6.4: Direct payments by member State (2006).

	a—DP, Total (million euro)	b—DP, < 5000 euro (million euro)	c—DP, >5000 euro (million euro)	d, b/a (%)
Belgium	503.8	143.9	359.9	28.6
Denmark	996.9	258.4	738.5	25.9
Germany	5380.9	1332.8	4048.1	24.8
Greece	1936.8	1361.4	575.4	70.3
Spain	4809.1	1869.0	2940.1	38.9
France	8354.4	1757.7	6596.7	21.0
Ireland	1255.7	503.9	751.8	40.1
Italy	3910.5	2039.3	1871.2	52.1
Luxembourg	29.5	6.7	22.8	22.7
Netherlands	705.5	227.9	477.6	32.3
Austria	696.5	399.1	297.4	57.3
Portugal	582.0	361.5	220.5	62.1
Finland	528.4	268.6	259.8	50.8
Sweden	718.0	219.2	498.8	30.5
UK	3755.6	578.8	3176.8	15.4
EU-15	34,163.8	11,328.1	22,835.7	33.2

Source: Council Working Party (2003).

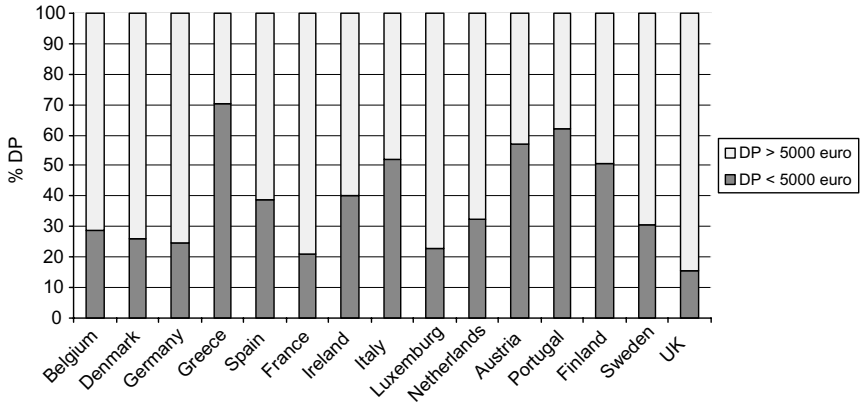

Figure 6.2: Composition of DP by member State (%).

the nominal one. These differences will vary according to Member States (Table 6.6). In the first year, when the nominal modulation rate is 3%, the actual one will range from 0.9 in Greece to 2.5 in UK. In 2007, with a nominal modulation rate of 5%, the actual rate in the same countries will range from 1.5 to 4.2%.

Looking at the revenues from modulation returning to the EU (equal to 80% of total resources from modulation in 2007 and following years), the Commission has indicated the so-called "objective criteria" of distribution. These were followed in the distribution of

Table 6.5: Modulation of direct payments by member State (million euro).

	3% (2005)			**4% (2006)**			**5% (2007)**		
	Total	**MS (33%)**	**EU (67%)**	**Total**	**MS (25%)**	**EU (75%)**	**Total**	**MS (20%)**	**EU (80%)**
Belgium	10.8	3.6	7.2	14.4	3.6	10.8	18.0	3.6	14.4
Denmark	22.2	7.4	14.8	29.5	7.4	22.2	36.9	7.4	29.5
Germany	121.4	40.5	81.0	161.9	40.5	121.4	202.4	40.5	161.9
Greece	17.3	5.8	11.5	23.0	5.8	17.3	28.8	5.8	23.0
Spain	88.2	29.4	58.8	117.6	29.4	88.2	147.0	29.4	117.6
France	197.9	66.0	131.9	263.9	66.0	197.9	329.8	66.0	263.9
Ireland	22.6	7.5	15.0	30.1	7.5	22.6	37.6	7.5	30.1
Italy	56.1	18.7	37.4	74.8	18.7	56.1	93.6	18.7	74.8
Luxembourg	0.7	0.2	0.5	0.9	0.2	0.7	1.1	0.2	0.9
The Netherlands	14.3	4.8	9.6	19.1	4.8	14.3	23.9	4.8	19.1
Austria	8.9	3.0	5.9	11.9	3.0	8.9	14.9	3.0	11.9
Portugal	6.6	2.2	4.4	8.8	2.2	6.6	11.0	2.2	8.8
Finland	7.8	2.6	5.2	10.4	2.6	7.8	13.0	2.6	10.4
Sweden	15.0	5.0	10.0	20.0	5.0	15.0	24.9	5.0	20.0
UK	95.3	31.8	63.5	127.1	31.8	95.3	158.8	31.8	127.1
EU-15	685.1	228.4	456.7	913.4	228.4	685.1	1 141.8	228.4	913.4

Source: elaboration on data by Council Working Party (2003).

Table 6.6: Effective rate of modulation per member State (total cuts in million euro).

	Mod. 3%		Mod. 4%		Mod. 5%	
	Total cut	**% Cut DP**	**Total cut**	**% Cut DP**	**Total cut**	**% Cut DP**
Belgium	10.8	2.1	14.4	2.9	18.0	3.6
Denmark	22.2	2.2	29.5	3.0	36.9	3.7
Germany	121.4	2.3	161.9	3.0	202.4	3.8
Greece	17.3	0.9	23.0	1.2	28.8	1.5
Spain	88.2	1.8	117.6	2.4	147.0	3.1
France	197.9	2.4	263.9	3.2	329.8	3.9
Ireland	22.6	1.8	30.1	2.4	37.6	3.0
Italy	56.1	1.4	74.8	1.9	93.6	2.4
Luxembourg	0.7	2.3	0.9	3.1	1.1	3.9
The Netherlands	14.3	2.0	19.1	2.7	23.9	3.4
Austria	8.9	1.3	11.9	1.7	14.9	2.1
Portugal	6.6	1.1	8.8	1.5	11.0	1.9
Finland	7.8	1.5	10.4	2.0	13.0	2.5
Sweden	15.0	2.1	20.0	2.8	24.9	3.5
UK	95.3	2.5	127.1	3.4	158.8	4.2
EU-15	685.1	2.0	913.4	2.7	1141.8	3.3

Source: elaboration on data by Council Working Party (2003).

resources for SAPARD for New Member States and used to allocate resources in the next planning period of RDR.

The impact of distribution criteria is reported in the first column of Table 6.7: the main beneficiary is France (19.8%), followed by Spain (18.5%), Italy and Germany (both with 12.9%). Following these criteria, the "restitution" in terms of additional funds for RDR supplied to each Member State is reported in the second column.

Table 6.7: Redistribution of cuts from modulation—EU quota—2007.

	EU criteria (%)	**Restitution (million euro)**	**DP cut (million euro)**	**Difference (million euro)**
Belgium	1.0	9.1	14.4	−5.3
Denmark	1.7	15.5	29.5	−14.0
Germany	12.9	117.8	161.9	−44.1
Greece	5.6	51.2	23.0	28.1
Spain	18.5	169.0	117.6	51.4
France	19.8	180.9	263.9	−83.0
Ireland	2.7	24.7	30.1	−5.4
Italy	12.9	117.8	74.8	43.0
Luxembourg	0.1	0.9	0.9	0.0
The Netherlands	2.2	20.1	19.1	1.0
Austria	4.1	37.5	11.9	25.6
Portugal	4.9	44.8	8.8	35.9
Finland	1.8	16.4	10.4	6.0
Sweden	2.0	18.3	20.0	−1.7
UK	9.8	89.5	127.1	−37.6
EU-15	100.0	913.4	913.4	0.0

Source: elaboration on data by Council Working Party (2003).

Some Member States will be net beneficiaries of the whole process of modulation, while others will be the actual payers. More in detail, the net payers are Germany (−44.1 million euro), France (−83 million euro) and UK (−37.6 million euro), while net beneficiaries are Spain (51.4 million euro), Italy (43 million euro) and Greece (28.1 million euro). A potentially relevant redistribution effect is featured, however, it can be mitigated by the decision of the Commission to establish a threshold of restitution of at least 80% of the total amounts generated by modulation in a Member State.

Table 6.8 displays the overall rate of restitution for each Member State. The figures show that for some countries, the ratio of restitution to the total cut of modulation is less than 80% (Belgium, Denmark, Germany, France, UK). For these countries, the theoretical restitution so as to achieve the threshold of 80% indicated in the approved scheme of modulation is displayed in the table. According to what was established in the agreement, some sort of compensation should be provided for those partners.

Finally, the distribution effect of the approved modulation is compared with the potential effects of the previous ones. In the case of the July 2002 proposal, the distribution effect was rather powerful, given the capping mechanism and the high rate of modulation on aids above 5000 euro. For this reason, this type of modulation particularly hits countries with large farms specialised in products that enjoy DP support: Germany and, to a lesser extent, France and UK. Concerning the modulation proposal of January 2003, it is worth distinguishing between the contribution to RD and the contribution to future reforms. In the RD distribution case, net contributors would have been once again France, Germany, UK, while beneficiaries would have been roughly all the Mediterranean Countries. In the latter case, assuming a distribution of resources for milk and sugar reforms, the situation would be quite different. The main beneficiaries would have been Germany, Italy, Belgium, Netherlands, Austria, while the main net contributors would be Spain, France and UK.

Table 6.8: Return to member States of modulated resources.

	Total restitution (million euro)	**Total cut (million euro)**	**Restitution/cut (%)**	**80% threshold (million euro)**
Belgium	12.7	18.0	70.8	14.4
Denmark	22.9	36.9	62.1	29.5
Germany	158.3	202.4	78.2	161.9
Greece	56.9	28.8	197.8	–
Spain	198.4	147.0	135.0	–
France	246.8	329.8	74.8	263.9
Ireland	32.2	37.6	85.6	–
Italy	136.5	93.6	145.9	–
Luxembourg	1.1	1.1	100.1	–
Netherlands	24.9	23.9	104.2	–
Austria	40.4	14.9	271.9	–
Portugal	47.0	11.0	426.0	–
Finland	19.0	13.0	146.6	–
Sweden	23.3	24.9	93.3	–
UK	121.3	158.8	76.4	127.1
EU-15	–	–	–	–

Source: elaboration on data by Council Working Party (2003).

6.6. CONCLUSIONS

It is quite hard to come to conclusions about modulation, given the fact that this tool is new within the CAP tool-box and has undergone a quick process of changes. None the less, some conclusions can be made. First of all, modulation represents a new and innovative instrument in the panorama of the traditional tools set up by the EU. It is selective, flexible and addresses relevant issues of the new CAP. It is the only instrument, so far, that realises a real transfer of resources from pillar 1 to pillar 2, thus addressing one of the issues emerged with the Conference of Cork and very often stressed since then: the imbalance among pillars of the CAP.

More in general, a sort of common path followed by the Commission in the long and complex CAP process of reform can be highlighted. A new instrument is firstly tasted and introduced on a voluntary base, with limited effects, then progressively turned into compulsory and made more stringent. In the case of modulation, no matter its level and rationale of implementation, its approval in a compulsory form is a historical change for the CAP. Together with conditionality, the message undergone is that DP, no matter if de-coupled or not, are not granted forever, and that they need to be connected to some sort of "good behaviour". Revenues of modulation are, in fact, used to improve other more sustainable form of subsidies for rural areas.

Modulation is by its nature a temporary instrument that makes sense only in the process of reorienting and reducing DP. It may lose its reason to exist once the second pillar has reached a proper level of financial support and DP have been reduced and redistributed among Member States. However, whoever has followed the CAP history, knows very well what "temporary" means in the CAP language. Decisions about de-coupling may give an indirect help in this analysis. De-coupled payments are much more difficult to justify in front of the public opinion, so the shift form partial to totally de-coupled payments could be the first step towards a drastic reduction or a more visible reorientation of the CAP support.

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PART III

Formalisation of the links between institutions and policy

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 7

Rules and Equilibria: A Formal Conceptualisation of Institutions with an Application to Norwegian Agricultural Policy Making

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Abstract

For more than 50 years, the agricultural policy decision-making in Norway has granted the farmers' organisations the legal and exclusive right to enter into negotiations with the government about direct budget support and administrative prices. The institution of Norwegian agricultural policy formation is studied within a game-theoretic framework. This framework is based on two views of institutions: institution as rules and institutions as equilibria. On the theoretical side, this chapter provides evidence that viewing institutions as both rules and equilibria facilitates comparative institutional analysis. On the applied side, several reasons for the persistence of agricultural policy formation in Norway are identified.

7.1. INTRODUCTION

Although most economists seem to agree that "institutions matter," different definitions and uses of the term "institution" still prevail in the literature. Proponents of the "institutions-as-rules" view perceive institutions as the humanly devised constraints that define and limit the choice sets of individuals. In a game-theoretic framework, the players' choice sets and payoffs are constrained by the institution. The players are unable to change the institution (i.e., the rules of the game) while the game is played. Advocates of the

"institutions-as-equilibria" view an institution as an equilibrium established as a result of a repeatedly played game. Players shape institutions through their strategic interaction. The two perspectives are closely inter-related as both study the relationship between "human-made" constraints and the players' strategic interaction. They differ considerably, however, with respect to the causal connection between human-made constraints and the players' strategic interaction. While proponents of the institutions-as-rules view seem to focus on the impact of human-made constraints on the (equilibrium) behaviour of individuals, advocates of the institutions-as-equilibria view study how equilibrium behaviour leads to the establishment of human-made constraints.

In this chapter a framework is presented in which a game is made up of two levels: an institution-forming level, and an institution-dependent level. At the institution-forming level, players play a sub-game about rules that define sub-games to be played at the institution-dependent level. That is, the game at the first level is precisely a "game about rules". At the institution-dependent level, players play one of the sub-games defined at the preceding level. A game at the institution-dependent level becomes a "game constrained by the rules formed in the game about rules". Formally, an institution is defined as an ordered pair, consisting of: (1) the rules of a specific sub-game at the institution-dependent level, and (2) the equilibrium strategies of that specific sub-game.

The framework is applied to Norwegian agricultural policy-making. Unlike the decision-making process in many developed countries of the Western world, farmers' organisations in Norway are granted the legal and exclusive right to enter annual negotiations over the level and means of agricultural budget support measures. This right was established in 1950 in the so-called basic agreement for agriculture (BAA) as a means of holding farmers' organisations partly responsible for agricultural policy measures in return for exclusive access to the political arena. The institution-forming level of this framework is modelled as a sub-game (called the "rules game") in which the farmers' organisations and the government are the two players. Each player has the choice to continue or to abolish the BAA. This leads to two different "rules of the rules game": if both players continue the BAA, negotiations take place; if at least one player abolishes the BAA, the decision about the level and means of agricultural budget support is transferred to the parliament. These two rules make up two sub-games at the institution-dependent level. The entire policy decision-making process is modelled as a repeated game in which the two levels are repeatedly played.

For political reasons, as the BAA was shaped in a period of very favourable political conditions for the agricultural sector, it is assumed that once a player has chosen to abolish the BAA, it is not possible to return to the BAA at any later stage. The forces and conditions that maintain the particular policy decision-making process in Norway are examined.

The overall aim of this chapter is two-fold. On the theoretical side, the institutions-as-rules view and the institutions-as-equilibria view are synthesised by presenting a game-theoretic framework in which institutions are conceptualised as rules about the kind of game to be played *and* equilibria of the game. The second aim is to apply the framework to the particular case of Norwegian agricultural policy making in order to study reasons for the persistence of Norwegian agricultural policy formation. This application does not

necessarily result in new insights about policy formation in Norway. At this State of our research, only the applicability of the framework for applied policy analysis is shown.

7.2. THE INSTITUTIONAL STRUCTURE OF NORWEGIAN AGRICULTURAL POLICY FORMATION

The agricultural sector in Norway is subject to extensive government intervention. This comes as no surprise as the agricultural sector in most developed countries in the Western world is highly regulated and subsidised. As in many other countries, agricultural policy decision-making in Norway involves farmers' organisations, other interest groups with concerns in agricultural matters (e.g., organisations of the food processing industry, taxpayer organisations), government officials, bureaucrats, and politicians. Contrary to many other countries, however, the most important means by which Norwegian farmers exercise their influence is formally institutionalised in the so-called BAA.

The BAA was established in 1950, a period characterised by rebuilding the Norwegian economy after the devastation of the Second World War, and favourable political conditions for the special interests groups of the agricultural sector. The BAA grants the two Norwegian farmers' organisations (The Norwegian Farmers' Union and the Norwegian Farmers' and Smallholders' Union) the legal and exclusive right to enter annual negotiations over agricultural support measures. The BAA excludes all other interest groups from taking part in the agricultural negotiations. This feature places the Norwegian model into the corporatist view of interest representation as it constitutes "a monopoly of representational activity" (Schmitter, 1970).

Before the start of the actual negotiations, the Budget Committee for Agriculture (known as the BFJ (from Budsjettnemnda for jordbruket)) provides statistical background material on the country's agricultural situation. This material provides "objective" information approved by the government and the farmers' organisations. According to Steen (1988), the procurement of objective information is another important element of the corporatist model. In addition, it reduces the amount of asymmetric information between the parties involved.

Figure 7.1 gives an overview of the process leading to new agreements. Negotiations have three inputs: statistical data from the BFJ, offers from the government, and claims of the agricultural negotiators. The result of negotiations is a binding agreement (a so-called "set of agreements for agriculture") that has to be finally approved by the parliament. This manner of legal influence in the agricultural policy decision-making process distinguishes Norwegian farmers' organisations from farm interest groups in many other countries. There are, of course, examples of countries where farm interest groups have close ties to governments and other agricultural authorities. Salhofer et al. (1998) highlight the important role that an informal network plays in Austrian agriculture. The network, consisting of major agricultural organisations, advises the government and co-ordinates the policy decision-making process. Van der Zee (1997) argues similarly with respect to EU agricultural policy making. The main difference, however, lies in the fact that the BAA *as a matter of law* discriminates between interest groups in the agricultural policy decision-making process in Norway.

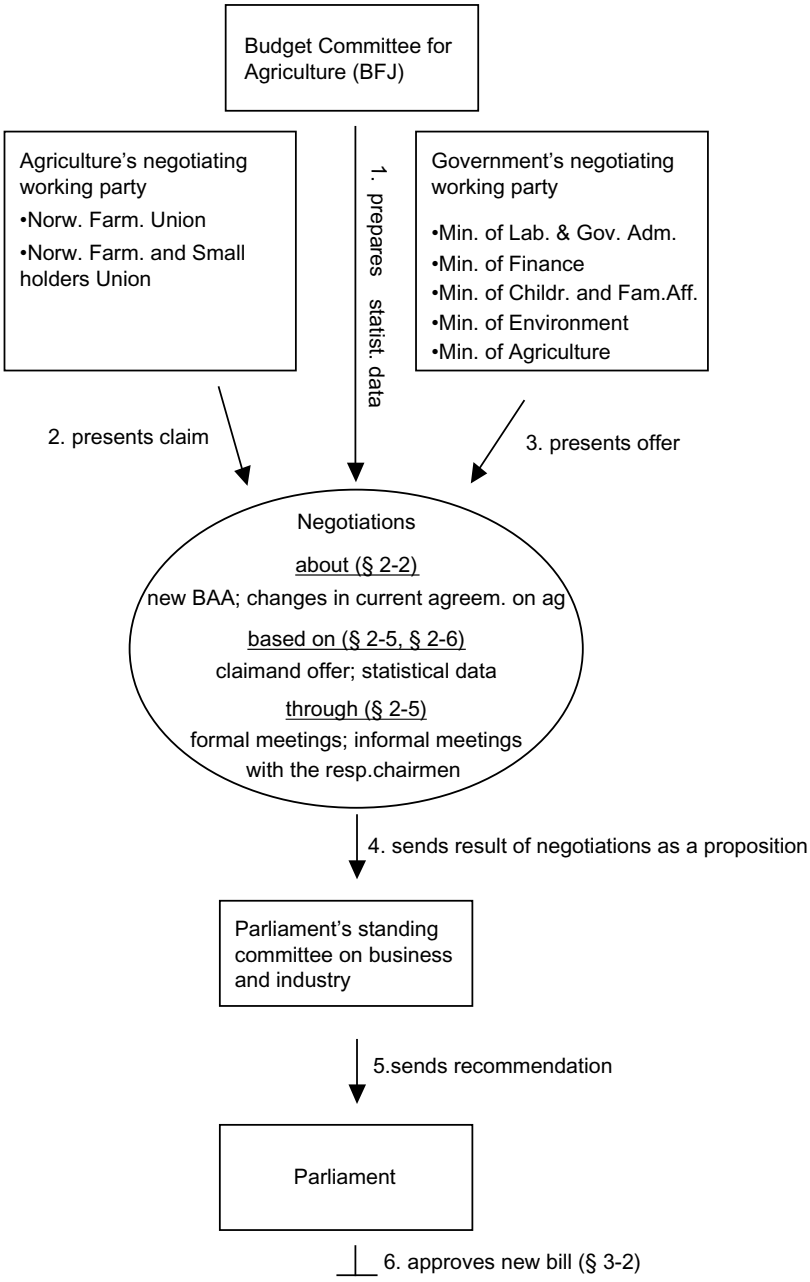

Figure 7.1: Sketch of the basic agricultural agreement (BAA).

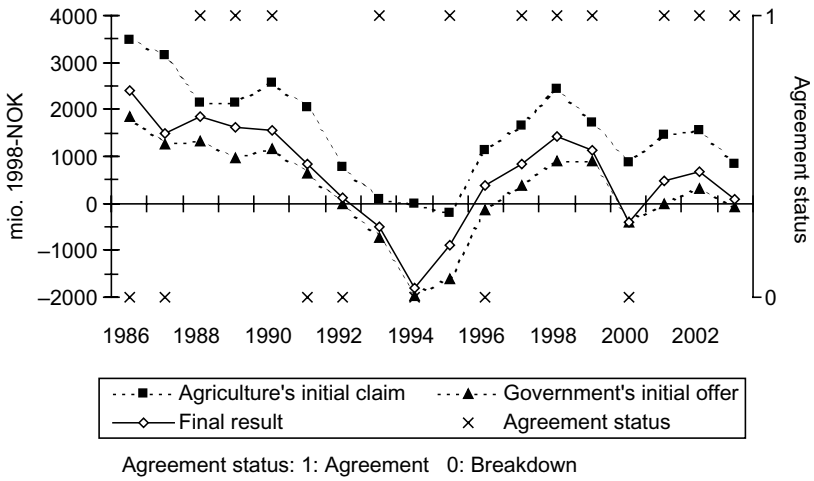

Figure 7.2: Key figures for the BAA 1986–2003.

The negotiations may end in agreement or disagreement. In case of agreement, the set of agreements for agriculture is passed on to the parliament for final approval. If the negotiations break down, the government sends its own proposal, which is often based on the first offer, to the parliament. In any case, the parliament has to approve the final outcome. Approval validates use of the (new) agricultural policy instruments for the coming year. Many support measures are, however, annually re-validated, with prolonged use over several years or even decades. The farmers' very right to negotiate is in principle not affected by whether agreement is reached or not. There is, however, strong pressure by the parliament to reach agreement.

Figure 7.2 identifies key figures for the development of the BAA over the last two decades. The left-hand axis measures the change in the value of government support measures for Norwegian farmers. Without exception, the final result is bounded below by government's initial offer and bounded above by agriculture's initial offer. The right-hand axis indicates whether agreement was reached (1) or the negotiations broke down (2). The period before 1990 is characterised by stable and significant increases in budget support (including increases in administrative prices). In the first half of the 1990s, talks broke frequently down and the final result tended to lie close to government's initial offer. This period culminated in 1995, when even the agricultural organisations proposed to cut the amount of budget support in the aftermath of Norway's negative vote in the EU-membership referendum. Since that time, negotiations have tended to result in agreement, and the overall amount of budget support has steadily increased.

7.3. PRESENTATION OF THE FORMAL FRAMEWORK

The basic idea of the game-theoretic framework is that players form rules (which become common knowledge) in the first level of the game by choosing institution-forming sub-strategy combinations. Together with other parameters, a rule then defines a sub-game

(i.e., the relevant players, their strategies and corresponding payoff functions) to be played at the second level of a game with institutions (i.e., the institution-dependent level). In this context, an institution is defined as consisting of the rules defining a sub-game of the institution-dependent level, and of an equilibrium strategy of the institution-dependent level. Splitting up the institutional game this way formalises the idea that institutions are endogenously created by the players through their interaction, but—once established—become exogenous constraints for each player.

Consider a game in strategic form given by $\Gamma = (N, S, \pi)$, where $N = \{1, \ldots, n\}$ is a set of players, $S = S_1 \times \cdots \times S_n$ is the (pure) strategy space of the game, and $\pi = (\pi_1, \ldots, \pi_n) \in \Pi$ is a vector of payoff functions for the players with Π being the payoff space. A player i's payoff function $\pi_i : S \rightarrow \Re$ shows how all players' strategies combine to determine player i's utility. Any game in strategic form has a corresponding game form (or "mechanism") in strategic form. The game form corresponding to the (strategic form) game Γ is given by $G = (N, S, \mathbf{h})$, where $\mathbf{h} = (h_1, \ldots, h_n)$ is a vector of outcome functions for the players. A player i's outcome function h_i shows how the strategies of all players combine to affect the (physical) outcome z_i that player i experiences (Hurwicz, 1994, 1998). An outcome "is a set of interesting elements that the modeller picks from the values of actions, payoffs, and other variables after the game is played out" (Rasmusen, 1989).

A player's strategy is a plan for choosing moves at each of that player's information sets in a game. In the institutional game developed in this chapter, a particular strategy $\mathbf{s}^{D'}$ at the institution-dependent level can only be reached if a particular strategy $\mathbf{s}^{F'}$ has been chosen at the institution-forming level. We call any such pair $(\mathbf{s}^{D'}, \mathbf{s}^{F'})$ a feasible pure strategy combination for the entire game with institutions, and denote it by $\mathbf{s}'$. Let S be the set of all feasible pure strategy combinations with $\mathbf{s}$ being a generic element of S. S can be defined as the Cartesian product of the sub-strategy spaces S^F and S^D, i.e., $S = S^F \times S^D$. The set of feasible pure strategy combinations for a game with institutions can also be written as $S = \{(\mathbf{s}^F, \mathbf{s}^D) : \mathbf{s}^F \in S^F, \text{ and } \mathbf{s}^D \in S^D\}$.

Every player $i \in N$ has a set of imaginable (physical) outcomes Z_i. An element $\mathbf{z}_i \in Z_i$ is called an outcome. An outcome may be, but need not be a payoff. We think of player i's outcome as being his or her (physical) State at the end of the game. So, $\mathbf{z}_i$ will typically be a vector. We will refer to $Z = Z_1 \times \cdots \times Z_n$ as outcome space with $\mathbf{z} \in Z$ being a generic element of Z. Let $\mathbf{h} : S \rightarrow Z$ be the vector of outcome functions, which describe how players' outcomes are related to pure strategy combinations. Then a generic vector of outcome functions would be $\mathbf{h}(\mathbf{s}^F, \mathbf{s}^D) = \mathbf{z}$. In a similar fashion, an intermediate outcome $\mathbf{z}^F$ is defined as the outcome at the end of the institution-forming level of the game. Following the definition of an outcome by Rasmusen (1989), an intermediate outcome could be defined as "a set of interesting elements that the modeler picks from the values of actions and other variables while the game is still being played". Z^F is referred to as intermediate outcome space with $\mathbf{z}^F \in Z^F$ being a generic element of Z^F. Let $\mathbf{h}^F : S^F \rightarrow Z^F$ be the intermediate outcome function, which describes how players' intermediate outcomes are related to pure sub-strategy combinations at the first level of a game with institutions. Then a generic intermediate outcome would be $\mathbf{z}^F = h^F(\mathbf{s}^F)$. Contrary to the definition of (final) outcome $\mathbf{z}$ that may contain all kinds of information, we presuppose that $\mathbf{z}^F$ only contains information about the endogenously created rules of the sub-game at the institution-forming level. That is, information about the environment

(e.g., technologies, the players' utility functions) is not assumed contained in $\mathbf{z}^{\mathrm{F}}$. Every intermediate outcome $\mathbf{z}^{\mathrm{F}}$ is associated with one and only one sub-game denoted by $\Gamma^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}) = (N^{*}(\mathbf{z}^{\mathrm{F}}),\ S^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}),\ \pi^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}))$, which has a corresponding sub-game form $G^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}) = (N^{*}(\mathbf{z}^{\mathrm{F}}),\ S^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}),\ h^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}))$. Sub-game $\Gamma^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}})$ is played at the second level of a game with institutions, and it depends on $\mathbf{z}^{\mathrm{F}}$. Consequently, the number of sub-games at the second level corresponds to the number of elements in Z^{F}. Since $\mathbf{z}^{\mathrm{F}} = h^{\mathrm{F}}(\mathbf{s}^{\mathrm{F}})$, a sub-game $\Gamma^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}}) = \Gamma^{\mathrm{D}}(h^{\mathrm{F}}(\mathbf{s}^{\mathrm{F}}))$ depends on the strategy $\mathbf{s}^{\mathrm{F}}$ played at the institution-forming level. That is, $\mathbf{s}^{\mathrm{F}}$ is the unique strategy that has been played at the institution-forming level in order to reach sub-game $\Gamma^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}})$. Strategy $\mathbf{s}^{\mathrm{F}}$ defines the endogenously created institutional rules that govern $\Gamma^{\mathrm{D}}(\mathbf{z}^{\mathrm{F}})$. This term refers to the basic idea of the institution-forming level being a sub-game about rules. These rules are denoted $(\Gamma^{\mathrm{D}}|\mathbf{z}^{\mathrm{F}})$. In other words, $(\Gamma^{\mathrm{D}}|\mathbf{z}^{\mathrm{F}})$ means that the rules (i.e., the common "institutional" knowledge about Γ^{D}) contained in intermediate outcome $\mathbf{z}^{\mathrm{F}}$ govern sub-game Γ^{D}.

Payoffs to player i depend on outcomes according to the utility function $u_i : Z \rightarrow \Pi_i$. If a player is neither altruistic nor envious, then only his/her own physical outcomes affect his/her utility, so more specifically $u_i : Z_i \rightarrow \Pi_i$. Calling payoff space $\Pi = \Pi_1 \times \Pi_2 \cdots \times \Pi_n$, the vector of von Neumann-Morgenstern utility functions $\mathbf{u} = (u_1, \ldots, u_n)$ maps physical outcome space into payoff space: $\mathbf{u} : Z \rightarrow \Pi$. Payoffs are dependent upon strategies according to the payoff function for player i: $\pi_i = u_i(\mathbf{h}(\mathbf{s}^{\mathrm{F}}, \mathbf{s}^{\mathrm{D}}))$. Letting the vector of payoff functions be $\pi = (\pi_1, \ldots, \pi_n)$, we have $\pi = \mathbf{u} \circ \mathbf{h} : S \rightarrow \Pi$. This is similar to an outcome function treatment by Hurwicz (1996).

To complete the formal framework, the environment $\mathbf{e}$ of the game is defined as a vector including initial endowments, technologies, the players' utility functions and institutions outside the present game. For example, for some games it may be useful to assume the pre-existence of private property rights. In such a case, the institution defining private property rights then will be an element of the (exogenous) environment. This treatment of institutions is based on Aoki (2001) and follows the idea that every game is embedded in some broader social context involving the existence other institutions outside the analysed game.

For the institutional game $\Gamma = (N, S^{\mathrm{F}}, S^{\mathrm{D}}, \pi)$, an *institution* is a pair $((\Gamma^{\mathrm{D}}|\mathbf{z}^{\mathrm{F}}),\ S^{\mathrm{D_E}})$, where $(\Gamma^{\mathrm{D}}|\mathbf{z}^{\mathrm{F}})$ is a rule (or a set of rules) governing the sub-game at the institution-dependent level, and $\mathbf{s}^{\mathrm{D_E}}$ is an equilibrium strategy for the sub-game at the institution-dependent level.

The definition above provides a concept of an institution that includes knowledge about the equilibrium strategies in the institution-dependent part of the game. This knowledge is derived from the endogenously created "rules of the sub-game" (at the institution-forming level of the game). It is important to note that this knowledge should not be confused with knowledge about which of the possible equilibria will be chosen in the game. The problem of equilibrium selection in case of multiple equilibria has fostered a large amount of literature concerned with the refinement of the basic concept of Nash equilibrium. This issue is not addressed here, and *how* the players in fact arrive at a particular equilibrium is left open. The idea that institutions (as defined in the framework) may be useful in the process of equilibrium selection is not opposed. More research is needed on this issue. This framework—as most other non-cooperative games—aims at describing "the way the worlds looks like once the dust has settled" [or how the world may look once the dust has

settled]. But there is no attempt to describe with the framework "how the dust goes about settling" (Young, 1998). Young (1998) presents a formal theory of the emergence of institutions based on evolutionary game theory. This theory may be best suited for institutions that have "emerged from experimentation and historical accident" (Young, 1998). It may be questioned, however, whether the theory serves usefully in the study of institutions that are shaped merely through single acts such as constitutions or comprehensive policy reforms.

7.4. APPLICATION TO NORWEGIAN AGRICULTURAL POLICY MAKING

Figure 7.3 shows a graphical application of the formal framework to the BAA. The current institutional structure of policy decision-making determines the structure of the sub-game at the institution-forming level. The players are the farmers' organisations, the government and the parliament: $N^{F} = \{F, G, P\}$. A player's strategy space at the institution-forming level contains two strategies: to vote to extend the BAA (E) or to abolish it (A). More formally, $S_{F}^{F} = S_{G}^{F} = S_{P}^{F} = \{E, A\}$. The strategy space at the institution-forming level then becomes $S^{F} = S_{F}^{F} \times S_{G}^{F} \times S_{P}^{F}$ with s^{F} being a typical element of S^{F}. According to the rules laid down in the BAA, the BAA is abolished if at least one of the negotiating parties terminates the BAA. Negotiating parties are the farmers' organisations and the government. Therefore, the parliament can only indirectly abolish the BAA by instructing the government to do so. In recent years, Norwegian governments have been minority governments that could have been (and were) over-ruled by the parliament many times.

Two outcomes at the institution-forming level are possible: one outcome in which the BAA is extended by all players ($\mathbf{z}^{F_C}$), and one outcome in which at least one of the players chooses to abolish the BAA ($\mathbf{z}^{F_D}$). The two outcomes at the institution-forming level lead to two sub-games at the institution-dependent level. The continuation of the BAA

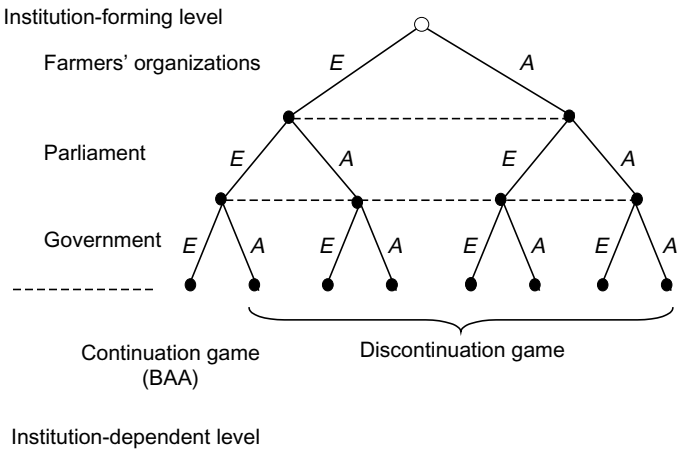

Figure 7.3: Application of the BAA to the formal framework.

constitutes a binding agreement between the parties to start negotiations—whether those end in agreement or not. We call this sub-game at the institution-dependent level the "continuation game". The discontinuation of the BAA implies that a new structure for the policy decision-making process has to be found. One of the most likely alternatives would be to treat the decision on agricultural policies together with the parliaments' overall budget negotiations in the fall each year. This alternative is based on proposals made by the Conservative Party, which recently began questioning the usefulness of the BAA, and the right-wing Progress Party, which has favored abolishing the BAA since the late 1980s. In this case, agricultural policy formation could be modelled by political competition in which the farmers' organisations are not legally favoured over other interest groups, but are expected to perform lobbying activities in line with other interest groups. Literature on interest group models originates from the seminal article by Becker (1983). Recent surveys of the use of political economy models in agricultural economics are given by Swinnen and van der Zee (1993), van der Zee (1997) and a recent example within the general economics literature comes from Dixit et al. (1997). The sub-game at the institution-dependent level that implies the termination of the BAA is called the "discontinuation game".

The outcome function at the institution-forming level can therefore be defined as $h^{\mathrm{F}} : S^{\mathrm{F}} \rightarrow Z^{\mathrm{F}}$ with

$$\mathbf{h}^{\mathrm{F}} = \begin{cases} \mathbf{z}^{\mathrm{F_C}} \text{ if } s^{\mathrm{F}} = (E, E, E) \\ \mathbf{z}^{\mathrm{F_D}} \text{otherwise} \end{cases}$$

The particular structure at the institution-forming level implies that each player alone can force the abolishment of the BAA irrespective of the strategy choices of the other players. The BAA is maintained only if all players choose to extend it.

Hereafter, the focus is to explain the persistence of the BAA, or in terms of the framework, to explain why the players have chosen to extend the BAA every year since 1950.

First, consider the choice of the farmers, and let $u_{\mathrm{F}}^{\mathrm{D}}$ denote the payoff for the farmers' organisations of the discontinuation game. The payoff for the farmers' organisations in the discontinuation game is defined as $u_{\mathrm{F}}^{\mathrm{C}}$. The term "farmers' organisations" includes their members (i.e., the farmers) as well as the representatives. For one stage, a necessary requirement for the farmers to end the BAA must be $u_{\mathrm{F}}^{\mathrm{C}} < u_{\mathrm{F}}^{\mathrm{D}}$. In this situation, the farmers' organisations obtain a higher (expected) payoff by playing the discontinuation game instead of sticking to the BAA. In reality, it is hard to see how that could be accomplished. Four personal interviews with former and current participants in the agricultural negotiations representing four different organisations indicated that the level of agricultural budget support would be lower should the BAA be abolished. In addition, the informants agreed that a decision to abolish the BAA practically would be irreversible given the current political and economic situation in Norway. This aspect hints that the BAA itself may constitute a positive option value for the farmers' organisations.

There is some empirical evidence for the existence of a positive option value for farmers. In 1995, the farmers' organisations even claimed a slight reduction in budget

support. This may indicate that the farmers' organisations value the long-term benefits of the BAA higher than a short-term disappointment, indicating the existence of an option value in case of maintaining the BAA. Abolishing the BAA possibly would provide farmers' organisations a short-run gain, because they could act more freely and substantively in opposition to the government's agricultural policy, but the long-term benefit of having a legal advantage over other interest groups in the political arena would be irretrievably lost. This situation is somewhat different from that in the investment literature using the concept of the option value (Dixit and Pindyck, 1994). Here, an irreversible investment involving immediate costs is contrasted with a long-term flow of benefits.

The basic decision for the parliament is similar to that of the farmers' organisations: the parliament is expected to abolish the BAA whenever its payoff from playing the discontinuation game is higher than the payoff of playing the discontinuation game. When the BAA was launched in 1950, the parliament was remarkably passive. The BAA was discussed in the parliament, but not even approved by the parliament. Instead, the government cabinet adopted it. This might be due to the special political conditions shortly after the Second World War, when the Norwegian Labor Party (DAP) was the leading party with an absolute majority in the parliament (85 out of 150 representatives). This indicates that the government lead by the DAP almost could have imposed its will on the parliament. The role of the parliament in the BAA continued to be rather passive until the early 1990s, when general economic conditions required rather strict budget discipline. Ever since, the parliament's resistance to the BAA has grown stronger. Today, the two conservative parties demand the abolition of the BAA.

While the parliament's strategy in the continuation sub-game at the institution-dependent level mainly consists of approving the result of the agricultural negotiations without major change, the role of the parliament in the alternative discontinuation sub-game would probably become much more active. The parliament makes the final decisions on agricultural policy matters, but may, of course, be influenced in its decisions by the government and by actions taken by different interest groups (among them being the farmers' organisations).

Similarly, the government is expected to abolish the BAA whenever such action is in its own interest. Contrary to the parliament, the government plays an active role in the discontinuation game at the institution-dependent level, because it participates in the agricultural negotiations. In the alternative discontinuation sub-game, the government also plays an important role through the execution of the agricultural policy adopted by the parliament. In this role it is also influenced by pressure from interest groups.

In explaining the persistence of the BAA, the two main questions are why the parliament seems to be pleased with its rather passive role in the policy formation process, and why the government considers the continuation of the BAA as superior compared to its discontinuation.

There may be several reasons. First, there might be preferences in Norwegian society as a whole for corporatist solutions that involve legal ties between the government and the respective sectors. This argument may explain the origin of the BAA. In 1950, the Social Democratic government was very much in favour for having close ties between the government and the industry in an attempt to plan, govern, and control the reconstruction

of the country after the suffering of the war period (Omholt, 1984). The corporatist model was viewed as a pre-condition to accomplish that goal. Today, however, times and preferences have changed. Although it might be true that Norwegians still have some preferences for the corporatist model, those preferences now appear weaker than during post-war reconstruction.

Second, there may be transaction costs in switching to a new institutional structure. Clearly, a switch in the process of policy formation is costly, and the costs are borne by non-farmers, who are expected to win from such a shift. If, however, the costs of switching are higher than the expected benefits of a new policy process (leading to a less subsidised agriculture), then one should indeed not observe lobbying activities aimed at changing the institutional structure. Significant risks are also involved in institutional change, and these provide further incentive for risk-averse groups not to try too hard to change institutions. On the other hand, it lies in the nature of lobbying that lobbying activities are difficult to observe. The (transaction) cost interpretation is probably more suitable to explain the persistence of the BAA rather than the choice of the corporatist model in 1950. This argument is one of path-dependence, based on the suggestion that the basic existence of the BAA has built up transaction costs.

Third, there might be some kind of informational disadvantage or even ignorance for non-farmers. This suggestion is based on the existence of asymmetric information. For example, in 1997 on average a Norwegian farmer received ca. 195,000 NOK in transfers, while on average a non-farmer contributed to these transfers with less than 5000 NOK. A greater economic incentive existed for farmers to be informed about agricultural support measures than existed for taxpayers and consumers. Steen (1989) provides empirical support for informational disadvantages on the side of non-farmers: in a poll from 1988, 47% of the respondents denied that domestic budget support to agriculture reduces one's own income. In her famous essay on American sugar policy, Krueger (1990) claims that "it seems highly unlikely that the electorate would support a programme that provide payments of over $136,000 per farm were that figure highly publicized". This result seems to stem from the informational disadvantage of American voters. This argument about informational disadvantage is not undisputed in the literature. Becker (1976) claims that "I find it difficult to believe that most voters are systematically fooled about the effects of policies like quotas and tariffs that have persisted for a long time. I prefer instead to assume that voters have unbiased expectations, at least of policies that have persisted."

There are some parallels between American sugar policy, and the BAA. Both concern the agricultural sector, and both have a long history. The American sugar system was established in 1934, reinforced in 1948, was briefly suspended in 1974, but was soon reinstated and is in operation today as strong as ever. It also seems unlikely that Norwegians are aware of the total social costs of Norwegian agricultural policy-although there seems to be a clear understanding about the high level of food prices and budget outlays. In 1999, Norwegian farmers received on average 240,000 NOK per man-year through domestic budget support and border measures, while the return to labour and own capital was only 136,000 NOK per man-year. Only the latter figure, which indicates lower income in agriculture compared with industry workers, is extensively published by the farmers' organisation. On the contrary, the former figure is little known. Since this

argument rests on the longevity of the BAA, it cannot explain the establishment of the BAA in 1950. Rather, it might help explain why the BAA is still in existence after more than 50 years.

The argument of informational disadvantage may also be valid for the parliament. Agricultural policy matters in Norway are a quite complicated and complex issue. Already in 1964, the parliament demanded a simplification of the system. Instead, the number of different types of subsidies increased significantly from 13 subsidies in 1958 to over 100 different measures in 2000. Doubtless, it is difficult for the parliament to keep track of the frequent changes in a complex agricultural policy.

7.5. CONCLUSIONS

The agricultural policy decision-making process in Norway differs from other industrialised countries in the Western world by granting the farmers' organisation the legal and exclusive right to enter into annual negotiations about agricultural budget subsidies and administrative prices. The system, called BAA, is seen to be an important condition in maintaining the high level of support to agriculture in Norway compared to other countries, and exemplifies that the system of policy formation in itself may affect the policy outcome.

In analysing the institutional structure of agricultural policy decision-making in Norway, we develop a novel definition of an institution placed within a game-theoretic framework. Instead of viewing institutions as either rules or equilibria, as done in most of the literature in institutional economics, we propose to define institutions as consisting of both rules and equilibria. These ideas are developed and illustrated in a game-theoretic framework, composed of two levels: the institution-forming level and the institution-dependent level. At the institution-forming level, the players decide whether to continue or discontinue the BAA. At the institution-dependent level, the players play a game about agricultural subsidies and administrative prices according to the rules, laid down at the institution-forming level.

The analysis highlights different reasons for the persistence of the BAA, placing special emphasis on parliament's informational disadvantage.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 8

Decision-Making on the Common Agricultural Policy of the EU: The Influence of the European Commission

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Abstract

A formal model is developed of a two-stage decision-making in the European Union (EU) Common Agricultural Policy. The EU decision-making procedure provides some freedom to the European Commission to influence the final policy levels. The least powerful is the Commission under simple majority voting, under which the final policy level is obtained by the median voter theorem. Under qualified majority (including unanimity), the Commission's potential to influence policy level increases. However, with the rise of qualified majority the possibility of a stalemate also increases. By using package deals, the Commission can extend its power and/or get out of the status quo. The more policies are in the package, the bigger becomes the Commission power.

8.1. INTRODUCTION

Agricultural policy remains one of the most important policy areas of the European Union (EU). Close to half of the EU budget is still spent on agriculture, which is extensively regulated in the framework of the common agricultural policy (CAP). The CAP has been subject to criticism both in terms of the budget resources it uses and in terms of the distortions it induces both internally in the EU and externally on world markets.

The persistence of the inefficient CAP instruments has induced a large literature on the political economy of the CAP and on how the decision-making process affects the policy outcomes in this field. The majority of studies in the agricultural economics literature on decision-making on the CAP either use reduced form empirical models, relating indicators

of policy distortions with a set of political indicator variables, or are of a descriptive nature, analyzing the historical development of the CAP, its context as well as motives behind certain decisions (Pearce, 1983; Wallace, 1983; Neville-Rolfe, 1984; Tracy, 1984, 1996; Moyer and Josling, 1990; Fearne, 1991; Josling and Moyer, 1991; Olper, 1998; Ackrill, 2000).

There is, however, hardly any formal analysis of the CAP decision-making process. The main reason is that the decision-making process is an institutionally complex procedure, in which the member State governments, the European Commission, and the Council of Agricultural Ministers all play an important role. While the Council of Ministers ultimately takes the decisions, the Commission has the sole right of proposal. The Council of Ministers cannot formally consider a proposal that has not come from the Commission. If the qualified majority in the Council does not approve the proposal, the Commission (in co-operation with the Council) drafts a new proposal until a final compromise is reached. This seems to put the Commission in a privileged and influential position in the decision-making process.

Studies in the literature differ in how they assess the Commission using its agenda-setting powers. For example, Coleman and Tangermann (1999) view the Commission as an independent body that plays a role as entrepreneurial leader and which pursues its own preferences. On the other hand, Moravcsik (1994) argues that the Commission just decreases transaction costs of inter-country bargaining. Modeling this multi-stage and multi-agent decision-making process is complicated and, therefore, relatively little formal analysis is devoted to the CAP in the political economy literature.

In the general public choice literature, there are several studies on decision-making in the EU based on Shapley and Banzhaf indices (Widgren, 1994; Hosli, 1996; Bindseil and Hantke, 1997; Winkler, 1998). Shapley and Banzhaf indices measure the probability that the member State casts a decisive vote, i.e., member State's potential to change the result of voting. These studies typically assume that any coalition of member States supporting a motion is possible and equally probable. Or, in other words, preferences of member States play no role in this voting game (Straffin, 1988). For this reason, this approach is not appropriate to analyze CAP decision-making where preferences of member States are crucial.

The aim of this chapter is to develop a formal model of the CAP decision-making on the CAP that explicitly includes the two stages of, first, determining member States preferences and, afterwards, of the joint decision-making of the EU member State governments in the Council of Ministers. To keep the analysis tractable within this two-stage decision-making framework, a highly stylized model of the CAP policy instrument is used. The more complex case of involving package deals is discussed in the end. Both the "influence" of the agents involved and the likelihood of a political stalemate, resulting in a status quo bias, are analyzed. Also is shown how results change under different institutional assumptions (voting procedures, such as majority rules) and how they are affected by changes in the external environment.

The following results are derived. First, a precise definition of influence is derived. Second, it is shown that the influence of the European Commission on the final policy decision depends on the voting rule. The occurrence of a political stalemate is a function of the voting rule adopted in the Council of Ministers. The probability of a stalemate also

depends on changes in external environments, which have taken place since the previous decision-making round.

The paper is organized as follows: Section 8.2 evaluates national preferences on the CAP. A two-stage model of CAP decision-making process is presented in Section 8.3. The two-stage model of CAP is used in Section 8.4 to analyze the Commission's influence and status quo bias under various voting rules. In Section 8.5, the stylized model is extended to the analysis of package deals. The final section summarizes the results and draws conclusions.

8.2. MEMBER STATES PREFERENCES ON THE CAP

The CAP was first implemented at the end of the 1960s. The main aspect of the CAP was an intervention price for important commodities, including grains, sugar, beef, and milk combined with the trade instruments (variable import levies and export refunds) needed to sustain this intervention price. The policy specifics differ between commodities and have changed over time. Due to several reforms of the CAP since then, the CAP has become more complex. The CAP now includes tariffs, quotas, payments per hectare, payments per animal, agri-environmental support, price support, etc., which differ by commodity.

To keep the analysis tractable and to focus on the impact of the two-stage decision-making process, the analysis assumes one agricultural commodity and that the national governments and the Council of Ministers only have to decide on one policy variable. The assumption will be relaxed when package deals are discussed. For simplicity, the intervention price for the agricultural commodity is used as the policy variable. However, this is not a unique choice: also direct payments, the most important budgetary item of the CAP, could be the decision variable, or most other CAP instruments. While some details of the analysis would then vary, the key results will remain the same.

$P_j^{\#}$ is denoted as the politically optimal intervention price in country j. By definition, the politically optimal intervention price implies that either increasing or decreasing it from the level $P_j^{\#}$ reduces political support for the government of country j. In other words, countries have Euclidean single-peaked preferences over the domain of the policy variable, i.e., the intervention price. Formally, $P_j^{\#}$ can be derived from several underlying models on decision-making in the countries, such as lobbying or collective action models (Becker, 1983). Alternatively, the models of Swinnen and de Gorter (1993, 1998) and Swinnen (1994) also yield this result.

8.3. A MODEL OF THE CAP DECISION-MAKING PROCESS

The decision concerning the common intervention prices is made in the annual CAP review by the Council of Agricultural Ministers. The CAP decision-making process is discussed in, for example Fearne (1991) and Tracy (1996). A simple consultation procedure applies to most policy issues within the framework of the CAP. Under this procedure, the EU Commission makes a proposal and the Council decides on the proposal, after receiving a non-binding opinion from the European Parliament. Decision-making in the Council proceeds by vote and qualified weighted majority is used. Currently

(for EU15) the distribution of votes is: 10 votes for Germany, France, Italy and the UK; 8 for Spain; 5 for Belgium, Netherlands, Greece and Portugal; 4 for Austria and Sweden; 3 for Denmark, Finland, and Ireland; and 2 for Luxembourg. To be accepted by "qualified majority", a proposal must obtain 62 out of a total of 87 votes.

Each member State can propose an amendment to the Commission proposal. The amendment is adopted if it is accepted unanimously. In practice, the Commission considers political acceptability of its proposal by the Council. Furthermore, in order to achieve the final compromise, the Commission may be "obliged" to adjust its proposals in accordance with the Council's line of thinking (Fearne, 1991).

The CAP decision-making is modeled as a set of voting rounds to determine the equilibrium intervention price within the Council of Ministers. Define P^0_{EU} as the existing common intervention price in the EU, i.e., the intervention price decided in last year's decision-making round. We assume that at the beginning of the annual decision-making round, the Commission proposes a common intervention price for the next year, $P^{\mathrm{N}}_{\mathrm{EU}}$. This price can be the same as last year's or a different one.

The Council of Ministers votes on the proposal. The voting behavior of each minister is assumed to be determined by the politically optimal intervention price for the government the minister represents. More specifically, a minister will vote in favor of the proposal if the proposed price $P^{\mathrm{N}}_{\mathrm{EU}}$ is closer to his/her government's optimum than the current price P^0_{EU} (or if it is the same). Formally:

$$v_j = 1 \text{ iff} |P^{\mathrm{N}}_{\mathrm{EU}} - P^{\#}_j| \leq |P^0_{\mathrm{EU}} - \mathrm{P}^{\#}_j| \tag{8.1}$$

$$v_j = 0 \text{ iff} |P^{\mathrm{N}}_{\mathrm{EU}} - P^{\#}_j| > |P^0_{\mathrm{EU}} - P^{\#}_j| \tag{8.2}$$

where v_j is the voting decision by minister j (i.e., of country j).The proposal is accepted if

$$\sum_j n^v_j v_j \geq \Gamma \tag{8.3}$$

where n^v_j is the number of votes of country j and Γ the minimum amount of votes needed to approve the proposal (currently Γ is 62 votes). Let us also define γ as a proportion of votes needed to pass the Commission proposal, $\gamma = \Gamma / \sum_j n^v_j$ and $0.5 \leq \gamma \leq 1.0$.

Assume that, after the vote, either the Commission or a minister of a member State, can table a new proposal on which a new vote takes place. If the previous vote was approved, the newly approved common intervention price now becomes the price against which a new proposal is evaluated. Voting goes on until no new proposal is accepted. The intervention price that is chosen by the Council, the "equilibrium intervention price" $P^{\mathrm{M}}_{\mathrm{EU}}$, is the last one which was approved.

It is obvious from equation 8.3 that the equilibrium intervention price will depend on the decision-making rules that determine the amount of votes needed, Γ, and on the distribution of votes, n^V_j. In the next sections, the equilibrium intervention price will be discussed under three different decision-making rules that are used in the EU. While the qualified majority rule is officially used by the Council of Ministers on most agricultural policy decisions, for expositional purposes we start with the analysis under assumption of

a simple majority rule. This is simpler to analyze and it helps to understand the result in the more complicated analysis of qualified majority decision-making, which will be faced afterwards. Finally, unanimity as a historically important voting rule in the EU is dealt with at the end.

8.4. COMMISSION INFLUENCE AND STATUS QUO BIAS

8.4.1. Definition

Assume that the Commission has some preference of its own regarding the common intervention price. This Commission preference may be due to personal preferences, to the Commission's concern for economic efficiency or for the welfare of some interest groups, or due to other reasons. Here, neither the likely preferences of the Commission nor their causes will be analyzed, merely the fact that the Commission has its own preference, which may diverge from that of the majority of the member States, is assumed.

The (potential) influence of the Commission is defined as the price domain over which the Commission can pick a price according to its own preference and which price will be finally agreed upon by the Council of Ministers. Hence, if this domain is large, the Commission has much potential influence because any price it picks within this domain will be the final price, and its own preferences can play an important role.

As will be shown below, the size of this choice domain, and hence the influence of the Commission will depend upon the voting rules and upon exogenous changes. Exogenous changes will be modeled as changes in, e.g., market conditions, which will not only affect the preferences of the member States, but presumably also those of the Commission. One example of such exogenous change could be declining world market prices due to developments in other parts of the world and which affect the budgetary costs and distortions caused by the CAP.

Yet, it may also be the case that no proposal of the Commission will be accepted. In other words, not a single Commission proposal for a new intervention price will be accepted by the Council of Ministers. This case is referred to as the status quo: the Council cannot reach an agreement to change the intervention price and hence the existing intervention price remains unaltered. The likelihood that this occurs also depends on the voting rules and on exogenous changes.

In the rest of this section, the potential influence of the Commission is derived. In the next section, the likelihood of a status quo outcome under various decision-making rules is treated.

8.4.2. Simple majority voting

Assume the following order of the politically optimal intervention prices $P_j^{\#}$ of member States: country 1 has the lowest politically optimal price $P_1^{\#}$, country k has the highest politically optimal common price $P_k^{\#}$, thus $P_1^{\#} < P_2^{\#} \ldots < P_k^{\#}$. Country 1 has n_1^v votes in the Council, country 2 has n_2^v votes and country k has n_k^v votes.

Assume further that the countries together have an uneven number of votes in the Council (as it is currently the case in the EU-15, 87 votes) and that $P^{\#}_{\mathrm{M}}$ is the median politically optimal price. In the EU-15, this would be the politically optimal price of the country with the 44th vote. We refer to the country with $P^{\#}_{\mathrm{M}}$ as the "median country".

In a single-dimensional issue, that is when, as assumed above, a decision concerns only one policy variable and if all voting agents have single-peaked preferences defined over the domain of the policy variable, then the median voter cannot lose under simple majority rule. This result is known as the "median voter" rule (Mueller, 1989). As shown above, the voters in the Council of Ministers, i.e., the Ministers, have single peaked preferences. The median voter rule therefore implies that the politically optimal price of the median country will be adopted as the common price ($P^{\mathrm{M}}_{\mathrm{EU}} = P^{\#}_{\mathrm{M}}$).

It is easy to see that under simple majority voting in the Council, the Commission has no influence on policies. The equilibrium outcome is the politically optimal price of the median country, which will always be chosen in the final decision round, no matter what the Commission proposes.

8.4.3. Qualified majority voting

Under a qualified majority system, adoption of the Commission proposal requires more than 50% of the votes, otherwise the common price stays unchanged. Under the currently used system (EU15) on CAP decisions, approval requires at least 62 votes from Council members, i.e., $\Gamma = 62$ and $\gamma = 62/87$.

Define country X as follows:

$\sum_{i=X+1}^{k} n_i^v < \Gamma$, i.e., all countries with higher preferred optimal prices than the optimal price of country X ($P^{\#}_X$) cannot obtain Γ votes to approve Commission's proposal without country X.

$\sum_{i=X}^{k} n_i^v \geq \Gamma$, i.e., country X and all countries with higher optimal prices can obtain at least Γ votes to approve the proposal.

As defined, country X is crucial for increasing the existing common price.

By analogy, define country Y as:

$\sum_{i=1}^{Y-1} n_i^v < \Gamma$, i.e., all countries with lower optimal prices than that of country Y ($P^{\#}_Y$) cannot obtain Γ votes to approve Commission's proposal without country Y.

$\sum_{i=1}^{Y} n_i^v \geq \Gamma$, i.e., country Y and all countries with lower optimal prices can obtain at least Γ votes to approve the proposal.

Similarly, country Y is crucial for decreasing the existing common price.

It is obvious that in order to be approved, a proposed price has to be larger than $P^{\#}_X$ and lower than $P^{\#}_Y$. In other words, these prices form the boundaries of the domain within which price proposals have to fall in order to have a chance to be accepted. The size of the domain $(P^{\#}_X, P^{\#}_Y)$ will depend on several factors, including the decision-making rule (γ), the distribution of votes and price preferences. The impact of the decision-making rule is illustrated by Figure 8.1.

Consider four different rules of qualified majority with $1 > \gamma_1 > \gamma_2 > \gamma_3 > \gamma_4 > 0.5$. It is clear that the range of the domain $(P^{\#}_X, P^{\#}_Y)$ increases when the necessary shares of total votes to pass the proposal of the Commission increase. $P^{\#}_X(1)$ is the politically

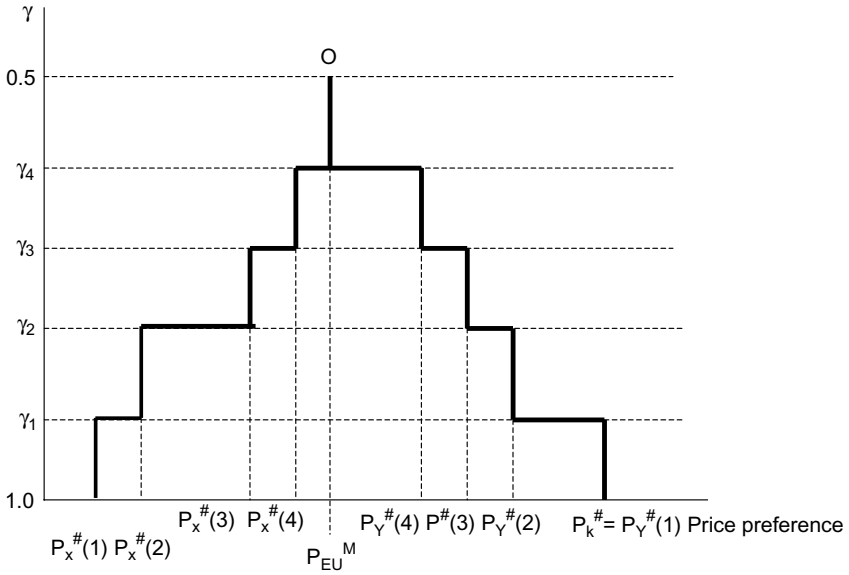

Figure 8.1: Potential influence of the Commission and status-quo bias under various voting rules.

optimal intervention price for country X when qualified majority voting γ_1 is used. The top of the graph ($\gamma = 0.5$) represents the simple majority. Here the domain is reduced to a single price, which equals the median country's preferred price. However, as one needs a larger majority, the range of price proposals with a chance of being finally accepted increases: for $\gamma_4 > 0.5$ the interval is $(P_X^{\#}(4), P_Y^{\#}(4))$. The median country is no longer the crucial vote, and as such the voting system does no longer have an implicit tendency of moving the final decision towards the preferences of the median country. As a consequence, the larger the share of the votes needed to obtain a decision (γ), the larger the domain, as is illustrated by Figure 8.1: for $\gamma_2 > \gamma_4$ the interval is $(P_X^{\#}(2), P_Y^{\#}(2))$, which goes beyond the $(P_X^{\#}(4), P_Y^{\#}(4))$ domain.

8.4.4. Unanimity rule

Unanimity rule can be considered as an extreme version of the qualified majority rule. Unanimity rule requires all member States to agree with a new proposal. In the context of this model, this implies that for a proposal to have a chance of being accepted it will always have to be between the lowest politically optimal intervention price of any country ($P_1^{\#}$) and the highest politically optimal price ($P_k^{\#}$), as is illustrated in Figure 8.1.

The size (width and length) of the "steps" along the frontier of the $P_1^{\#}-O-P_k^{\#}$ area depends on the distribution of votes per country, the number of countries, and the number of voting rules considered. Obviously each of these factors affect the room for maneuver of the Commission in its proposals, and hence the $P_1^{\#}-O-P_k^{\#}$ area in Figure 8.1. The $P_1^{\#}-O-P_k^{\#}$ triangle in Figure 8.2 is a stylized version of the $P_1^{\#}-O-P_k^{\#}$ frontier in

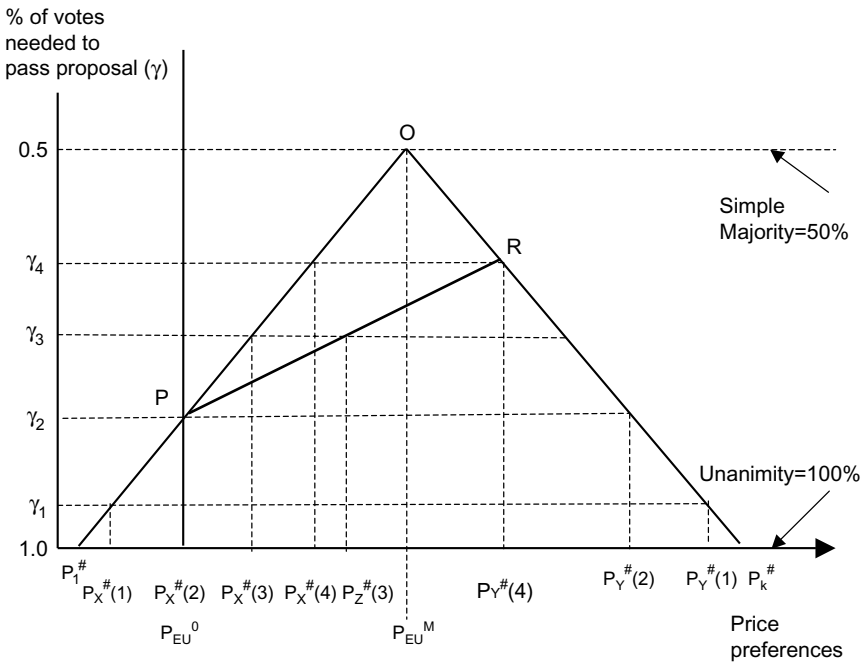

Figure 8.2: Potential Influence of the Commission and status-quo bias under various voting rules—stylized version.

Figure 8.1. The stylized version in Figure 8.2 assumes implicitly (a) that there are an infinite number of voting rules (γ continuous between 0.5 and 1) and countries (continuous set of optimal prices between $P_1^{\#}$ and $P_k^{\#}$), which is reflected in the "smooth" sides of the triangle; and (b) that there is an equal distribution of votes among the countries.

8.5. STATUS QUO BIAS

8.5.1. Conditions for new proposal acceptance

An important conclusion is that once a price proposal within the $(P_X^{\#}, P_Y^{\#})$ interval is approved, no other price will be preferred under the same voting rule. At first sight, this suggests that the influence of the Commission would increase considerably when a higher qualified majority is required for decision-making, since it appears that the influence of the Commission is a direct, and positive, function of the size of the $(P_X^{\#}, P_Y^{\#})$ domain. For example, if the Commission prefers a high intervention price, it will propose a price close to $P_Y^{\#}$. On the other hand, if the Commission prefers lower prices, it would propose a price close to $P_X^{\#}$. Obviously its room for choice depends on the size of the $(P_X^{\#}, P_Y^{\#})$ domain.

However, this is only half the story. This logic ignores the fact that the size of the qualified majority will also influence the likelihood of a status quo. Moreover, the latter

may more than offset the effect of the increase in the $(P_X^{\#}, P_Y^{\#})$ domain. To show this, first, the conditions on the choice of the Council of Ministers are formally derived:

If $P_{\mathrm{EU}}^0 < P_X^{\#}$, $\mathrm{P}_{\mathrm{EU}}^{\mathrm{N}}$ will be adopted iff

$$|P_{\mathrm{EU}}^{\mathrm{N}} - P_X^{\#}| \leq |P_{\mathrm{EU}}^0 - P_X^{\#}| \tag{8.4}$$

Moreover, $P_{\mathrm{EU}}^{\mathrm{N}}$ must satisfy: $P_{\mathrm{EU}}^{\mathrm{N}} \geq P_X^{\#}$. $\mathrm{P}_{\mathrm{EU}}^{\mathrm{N}}$ must be preferred by country X to the existing (status quo) price and must not be lower than the politically optimal level of country X, otherwise country X could propose a higher price. The proposal of the Commission will be accepted as final if $P_{\mathrm{EU}}^{\mathrm{N}}$ satisfies two conditions:

$$P_{\mathrm{EU}}^{\mathrm{N}} \geq P_X^{\#} \text{ and } |P_{\mathrm{EU}}^{\mathrm{N}} - P_X^{\#}| \leq |P_{\mathrm{EU}}^0 - P_X^{\#}| \tag{8.5}$$

On the other hand, if $P_{\mathrm{EU}}^0 > P_Y^{\#}$, then $P_{\mathrm{EU}}^{\mathrm{N}}$ will be adopted if

$$|P_{\mathrm{EU}}^{\mathrm{N}} - P_Y^{\#}| \leq |P_{\mathrm{EU}}^0 - P_Y^{\#}| \tag{8.6}$$

$P_{\mathrm{EU}}^{\mathrm{N}}$ must be preferred by country Y to status quo and must not be bigger than the politically optimal level of country Y, otherwise country Y could propose its decrease. Thus, $P_{\mathrm{EU}}^{\mathrm{N}}$ must satisfy: $P_{\mathrm{EU}}^{\mathrm{N}} \leq P_Y^{\#}$. The conditions for the Commission proposal to be accepted then becomes:

$$P_{\mathrm{EU}}^{\mathrm{N}} \leq P_Y^{\#} \text{ and } |P_{\mathrm{EU}}^{\mathrm{N}} - P_Y^{\#}| \leq |P_{\mathrm{EU}}^0 - P_Y^{\#}| \tag{8.7}$$

Combined, these conditions imply that when $P_X^{\#} < P_{\mathrm{EU}}^0 < P_Y^{\#}$ no Commission proposal, $P_{\mathrm{EU}}^{\mathrm{N}}$ will be adopted by a qualified majority in the Council. In other words, if the existing common price is located between the intervention prices of member States X and Y, then there is no qualified majority in the Council that agrees on either increasing or decreasing the existing intervention price, i.e., the status quo prevails. Notice that this will always be the case when there is no exogenous change in the market conditions: without some exogenous change, all preferences will be the same as the previous year. As a consequence, no new price proposal will be accepted. Under these conditions, only a change in external conditions can trigger a change in policy.

There is an inherent bias towards the status quo under a qualified majority rule, and the bias is stronger the higher is the required majority (γ). This can be seen from Figure 8.2. Consider the case that the previous year's equilibrium intervention price was the same as the price preferred by the median voter country. However, since then external conditions have changed such that member State preferences have generally moved towards higher prices, i.e., to the right on Figure 8.2. The result is that the existing common price, P_{EU}^0, is lower than the current median voter optimal price, $P_{\mathrm{EU}}^{\mathrm{M}}$. Will this exogenous change trigger a change in the EU common price? It depends on the voting rules. Under the simple majority rule, there would be a change in the EU price policy: the new equilibrium price would be $P_{\mathrm{EU}}^{\mathrm{M}} > P_{\mathrm{EU}}^0$.

Under the qualified majority rule γ_1, however, there will be no change in policy: since $P_X^{\#}(1) < P_{\mathrm{EU}}^0 < P_Y^{\#}(1)$ under this voting rule, there is no qualified majority formed that is

able to change the price. The same holds for qualified majority γ_2. On the other hand, under lower thresholds, such as qualified majority γ_3 (and similarly for γ_4) there will be a change, as P^0_{EU} is outside the interval $(P^{\#}_X(3), P^{\#}_Y(3))$.

Notice that while under γ_4 any price from the entire $(P^{\#}_X(4), P^{\#}_Y(4))$ range is an acceptable proposal for the Council of Ministers, this is not the case with a higher qualified majority, such as γ_3. Under this rule, only the prices in the $(P^{\#}_X(3), P^{\#}_Z(3))$ range will be approved by the Council of Ministers, as prices to the right of $P^{\#}_Z(3)$ would be less preferred than status quo by country X, i.e., these prices would not satisfy condition 8.5.

Hence, the influence of the Commission is summarised by the "influence area" PRO (an "influence triangle" in this case) in Figure 8.2. The potential influence of the Commission is a function: $\Pi = \Pi(\gamma, \theta)$ where $\theta = |P^0_{\mathrm{EU}} - P^{\mathrm{M}}_{\mathrm{EU}}|$ measures exogenous change and γ is the share of votes needed to pass the Commission proposal in the Council.

8.5.2. Influence triangle versus status quo

With simple majority, Commission has no influence. Its influence increases as the qualified majority needed to approve a proposal increases. However, at the same time an increase in the qualified majority increases the likelihood of a status quo. At some point (as of qualified majority γ_4 in Figure 8.2) the second force will begin mitigating the first effect, reducing the influence of the Commission. At some point (as of qualified majority γ_2 in Figure 8.2) it will totally offset the first effect and remove any influence of the Commission as any further increase in the qualified majority will lead to a status quo.

Obviously, the likelihood of a status quo, and therewith the size of the influence triangle depends on the importance of the change in external conditions. The stronger this change, the more likely that the status quo bias will be overcome for a given qualified majority, ceteris paribus. This is illustrated by Figure 8.3 where the influence triangle is drawn for two different assumptions on external changes, θ_A and θ_B. With $P^0_{\mathrm{EU}}(A)$ representing a stronger change in external conditions than $P^0_{\mathrm{EU}}(B)$ $(\theta_A > \theta_B)$, it is clear that under condition A it is less likely that there will be a status quo, and more likely that the Commission can have some influence on the decision-making. This is illustrated in Figure 8.3 with a larger influence triangle under conditions A (PRO) than under conditions B (MNO). Ceteris paribus, the Commission can have a bigger influence as it has, under the condition A compared to condition B, a larger price range to choose from. Figure 8.4 presents the influence of the Commission as a function Π of the voting rules. This illustrates how the influence initially grows with a higher qualified majority, but at some point reduces again and vanishes ultimately. Bold line represents small exogenous (condition B) while dotted line represents bigger exogenous change (condition A). For bigger exogenous change the potential influence of the Commission is bigger and it reaches its peak at higher qualified majority.

Alternatively, Figures 8.2–8.4 can also be used to interpret the external change, which is required to "trigger" a policy change. Clearly, the larger the qualified majority, the larger is the change in external conditions that is required for a policy change to occur. One could define the external change required to trigger a policy

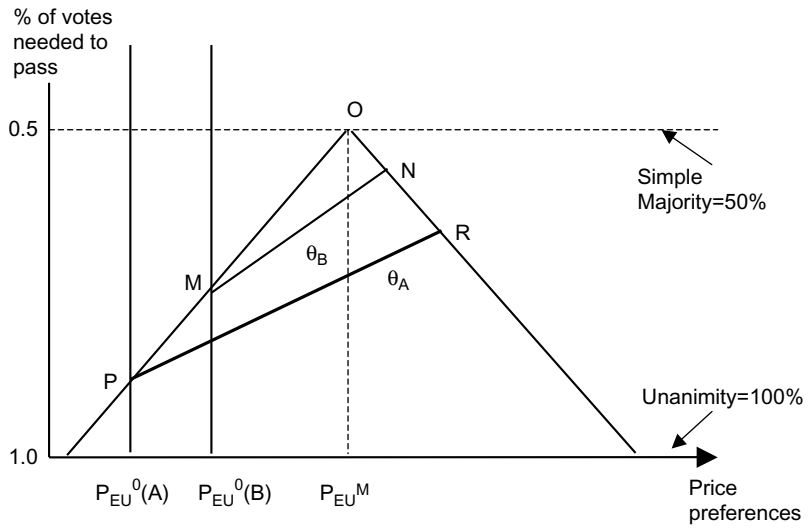

Figure 8.3: Potential influence of the Commission and exogenous change.

change as the "status quo bias" of the voting rules. Clearly, this status quo bias increases linearly with the qualified majority that is required.

The status quo bias is strongest with the unanimous voting rule. When the existing price is located between these extreme politically optimal intervention prices, there can be no unanimous agreement on a change of the common price. Hence, there is extreme propensity to favor the maintenance of status quo under the unanimous agreement rule. The probability that the previous year common price is inside the $P_1^{\#} - P_k^{\#}$ range is high, and more likely with more diversified countries.

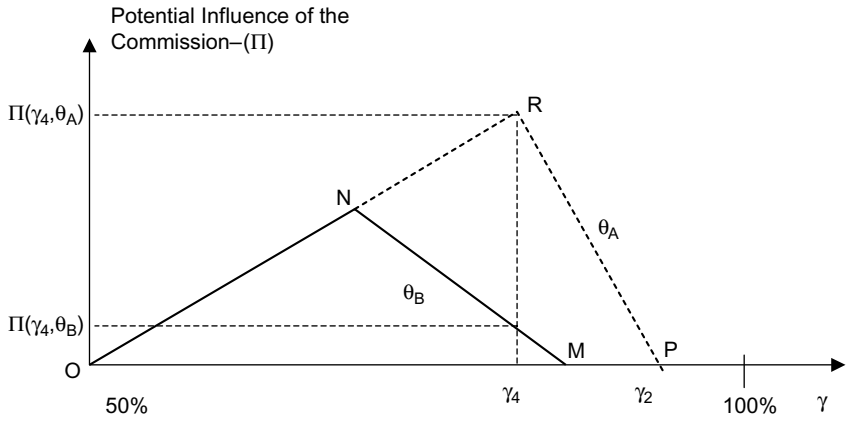

Figure 8.4: Potential influence of the Commission under various voting rules.

8.6. PACKAGE DEALS

So far it is assumed that the Commission could propose either increase or decrease of policy level for one decision variable only. This assumption ruled out "fine tuning" of policies: decrease price support, increase quota while keeping direct payments unchanged or decrease price support, keep quotas unchanged while increasing direct payments, and so on. The possibilities are unlimited because of many commodities that are subject to CAP decision-making and obviously due to infinite number of policy levels.

By changing levels associated with each policy instrument, the Commission can alter net beneficiary positions of member States. The politically ideal point of a member State for the whole agricultural package goes up, if a country is given a good deal for its important product ("candy"), because the country is a bigger net beneficiary of the CAP as a whole. The reasoning is straightforward. Some of the income going to agriculture of a net beneficiary of the CAP comes from taxes on other member States. Hence, the candy gives higher subsidies to agriculture for a given tax on the rest of the domestic economy. Therefore, ceteris paribus, governments of net beneficiary member States will prefer higher protection of agriculture as a whole than the country, which has neutral or contributory net position. Obviously, positions of some other member States that have not received a candy are worsened if a candy is given to some countries and the preferences of these other countries for the whole agricultural package will increase.

By using package deals (fine tuning), the Commission can extend its power and/or get out of the status quo. Bigger package of policies enable the Commission to pass proposals that would not be passable with one decision variable. The more policies there are in the package, the bigger is the power of the Commission.

Assume the goal of the Commission is to increase agricultural support. The country that is crucial for increasing the common price (country X) or countries with lower politically optimal prices are primary targets to be subsidized with a candy. If a country with lower ideal price than country X is subsidized with a candy, its ideal price must increase above country's X price and countries with higher ideal prices than country X must not fall below country's X ideal price.

Countries with high politically optimal prices whose positions will not be worsened below country's X's (old X or new X) position are primary targets to pay for that candy. This makes distribution of politically optimal prices more peaked. Also countries with extremely low ideal prices can also be taxed, but this is an unlikely case. Countries that are taxed in order to increase country X's politically ideal price cannot switch order of politically optimal prices with country X.

What are the limits to the Commission's influence? First are the limits imposed by the voting rule. Giving a candy to a crucial country or countries improves their net positions. This occurs at the expense of some other countries, which become bigger net contributors and therefore opposed to high levels associated with this policy. Next are the deadweight costs. If Commission's activity worsens allocation of resources, which must not be the case all the time, its room for maneuvers shrinks. Finally, transaction costs of bargaining are also to be considered as limits to the Commission's influence.

8.7. CONCLUSIONS

In this chapter, a two-stage decision-making in the EU on the CAP is considered. In the first stage (national level), national governments choose their optimum policy level. Then is shown that under various assumptions, the institutional structure of the CAP has an impact on the choice of the common intervention price for the EU.

The decision-making procedure in the EU provides some freedom to the European Commission to influence the final policy levels. The least powerful is the Commission under simple majority voting. Under simple majority the final common EU policy level is decided by the median voter theorem. The ideological set-up, national sympathies or farming attitudes of the Commission or the Commissioner responsible for agriculture are unimportant for the equilibrium policy. The Commission can influence policy level under qualified majority (including unanimity). Commission's potential influence increases as the qualified majority needed to approve a proposal increases.

However, with the rise of qualified majority the possibility of a stalemate also increases. The highest probability for a status quo is when unanimous agreement is needed in the Council. Ceteris paribus, the higher the qualified majority rule, the higher is the probability of preservation of status quo. The likelihood of a status quo also depends on the importance of the change in external conditions. The stronger this change, the more likely that the status quo bias will be overcome for a given qualified majority, ceteris paribus. By using package deals (fine tuning), the Commission can extend its power and/or get out of the status quo. The more the policies there are in the package, the bigger is the power of the Commission.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 9

The Role of Institutions in Agricultural Protectionism

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Abstract

This chapter focuses on the role of political institutions on variances of agricultural protection levels across industrialised countries, in particular between the EU and the USA. A simple game-theoretical model of legislative decision-making is used. Two organisational aspects of legislative decision-making induce a high protection level in the EU-system. The first aspect concerns formal institutional settings, which imply high committee power vis-à-vis the floor. The second, informal institutional settings, imply a composition of the agricultural committee with preference outliers preferring high protection levels for specific agricultural commodities. Both increase agricultural protection and, in particular, the first aspect distinguishes the EU-system from the US-system.

9.1. INTRODUCTION

Agricultural protection levels vary significantly across countries. While agriculture in the so-called "industrialised" countries is heavily protected, it is mostly taxed in the so-called "developing" countries (Anderson and Hayami, 1986; Honma and Hayami, 1986; Witzke, 1986; OECD, 2001). In general, in explaining biased public policies as the outcome of individual rational behaviour, the political economy focuses on specific characteristics within the political process. One notable body of literature in particular identifies economic and political determinants explaining biased agricultural protection (Swinnen and van der Zee, 1993; Gorter and Swinnen, 1994).

Although the existing political economy models certainly contribute to the understanding of biased agricultural policies, they still leave certain puzzles unsolved. For example, the models mainly explain the observed variances of agricultural protectionism

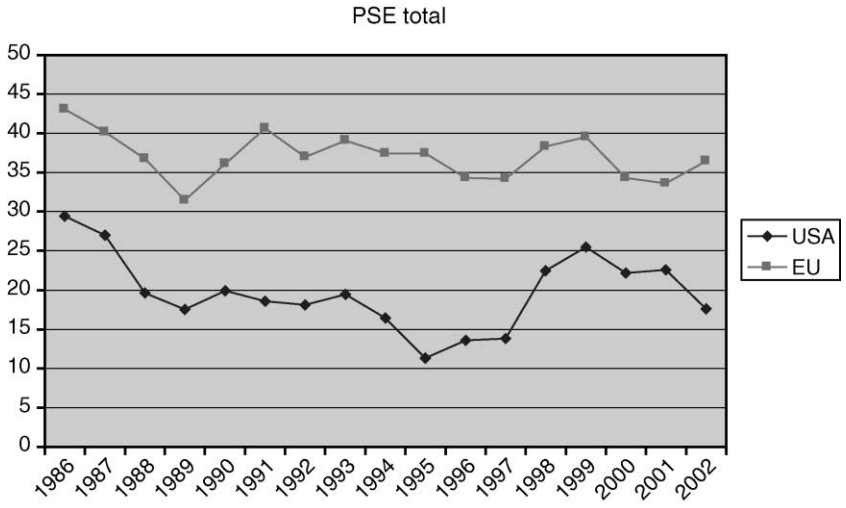

Figure 9.1: Agricultural protection level for USA and EU.
Source: OECD (2001).

across developing and industrialised countries by focusing on systematic differences within economic and demographic structures. However, they do not explain the observed significant variances of agricultural protection levels across industrialised countries, one example being why the EU agricultural protection level is significantly higher than that of the US-level (OECD, 2001, Figure 9.1).

In this chapter it is argued that the observed differences in agricultural protection levels can partly be explained by differences in political institutions organising legislative decision-making.

This is first supported with a literature overview, then worked out with a simple game-theoretical model and is finally tested against empirical evidence. The literature overview of how the political economy theory deals with institutions is given in Section 9.2. In Section 9.3 a simple game-theoretical model of legislative decision-making in agricultural policy is derived to explain the general argumentation logic. Model results are shown in Section 9.3. Some empirical evidence for theory is given in Section 9.4. In Section 9.5 the main conclusions are summarised. Furthermore, a rational explanation for the constitutional choice of seemingly inefficient legislative institutions within the EU-system is discussed.

9.2. POLITICAL ECONOMY AND INSTITUTIONS

Theoretical approaches explaining biased agricultural policy differ in their specific modelling strategies. One, based on the fundamental contributions of Peltzman (1976) and Becker (1983), namely *interest group models*, interprets the political decision-making process as a bargaining process among various interest groups representing the political interest of different social groups (Rausser and Freebairn, 1974; Gardner, 1987;

Miller, 1991). Another, based on the works of Downs (1957) and Magee et al. (1989), namely *voter support models*, interprets political decision-making as an interaction among voters and politicians (Gorter and Tsur, 1991; Tyers and Anderson, 1992; Swinnen, 1994). In general, these studies understand agricultural policies as the results of political bargaining (competition) among various social groups for income/welfare redistribution. The final policy outcome is determined by both the relative political bargaining power of agrarian and non-agrarian groups and the economically determined transformation of welfare among them.

Political institutions like the electorate system or the legislature organisation, including formal decision-making rules, have a significant impact on policy outcome (Weingast et al., 1981; North, 1990; Miller, 1997; Binswanger and Deininger, 1997). Nevertheless, political institutions shaping the political decision-making process have so far mainly been neglected in political economy theory on agricultural protection (Beghin and Fafchamps, 1995). Only some recent analyses really attempt to cover this gap (see for example Beghin and Kherallah, 1994; Beghin et al., 1996; Olper, 2001; Swinnen et al., 2001). Most of these studies, however, analyse the general impact of democracy on agricultural protectionism comparing agricultural protection levels in democratic and autocratic countries.

Some studies go beyond this simple dichotomous relationship by taking the actual quality of specific democratic institutions into account. For example, Olper (2001) analyses the impact of the quality of democratic institutes, e.g., the rule of law, bureaucratic quality or government creditability, on the level of agricultural protectionism. Overall, these studies show that the political systems and the quality of democratic institutions, respectively, have a significant impact on agricultural protection (Olper, 2001). However, due to the fact that the quality of democratic institutions does not vary significantly across highly industrialised countries like the USA and the EU-member States, these studies do not offer an institutional explanation for the significantly different levels of agricultural protection observed across industrialised countries. In contrast, Persson et al. (2000) derived systematically different macro policy outcomes for presidential and parliamentary systems through the application of an extended non-cooperative legislative bargaining model of Baron and Ferejohn (1989).

Analogous to this interesting study, this chapter focuses on the specific organisation of legislative decision-making to give an institutional explanation of empirically observed differences between EU and US agricultural protection levels. Starting from the pioneering work of Weingast (1979) and Weingast et al. (1981), a simple game-theoretical model is applied to derive the following results:

(i) Two aspects of the organisation of legislative decision-making induce a high protection level as the final policy outcome in the EU-system: (a) formal institutional settings implying extremely high committee power vis-à-vis the floor; (b) informal institutional settings implying a composition of the agricultural committee with preference outliers preferring high protection levels for specific agricultural commodities.
(ii) While both points increase agricultural protection, it is the first point especially that distinguishes the EU-system from that of the US-system. In concrete terms, the

agricultural council comprising preference outliers in the EU-system draws the final agricultural policy decision without any significant participation of the European parliament. In the US-system the preference outliers in the agricultural committee are controlled by the majority of the floor, tolerating only moderate agricultural protection levels.

9.3. THEORETICAL MODEL DERIVATION

9.3.1. A simple model of legislative decision-making

For a systematic analysis of legislative decision-making, a legislative system is formally defined as a finite set N of political agents i where $i = 1, \ldots, n$ denotes a generic element of the legislative system. Within the political system, specific institutions such as the government (G) and parliament (P) are defined as specific subsets of N. As a characteristic structural arrangement of democratic legislative systems, both government and parliament are further separated into governmental departments or ministries and committee systems. Accordingly, a family of sets G_k is defined as the department structure of the government G and the family of sets C_j as a committee system of the parliament P. According to the division-of-labor argument, different committees and governmental departments are usually responsible for different policy domains (Shepsle, 1979), in particular the agricultural department or ministry G_{A} and the agricultural committee C_{A}.

The legislative process in the democratic systems typically begins when the government submits a bill, $\alpha_{\mathrm{G}} \in A$, to the parliament (although in most democratic systems members of the parliament can initiate legislation if there is no proposal of the government). Then, the legislative consideration of a bill starts in a committee where amendments might be made before the report to the floor. On the floor, additional amendments may or may not be submitted before the final vote on the entire bill is cast. To analyse the impact of the legislative decision-making organisation on agricultural protection, the interaction between the agricultural ministry G_{A}, the agricultural committee C_{A} and the floor F is highlighted. In general the floor and the agricultural committee consist of multiple members.

The model has two stages. Firstly, in the *proposal stage* the agricultural ministry G_{A} submits a bill (α_{G}) to the agricultural committee C_{A}, where it undergoes the following legislative process. The committee selects the common committee proposals (α_{C}) according to a constitutionally fixed voting procedure (γ_{C}). Regarding the voting procedure γ_{C}, different institutional arrangements are possible that allow for a different degree of agenda setting power from the government. For the analysis at hand the following voting procedures are considered:

C1) *Standard open rule*: In a first step, each member of the committee can propose an individual proposal (α_i with $i \in C$) and the committee selects one of them according to the following voting procedure. The set of individual proposals is randomly ordered. According to this random order, the committee votes pairwise on proposals. Within a vote, the lower ordered proposal wins if no majority M_1 opts for the higher ordered proposal.

The winner of a pairwise vote will be put against the next ordered proposal until no proposal is left. In a second step, the winner of the last vote is the selected proposal of the committee that then is put vis-à-vis the status quo in a majority vote M_1. If a majority M_1 opts for the selected proposal, then that becomes the final committee proposal, in any other case the status quo is the final committee proposal.

C2) *Extended open rule*, which is a three-step voting procedure. The first step corresponds exactly to the first step of the standard open rule. In the second step, the selected proposal is put vis-à-vis the governmental proposal α_G in a majority vote M_2. If a majority M_2 opts for this proposal it is the winner, otherwise the government proposal is the one accepted. In a third step, the winning proposal of the second step is put vis-à-vis the status quo under a majority vote M_1. Analogous to the standard open rule procedure, the winning proposal will be the final committee proposal if it defeats the status quo under M_1, otherwise the status quo will be the final committee proposal.

Secondly, in the *decision stage*, the committee proposal α_C is submitted to the floor, where it undergoes the following legislative process. Analogous to the committee, the floor selects the final policy ($\alpha*$) according to a constitutionally fixed voting procedure (γ_F). Regarding the voting procedure of the floor, γ_F, the following institutional arrangements are considered allowing for a different degree of agenda setting power of the committee:

F1) *Close rule*: The committee proposal is put vis-à-vis the status quo in a majority vote M_3. If a majority M_3 opts for the committee proposal, then it becomes the final decision $\alpha*$, otherwise the status quo is the final decision.

F2) *Standard open rule*: We consider the same standard open rule procedure for the floor as defined for the committee under C1 above.

To capture the specific institutional arrangements of the EU-system the following consultation procedure is added:

F3) *Consultation procedure*: Under the consultation procedure, the floor directly accepts the committee proposal, i.e., the final policy outcome is always α_C.

9.3.2. Preferences of the political agents

The standard assumption in legislative decision-making theory is that political agents have spatial policy preferences (Enelow and Hinich, 1984; Mueller, 1989). Formally, assuming a one-dimensional policy space $A = (0, 1)$, the agents' spatial utility function $U(\alpha)$ can be defined by:

$$U_i(\alpha) = 1 - |\alpha - Y_i| \tag{9.1}$$

According to Equation 9.1 each political agent desires policy outcomes that are as close as possible to their ideal position Y_i. Spatial policy preferences generally reflect agents' interest in political support by politically responsive interests located within their constituencies (see for example Weingast and Marshall, 1988). Electoral competition encourages political agents, at least in part, to represent the interest of their constituents. Since economic importance of the farm sector is not uniformly distributed across

constituencies, farm interests are not uniformly distributed over constituencies either. Therefore, different political agents represent farmers' interest to a different degree according to the economic importance of the farm sector. Furthermore, rational ignorance biases political response toward those voters who express their interest via organised interest groups. Having greater individual stakes in particular issues, interest groups monitor political agents and provide them with information. They also mobilise their members to support friendly political agents. In this regard, specific interest groups have different access to political agents beyond their economic importance, i.e., political agents are affiliated to the farm sector to differing degrees. For example, a "peasant" party candidate is more closely monitored by farm interest and depends more on the farmers' political support in comparison with a labour party candidate, even within the same constituency. Analogously, for the same reason and in the same sense a political agent responsible for the agricultural policy domain, e.g., a member of the agricultural committee or the agricultural ministry, is more affiliated to the farm sector than a political agent responsible for another policy domain.

Beyond economic importance and beyond agents' affiliation to the farm sector, a political agent's preference for agricultural protection is also determined by relative welfare gains and losses induced by agricultural protection in their constituency (Gorter and Tsur, 1991; Tyers and Anderson, 1992). In particular, the lower the farmers' income is in relation to non-farm income and the higher the gains are in relation to the loss in a specific constituency, the more *ceteris paribus* a political agent prefers agricultural protection. This is a major implication of the politician–voter-interaction model of Gorter and Tsur (1991).

To get further insight into spatial preferences of political agents, i.e., to understand which factors imply high preferred protection levels of agents, we formally derive spatial preferences from the following political support maximisation:

$$Y_i = \arg\max_{\alpha \in A} \; S_i(\alpha) = \phi_i W_i(\alpha) - C_i(\alpha) \tag{9.2}$$

$$W_i(\alpha) = w_i(k_w + \alpha)^{\sigma} - k_w^{\sigma} \qquad C_i(\alpha) = s_i\left[k_c^{\beta} - (k_c - \alpha)^{\beta}\right]$$

W_i and C_i denote the economic welfare gains and losses realised by farmers and non-farmers, while ϕ_i denotes the relative affiliation of a political agent to the farmer's interests in comparison to that of the non-farmer. The relative share of a constituency in welfare gains and losses induced by agricultural protection is denoted by w_i and s_i. According to the exposition above, w_i corresponds to the economic importance of the farm sector in a constituency, while s_i corresponds to the share of the population of a constituency in agricultural consumption and in paid (income) taxes. k_w^{σ} and k_c^{β} denote the welfare level of farmers and non-farmers without protection, respectively. σ and β are the parameters of the respective producer and consumer welfare function and it holds: $0 < \sigma, \beta < 1$.

From comparative static analysis, it can be derived that the preferred protection level Y_i increases in w_i, k_{c} and ϕ_i and decreases in s_i and k_{w}. Hence, the support maximisation in Equation 9.2 reproduces major results of standard political economy theory of agricultural protection.

Since the government seeks simultaneous support from all constituencies, from Equation 9.2 it holds that for governmental actors: w_A equals s_A equals 1. Within the government, however, different governmental actors are affiliated to the farm sector at differing degrees, but the agricultural department is still the most affiliated to the farm sector. Thus, within the government, the agricultural department is a preference outlier. However, compared to the preferred protection levels of legislators representing farm districts with a high importance within the agricultural sector and well-organised farmer interest groups, the agricultural department should prefer a considerably lower protection level. This is because both the economic importance of agriculture and the affiliation ϕ is lower for the agricultural department when compared to the latter legislators.

9.3.3. Composition of the agricultural committee

The next question is how legislators are assigned to the agricultural committee. A well-known empirical observation and theoretical result is that agricultural committee members are preference outliers preferring high agricultural protection levels, when compared to median preferences of the floor (Weingast and Marshall, 1988; Krehbiel, 1991). In general, this is explained via political exchange processes, where legislators realised gains via assignment to committees in policy domains of high interest to their constituencies. Weingast and Marshall (1988) have developed a political exchange theory assuming that the committee system is a non-market organisation to realise gains from political exchange. In particular, they demonstrate how committee assignment is organised by an auction process that results in a committee composition reflecting legislators' interest within the various policy domains. Members of the agricultural domain in particular show high preferences for agricultural protection. Furthermore, empirical studies confirm this theoretical implication, especially for industrialised countries, where the floor median represents an urban district and thus prefers a low level of agricultural protection according to Equation 9.2 (Weingast and Marshall, 1988; Krehbiel, 1991).

9.3.4. Stylised policy preferences of the government, the committee and the floor

According to the theory developed in this chapter, the following stylised preferences for agricultural protection of the agricultural department, G_A, the committee median, C_{med}, and the floor median, F_{med}, can be derived as demonstrated in Figure 9.2.

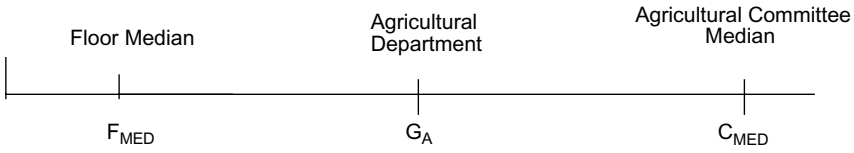

Figure 9.2: Stylised preferences for agricultural protectionism of relevant political agents.

In industrialised countries the floor median represents an urban district, while according to the political exchange theory of Weingast and Marshall (1988) the committee median represents a farm district. Subsequently, following the comparative static of the support maximisation in Equation 9.2, the floor median will prefer a considerably lower agricultural protection level in comparison with the agricultural committee median. Finally, in accordance with the expositions above the agricultural department or ministry will prefer an agricultural protection level that lies between these two extremes. This follows from Equation 9.2, because on the one hand the agricultural ministry is certainly more affiliated to the farm sector when compared to a representative of an average urban constituency. On the other hand the average national economic importance of the farm sector is higher in comparison with the average economic importance of the farm sector in urban constituencies.

9.4. MODEL RESULTS

The subgame Nash equilibrium is applied as the equilibrium concept of the defined simple game-theoretical model of legislative decision-making. Depending on the specific institutional arrangements at the proposal and decision stage, different games with different equilibria may be defined. In the following only two specific games, which are relevant for the explanation of observed divergences in the agricultural protection level of the USA and EU, are analysed. In particular, a US-game is defined where the committee operates under the standard open rule and the floor operates under the close rule. Moreover, the majority rules M_1, M_2 and M_3 all correspond to a simple majority rule. The EU-game is defined with the committee operating under the extended open rule and the floor operating under the consultation procedure. The majority rules M_1 and M_3 correspond to a qualified majority rule, while the majority rule M_2 corresponds to unanimity.

For simplicity, rather than derive the complete equilibrium strategies, the equilibrium outcome for the two games is described instead.

9.4.1. Equilibrium outcome of the US-system

For the US-system, the equilibrium outcome can be easily described focusing on the interaction of the committee and the floor median, C_{med} and F_{med}, respectively. To simplify the description of the equilibrium outcome the following winsets are defined. Firstly, the winset of the status quo in the floor, $W_F(\alpha_0)$, is defined as the subset of alternatives $\alpha \in A$ that are preferred by a majority M_3 in the floor. Secondly, the winset of the status quo in the committee, $W_C(\alpha_0)$, is defined as the subset of alternatives $\alpha \in A$ that are preferred by a majority M_1 in the committee. Clearly, any committee proposal must lie between W_F and W_C. Moreover, the Pareto-set of the committee (PS_C) is defined as the subset of proposals $\alpha \in W_F(\alpha_0)$ for which no other proposal $\alpha' \in W_F(\alpha_0)$ exists which is preferred by a majority in the committee. Of course, in equilibrium any proposal must lie in the Pareto-set PS_C, otherwise it will be defeated in the first step of the standard open rule procedure. Finally, given the simple structure of the model it follows directly that the

Pareto set invariably has only one element, namely the proposal of the committee median, $\alpha_{C_{\text{med}}}$. The latter corresponds with the proposal maximising the utility of the committee median over the winset of the status quo in the floor, W_{F}. Thus, since in equilibrium the proposal of the committee median will always lie in W_{F}, the floor will always accept the committee proposal, which becomes the final outcome in equilibrium. Formally, it holds:

$$\alpha^*_{\text{US}} = \arg\max_{\alpha \in W_{\text{F}}} U_{C_{\text{med}}}(\alpha) \tag{9.3}$$

$$W_{\text{F}} = \left\{ \alpha \in A \middle| \alpha_{\text{F}_{\text{med}}} - \left| \alpha^0 - \alpha_{\text{F}} \right| \leq \alpha \leq \alpha_{\text{F}_{\text{med}}} + \left| \alpha^0 - \alpha_{\text{F}} \right| \right\}$$

Since W_{F} is a closed convex set, the maximisation problem in Equation 9.3 invariably has a unique solution and hence the US-game has a unique equilibrium outcome, $\alpha^* = \alpha_{\text{med}}$. Moreover, given the stylised policy preferences of the floor and the committee median the committee can only shift the agricultural protection level if the status quo level is lower than the preferred level of the floor median. However, economic and political framework conditions determining the political support maximisation of the floor median change over time, e.g., the relative rural and urban income gap may increase. Therefore, the ideal points of the floor median may shift over time, implying that the committee has an opportunity to shift the agricultural protection level. Of course, the exogenously induced shifts of the ideal point of the floor median will generally not be high. Thus, in accordance with the model observed shift of the status quo will be small. This is exactly what can be observed empirically for US-agricultural policy (Krehbiel, 1991).

9.4.2. Equilibrium for the EU-system

To describe the equilibrium outcome of the EU-game, the interaction of the agricultural department G_{A} and the agricultural committee C_{A} is focussed. As will be discussed in more detail in Section 9.5, the government in the EU-system corresponds to the commission and the parliament is composed of two chambers, the council and the European parliament. Accordingly, the agricultural department corresponds to the General Directory of agriculture of the commission, while the agricultural committee corresponds to the agricultural council.

The following definitions are introduced which help to describe the equilibrium outcome. Firstly, the Pareto-set of the committee operating under unanimity (M_2), $\text{PS}_{\text{C}}^{\text{EU}}$ is defined. Analogous to the definition above, $\text{PS}_{\text{C}}^{\text{EU}}$ is defined as the subset of A including all $\alpha \in A$, for which no other alternative $\alpha' \in A$ exists, so that the agricultural council unanimously prefers α' to α. Further, we define the winset of the status quo in the committee, W_{C}^{EU}, as the subset of all $\alpha \in A$, for which a qualified majority (M_1) in the committee exists that prefers α to the status quo. Note that the winset of the status quo in the floor, W_{F}^{EU}, simply equals A due to the consultation procedure.

Given these definitions, the equilibrium outcome can be described as follows. The commission will propose a protection level, α_{G}, that maximises its utility over the intersection set of the winset W_{C}^{EU} and the Pareto set $\text{PS}_{\text{C}}^{\text{EU}}$. According to the consultation

Figure 9.3: Stylised representation of the equilibrium outcome for the US-system.

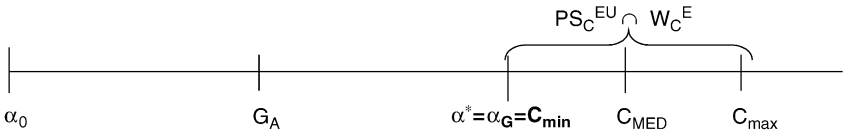

Figure 9.4: Stylised representation of the equilibrium outcome for the EU-system.

procedure, the floor is not involved, i.e., the commission proposal is always the final outcome in equilibrium. Formally, it holds:

$$\alpha^*_{EU} = \underset{\alpha \in W_C^{EU} \cap PS_C^{EU}}{\arg\max} \; U_{G_A}(\alpha) \tag{9.4}$$

Since both the winset, W_C^{EU}, and the Pareto set, PS_C^{EU}, are close and convex sets, their intersection is also a close and convex set and therefore the maximization problem in Equation 9.4 always has a unique solution and hence the EU-game has a unique equilibrium outcome, α^*_{EU}. Moreover, due to the stylised policy preferences derived above, the members of the agricultural council are preference outliers preferring extremely high levels of protection while the commission prefers comparatively moderate protection levels. However, even if a low status quo is assumed, an extreme agricultural protection level results in the equilibrium of the EU-game, which is unanimously preferred to the status quo by the council. Thus, although the EU-system guarantees significant agenda setting power for the commission, it is obsolete as long as the council members can act unanimously due to homogenous policy preferences. Furthermore, although the same stylised policy preferences for the EU- and US-game have been assumed, the equilibrium outcome of the EU-game corresponds to a significantly higher agricultural protection level in comparison with the US-game (Figures 9.3 and 9.4).

9.5. EMPIRICAL EVIDENCE

The following evidence shows that choices and decision-making in the EU- and US-system are consistent with the theory. This includes on one hand demonstrating that the institutional settings described for the US- and EU-game, respectively, correspond to the institutional settings that apply to real legislative procedures within these systems. On the other hand, this includes demonstrating empirically that policy preferences of relevant actors correspond to assumed stylised preferences.

With respect to legislative decision-making in the USA as well as in the EU, a large number of different institutional decision-making procedures exists. For the USA in

particular, different voting procedures are possible for the floor, namely the open and the close rule. However, Shepsle and Weingast (1987a,b) as well as Weingast (1989) demonstrated that even under the open rule, due to informal rules, some committee power is implied. In essence, according to Shepsle and Weingast, legislative decision-making in the USA is generally characterised by committee power vis-à-vis the floor and hence corresponds to the institutional setting defined for the US-game. Moreover, assuming that the floor operates under an open rule, this implies that in an equilibrium of the US-game the agricultural protection level corresponds to the level preferred by the floor median, i.e., would be even lower when compared to the outcome under the close rule.

Regarding the EU-system, there are over 25 different legislative decision-making procedures defined within the treaty (Pappi and Henning, 2003). Common agricultural policy (CAP) is decided under the consultation procedure, i.e., the council decides on a proposal made by the commission. The council can accept the commission proposal by a qualified majority (which, for the EU-15, corresponds to 62 out of 87 votes) or the council can adopt any other proposal by unanimity. According to the treaty the council consists of delegations of the national governments of the member States. In practice, however, the council is subdivided into sector councils which control specific policy domains, e.g., agricultural policy which is decided by the agricultural council comprising the national agricultural ministers. Furthermore, empirical analyses also indicate formally that the commission formulates a proposal collectively. In political practice it is the General Directory of Agriculture (DGVI) that formulates agricultural policy proposals. Finally, according to the consultation procedure the European parliament has only advisory status, i.e., it gives a statement on the commission proposal before the council decides on it. Hence, the consultation procedure overall corresponds to the institutional settings assumed for our EU-game above.

The next question is to what extent the assumed stylised preference structures can be underlined empirically. For the USA there is a variety of empirical studies supporting the hypothesis that agricultural committee members are preference outliers (Shepsle, 1979; Ray, 1980; Ferejohn, 1986; Weingast and Marshall, 1988; Krehbiel, 1991; Londregan and Snyder, 1995). Although all of these studies report empirical evidence that agricultural committee members are significant preference outliers, to some extent they apply completely different theoretical approaches. For example, Shepsle (1979) as well as Weingast and Marshall (1988) apply distributional theories concluding that the committee system is an institutional design to secure gains from trade. In contrast, Krehbiel (1991) applies informational theories concluding that the committee system is an institutional setting to reveal gains from specialisation. Note that in contrast to distributive theories, informational theories imply that apart from specific cases, like agriculture, committee members are generally no preference outliers (Krehbiel, 1991). A third line of theory explaining the composition of committees corresponds to partisan leadership (Londregan and Snyder, 1995).

For the European Union it is well known that the council regularly increases the original price proposals of the commission within the annual price rounds determining intervention prices for major agricultural commodities (EWSA, 1983). Furthermore, Franchino and Rahming (2003) report empirical evidence that agricultural council members are preference outliers when compared to the commission and the corresponding

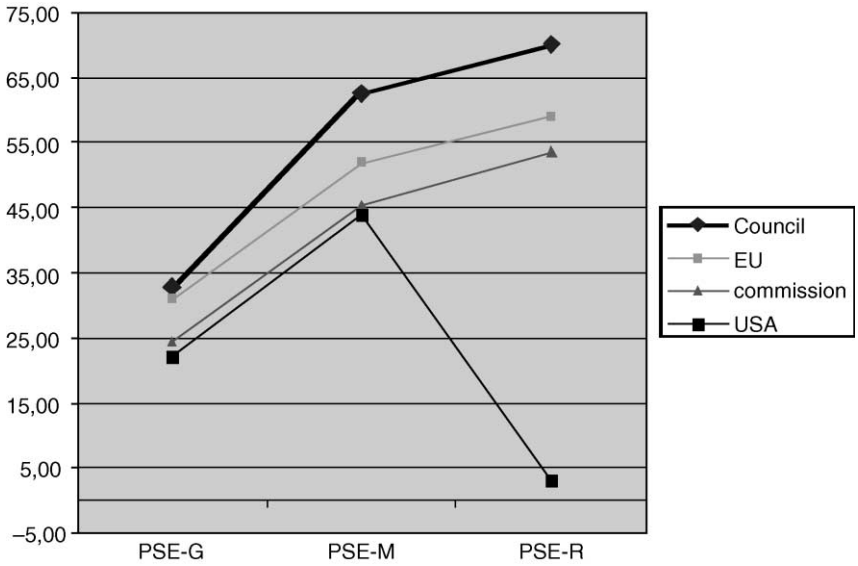

Figure 9.5: Protection levels for cereal (PSE-G), milk (PSE-M) and beef (PSE-R) in the EU and USA measured in PSE-% for the year 1996. Council is the average preferred position of council members, EU, the OECD protection level for EU; Commission, the preferred position of DGVI; USA, the OECD protection level for USA. *Source*: Interview data by Pappi and Henning (1999) and OECD (2001).

heads of national governments. Finally, in Figure 9.5 empirical data collected by Pappi and Henning (1999) on agricultural protection levels for milk, cereal and beef preferred by national members of the agricultural council, the commission as well as the observed EU and US protection levels are reported. As can be seen from Figure 9.5 empirically observed protection levels correspond nicely with stylised preferences assumed in the EU-game above.

9.6. CONCLUSIONS

This chapter argues that specific institutional settings within the EU-system could explain the empirical observation that agricultural protection levels of almost all commodities are significantly higher for the EU in comparison with the USA. With a simple unidimensional model assuming one agricultural protection level, it was demonstrated that in the EU-system the agricultural council comprising preference outliers draws the final agricultural policy decision without any significant participation of the European parliament, while in the US-system the preference outliers sitting in the agricultural committee are controlled by the majority of the floor tolerating only moderate agricultural protection levels.

Finally, two more comments should be made. One, the fact that agricultural protection is inefficient from a welfare economic perspective raises the question why EU-member States have selected legislative procedures leading to inefficient protection in the first place. In general, different approaches can be found in the constitutional choice literature:

distributional theory focusing on the role of institutions to secure gains from exchange (Shepsle, 1979; Weingast and Marshall, 1988), informational theory focusing on the gains of specialisation (Gilligan and Krehbiel, 1989; Krehbiel, 1991) and the partisan theory focusing on the role of institutions to solve collective action problems (Londregan and Snyder, 1995). Regarding legislative decision-making in EU-agriculture, the specific setting of the EU-system can be best explained by distributional theory. In particular, the constitutional choice of inefficient legislative institutions in the EU-system can be understood as an institutional arrangement that credibly implements the "deal" between Germany and France establishing the EEC. That is Germany's goal of a common market, in exchange for and in contrast to France's goal of high protection of the agricultural sector (Hix, 1999). In a more general framework, this deal can be understood as a redistribution mechanism of economic and political gains induced by European unification, which was also relevant for reaching agreements in the later negotiations on EU-enlargement. In this sense the deal can be generally understood as a necessary precondition to realise the enormous gains implied by the economic and political unification of Europe and hence might be considered as efficient after all.

Second, it follows directly from comparative static analysis of the model used in this chapter that an increase of legislative power of the European Parliament within the EU-system, e.g., a switch to the co-operation procedure, would have no impact on agricultural protection. This follows directly, because the protection level of the EU at present is already high and in a close rule procedure, the floor can only limit protection in relation to the status quo level. Thus, assuming EU-policy would be decided according to the close rule procedure of the US-system, this implies that the council would always propose the status quo policy. According to the model, the parliament could reduce high protection only by applying an open rule procedure. For the US-system Baron (1995) derived the same result demonstrating that open rule procedures are applied to control inefficient logrolling. In the EU-system, open rule procedures correspond to meetings of the European Council, as members of the European Council are the heads of national governments representing preferences of a society as a whole. Therefore, it seems unsurprising that significant reforms of the CAP have usually been initiated by the European and not the agricultural council.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 10

Political Institutions and Milk Policy Outcomes in OECD Countries

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Abstract

The impact of electoral rules and government forms on milk policies has been analysed from a panel of 29 OECD countries, from 1980 to 2000. In majoritarian elections and presidential regimes, the transfer level to the dairy sector is significantly smaller than in proportional and parliamentary systems. Moreover, the effect of the farmers' geographical concentration on dairy policy depends heavily on political institutions: a high geographical concentration of dairy farming induces more transfers in majoritarian and presidential systems than in proportional and parliamentary ones. These results are in line with recent political economic models and with results obtained at a more aggregated level.

10.1. INTRODUCTION

Literature concerning political economic determinants in agricultural policy has, until recently, hardly taken into account the role of political institutions in shaping agricultural policy. In the last decade, however, a few studies have begun to focus on this subject, mainly from an empirical point of view (Beghin and Kherallah, 1994; Binswanger and Deininger, 1997; Swinnen et al., 2000; Olper, 2001; Henning et al., 2002). Unsurprisingly, these studies reveal that political institutions play a significant role in the determination of agricultural policy outcomes. One of the main problems is that this early literature is quite limited in its link with theoretical contributions, limiting our understanding of the mechanism in place and, consequently, the policy implication. Notable exceptions are Henning et al. (2002) and Henning (2004) who explicitly analysed the impact of political institutions on the agricultural political economic equilibrium. In a sample of ten East

European countries Henning et al. (2002) show that the political weight of the agrarian population increases with the proportionality of the electoral system, and on passing from mono to bicameral parliamentary organisation. In the previous chapter, Henning (2004) demonstrates the role of political institutions on agricultural protection, using a formal model.

The work developed in this chapter tries to go one step further, through relying on recent political economic models that predict how electoral rules and political regimes systematically influence the level and composition of government spending (Persson and Tabellini, 2000). In a panel of 29 OECD countries observed from 1980 to 2000, theoretical predictions concerning the effect of electoral rules and forms of government on policy outcomes are tested in the context of milk policy formation. This test should be quite informative as agricultural policy in general, and that of milk in particular, represents an interesting case study due to the small (and homogeneous) nature of the farm groups, often associated with a strong geographical concentration. Thus, mapping the link between these features and political institutions could offer some new insight into this growing and interesting literature.

The main results can be summarised as follows. Firstly, presidential and majoritarian institutions are associated with smaller transfers than are parliamentary and proportional systems. Their effect is quite similar. On passing from majoritarian or presidential regimes to proportional and parliamentary systems, the level of dairy transfers, measured as the producer subsidy equivalent, increases by about 6-7%. Furthermore, federalist countries tend to protect the dairy sector more heavily.

Secondly, an interesting interaction has been found between the geographical concentration in dairy production and political institutions. It was noted that a high geographical dairy farming concentration induces more government transfers in majoritarian and/or presidential systems, but not in proportional and parliamentary systems where the links tend to become negative. These results are generally in line with theoretical predictions and with the recent empirical regularity obtained at a more aggregate level.

The remainder of the chapter is organised as follows. The main ideas of recent theoretical works are summarised in Section 10.2, from which theoretical hypotheses are derived. Section 10.3 describes the data set and political institution variables. Section 10.4 presents the estimation model and results. Finally, some conclusions are drawn in Section 10.5.

10.2. THEORETICAL HYPOTHESES

The main concern lies in trying to answer the question: how do electoral rules and regime types influence the level and composition of government spending? Political economic models treat this as a "cake splitting" type problem (Tabellini, 2000). A budget must be allocated between a general program that benefits a large number of voters (e.g., general public goods and welfare programs), and/or several narrowly targeted programs (e.g., local public goods and transfers to power minority groups) that each benefits a small group of constituents. Agricultural policy choice represents the more classical example of

narrow target programs, benefiting a small and often geographically delimited group of beneficiaries.

10.2.1. Electoral rule and composition of government spending

There is a growing body of literature that formally modelled how electoral rules influence the levels and composition of government spending (Lizzeri and Persico, 2001; Persson and Tabellini, 1999; Milesi-Ferretti et al., 2002). The key prediction from these models is that proportional elections tend to address government spending towards large programs benefiting large groups in the population, while majoritarian elections give politicians a greater incentive to target transfers to geographically smaller constituency groups. There are two main factors determining these differences (Persson and Tabellini, 2002): the electoral district magnitude (share of the elected legislature in a typical district) and the electoral formula (conversion of votes to legislative seats).

In proportional elections the legislators are elected from large districts and this gives the politician a strong incentive to get support from large coalitions within the population. Contrarily, in majoritarian elections the districts are small, creating a strong incentive for the politicians to target policies towards key district constituencies (the geographically relevant groups). Furthermore, the electoral formula has a reinforcing effect. In proportional elections, the voters choose a list of candidates, while in majoritarian elections a single candidate is chosen. In the former case, the implemented policy is thus likely to reflect what is optimal for the party, often reflecting the national perspective and favouring broad forms of redistribution. In majoritarian elections, however, the voting for a single candidate means that political party power is reduced with respect to the preferences expressed by the individual legislator who tends to "look after" the interests of the represented district, thus favouring a narrower distribution.

Differences in the published papers emerge when trying to assess the electoral rules that induce more overall government spending and transfers. For example, Persson and Tabellini (1999) found greater overall government spending in majoritarian elections, while Lizzeri and Persico (2001) reported similar spending on transfers in the two electoral systems. Instead Milesi-Ferretti et al. (2002) and Kontopoulos and Perotti (1999) see greater spending in proportional systems.

This literature review already yields at least one clear hypothesis concerning the effect of the electoral system on farm policy transfers: a small, geographically concentrated, farm group gets more farm subsidy under the majoritarian electoral rule, *ceteris paribus*. This does not mean that, on average, a majoritarian government gives more support to farmers than a proportional one. Indeed, such support could be related to the underlying distribution of voter preferences with respect to farm subsidy, or to the legislative representation of farm interests that, as suggested by political science literature, tend to be stronger in proportional systems (Henning et al., 2002). Consolidated results reveal that majoritarian elections are associated with fewer parties than proportional elections. Thus, minority groups are more likely to be represented in proportional than in majoritarian systems (Scartascini and Crain, 2002).

10.2.2. Regime types and composition of government spending

Few formal models assess the effect of different regime types or government forms on the level and composition of governmental spending. Persson et al. (1997, 2000) compared presidential vs. parliamentary democracy.

In a parliamentary democracy, legislative decisions are made by the government, an expression of a majoritarian coalition in parliament. The policy chosen by the government here must be equally optimal for the coalition members, who give a vote of confidence to the government. Thus, a government will seek to please a voter majority by allocating spending and transfers to broader redistributive programs. The set-up in presidential regimes is quite different, where various Congressmen are responsible for different aspects of policy and the absence of a confidence requirement leads to "unstable" coalitions and less discipline within the majority. Such features tend to lead to the allocation of spending targets to powerful minorities as the Congressmen try to direct resources towards their own electoral districts (Tabellini, 2000).

Thus again, and without further going into details, a clear hypothesis on the level and composition of government spending can be formulated, which may mimic and reinforce the previous discussion on electoral systems. The implication is that for agricultural transfers, a geographically concentrated group will get more subsidies under a presidential regime. Contrarily, a geographically dispersed farm group is more likely to get higher government transfers under a parliamentary regime, ceteris paribus.

In what follows, we offer a preliminary test of the effect of electoral rules and regime types on dairy policy outcomes.

10.3. DATA AND BASIC SPECIFICATION

This section draws attention to the problems regarding the measurement of political institutions, the central element in testing the hypotheses described above. The sample used refers to 29 OECD countries, comprising yearly data over almost 2 decades (1980–2000), with more than 550 observations. Now unlike in most previous cross-country studies, the European Union countries have been considered as being a separate entity, due of the differing levels of farm support observed in many of the studies (Bureau and Kalaitzandonaks, 1995; Raimondi, 2002). For the CEEC countries in the sample (Poland, Hungary, Czech Republic and Slovakia), the starting year is either 1986 or the first year after constitutional reform (generally 1992, see below). Thus, the data set tends to be unbalanced.

10.3.1. Political institution variables

Based on the theoretical hypotheses put forward in Section 10.2, the country sample should be divided by means of two key dimensions: (i) electoral rules: majoritarian vs. proportional rules; and (ii) regime types: presidential vs. parliamentary systems. However, with respect to these dimensions, real world constitutions are often much more complex and certain assumptions will have to be made.

Following Persson and Tabellini (2002) institutional indicators are two dummy variables for majoritarian (maj) and presidential (pres) countries. With reference to legislative election of the lower house, maj = 1 in the presence of either a majority or plurality electoral rule in the period under study. For the other situation, where the electoral system is proportional and/or mixed, maj = 0. In ambiguous cases, account is taken of whether it is plurality or proportional representation that governs the majority in the House. The primary source used for mapping the sample into this crude binary classification is the World Bank DPI database, version 3.0 (Beck et al., 2000). In case of changes in classification during the period under study, the variable maj is treated as before, excepted for the CEEC countries in the sample. The rationale of this choice is that small changes in the electoral system take some time to have impact on the dairy protection level. Instead, in the transitional countries, reform in the early nineties induced a more plausible change in political preferences and representations. Given some doubts concerning classification, the robustness of classification is checked by also using the log of average district magnitude (avdm) and including a dummy for a mixed electoral system (mixed). Finally, as the predictions in Section 10.2 are drawn from models that take the number of party structures as exogenous (normally equal to two), also the number of effective political parties (nepp) are considered. These are measured by the inverse of the Herfindahl concentration index of parties seats in the legislature.

The dummy capturing the regime types is coded pres = 1, when the chief executive is not accountable to legislature through a vote of confidence and/or when he has great weight in legislative power. In all other situations, there is a parliamentary system (pres = 0). Following this logic, countries with a directly elected president, such as Portugal and France, are classified as parliamentary and countries without a popularly elected president, such as Switzerland, are coded as presidential. This classification can differ depending on the source (DPI database vs. Persson and Tabellini, 2002) and is problematic in coding the CEEC countries before the nineties. So, to be on the safe side, two different samples and classifications are considered. The first one, called the *broad sample*, follows the World Bank DPI classification. The DPI database classifies countries as presidential when the chief executive has some prerogatives, which will not be discussed here. All CEEC countries are classified as pres = 1 before the constitutional reform of the nineties, afterwards pres depends on the specific constitutional reform. Switzerland, according to this source, is coded as parliamentary. In the second sample, called *narrow*, observations on the CEEC countries before the constitutional reform of the nineties are dropped and, following the classification of Persson and Tabellini (2002), Switzerland is coded as presidential. Finally, as political science literature suggests that the federal system often leads to the biasing of legislator preferences towards rural interests (Henning et al., 2002), also a federal dummy (federal) is introduced. For classifying countries as federal or unitary States, Boix (2001), who mainly look at the political structure and autonomy of States and local governments, is followed: federal = 1 for Australia, Canada, Germany, Mexico, Switzerland and USA.

Table 10.1 shows the results of this classification, reporting the average of maj and pres variables in each country over the time period. The broad sample shows greater variation in the considered constitutional features. In this sample, there are at least for some years, 7 countries classified as presidential and 11 as majoritarian. In the narrow sample, the

Table 10.1: Country sample and political institutions.

Sample	Year	Broad		Narrow	
		Pres	Maj	Pres	Maj
Australia	1980–2000	0	1	0	1
Austria	1980–2000	0	0	0	0
Belgium	1981–2000	0	0	0	0
Canada	1981–2000	0	1	0	1
Czech Republic	1986–2000	0.47	0.47	0	0
Denmark	1981–2000	0	0	0	0
Finland	1980–2000	0	0	0	0
France	1981–2000	0	1	0	1
Germany	1981–2000	0	0	0	0
Greece	1981–2000	0	0	0	0
Hungary	1986–2000	0.33	0.33	0	0
Iceland	1980–2000	0	0	0	0
Ireland	1981–2000	0	0	0	0
Italy	1981–2000	0	0	0	0
Japan	1982–2000	0	0	0	0
Korea	1986–2000	1	1	1	1
Mexico	1980–2000	1	0	1	0
Netherlands	1981–2000	0	0	0	0
New Zealand	1980–2000	0	1	0	1
Norway	1980–2000	0	0	0	0
Poland	1986–2000	1	0.33	1	0
Portugal	1992–2000	0	0	0	0
Slovakia	1986–2000	0.47	0.47	0	0
Spain	1986–2000	0	0	0	0
Sweden	1980–2000	0	0	0	0
Switzerland	1980–2000	0	0	1	0
Turkey	1980–2000	0	0	0	0
United Kingdom	1981–2000	0	1	0	1
USA	1980–2000	1	1	1	1

Note: the table reports the average value over the country time period of the two political institution dummies for majoritarian (maj) and presidential (pres) countries (see text).

constitutional variation is smaller, having only 5 countries classified as presidential regimes and 7 with majoritarian electoral rule.

10.3.2. Dependent variable and structural controls

Transfers to the dairy sector are measured by the producer subsidy equivalent (pse) as a percentage of final output. This includes all direct and indirect transfers from consumers and taxpayers to the farm sector. For non-EU countries, the source is the OECD database. The pse for the EU countries, however, is that of Raimondi (2002), who in splitting the EU pse into each country level followed the OECD methodology as accurately as possible.

The pse in dairying varies quite markedly, both across countries and over time. Of particular interest here is the pse variation across different constitutional features. Figures 10.1 and 10.2 map this information, averaging the time variation of the pse over

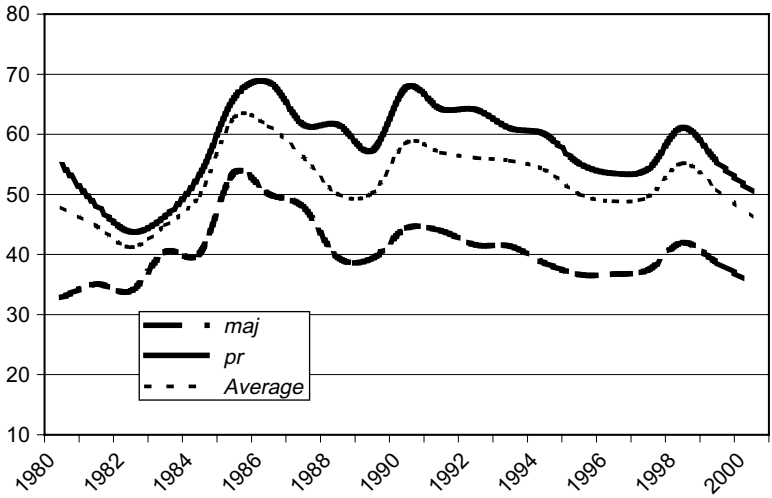

Figure 10.1: Pse dynamics over different institutional groups: majoritarian (maj) vs. proportional (pr).

different institutional groups, majoritarian vs. proportional (pr) systems and presidential vs. parliamentary (parl). The patterns are interesting and quite different. Firstly, the majoritarian countries have a consistently lower level of dairy transfers with respect to countries with proportional electoral rule. A similar but not equal pattern can be shown for presidential governments vs. parliamentary. Note that the presidential group, at least after 1986, had a consistently lower level of dairy transfers with respect to the parliamentary group. The noise before 1986 is due to the fact that during this period only two countries were classified as presidential, one of these (Mexico) being at the root of this strong variation. These patterns are not inconsistent with the theoretical discussion in

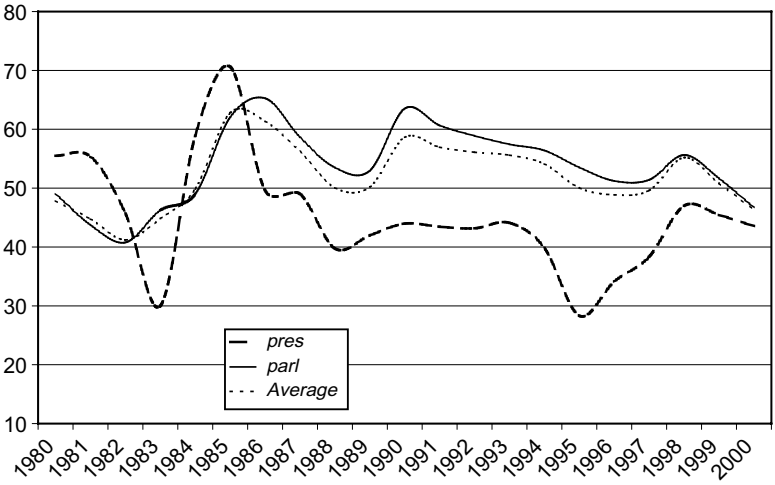

Figure 10.2: Pse dynamics over different institutional groups: presidential (pres) vs. parliamentary (parl).

Section 10.2 and are in line with previous cross-countries evidence found at a more aggregate level. For example, Scartascini and Crain (2002) recently showed that in both the OECD and "world" country samples, presidential and majoritarian systems systematically favour lower government subsidies and transfers.

As suggested by several empirical studies (Swinnen et al., 2000, 2001; Olper, 2001), a number of additional economic and political variables are likely to affect the level of dairy protection. Thus, it is necessary to check for these variables before coming to conclusions on the effect of institutions on dairy policy outcomes. Therefore, the basic specification will always include the following structural variables:

- the level of development, measured by the log of real per capita GDP (lgdp);
- the self-sufficiency ratio (ssr) measured as the ratio of domestic production over consumption;
- the share of the value of dairy production in total GDP (mlksh);
- the share of agricultural employment on total population (empsh);
- and the log of a "nationalised" world price deflated by the relevant consumer price index and converted to 1995 US dollars (lpw). This world price is called nationalised as it captures, across countries, differences in transport costs and the "quality" of milk production, as well as in the overall price levels of each economy.

Furthermore, an index of geographical concentration in dairy production (geo), measured by the Herfindahl Index of cow milk distribution in each country is included. This last variable can be important in assessing the impact of political institutions on policy outcomes, as theoretical predictions allow for different political incentives with respect to target geographical transfers vs. broad national distribution. A higher geographical concentration in milk production is more conducive to government transfers, especially in majoritarian and presidential systems, ceteris paribus. A strong geographical concentration, however, can also affect dairy transfers through other channels, e.g., the reduction of transaction costs inherent in a farm group organisation (Olson, 1965; Gardner, 1987).

Finally, to take into account non-observable country and time effects, a set of regional and time dummies were also used. The regional dummies are defined as *northa* (USA, Canada and Mexico), *ocean* (Australia and New Zealand), *asia* (Japan and Korea), *eu* (EU member States), *eurno* (non-EU European countries) and *ceec* (Poland, Hungary, Czech Republic and Slovak).

10.4. EMPIRICAL SPECIFICATION AND RESULTS

10.4.1. Basic model specification

Throughout this section different variations of the following general empirical equation will be estimated:

$$y_{it} = \alpha + \boldsymbol{\eta}\mathbf{z}_i + \gamma^1 \mathrm{geo}_i + (\gamma^1 - \gamma^2)\mathrm{geo}_i \cdot \mathbf{z}_i + \boldsymbol{\beta}\mathbf{x}_{it} + \delta_r + \phi_t + u_{it} \qquad (10.1)$$

where y_{it} is a dairy policy transfer (pse) in country i in year t, α is a common intercept, δ_r are regional-specific intercepts; ϕ_t are time dummy variables; $\mathbf{z}_i$ is a vector of institutional variables; $\mathbf{x}_{it}$ is a vector of structural controls, $\boldsymbol{\beta}$, $\boldsymbol{\eta}$ and $\boldsymbol{\gamma}^i$ denote vectors of unknown parameters to be estimated and u_{it} is an unobserved error term, assumed to be identically distributed across countries and over time.

Using Equation 10.1, two sets of hypotheses are tested. First, the question is posed whether dairy policy is influenced directly by institutions $\mathbf{z}_i$, namely the two dummy variables, pres and maj. Hence, the null hypothesis related to this question could be formulated as:

$$H_0^1 : \boldsymbol{\eta} = 0.$$

Finding coefficients $\boldsymbol{\eta} \neq 0$, suggests a direct effect of institutions on dairy policies. Secondly, the effect of geo, the geographical concentration of dairy activity, on institutions is tested. In this second case, the corresponding null hypothesis tests whether countries with different values of $\mathbf{z}_i$ also have the same coefficients $\boldsymbol{\gamma}^i$ in Equation 10.1:

$$H_0^2 : \gamma^1 = \gamma^2 \qquad \text{even if} \qquad \mathbf{z}_i \neq \mathbf{z}_j$$

Finding coefficients $\gamma^1 \neq \gamma^2$ suggests that the effect of geo on policy outcomes will depend on the values of $\mathbf{z}_i$ or, put in another way, that institutions have an indirect or non-linear effect on policy. The t-statistic on pres and maj and on their interaction with geo are then the test of the two null hypotheses.

10.4.2. Results

The first question is analysed by imposing the restriction that $\gamma^1 = \gamma^2$, thus excluding the interaction term between geo and $\mathbf{z}_i$ from Equation 10.1. Table 10.2 shows the results of different specifications where, to save space, only the estimated coefficients $\boldsymbol{\eta}$ (one for each institution variable) plus the linear coefficient of geo are shown. In each equation, all the controls discussed in Section 3.2 are included in the vector $\mathbf{x}_1$. The effect of variables included in $\mathbf{x}_1$ gives a confirmation of previous results: dairy transfers are negatively affected by the log of world price, the self-sufficiency ratio, and the employment share, and positively related to the log of per capita GDP and the share of dairy production in total GDP. The geo index is positive and significant only in specifications that omit institutional variables.

As all controls are included in the vector $\mathbf{x}_1$, the specifications differ only in the set of institutional controls, other then maj and pres, used to check the robustness. Columns 1–4 show the OLS estimates for the broad sample, while in columns 5–8 the OLS estimates refer to the narrow sample. Finally, the last two columns check robustness, using weighted least squares (WLS) and two stage least squares (2SLS) estimates, respectively.

Column 1 reports the basic specification, where only our two key institutional variables, pres and maj, are included. These variables enter the equation with a negative, highly significant coefficient and their effect is quite similar. The default group concerns

Table 10.2: Diary policy transfers and political institutions.

Dependent variable	**Producer subsidy equivalent**									
Regression	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Estimation	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**	**WLS**	**2SLS**
Geo	−1.96	−1.76	−2.89	−3.34	1.77	1.54	0.24	0.42	1.66	1.43
	(1.02)	(0.80)	(1.10)	(1.57)	(1.25)	(0.89)	(0.12)	(0.28)	(0.72)	(0.76)
Pres	−5.79	−7.05	−7.04	−6.34	−3.15	−6.82	−6.73	−6.89	−8.96	−7.97
	(3.25)	(3.91)	(3.79)	(3.54)	(2.12)	(4.19)	(4.27)	(4.47)	(5.42)	(−4.78)
Maj	−6.61	−5.04	−6.59	−6.91	−8.95	−6.82	−6.54	−7.06	−6.95	−7.89
	(5.73)	(4.46)	(2.96)	(5.40)	(7.89)	(5.97)	(3.28)	(5.77)	(5.28)	(6.66)
Mixed		1.72	0.61			0.52	0.03			
		(1.14)	(0.27)			(0.37)	(0.02)			
Federal		4.62	4.48	5.47		5.89	6.73	6.16	6.85	6.82
		(3.60)	(3.37)	(3.46)		(3.44)	(4.00)	(3.85)	(3.78)	(3.38)
lavdm			−0.62				0.47			
			(0.89)				(0.90)			
enpp				−0.94				0.36		
				(2.51)				(0.99)		
Controls	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1
Sample	Broad	Broad	Broad	Broad	Narrow	Narrow	Narrow	Narrow	Narrow	Narrow
No. of observations	551	551	551	551	528	528	528	528	528	478
No. of countries	29	29	29	29	29	29	29	29	29	29
Adj R^2	0.79	0.79	0.79	0.80	0.84	0.84	0.85	0.85	0.85	0.86

Broad refers to the full sample; narrow sample drops the observation of CEEC countries before the nineties (see text). Robust *t*- statistic are in parentheses. X_1 includes the variables lpw, lgdp, ssr, mlksh, empsh (see text). All equations include a set of year dummies and regional dummies for northa, ocean, eu, eurno, ceec, and asia countries (see text). The WLS weight is proportional to the length of each country panel. 2SLS includes as instruments: lpw_{t-1}, ssr_{t-1}, ssr_{t-2}, pse_{t-1}.

parliamentary–proportional systems. So, according to the point estimates, majoritarian and presidential countries have, on average, a pse of about 6% smaller than the parliamentary-proportional systems.

The direction and magnitude of the economic effect is similar to analyses conducted at the aggregate level. For example, Persson and Tabellini (2002) show, in a larger sample of countries, that the presidential and majoritarian systems cut government size by about 5% of GDP. Scartascini and Crain (2002), like Milesi-Ferretti et al. (2002) report a very similar effect in a sample of OECD countries, showing that the majoritarian and presidential systems induce lower spending in terms of subsidy and governmental transfers.

Controlling for political institutions, the variable capturing the geographical concentration of dairy activity is negative but insignificant. This result is contrary to the traditional view and to previous empirical studies. For example, in the US context Gardner (1987) found a significant positive effect of geographical concentration on agricultural protection and justified it by collective action arguments. However, Gardner's positive effect of geographical concentration could also be due to a US electoral system based on a plurality rule and geographic representation. If the last hypothesis is assumed to be the main reason for Gardner's results, then the effect of geo on agricultural transfers could have been effectively institutional-specific. Furthermore, the fact that omitting institutional dummies can lead to estimated coefficient of geo being positive and significant (not shown) gives preliminary confirmation of this idea. This important question will be looked at in the following section.

Next, the dummies for mixed electoral systems (*mixed*) and federal regimes (*federal*) are added to the equation (results in column 2). The federal system dummy is positive and highly significant, allowing the idea that agrarian interest tends to be better represented in federal systems. On the other hand, the estimated coefficient of mixed electoral systems, though positive, is insignificant, showing that the crude binary classification of the electoral system works quite well. Confirmation of this conclusion can be seen in column 3, where controlling for the log of the average district magnitude (lavdm) does not, to any degree, affect the results. The only difference is that the coefficient of maj is estimated with less precision (lower t-value) due to the collinearity problem with lavdm ($r = -0.71$). The coefficient of lavdm is negative and insignificant, but turns out to be positive and highly significant when the electoral dummy maj (not shown) is dropped.

A final check of the results is related to the hypothesis of a fixed number of political parties embedded in the models of electoral competition. Indeed, the features of the electoral system also affect the structure of party competition, increasing (decreasing) the number of political parties in proportional (majoritarian) systems and conditioning post-election political bargaining.

To test if the political party structure plays a rule in shaping dairy policy outcomes, an index of the effective number of political parties enpp (Column 4) is added to the equation. Its estimated coefficient is negative and significant, contrary to expectations, but the coefficient of maj did not change importantly. The significant negative effect of enpp, however, is not robust. Indeed, it disappeared when the maj dummy (not shown) is dropped and turns out to be positive and insignificant in the narrow sample (see Column 8). These contradictory results are probably driven by collinearity or mis-specification

problems. Indeed, a potential problem with the specification above is that the effect of political party structure on policy outcomes could be only indirect, for example via more frequent coalition governments (Persson, 2003). In the last case, the above specification is incorrect. Thus, contrary to the findings of Scartascini and Crain (2002) showing a strong effect of party competition structure on fiscal policy, the electoral systems effects on agricultural policy outcomes does not seem to work through the party structure channel, ceteris paribus.

Columns 5–8 repeat the battery of regressions using the narrow sample that excludes the observation of CEEC countries before the nineties, eliminating the more dubious classification, and classifying Switzerland as a presidential regime according to Persson and Tabellini (2002). From this sample, two minor differences emerge. First of all, in the basic specification (Column 5), the magnitude of the effect of pres falls by over 50%, but stays negative and significant. Testing for federal systems, however, the point estimates return to the earlier levels. Secondly, in the narrow sample the estimated coefficients of geo are always positive but never statistically significant.

Finally, from Columns 9 and 10 can be seen that key findings are robust to using WLS or 2SLS estimation.

10.4.3. Interaction effect between geographic concentration and institutions

To test the second hypothesis, namely the effect of geographic concentration on the political institution, the restriction in Equation 10.1 that $\gamma^1 = \gamma^2$ is dropped. This allows the geo coefficient to differ across political institutions, $\mathbf{z}_i$. Because the political institution variables maj and pres are correlated, especially in the broad sample ($r = 0.43$), and given their small variation, the hypothesis has been tested for one institution at a time. Table 10.3 shows the results; note that the specifications are identical to those of Table 10.2 but the vector of control $\mathbf{x}_2$, now include the federal dummy too.

Column 1 shows the interaction effect between geographical concentration and presidential dummy (geo $*$ pres). The estimated interaction effect is positive and highly significant, confirming that geographical concentration only matters for dairy protection in presidential countries. Geographical concentration does not matter in parliamentary regimes, and moreover as the linear coefficient of geo is negative, it also seems detrimental to agricultural transfers. The estimated coefficients of pres and maj have their expected negative sign and are statistically significant. The interaction coefficient of geo with the majoritarian dummy (geo $*$ maj) is strongly positive and significant, and the direct effect of geo is significantly negative. Thus, as predicted by the theory, geographically concentrated groups in majoritarian electoral systems also tend to be better off than those in proportional elections.

Similar results are obtained for the narrow sample (see Column 4 and 5). However, the negative geo effect in this case is smaller and significant at the 10% level only in the specification where geographical concentration interacts with the majoritarian dummy. Finally, running together the interaction effects, the estimated coefficients are both positives, but only the interaction between geo and pres is significantly different from zero (see Columns 3 and 6).

Table 10.3: Interaction between geographical concentration and institutions.

Dependent variable	**Producer subsidy equivalent**					
Regression	**1**	**2**	**3**	**4**	**5**	**6**
Estimation	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**	**OLS**
Geo	−4.18 (2.19)	−7.13 (3.37)	−4.99 (2.40)	−0.59 (0.16)	−2.79 (1.75)	−1.23 (0.75)
Geo ∗ pres	160.76 (4.66)		114.52 (3.76)	104.70 (3.81)		89.94 (2.49)
Geo ∗ maj		56.06 (3.96)	12.71 (0.67)		43.45 (3.39)	10.64 (0.51)
Pres	−18.5 (5.95)	−4.69 (2.37)	−14.51 (3.66)	−13.09 (5.23)	−4.15 (2.50)	−11.61 (2.65)
Maj	−8.75 (6.68)	−11.41 (6.53)	−9.24 (5.24)	−9.65 (8.03)	−11.95 (7.60)	−10.44 (6.14)
Controls	X_2	X_2	X_2	X_2	X_2	X_2
Sample	Broad	Broad	Broad	Narrow	Narrow	Narrow
No. of observations	551	551	551	528	528	528
No. of countries	29	29	29	29	29	29
Adj R^2	0.80	0.80	0.80	0.85	0.85	0.85

Broad refers to the full sample; narrow sample drops the observation of CEEC countries before the nineties (see text). Robust *t*- statistics are in parentheses. X_2 includes the variables in X_1 plus the federal dummy used in regressions of Table 10.2. All equations include a set of year dummies and regional dummies for northa, ocean, eu, eurno, ceec, and asia countries (see text).

10.5. CONCLUSIONS

The intention of this chapter was to test the prediction of recent political economic models linking political institutions to policy outcomes, using an agricultural policy case. The empirical results are encouraging, supporting both the theory and previous empirical findings at the aggregate level. The level of dairy government transfers is lower in majoritarian and presidential systems. In these regimes, the transfers are 6% lower than in parliamentary and proportional systems on average. Moreover, geographical concentration seems to be important for dairy transfers, but only in presidential and majoritarian systems. This supports the hypothesis that within these institutions the political incentives are biased towards geographically concentrated interests.

This last result indirectly throws some light on the important issue of observational equivalence in models of agricultural policy formation, namely pressure group vs. politician–voter models. Such an issue is due to the difficulty in identifying the underlying theoretical models driving the results in the empirically reduced form equation. Recently, De Gorter and Swinnen (2002) suggested that the two models could be identified by means of institutional factors. The examples are given of the proportional representation in Germany and geographic representation in the UK, with a parliamentary system in the latter. Indeed in Germany, farmers are greater in number and more geographically dispersed, and have more influence than the fewer in number and geographically concentrated farmers in the UK: both are features contrary to the collective action arguments (De Gorter and Swinnen, 2002). The results presented in this chapter give strong empirical confirmation to the De Gorter and Swinnen argument. Indeed, the UK–Germany price support preference paradox (from a pressure group perspective) could lie in the fact that the positive effect of farmer geographic concentration due to the UK plurality rule tends to be countervailed by the negative effect of geographic concentration within a parliamentary regime. Indeed, the figures in this chapter suggest that in parliamentary systems, the legislators' incentive is biased toward geographical scattered groups. A parallel argument explains the political economics of the German situation where the proportional–parliamentary system, especially when associated with farms geographical dispersion, increases the marginal weight of the agricultural group, giving preference to higher food prices. In other words, the different incentive effects of different political institutions, with respect to local vs. scattered geographic interests, could help to explain the UK–Germany price support paradox, without the consideration of collective action and in line with the De Gorter and Swinnen arguments.

Some findings could be improved in the future. One of the main shortcomings of the present analysis lies in the small variation of our institutional dimensions in the OECD sample. This reduces the robustness and the potential generalisation of the findings. Extending country coverage through new data collections could be a good investment, especially on the policy outcome side. Finally, this chapter has focused on government redistributive policy in the form of commodity policies. Yet, an extension of this analysis, linking institutions to public good agricultural policy, such as public agricultural research investments, could well be interesting. Indeed, actual theory suggests that political institutions may have a different effect on public good policies than government redistribution and transfers.

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PART IV

Institutions in policy analysis

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 11

An Agent-Based Analysis of Different Direct Payment Schemes for the German Region Hohenlohe

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Abstract

This chapter aims at analysing, with the agent-based model AgriPoliS, some dynamic effects of different direct payment schemes on agricultural structure, farm incomes and efficiency. AgriPoliS is a normative spatial and dynamic model of regional agricultural structures that takes account of actions and interactions between individual farms. The model is calibrated to the region 'Hohenlohe' in Baden-Würtemberg, which is characterised by a mix of intensive and extensive livestock farming. Impacts on structural change, competitiveness and income distribution highly depend on how the policy scheme is implemented. In particular, completely decoupled direct payments have significant and lasting effects.

11.1. INTRODUCTION

The current discussion on the mid-term review of the EU common agricultural policy (CAP) has drawn much attention to the further decoupling of direct payments from production. The proposed policy change is not only to provide a basis for the forthcoming WTO negotiations, but also for the enlargement of the EU. Since it is expected that an application of the Agenda 2000 policies to the accession countries would create enormous budget pressure (Swinbank and Tangermann, 2000), a less costly CAP is needed. The mid-term review of the CAP provided a first proposal for such a policy change (EU Commission, 2002). A key issue is the introduction of a farm specific decoupled income

payment instead of payments coupled to production. This is expected to give farms greater flexibility and to increase their market orientation. Among agricultural economists, not the decoupling as such is discussed, but rather the details of decoupled payments are open to dispute. Among others, some critical points are: (i) a step-wise payment cut; (ii) the establishment of payment entitlements per hectare; and (iii) the transfer of payment entitlements when parts of the farm are sold or leased.

The objective of this chapter is to simulate some fundamental dynamic effects on agricultural structure, farm incomes, and production efficiency that result from a switch to further decoupled income payment schemes and related detailed regulations. For this the agent-based model AgriPoliS (*Agri*cultural *Poli*cy *S*imulator) is applied. AgriPoliS is a normative spatial and dynamic model of agricultural structures. The model explicitly takes account of actions and interactions (e.g., rental activities, investments and continuation of farming) of a large number of individually acting farm-agents. Accordingly, AgriPoliS allows for endogenous structural change. It is particularly suited for analysing structural, allocative and distributive effects of policy changes on the agricultural structure of a small region. In this study, the model is applied to the region of Hohenlohe in Southwest Germany.

11.2. METHODS AND TECHNIQUES

AgriPoliS interprets farms as agents, i.e., as entities that act individually, sense parts of their environment and act upon it (Ferber, 1999). As the main features of agent-based models of agricultural structures have been described elsewhere (Balmann, 1995, 1997; Berger, 2001; Happe and Balmann, 2002) this chapter will not further elaborate on them, but focus on those model components that go beyond the basic Balmann model (Balmann, 1995, 1997). More detailed technical model documentation is available from the authors.

In AgriPoliS, an agricultural region is represented as a GIS-like grid of cells with a size of 2.5 ha each (Figure 11.1). The coloured cells represent agricultural land, which is either grassland or arable land. On some cells, farmsteads are located. They are marked with an X. A farm's total land consists of both own and rented land. All cells belonging to one farm have the same colour; if the land is owned by a farm, the cell is surrounded by a box.

It is assumed that each farm acts autonomously and maximises household income. For the adaptation of the model to the Hohenlohe region, 13 production activities that are typical for the region (pig fattening, pig breeding, turkeys, dairy cows, beef cattle, suckler cows, cereals, sugar beet, rape seed, and permanent grassland) are defined. For production, farmers can choose between 29 investment options (buildings, machinery, equipment) of different types, capacities and sizes. The latter allows implementing size effects, i.e., with increasing size, the costs per unit of production capacity decrease and labour is assumed to be used more efficiently. Farms can rent land, production quotas and manure disposal rights. Labour can be hired on a fixed or per-hour basis. On the other hand, farm family labour can be offered for off-farm employment. To finance farm activities, farms can take up long-term and short-term credits. Liquid assets not used on-farm are saved. Farms quit production either if they are illiquid or if opportunity costs of farm family owned production factors are not covered.

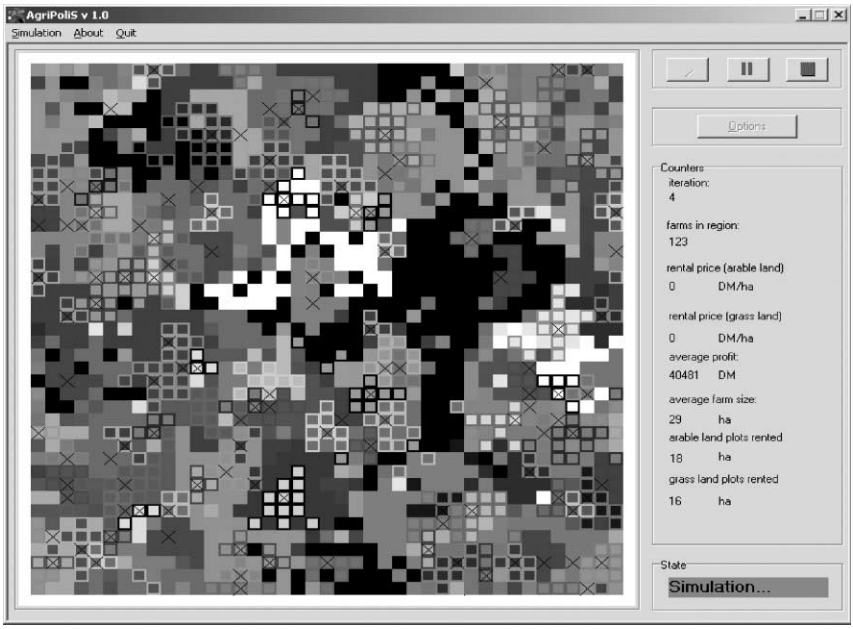


Figure 11.1: AgriPolis—graphical user interface.

Production and investment decisions are considered simultaneously in a mixed-integer optimisation programme. Farm decision-making can be called myopic or boundedly rational because the decision problem of the model farms is highly simplified with respect to strategic aspects. Unbounded rationality would require that farms take account of interactions between farms and technical and political framework conditions now and in future periods. Currently, this cannot be implemented because of computational and methodological problems. For instance, there may not be a unique analytical solution to such a complex decision problem. Hence, a number of assumptions have to be made about how expectation is formed. In the majority of cases, farms follow adapted expectations. Merely policy changes are anticipated one period in advance and included into the decision-making process. If a policy change is expected to cause severe structural effects on key variables (e.g., a drop of land rental prices due to fully decoupled direct payments) then expectations about the respective variables (e.g., rents) are given exogenously. Furthermore, most prices remain relatively constant. Prices of livestock and cereals undergo a slight downward trend, prices of variable labour and agri-services are assumed to show a slow, but steady increase.

New investments affect production capacities for the operating lifetime of the investment. Investment outlays are assumed to be totally sunk. Farms are handed over to the next generation every 25th period. For this decision, opportunity costs of farm family labour are considered to increase by 15%. Accordingly, continuation of farming can be interpreted as an investment decision into either agricultural or non-agricultural training. And finally, farms are differentiated by their managerial ability. To reflect this,

we randomly assigned each farm a managerial ability factor that affects the profitability of the farm.

At start-up, the location of farmsteads as well as the farms' initial endowment with production factors (family labour, machinery, buildings, production facilities, land, production quota, liquid assets and borrowed capital) are specified. During the following periods, these variables change as a result of production, lease, and investment activities of individual farms. Even though farms do not directly interact with each other, they are connected indirectly via markets for products, land, milk quota, and manure disposal area.

The land market is of particular relevance as farms cannot grow independently of land. As farms predominantly grow by renting land, only a land rental market is considered. On this market, land is available either because farms quit the sector or because unprofitable land is let to the market. Each period, free plots are allocated to farms in an iterative auction. For this, each farm determines the plot it wishes to rent and determines a bid depending on the shadow price for land, the number of adjacent farm plots and the distance-dependent transport costs between the farmstead and the plot. As shadow prices for land may increase with land endowment, it would be reasonable to bid for more than one plot at a time. This, however, poses computational problems. Therefore, in addition to the shadow price for only one plot, the average shadow price for renting eight plots at a time is calculated and the maximum of both is taken as the basis for the rent offer. The number of adjacent plots and the bid are positively correlated because size effects in crop production are assumed to be realised with larger field sizes and larger machinery. Finally, the bids of all farms are compared and the farm with the highest bid receives the plot. This process continues until all land is leased or the bids are zero. The renting process alternates between arable land and grassland. As other costs associated with leasing land, such as taxes and fees, are not considered in the initial bid, the actual rent paid is set at 75% of the bid. At the end of each period, existing rental contracts are adjusted towards the average rent paid for newly leased plots. This is done to avoid large fluctuations of rents between periods and to take account of trends.

Technical change is another issue in AgriPoliS. On farms, technical change is mostly embodied in process innovations, i.e., in improved equipment, facilities, or work organisation (Berger, 2001). With process innovations farmers usually expect to realise cost savings. As, in reality farms are highly heterogeneous, it is difficult to determine an exact cost-saving effect. Hence, we assume that with each new investment the variable unit costs of the product produced with the investment type decrease by 1–1.5%. The labour-saving feature of larger investments also represents a kind of technical change.

11.3. MODEL CALIBRATION AND EMPIRICAL DATABASE

The definition of the individual farm agents in AgriPoliS is mainly based on farm accountancy data from 1997/98 for 12 selected farms in Hohenlohe. An adaptation to the financial year 1998/99 appeared not suitable because of the extremely unfavourable situation on pig markets. In a more current version, the financial year 2000/01 is taken as the base year. The chosen farms are considered to be typical for the region, i.e., they cover most important production activities and organisational forms of the region. Table 11.1

Table 11.1: Key characteristics and frequencies of the chosen farms (financial year 1997/98).

	A	B	C	D	E	F	G	H	I	J	K	L
Organisation												
Farm type	PP	PP	D	D	A	A	M	PP	D	M	A	PP
Full-time/part-time	FT	FT	FT	FT	FT	FT	FT	FT	PT	PT	PT	PT
Land [ha]												
Total	22.5	72.5	67.5	30	35	60	50	112.5	12.5	17.5	10	20
Leased	15	67.5	55	10	10	45	20	92.5	5	0	0	0
Arable land	22.5	72.5	40	12.5	35	60	22.5	102.5	5	12.5	10	20
Grassland	0	0	27.5	17.5	–	–	27.5	10	7.5	5	0	0
Family labor	1	1.7	1.38	0.99	1.15	2.27	1.53	1.8	0.72	0.71	0.26	1.16
Milk quota [1000 t]	–	–	203	100	–	–	139	–	56	–	–	–
Livestock [places]												
Beef cattle	–	–	–	–	–	–	–	25	–	5	–	–
Dairy cows	–	–	39	26	–	–	28	–	12	–	–	–
Sows	40	128	–	–	40	–	64	170	–	–	–	128
Fattening pigs	300	600	–	–	–	–	–	–	–	100	–	–
Turkeys	–	–	–	–	–	20,000	–	–	–	–	–	–
Frequency	480	25	120	244	106	22	231	95	389	154	442	298

FT—Full-time; PT—part-time; PP—pig/poultry; A—arable; F—dairy; M—mixed.

provides an overview about key characteristics of the selected farms. Eight full-time and four part-time farms were chosen. Unfortunately, no data are available on the kind and the remaining useful lifetime of farms' production equipment. Therefore, the farms are assumed to operate with buildings, machinery and facilities that are considered to be typical for the region. This information is obtained from the respective agricultural administration in the region. In addition to the figures in the table, equity capital, land assets and private withdrawals are also taken from accounting data. Based on these real farms, 12 model farming systems are defined.

The database underlying these farming systems is calibrated to reflect production capacities and key economic figures of the 12 real farms. Data on prices, production costs and technical coefficients are taken from standardised data collections, which were published for certain regions or the whole of Germany (e.g., KTBL, various years). After calibrating the database at the farming system level, in a final step the region is calibrated to reflect major key characteristics of the real region. For this, each model farming system is assigned a specific frequency (Table 11.1, last row), which is the number of times that this particular farming system is represented in the region. The frequency was determined taking into account the total number of farms in the region differentiated by size, farm type, land use and livestock production. Kleingarn (2002) and Sahrbacher (2003) provide a more detailed description of the data base and the calibration procedure.

The adaptation of the model to the real region was done by minimising the weighted quadratic deviation between selected figures of the model and of reality (Balmann et al., 1998). With respect to a number of variables, the model matches reality quite well. For instance, in the model, full-time farms manage 55,565 ha land, whereas in reality it is 57,464 ha. A more detailed table that compares the model adjustment to reality can be

obtained from the authors. As for the number of farms of a particular type, the adjustment is worse: whereas in the model the number of arable farms is overestimated by 25%, the number of mixed farms is underestimated by 24%. About 50% of the farms in the region are part-time farms, whereas in the model about 25% of the farms are part-time farms. The reason behind is that very small farms are under-represented in the underlying statistical sample. This makes it difficult to properly represent part-time farms. In a final step, the some 2600 model farms that are based on the different farming systems are further individualised with respect to the age and kind of buildings, facilities, machinery, and farm location.

11.4. RESULTS

The following simulation results illustrate possible dynamic effects of several decoupled payment schemes The full implementation of Agenda 2000 by the end of 2002 is taken as the reference scenario. However, as the model data base is derived from financial years before the implementation of Agenda 2000, in a first step the model needs to be calibrated to a pre-Agenda policy situation. This is necessary since adjustment processes to policy changes are not immediate, but are slow and subject to a kind of path dependence (Balmann, 1995). Balmann et al. (2002) undertake a detailed calibration of the basic model and compare the pre-Agenda and Agenda 2000 simulations and check the results for their plausibility. In this study, the policy options as given in Table 11.2 are considered.

Table 11.2: Policy scenarios.

Scenario no.	Scenario description	Scenario elements
REF	Agenda 2000	Full implementation of Agenda 2000 at the end of 2002
I	Payment entitlement per hectare[a]	Each farm receives a single decoupled income payment based on the average payments of the past 3 years. The overall amount is split into parts (payment entitlements) on a per-hectare-basis. Hence, payments are attached to the use of land rather than production. Entitlements are fully transferred if land is rented or let to the market
II	Fully decoupled payment	Each farm receives a single decoupled income payment based on the average payments of the past 3 years. Payments are independent of farm activity, i.e., they continue to be granted if farms quit agriculture
III	Decoupled payment + area payment 50 €/ha	Each farm receives a single decoupled income payment based on the average payments of the past 3 years. This payment is reduced by 50 €/ha of the average land farmed in the 3 years prior to the introduction of the policy. Cultivated land receives a basic area payment of 50 €/ha which is a reward for the land management activity. The decoupled payment part of the scheme is independent of farm activity
IV	Decoupled payment + area payment 50 €/ha + cut	Like the previous scenario + the decoupled payment is cut annually by 5% of the initial payment over the next 20 periods

Set-aside is compulsory; the dairy regime remains unchanged; premium payments for dairy cows are not considered.

[a]This scenario is based on a specific interpretation of the EU commissions' mid-term review of Agenda 2000.

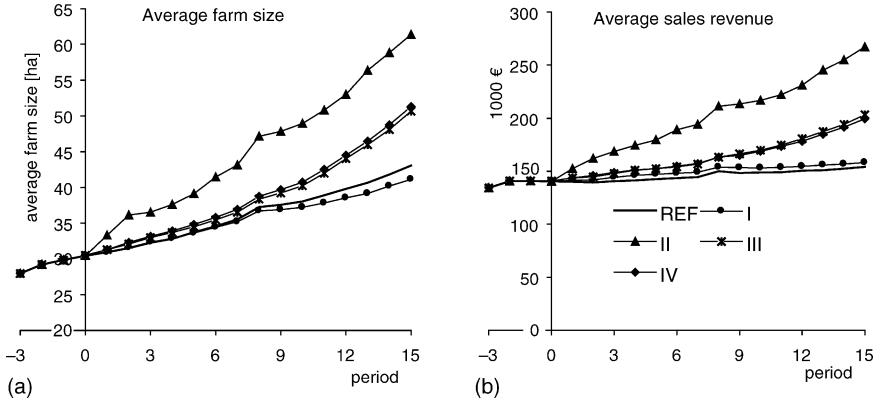


Figure 11.2: Average farm size and average sales revenue.

Figures 11.2a,b show the development of average farm size and average sales revenue over time. This and the following figures show results for four periods prior and 15 periods after the policy change, with period 1 standing for the first period after the policy change. Structural change takes place in all policy scenarios, but is more pronounced if payments are fully decoupled from production and land use. This is underlined by Figure 11.3 in which the reference scenario is contrasted with two decoupled scenarios. Only in the case of a fully decoupled payment, land is increasingly managed by farms with 50 ha or more. Coupling direct payments to farmed land even slows down structural change as compared to the reference scenario.

Figure 11.2 also shows a clear difference between policy scenarios with respect to the way in which farms grow. In the reference scenario and scenario I, average farm acreage grows quicker than average farm revenue. This means that over time, production becomes

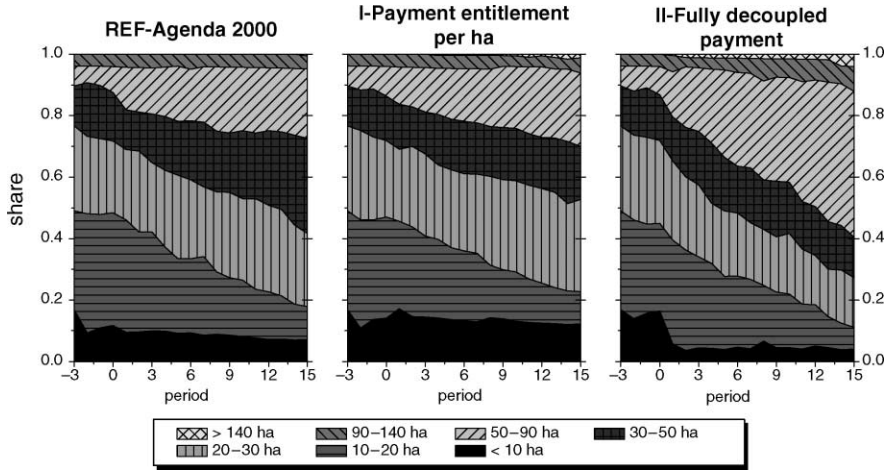


Figure 11.3: Development of farm size classes for selected policy scenarios.

less intensive. In the decoupled scenarios, production is more intensive as both revenue and farm size grow at similar pace. In these scenarios, however, fully decoupled direct payments are not the only reason for a more pronounced farm size and revenue growth. Many smaller farms take the fully decoupled payments with a continuation of payments as a chance to quit production. This changes the composition of the farm sample and therefore creates a sample effect.

What cannot be seen in the figures is that in scenario II with fully decoupled income payments, the model predicts that up to a third of all land (mainly grassland) in the region is not leased at all after the policy change. The introduction of a mixed policy, that on the one hand grants a fully decoupled income payment but at the same time rewards land use with a small base premium of 50 € per ha again ensures that all land is farmed.

As was indicated before, agricultural policies not only affect the farm structure of a region but also the production structure. Table 11.3 shows the average annual change rates of selected production activities after a policy change. Compared to the reference scenario, suckler cow production ceases immediately after the introduction of payments that are decoupled from livestock production. Results with respect to suckler cows need to be interpreted with care because profitability strongly depends on marketing. It is therefore difficult to model suckler cow production in a linear programming model. Dairy production also shows a steady decrease, which is more or less independent of the prevailing policy environment. Although this leads to falling quota prices, this effect is outweighed by the fact that dairy farms do not re-invest in dairy production or quit farming altogether. Intensive livestock production is more dependent on the policy environment. Whereas in the reference scenario, pig production decreases, this could be reversed or slowed down in the decoupled scenarios II–IV. A reason for this is the easier accessibility of land due to lower rents, which alleviates manure restrictions.

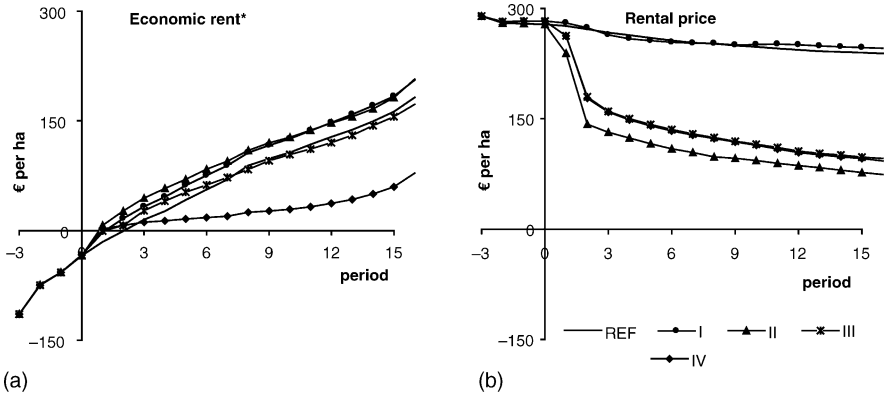
In spite of decreasing total revenues in the region, the efficiency of agricultural production, measured as the difference between net value added and opportunity costs of labour and capital increases significantly in all policy scenarios (Figure 11.4).

With farms leaving the sector, the composition of the farm sample changes and the surviving farms take advantage of relaxed conditions on product and factor markets and

Table 11.3: Average annual change rates of production capacities for marketed products.

	Scenarios (%)				
	REF	**I**	**II**	**III**	**IV**
Cereals	0.56	0.80	0.73	0.81	0.81
Sugar beet	0.00	0.00	0.00	0.00	0.00
Dairy cows	− 9.44	− 9.71	− 11.4	− 9.38	− 9.54
Suckler cows[a]	3.43				
Fattening pigs	− 0.51	0.78	2.40	2.41	2.07
Breeding sows[b]	− 2.41	− 1.34	− 2.07	− 1.71	− 1.62
Turkeys	1.51	1.43	4.37	2.52	3.00

[a]Suckler cow production immediately stops after a policy change.
[b]Production of sows and fattening pigs is not linked.



*The economic rent is what is left to pay for land. It is defined as total income plus rent expenditure minus opportunity costs of labour and capital. Depreciation of facilities that are used no longer when a farm quits the sector are not considered.

Figure 11.4: Average economic rent and average rent paid for leased land.

particularly on the land market. As Figure 11.4 shows, albeit an increasing average economic rent (Figure 11.4a), the average rent paid by the farms for leased land (Figure 11.4b) decreases. With respect to the fully decoupled scenarios, rents decrease dramatically by about 50% shortly after the policy change. This shows that the lower shadow prices for arable land and grassland resulting from decoupled payments are transferred quickly into lower rents. In reality, this process can be expected to last longer because lease contracts usually define a period of cancellation. Rental contracts, however, often include clauses that allow for the adjustment of rent payments to reflect changes in land supply and demand. As at the outset of the model, the share of leased land is about 60% on average, farms with a higher share of leased land will benefit from lower rents (Figure 11.5a).

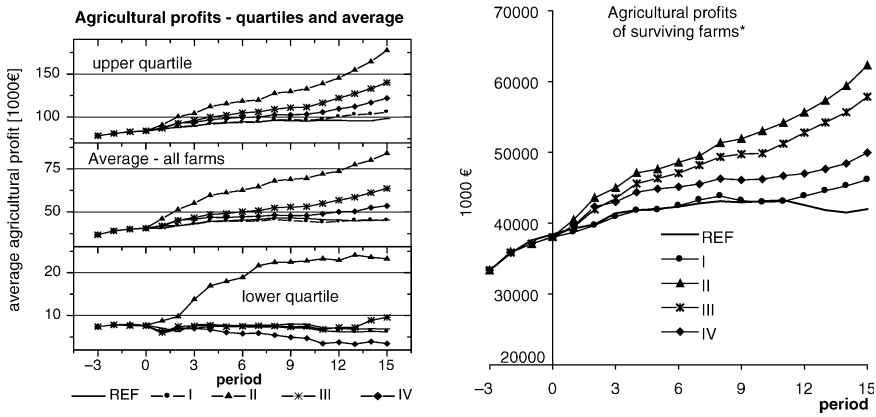


Figure 11.5: Agricultural profits.

On average, the agricultural profits, i.e., the income derived from agricultural activities including transfer payments, show a much stronger increase in the decoupled payment scenarios. Even if direct payments are cut annually (scenario IV), profits increase faster than in the scenarios with payments attached to production or land use. This means that decoupling on average generates a growth potential that outweighs the reduction of direct payments. A look at the averages for the upper and lower quartiles of farms, however, reveals that only in the scenario with fully decoupled payments all farms benefit. In the other decoupled scenarios, only the more profitable farms benefit. One could argue that this interpretation is also the result of the sample effect as the composition of the farm sample changes over time and depending on the policy. An analysis of the farms that survive under all policy conditions (Figure 11.5b), however, shows that these farms can generate increasing profits in any case and even if payments are cut annually. Hence, farms with a growth potential high enough to guarantee the farm business to operate in 15 years time, benefit the most from decoupled payments.

11.5. CONCLUSIONS

The results obtained with AgriPoliS are subject to a number of assumptions that influence the behaviour and interactions of farm agents. Especially since the presented results imply relatively clear conclusions, which probably cannot yet be reproduced with other models, the approach behind AgriPoliS as well as the underlying assumptions needs to be discussed thoroughly. As long as comparable models are lacking, results can only be evaluated along their theoretical and practical plausibility. In brief, the central results of the policy simulations are as follows.

If payments are no longer attached to production, but to land use only (scenario I), this will result in no significant changes in production, efficiency and profits compared to the reference scenario. This is not surprising as at least the cereal payments under Agenda 2000 are considerably attached to land use and widely uniform. In the model, this result is also due to the chosen algorithm on the land market. Free plots are chosen on the basis of distance and transport costs, and not depending on the payment entitlement of a plot.

Fully decoupled direct payment schemes granted independent of agricultural production (scenarios II–IV) show to have strong effects. Shadow prices for production factors fall dramatically as a consequence of the policy. Thus, farmers have stronger incentives to spend less on leasing land and to look for alternative uses of the complementary factors labour and capital. This results in an acceleration of structural change. Marginal land may no longer be occupied. In the model, a basic land management premium of 50 € per hectare was enough to prevent land from falling idle.

With respect to the winners and losers of a policy change, the model results produce a clear answer. Both unprofitable farms and farms with a growth potential, profit from fully decoupled payments. The first group profits because they are rewarded for leaving the sector. This takes away some constraint on the land market as more land is available for lease. The remaining farms have the opportunity to lease land at lower prices and to realise size effects more easily. Furthermore, as these

farms' share of leased land has already been higher at initialisation, farms receive an additional profit from the sharp drop in rents.

The resulting efficiency gains outweigh the disadvantages from an annual payment cut. Hence, decoupling could be seen as a means to reduce the total amount of payments without suffering from severe income losses. The income effect on farms leaving the sector will have to be analysed further as these farms are excluded from the growth potential of remaining farms.

Losers of a fully decoupled payment scheme will certainly be the landowners, as it can be expected that a drop in rents will also lower the sales value of land. This, however, has also consequences for the use of land as a security, which in return could endanger the survival of capital-intensive farms, too. Moreover, it would make it more difficult for farms to exploit the very growth potential that results from the decoupling.

The majority of the above points are plausible from a theoretical and empirical point of view. However, a number of questions remain and cannot be answered to a full extent. Although fully decoupled payments make sense from an economic point of view, their general acceptance by society can be questioned as it will be difficult to justify why farmers should still receive payments when they quit farming (Swinbank and Tangermann, 2000). Food quality and environmental aspects, which form another pillar of agricultural policy-making have also been left out. But it can be expected that these policies have an indirect effect on agricultural structures and production efficiency, too. From a purely economic point of view, the results presented in this paper support the demand for a decoupling of payments which over the past 25 years has repeatedly been advocated by agricultural economists (Koester and Tangermann, 1976; Swinbank and Tangermann, 2000; Isermeyer, 2002). If implemented at reasonable financial terms and time horizons, and if certainty about the future existence of the policy scheme is insured, then a decoupled payment scheme could provide a chance for both policy makers and active farmers to win in the end.

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CHAPTER 12

Organisation of Knowledge Transfer in Agricultural Policy Analysis

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Abstract

This chapter starts from the complex knowledge flow linked with quantitative policy analysis. An overview is given of the different stakeholders, their conflicting interests, the asymmetry in information flow and the asset specificity of a decision support system. Reflections on this predominantly communication problem lead to questions about appropriate institutional arrangements to increase knowledge transfer efficiency. First insights are in favour of a hybrid governance structure integrating long-term contract with spot market knowledge production. The working term "communication facilitator" (CF) is introduced to assign the functional, technical and organisational elaboration of a better knowledge transfer. These aspects are illustrated through the set-up of a policy analysis consortium and a pocket example of evaluating the EU-CAP mid-term review.

12.1. INTRODUCTION

Policy-making often relies on scientific policy analysis based on quantitative model techniques. Quantitative policy analysis implies a vast information exchange between many stakeholders: decision makers, staff of the Minister, farmers unions, environmental interest groups, administrative officers, policy analysts, sector experts, decision support system (DSS) managers, model builders and so on. Building and keeping sector models

operational are highly specialised activities almost exclusively performed by universities and State research institutes. This merely academic environment has its own culture and incentives and uses another language than administrators and other policy actors do. As a consequence, communication problems may arise between modellers and final users. The link between poor communication of scientific research results and poor decision by policy-makers has been explored inter alias by Baskerville (1997).

The question arises whether the efficiency of the knowledge transfer could be improved by designing appropriate institutional arrangements. This chapter explores the sources of the imperfect knowledge transfer in the agricultural policy-making process and discusses possible arrangements to cope with these problems. Insights from literature and theory are confronted with the case of a recently established research consortium in Belgium. This consortium is constituted by two universities, a State research institute and a policy-making directorate (see affiliations of the authors) and works out a DSS, called SEPALE, for agricultural policy analysis. SEPALE integrates cutting edge research on, e.g., advanced economic-environmental modelling techniques and further development of the symmetric positive equilibrium problem (SPEP) methodology (Paris, 2001a) and expertise on, e.g., technical–economic analysis of agriculture, data management and direct policy-making support. The SEPALE consortium observes some imperfectness in knowledge flows and is well placed to think about institutional improvements. In this context, the working term CF is introduced to indicate a (group of) person(s), instruments and an institutional arrangement designed in order to facilitate the knowledge flows between demanders and suppliers.

In Section 12.2, the literature is reviewed in order to obtain insights in the dominant paradigms of knowledge transfer for policy-making. This may serve as a background for analysing the factors causing imperfect knowledge transfer. Section 12.3 discusses these factors from a new institutional economics (NIE) point of view. Properties are reviewed that may influence the final organisational form of knowledge exchange: incentive conflicts, bounded rationality, information asymmetry, trust and asset specificity. Concepts for a more efficient organisation are derived in Section 12.4, from the theoretic reflections and from empirical findings in the SEPALE case. The working term CF is introduced and explained. In Section 12.5, an example is given as an illustration of the numerous problems that need a facilitated communication. The problem is based on actual concerns of the Flemish government with respect to the CAP mid-term review. Conclusions are given in Section 12.6.

12.2. LITERATURE REVIEW: MODELS OF KNOWLEDGE TRANSFER FOR POLICY-MAKING

A first step to understand what may go wrong and what can be improved in the knowledge flow, is to obtain a view on the existing paradigms about the link between policy-makers and policy analysts. This section presents a literature review of models, paradigms or approaches on this link. Although this review is not exhaustive, it should suffice to further discuss the factors causing imperfect knowledge transfer.

The first paradigm is based on a rather rational view of the policy-making process and embraces two opposite models: the rational-comprehensive and the rational-incremental model. In an ideal type, the policy-making process can be separated into a number of sequential steps, which are generally described as agenda setting, decision making, adoption, implementation and evaluation (Porter, 1995). This so-called rational-comprehensive or linear model of policy-making implies extensive consultation and communication. In this perspective, policy-making can be seen as a problem-solving process in which the role of researchers is to acquire knowledge and present all policy options. This model shows that researchers have both time and access to full information and that subsequent knowledge will allow the best policy to be identified. It also assumes that policy-makers will be convinced by the most accurate option. In the rational model, knowledge is seen as neutral so there can be an extensive use of experts. Although it is still considered by some as an accurate and relevant description of the policy-making process, the linear model is rejected at this moment by most researchers in this area. In most cases, the search for alternatives is stopped as soon as a workable solution is identified. Parsons (1995) recognises a variety of factors limiting the rational process such as organisational and individual values. Moreover, the cost of combining and assessing the information is also an important factor (Stone, 2001). Finally, policy-makers are often more interested in satisfying immediate public demands than in exploring all possible options.

In contrast to the linear model, the rational-incremental model sees policy-making as a series of steps in which policies are gradually modified. Lindblom (1980) called this model "satisficing", arguing that policy-makers are usually conservative in decision making. There is seldom enough time or resources to conduct research that would inform policy-makers. Researchers are likely to get marginalised in this model of policy-making. Incremental policy-making reinforces inertia, anti-innovation attitudes, discount of new ideas and gives low incentives for research planning.

Two other mainstreams of models can be distinguished, depending on who, the researchers or the politicians, obtains dominance in knowledge exchange: the knowledge utilisation school (or enlightenment school) and the policy paradigm. The enlightenment model presumes that new knowledge is changing the policy-makers' perception of a problem. This knowledge is then gradually reflected in policy changes (policy-makers may become "enlightened"). While stressing the process that transmits knowledge, this model does not explain what type of knowledge is transferred to policy-makers. Moreover, the social and political context in which this knowledge is built and used is mostly ignored. The other model, the policy paradigm, is a framework of ideas that structures policy-making in a specific field (Hall, 1990). This paradigm defines the problem and the instruments that are appropriate to resolve them. In this model, socio-economic and political factors are the main determinants of whether knowledge is acceptable. Research becomes subordinate to political interests and risks to shrink to a tool with no independent power.

Finally, the network models constitute a concept of knowledge exchange in policy-making in which researchers collaborate with decision-makers. They provide important information, initiate and conduct research and develop network tools such as databases or conferences. They also supply the conceptual language and help to create common ideas that educate the participants. Stone (1996) describes various policy network approaches.

Advocacy coalitions, trans-national advocacy networks, discourses communities and epistemic communities are the most important types of networks. Discourse communities and epistemic communities concentrate on the independent power of ideas whereas the other concepts insist on values and shared beliefs. Competing advocacy coalitions and trans-national advocacy networks can create a situation where knowledge is no longer objective and turn policy into a battle of ideas.

In an attempt to classify the above-mentioned models, paradigms or approaches to policy-making, Hoppe (2002) distinguishes two axes along which a typology of knowledge exchange models can be constructed (Figure 12.1). The first axe concerns the primacy: who has control over the other? The second one looks after the societal logic behind the transfer: is there divergence or convergence between the operational codes of science and politics? At the first extreme of primacy, where science dominates the knowledge transfer, the enlightenment model stands for the divergence between science and politics. On the contrary, the technocracy model expresses a belief that science, convergent to politics, can produce enough insights for a de-politisation in policy-making. At the other primacy extreme, the bureaucratic and engineering models suppose a strong primacy of politics. In the first model, public knowledge infrastructure is embedded in the administration, but the existence of own rules (e.g., in Belgium, formalised by a specific scientific status) emphasises divergence. In the engineer model, however, knowledge is mobilised outside the State institutions. With respect to the policy-making models of Porter (1995) and Lindblom (1980), the rational-comprehensive model rather has to be situated in the science extreme, whereas the rational-incremental model tends to the politics primacy extreme. A broad range of intermediate models exists between the extreme primacy models. The network approaches, discussed by Stone (1996) cover this range between extremities. Hoppe (2002) classifies them as advocacy and learning models.

Empirical analysis of the current manure policy-making in Flanders showed that it is difficult to detect a dominant model of knowledge exchange. In fact, actual knowledge

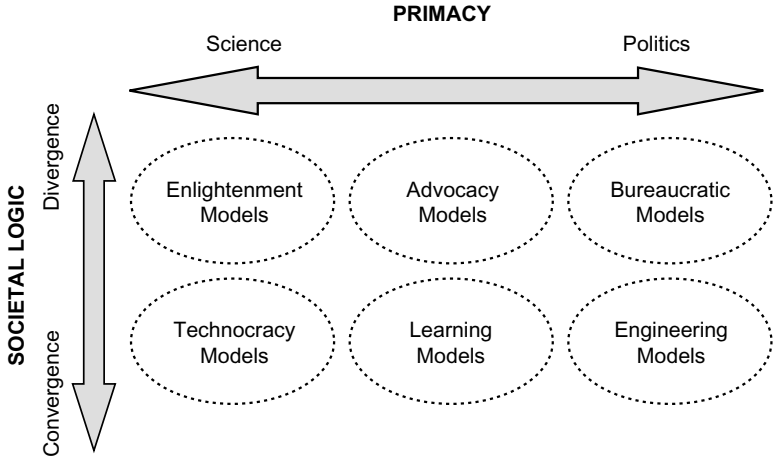

Figure 12.1: The Hoppe classification of knowledge exchange models in policy-making (after Hoppe, 2002).

exchange occurs according to a mix of transfer models, anchoring both primacy extremes to a rather networking approach (Lauwers, 2003). In the Flemish manure policy, technocratic, advocacy and engineer models are dominant but learning effects leading to enlightening ideas cannot be ignored. Moreover, extra dimensions should be included. One of them is the complex and dynamic interaction between beta and gamma sciences in policy-making. Pure "technology driven" agenda setting loses importance in favour of a more integrated social science-driven process. Another dimension may be the participatory approach to knowledge production and implementation in policy.

12.3. INSTITUTIONAL ASPECTS OF KNOWLEDGE TRANSFER

In this section, an NIE view is given to the problem of imperfect knowledge exchange. The NIE approach is supported by a double entry table of the actors involved in the decision-making process (Figure 12.2). This scheme is also used to show the bilateral flows of data, information and knowledge between actors. Own observations of these flows, confirmed with literature (inter alias In 't Veld (2000), using four policy cases in the Netherlands), clearly reveal properties such as complexity and uncertainty. More properties, such as trust and incentive structure, are discussed in order to derive the need for more efficient organisation forms.

Figure 12.2 highlights the four main groups of the science–policy nexus. These groups are not homogeneous but have an internal diversity. In the scheme, the minister is assigned as the final client, but in fact, this can be any political person or body with legislative or executive power. Next to the minister is the staff, which combines immediate support with strategic expertise. The latter forms a continuum with the internal departmental services combining operational expertise from civil servants, extension

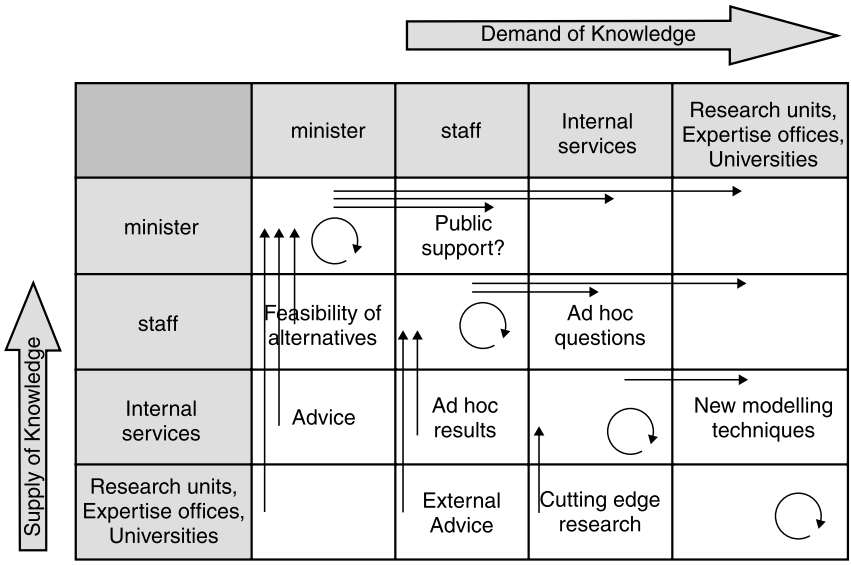

Figure 12.2: Main groups of the science–policy nexus.

officers, specialised departments and applied research units. Finally, external to the public authority, knowledge is provided from applied research units, private expertise offices or bureaus and universities.

This is, however, a highly simplified scheme, ignoring industrial and social stakeholders. Although they are heavily concerned with the final policy decisions, in the perspective of the science–politic knowledge transfer, they can be seen as third parties. Farmers and the agribusiness complex rely on field expertise, farmers' unions, NGO's and other societal groups who have their own expertise bureaus. Their knowledge impact on the policy-making process might be of advocacy nature, but overall learning effects should not be neglected. Figure 12.2 also allows for a schematic representation of the interactions between actors. As each group has an internal heterogeneity, internal flows should not be ignored. There are consultations and collaborations between ministers, between political staff and administrative top management, between administration and applied science. Finally, interdisciplinary research and ad hoc consortia allow for intensive interactions at the external knowledge supply side.

Links in this multi-actor scheme are most apparent between adjacent groups. In fact, there is often a continuum between two nodes of the science–politics chain. Differences between nodes, no matter how small they are, are cumulative. This means that differences between both ends of the chain may become quite substantial. As a consequence, supply and demand of usable scientific knowledge are difficult to tune to each other. To a great extent, this is due to an inappropriate formulation of demand (Hisschemöller et al., 2001), but more generally spoken, communication between scientists among themselves and with policy-makers leaves much to be desired (In 't Veld, 2000). From the demand side, selective problem perception (on purpose or not) frequently happens. At the supply side, this selective problem perception may be amplified by the search for simplifying technological solutions. To come to a more thorough assessment of the incomplete knowledge transfer problem, the next paragraphs are dedicated to analysing its properties. This may help to design institutional arrangements enabling a more efficient knowledge transfer. Incentive structure, uncertainty, information asymmetry, trust and asset specificity will be treated successively, focussed on the knowledge transfer in a DSS.

A multi-actor problem asks for multiple incentives. The problem arises how to get the researcher to act in the best interests of the policy-maker. This is not necessarily a problem, provided that the politicians aim at the best use of knowledge and that researchers are adequately compensated for their research efforts. From the research of In 't Veld (2000), however, one has to conclude that the actors in the policy arena are not really knowledge driven. They do not express a strong demand for knowledge. In fact, policy-makers often demand the knowledge that can support an a priori agenda. Midden and Verplanken (1990) observe that an a priori point of view rather becomes more extreme than more refined in case of such a knowledge demand. Knowledge demand can even be a time gaining instrument to postpone decisions. Up to a certain extent this also applies to the scientists in the scene: they are rather interested in publishable than in usable knowledge.

Incompleteness is inevitable in particular when the object of information is complex. It is well known that complexity and thus subsequent uncertainties give rise to bounded rationality. The complexity of the society in which we live and the uncertainty about the

future is synergetic with the above-mentioned incentive conflict. Limits are also imposed by the incompleteness and inadequacy of human knowledge and of the computations people can carry out, even with the aid of the most powerful computers (Simon, 1992). As a consequence, precise knowledge for solving social problems is unrealistic. Because of these limits, Williamson (1998) argues that decision makers must satisfy and come up with "good enough" responses, which is in contradiction with the concept of the utility maximisation of rational (-comprehensive) choice theory. Another neglected aspect of uncertainty specific to DSS data is described by Hättenschwiler (1999). A DSS is based on *situations* (i.e., data—often creating an incomplete knowledge base) which are combined with *scenarios*. Data warehousing systems are shown to be very powerful in extracting the *facts* (past horizon) but propose few mechanisms for managing scenarios (uncertain future horizon).

Both the complexity of information and the multiple steps it has to pass from science to politics lead to information asymmetry. With respect to information asymmetry, transaction costs such as adverse selection and moral hazard appear. These costs include ex ante search costs, associated with adverse selection (hidden information) and/or ex post monitoring and enforcement costs, associated with moral hazard (hidden action problems). Moreover, the multi-actor involvement makes the decision-making process vulnerable to diverging interests (differences in incentives) and to disciplinarily biased knowledge transfer. This explains why a lot of knowledge is not used or why some institutions and not others are involved in knowledge production (In 't Veld, 2000). Users of knowledge have the ambivalent attitude to have on one hand a sincere interest in additional information, but on the other hand not to use the information produced. Hisschemöller et al. (2001) concludes from case studies that people who have to make a decision in a very complex environment, are searching for a tool to structure and simplify policy-making but do not know in practice how to use it. Another reason causing information asymmetry is that at the knowledge holder side, the type of knowledge is often so specific that fragmentation occurs. Information asymmetry is not a real problem, as long as the actors have the same objectives. This is, however, clearly not the case and contractual incentives should be found to overcome this problem and to come to a win–win situation. Contractual incompleteness exposes the contracting parties to certain risks, which can lead to mal-adaptation costs or a hold-up problem (Klein, 2000).

Trust may be a solution for such a specific risk problem (Luhmann, 1988). In a trust relationship, the knowledge demander is the trustor. His characteristics are expectations, belief and vulnerability. Questions such as "does the policy-maker expect results, recommendations on alternatives, new solutions?" and "does the policy-maker believe that he is in charge of the decision-making process?" are crucial. Interesting to this respect is the study of Kreie et al. (2000) who explain the growing interest in end-user computing as a sign of lack of trust. On the supply side, characteristics of the trustee (supply of knowledge) are competence and reliability. Hereby, questions such as "how robust is the knowledge, which is produced by DSS?" and "what is the maturity of modelling technology?" are posed. Different trust levels exist: personal trust and institution-based or system trust (Lane, 1998). Each level can have a role in encouraging or preventing trust development at the other level. Thus, although there are more levels, each improvement of trust on whatever level will have a positive impact on the other levels.

Finally, appropriate knowledge transfer supposes an adequate investment in a DSS as a knowledge exchange tool. A DSS is composed of data, documents and models from which knowledge is derived and communicated to the decision-maker. According to the dominance of one of these components, DSS can be grouped in data-driven, document-driven, model-driven, knowledge-driven and communication-driven (Power, 2000). Besides the physical architectural nature of a DSS (mostly the data, document and model components), there is a human aspect of core competence (the knowledge-driven component) developed from learning effects during the policy-making process. The need to invest in an operational DSS gives rise to asset specificity problems. Investments such as those in an agricultural sector DSS are usually expressed in terms of specialised models and man-years, and thus create strong physical and human asset specificity. Asset specificity is a transaction property that highly influences the final organisational form (Williamson, 1991).

12.4. CONCEPTS FOR A MORE OPTIMAL ORGANISATION

In this section, the above-made reflections on typology (Section 12.2) and institutional aspects (Section 12.3) are used to derive concepts for a more efficient organisation. The SEPALE consortium example is treated in this section as a case illustrating the arguments. First insights in the policy knowledge exchange problem lead us to a hybrid governance structure proposal, which integrates a long-term contract or an own (= from the policy point of view) organisation unit with spot market knowledge production. Similar findings on the organisation of information production were obtained with respect to implementation of the rural development plans (Carels and Lauwers, 2002).

Further development of more efficient institutional arrangements should be guided by three questions: (1) Who is responsible for optimal knowledge flow? (2) How is the knowledge flow mediated? (3) Where should this be organised? First, the working term CF was assigned to the techniques to be developed in order to respond to the second question. However, this term may also be attributed to persons (see first question), in particular to enable the communication with the DSS-builder (Scholten et al., 2000). But as the organisational form cannot be de-linked from the third question, we propose to extend the working term to the overall institutional arrangement concept, which subsequently is decomposed in a CF-technique, CF-function and CF-institution. The three different components of the CF as they are currently conceptualised are shown in Figure 12.3.

The CF-technique or "how" knowledge flows should be mediated, is at this moment still the most unclear component. Similar to the knowledge itself, the mediating techniques will also be the subject of a learning process. Interaction and participation are key concepts. We also refer to what Gallouj (2000) calls "translation and absorptive capabilities". The CF must be aware of the knowledge absorption capacity of each receptor. This implies that models should be customised, where necessary, to each actor involved. At present, the CF-technique is mainly based on the development of "pocket" examples of the sector models. Communication through highly simplified pocket models should familiarise both policy-makers and multi-disciplinary collaborators with the most

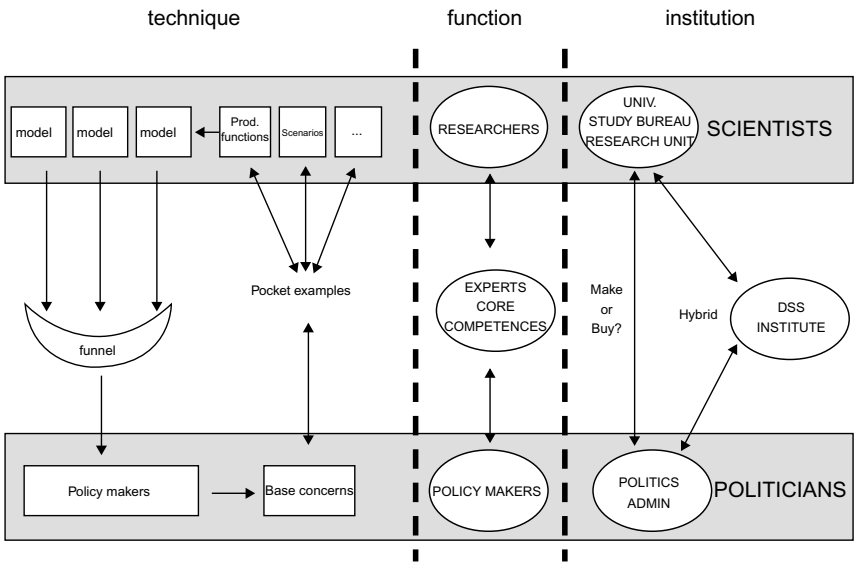

Figure 12.3: CF technique, function and institution.

elementary principles of optimisation, resource endowments, production and cost functions, scenarios and so on. The pocket examples not only stimulate communication among modellers but also increase participation in this discussion from the policy-maker side.

The CF function refers to the question "who" and it is filled in with persons, incorporating skills for data collection, research mechanisms and modelling. Ideally, this group of people should be able to follow on the one hand cutting-edge research and the associated jargon and to detect on the other hand the real content of analysis needs. In this capacity, they belong to or at least try to become part of both scientific and policy-making networks. They also play an important role in the memory and knowledge storage function (incorporation of the learning processes).

Finally, the question "where" looks for CF-institutions as a set of rules to stimulate investments in CF-techniques and CF-functions. These "core competences" need a certain continuity. Hertel (2000) suggests the lack of continuity as one of the biggest problems with agency-based projects for quantitative analysis. Neither the administration has the incentive or capacities to integrate them, nor is the academic reputation favouring routine matters. An intermediate institute should preserve the organisational memory and routine, embedded in a network of academics, administration and other stakeholders.

Some empirical validation of what is said above is based on observations within the policy analysis consortium SEPALE. The quantitative policy research basically covers rather "traditional" (positive mathematical programming (PMP)) and more cutting-edge sector modelling (SPEP). Both are advanced techniques demanding high absorptive capabilities at the demand side, if not facilitated. Within the consortium, network links are possible to other modelling techniques (econometric and simulation models), other disciplines (mainly agronomic knowledge) and to administrative and policy-making services. Therefore, the CF-function has been allocated to the State research institute.

This is not only consistent with the data collection function, but also with the CF-institution solution. Indeed, the latter has to be seen as an organisation (in this case a State institute) allowing the development of core capacities.

12.5. CASE: ASSUMPTIONS ON COST FUNCTION

During model-based policy analysis, important decisions on model simplifications have to be made. Simplifications inevitably lead to information biases, of which in the best case only the modellers are aware. The example in this section deals with a rather general technical decision on how to introduce cost functions in the model. Several possibilities of introducing functional forms of cost functions exist. Although this belongs to the core of micro-economic modelling, little is known about the impact on selective solution perception.

The case is exemplary for numerous decisions in DSS to policy-making. The case is, however, not completely arbitrary. Cost function choice is assumed to influence the results of the simulation of the so-called "internal competition" effect of the Mid Term Review of Agenda 2000. Internal competition is expected when farmers who receive fully decoupled payment will increase the supply of previously non-subsidised crops such as potatoes, and thus distort competition with non-subsidised farmers. As will be illustrated, simulation results depend on which cost function is assumed to reflect most correctly production decisions at farm level, since there is a duality between production and cost functions.

Cost functions describe how the costs will evolve when a farmer decides to increase or decrease his production. Mathematically it can be a function $C = f(y)$ of output only, but it can also be a function $C = f(x_1, x_2, y)$ of both inputs and outputs with x_1 and x_2 representing two types of input, and y the output. The choice of the functional form of the cost function influences the choices that can be simulated. The cost function only dependent of output $C = f(y)$ does not allow substitution between different inputs. It is implicitly assumed that for a quantity y always the same quantities of inputs x_1 and x_2 are needed. With the second cost function $C = f(x_1, x_2 y)$ dependent on both inputs and output, a quantity of output y can be produced with a bit more x_1 and less x_2 or with a bit more x_2 and less x_1. The results during simulation can of course be different.

Although most modellers are familiar with this, the real consequences of these assumptions are often not explored throughout. The following two different models will demonstrate the effect of the choice of the functional form of the cost function.

The first pocket model uses a simple quadratic functional form only dependent of output. The function is estimated per farm with maximum entropy Leuven estimator (Paris, 2001b). Substitution between inputs is not possible in this case. The second model uses a cost function able to describe the decreasing marginal product of an increase of input use while keeping other inputs use constant. This model is based on the framework described by Howitt (1995). Data are retrieved from the Belgian FADN. Both models run with data of arable farms, in particular data from 78 farms in the loamy and sandy-loam regions for the year 2000.

In both cases, a price elasticity matrix can be calculated, to illustrate the differences in behaviour as it appears in their functional form. The pocket model with the cost function only dependent on output (Table 12.1) assumes that the farmer can only decrease his production by decreasing the land allocation. As a consequence, a price increase of wheat sharply increases the demand for land for wheat. As a result, production of other crops decreases. This first model with a fixed availability of land has, therefore, large negative cross-elasticities. In the second model (Table 12.2) with a functional form dependent of inputs and outputs, an increase in production can also be achieved by increasing the input use (fertiliser, labour, pesticides,…). In this case, cross effects are closer to zero. The more important a crop is, the more these effects on other crops can be observed.

The choice of functional form of the cost function choice becomes more complex when looking at the simulation results. At the moment of this exercise, the final decoupling of the direct payment as a result of the mid-term reviewof Agenda 2000 was uncertain. For this a complete decoupling as well as eligible potatoes are assumed in the models. Table 12.3 presents the results of the simulation. Except for the wet pulses, the change in land use of all crops is more pronounced with the function dependent on both inputs as outputs. The inverse occurs for the production. This means that the second function is more flexible in changes of acreage and less flexible in changes of production. Moreover, the form of the cost function has less impact on the results of the supply level than on the activity level. Internal competition would be estimated as substantial when looking at the activity level but less problematic when looking at the supply level.

The example shows the importance of the assumptions behind cost functions. However, by presenting the results of the pocket model and discussing them between modellers and policy decision makers, better insights in what will really happen becomes possible. The choice can indeed not be made solely by modellers, but needs involvement of agronomical experts and even farmers. Instead of fighting a battle to defend one's belief, such discussions could reveal those aspects about farmer's behaviour, which are important for policy analysis and decisions. More in general, it also shows the danger for policy-makers of relying on published modelling results without having clear insights in the assumptions and thus for scientists the recommendation to give this information when publishing results.

The above-described example is not an isolated, just illustrative case. In Flemish manure policy-making, problem recognition is merely based on flat rate nutrient production estimation. It means that nutrient production is assumed to be linearly dependent on livestock numbers. This ignores the enormous variability in environmental efficiency (Lauwers, 2003). Under this hypothesis, it is not surprising that policy

Table 12.1: Price elasticity matrix of the cost function pocket model only dependent on outputs.

Price acreage	**Other crops**	**Cereals**	**Industrial crops**	**Potatoes**	**Wet pulses**
Other crops	1.416	−0.244	−0.046	−0.060	−0.021
Cereals	−0.056	0.130	−0.121	−0.156	−0.055
Industrial crops	−0.031	−0.351	0.948	−0.086	−0.030
Potatoes	−0.024	−0.276	−0.052	0.954	−0.024
Wet pulses	−0.035	−0.400	−0.076	−0.098	1.944

Table 12.2: Price elasticity matrix of the cost function dependent on both inputs and outputs.

Price acreage	Other crops	Cereals	Industrial crops	Potatoes	Wet pulses
Other crops	0.995	−0.115	−0.016	−0.020	−0.004
Cereals	−0.043	0.074	−0.133	−0.170	−0.031
Industrial crops	−0.006	−0.128	0.982	−0.023	−0.004
Potatoes	−0.005	−0.114	−0.016	0.980	−0.004
Wet pulses	−0.006	−0.134	−0.018	−0.024	0.996

Table 12.3: Simulation results of complete de-coupling.

	% Increase acreage		% Increase production	
	Model 2	Model 1	Model 2	Model 1
Sugar beet	6.11	0.24	0.00	0.00
Other crops	15.93	10.98	3.51	4.89
Cereals	−9.44	−4.33	−3.45	−4.42
Industrial crops	16.99	10.05	9.30	10.40
Potatoes	14.92	8.04	6.51	7.87
Wet pulses	17.45	23.57	9.34	20.70

alternatives are almost exclusively based on decreasing livestock or processing already produced nutrients, rather than on the prevention of nutrient production by giving incentives to increase eco-efficiency.

12.6. CONCLUSIONS

The knowledge transfer typology in Section 12.2 reveals that the policy relevant information flow does not follow a unique pattern. It shows that science-based policy-decision support should take into account the role and involvement of many stakeholders (and the related selective problem perception and knowledge building) and of the changing role of social sciences in problem solving.

From the institutional analysis, it is retained that mutual trust is a necessary basis for transferring information in an atmosphere of information asymmetry, incentive conflicts and uncertainty. Trust should find an institutional basis intermediating loyalty to the politician-client and scientific methodological soundness. A typology of DSS highlights the different aspects of data collection, search mechanisms and skills indicating the importance of core competence development. An appropriate DSS should not be limited to a strictly model-based DSS, but has to integrate exhaustive data, knowledge and document management needs and has to stimulate communication.

The typology and institutional conclusions indicate that knowledge transfer should be organised in an institution with sufficient continuity (long-term contract), such that it can account for learning effects and develop competencies. From the primacy of politics point of view, such an institutionalised knowledge exchange has to be seen as an intermediate between the bureaucratic and the engineering model of knowledge transfer. In neo-institutional economics, using a “make-or-buy” analogy, such an intermediate is typified as a hybrid organisation. The institution has to safeguard a scientific integrity, but

nevertheless accomplish a participatory role in the multi-actor (stakeholder) policy-making process. Such an intermediating and communicating institution has to develop specific tools that facilitate communication and that reduce information asymmetry and transaction costs associated with the knowledge transfer. Such an organisation has to avoid as much as possible selective problem recognition and selective solution supply. In this paper, the term CF is launched to indicate the three functions to be fulfilled in knowledge transfer.

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PART V

Market metamorphosis and chain dynamics

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 13

Markets in Metamorphosis: The Rise and Fall of Policy Institutions

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Abstract

Consumer concerns over food safety, a growing interest in food quality attributes with credence properties, and the emergence of agricultural biotechnology, have acted as exogenous shocks to the agri-food sector. In all three cases, heightened information asymmetry characterises the new reality. The resulting transaction costs are the catalyst for institutional adaptation. This chapter examines the relationship between transaction costs and institutions within the context of a changing agri-food sector. New policy institutions emerge and existing institutions wane. The challenge for policymakers lies in creating the conditions for flexible adaptation of the institutional environment without stifling innovation or investment through the creation of inappropriate incentives or through a failure to act.

13.1. INTRODUCTION

Emerging issues with respect to food safety, food quality and biotechnology are affecting agri-food markets worldwide. These changes create new sources of transaction costs and are the catalyst for institutional adaptation. In the absence of institutional adaptation, high transaction costs lead to market failure, impede economic growth and hamper competitiveness. This chapter examines the relationship between transaction costs and institutions within the context of the agri-food sector (see also Hobbs, 2003). A central theme of information asymmetry permeates the discussion. Three exogenous shocks to agri-food markets, in the form of food safety concerns, new food quality attributes and biotechnology innovations are discussed. The effect of these changes on information asymmetry and transaction costs, and the implications for institutional adaptation are examined.

13.2. TRANSACTION COST CONSIDERATIONS

Coase's (1937) original insight that transactions do not occur in the frictionless economic vacuum implicitly assumed by neoclassical economics, but that there are costs to carrying out any exchange, led to the development of Transaction Cost Economics and has profoundly altered economic analysis of industry and market structures. A burgeoning literature has tested the hypothesis that firms and markets are alternative co-ordination mechanisms for transactions, and has more generally investigated the impact of transaction costs on vertical co-ordination (Shelanski and Klein, 1995; Hobbs, 1996, 1997; Boger, 2001).

Williamson (1979) observes that the combination of bounded rationality, opportunism and asset specificity, in the presence of information asymmetry, leads to transaction costs. Information asymmetry and uncertainty are recurrent themes in the transaction cost approach to understanding the role of contracts and the nature of inter-firm relationships within a supply chain. Transaction costs include search (information) costs, negotiation costs, and monitoring and enforcement costs. Ex ante search costs include (but are not limited to) the costs of locating reliable buyers or sellers, of discovering relevant prices and of determining product quality specifications. Negotiation costs arise from the physical act of the transaction and can include auction or middlemen commissions, the costs of drawing up contractual agreements, etc. Monitoring and enforcement costs occur ex post to an agreement to engage in a transaction and include the costs of ensuring that the pre-agreed terms of the transaction are met. Monitoring and enforcement activities can include monitoring the actions of buyers or sellers, monitoring product quality or seeking legal redress to enforce contractual terms.

Institutions evolve to minimise transaction costs. For example, if the search costs of discovering market prices for an agricultural commodity are particularly high, price information institutions (whether public or private) may emerge. In the absence of effective legal institutions, contingent contracts are difficult to write and to enforce. The inability to safeguard investments in specific assets through enforceable contracts leads to hold-up problems and under-investment. An appropriate institutional structure is needed to facilitate transactions and provide the stability necessary for investment and growth.

In the absence of effective institutions, firms may internalise transaction costs through vertical integration. Williamson (1979) argued that the governance structure that emerges minimises the sum of production and transaction costs. The governance structure of transactions depends on the characteristics of the transaction (uncertainty, frequency and asset specificity) and on the institutional environment surrounding that transaction.

The changing nature of agriculture and food markets creates information asymmetry, introduces new uncertainties and often requires asset specific investments. *Ceteris paribus*, this reduces the role of commodity spot markets, leading to closer forms of vertical co-ordination such as contracts, value chain alliances or vertical integration.

For the transition countries of Eastern and Central Europe, the lessons of institutional development have been marked. In the absence of effective legal, financial and information institutions, high transaction costs stifle economic growth and the development of a functioning market economy. Policies to foster the development of market institutions, for example, policies related to property rights, enforceable contract

laws and effective commercial banking systems have been an important part of the transition process.

Institutional evolution is not limited to countries in transition or to developing countries. Developed market economies experience exogenous shocks, whether in the form of a new technology or product, a new animal or plant disease, a new consumer concern or an environmental externality, that alter the transaction environment. The resulting disequilibrium creates new sources of transaction costs. Some policy institutions become less relevant, or slide into obsolescence. In their place, new institutions evolve: private sector institutions or institutions born from regulatory intervention. The remainder of this chapter discusses three "exogenous shocks" impacting agri-food markets, together with the information asymmetry and transaction costs consequences of these changes. The changing role of policy institutions is examined.

13.3. FOOD SAFETY AND INSTITUTIONAL ADAPTATION

Food safety has become a central issue for consumers, for the agri-food industry, and for policymakers. The emergence of bovine spongiform encephalopathy (BSE) in the UK cattle herd, and the subsequent discovery of BSE cases in a number of other European countries, Japan, Canada and the US, has had a major impact. It is suspected that there is a link between BSE in cattle and a new variant of Creutzfeld–Jacob disease (nv-CJD) in humans. As the Canadian experience in 2003 has shown, discovery of BSE in a domestic cattle herd, even on a very small scale, can lead to an immediate loss of access to export markets, causing large economic losses for the industry. For consumers, compounding this uneasiness over food safety and a perception that food production methods may require closer scrutiny, has been a series of other high profile food safety scares. These include outbreaks of food-borne illnesses from *Salmonella*, *E. coli* 0157:H7 and *Lysteria* pathogens, together with incidents such as the contamination of livestock feed with dioxins in Belgium in 1999. In Europe in particular, public confidence in the food supply and the regulatory institutions in place to protect consumers has been severely weakened.

Two market failures arise from the production of unsafe food. Firstly, unsafe food creates a negative externality if the social costs it creates (medical costs, lost productivity due to illness, psychological costs, etc.) outweigh the private costs of the firm(s) producing the food. Thus, the market over-produces unsafe food. However, there is also a market failure due to information asymmetry, since rational consumers would not knowingly consume unsafe food. Usually consumers cannot identify unsafe food (e.g., the presence of pathogens) prior to purchase through search activities. Food safety is often an experience attribute that is only apparent to consumers after consumption (a subsequent illness). In other cases, food safety has credence properties: consumers may not be able to detect an "unsafe" attribute even after consumption. This would be the case with BSE-contaminated beef products.

The information asymmetry from food safety problems arises because the seller of the food tends to have more knowledge about its safety than does the buyer. In the absence of a credible food safety "signal" (for example, third party inspection), consumers incur

transaction costs (ex ante search costs) in determining whether an experience or credence attribute is present.

The renewed public and regulatory focus on food safety acts as an exogenous shock to the agri-food sector. Policy institutions adapt new regulations emerge to deal with the market failure, and new sources of transaction costs arise. The following section documents some examples of institutional adaptation in the European Union (EU).

13.3.1. New policy institutions in the EU

Revamping of food safety policy institutions in some European countries pre-dates the full-blown emergence of the BSE crisis. Although the BSE issue had simmered for a number of years, it erupted onto the European policy scene in 1996 with the announcement by a UK government-appointed scientific panel of a possible link between BSE and nv-CJD. Even before 1996, however UK public unease over food safety was brewing, following several pathogen-related food-borne illnesses, and the undercurrent of disagreement and uncertainty over whether BSE in cattle posed a threat to human health. UK food safety regulations had not been updated in decades when the government introduced the 1990 Food Safety Act. The Act was primarily focused on reducing pathogen-related food-borne illnesses, introducing new standards for microbiological testing and temperature control.

Far more significantly, however, the 1990 Food Safety Act fundamentally changed the legal liability incentives for downstream participants in the food supply chain. It did so with the introduction of a due diligence defence clause. Retailers were made directly liable for the safety of the food that they sold, regardless of the source of contamination. Previously a manufacturer's warranty had been a sufficient defence for a retailer in the event of a food safety problem. The 1990 Food Safety Act required food retailers to show that they had exercised due diligence in monitoring downstream suppliers, and in monitoring and testing the safety and quality of products from these suppliers (Hobbs and Kerr, 1992). Thus, the Act increased transaction (monitoring) costs for downstream food firms in dealing with their suppliers. The transaction costs of successive spot market transactions rose, creating the incentive for closer forms of vertical co-ordination between retailers, processors and producers through contracts or strategic alliance partnerships.

Institutional adaptation is a dynamic process, with potential implications for industry structure. An exogenous shock (concern over food safety) leads to increased transaction costs for food firms and consumers in ensuring that food is safe, and a regulatory response to create a new policy institution. The intention of the regulatory response may be to change the incentive structure for firms and to reduce the incidence of food safety hazards. In doing so, however, a new set of transaction costs arises or the distribution of transaction costs changes. Firms adapt by altering their supply chain relationships. If the new transaction costs associated with using markets are sufficiently prohibitive, Transaction Cost theory predicts the vertical integration a more efficient governance structure. A change in a key policy institution with respect to food safety can have far-reaching (and probably unintentional) effects in terms of the move to closer vertical co-ordination widely observed across many segments of the agri-food sector. Any analysis of this type

of policy response should consider both the direct incentives and outcomes targeted by the policy, together with the indirect effects on transaction costs from a change in the institutional environment.

Changes have also occurred within EU policy institutions in response to the increased public policy priority afforded to food safety. The need to restore public confidence in EU regulatory institutions has been a motivating factor. The EU 2000 White Paper on Food Safety proposed a number of new pan-European policy institutions, including new legal frameworks for food safety and for animal feed, enhanced monitoring and reporting requirements for food-borne diseases and zoonoses (e.g., Tuberculosis, Salmonellosis and Listeriosis), and revamped food hygiene regulations (Commission of the European Communities, 2000). The establishment of a European Food Safety Authority (EFSA) was proposed as a conduit for generating and disseminating independent scientific advice on matters related to food safety. The EFSA was created in 2002.

The EU food safety policy institutions illustrate how institutional adaptation responds to new sources of risk and transaction costs and how these changes create a new transaction cost environment for the agri-food sector. The resulting disequilibrium spurs a transaction cost reducing response from agri-food firms. The DG Health and Consumer Protection acknowledges that prior to the new set of policy institutions, EU rules on animal feed were focused on "furthering productivity of livestock farming … (and) providing information to the stock breeders on feedingstuffs' characteristics", together with reducing internal barriers to trade in livestock feed (DGHCP, 2002). Thus, the previous policy institutions were primarily concerned with reducing search costs for stock breeders. Following two major food safety scares that had their roots in livestock feed (BSE and dioxins), the emphasis shifted from a producer-oriented to a consumer-oriented focus. This external "shock" produced a new set of information asymmetry-driven transaction costs with respect to the content, origin and safety of animal feed and food. Institutional adaptation has resulted in a shift in focus towards the protection of human and animal health, and to some extent environmental protection.

A proposal for instituting a positive list of allowable feed materials in the EU was made in the 2000 White Paper on Food Safety, and has subsequently been under closer examination (Commission of the European Communities, 2000). If it were introduced, this would create compliance costs for feed manufacturing firms and monitoring costs for livestock producers in ensuring that feed included only allowable ingredients. It could create artificial barriers to entry in the EU feedstuffs market, restricting the ability of potential new entrants to compete in this sector through product innovations based on new technologies or ingredients. Potential new entrants with an innovation in livestock feeding would incur higher transaction (negotiation) costs in obtaining regulatory approval for their new products.

The EFSA is an institutional response to the perceived need to redress information impactedness with respect to food safety. The EFSA provides independent scientific advice on all matters that affect food safety, covering all stages of food production from animal feed to the supply of food to consumers (EFSA, 2003). It is intended that the EFSA will facilitate the collection, evaluation and dissemination of information on scientific aspects of the risk assessment process with respect to food safety, although it does not have decision-making power or risk management responsibilities. If effective, the EFSA

should reduce information costs for policymakers. Far less clear is the extent to which the EFSA could provide information on food safety risk assessments that reduces transaction (search and monitoring) costs for firms in agri-food supply chains.

These examples have shown that food safety crises shock the agri-food system out of equilibrium. Information asymmetries arise with respect to the safety of food products and the production and processing practices of downstream suppliers. There is a general increase in uncertainty in the transaction environment. Policy institutions evolve to deal with the information asymmetries, partly by changing the incentive structure for firms to undertake enhanced monitoring activities, and also by reducing information costs for policy makers and key decision-makers in food supply chains. Food safety policy institutions need to be flexible to adapt to the changing transaction environment as new food safety hazards emerge. The challenge lies in executing institutional adaptation without creating regulations that unduly limit competition or fundamentally alter supply chain relationships.

13.4. FOOD QUALITY AND INSTITUTIONAL ADAPTATION

The second "exogenous shock" driving changes in agri-food markets is consumer demand for new food quality attributes with credence characteristics. Firms have an incentive to signal the presence of high-quality credence attributes to consumers through labelling and/or certification, for example, organic, environmentally sound or animal welfare-friendly products. Credence attributes that are perceived as low quality by some consumers (for example, genetically modified (GM) food) can lead to information asymmetry and market failure if there are insufficient incentives for private sector players to identify the attribute. For quality attributes with experience properties, such as the palatability of meat products, sellers have an incentive to develop signalling mechanisms to reduce search costs for buyers, including consumers, thereby increasing the net price received by the seller. Repeated (duplicated) measurement and sorting activities by buyers is inefficient, therefore sellers have an incentive to reduce buyers' needs to conduct costly measurement of product quality through undertaking these activities once and then credibly signalling product quality to buyers (Barzel, 1982). Sellers may also have an information advantage that reduces the likelihood of measurement errors.

13.4.1. Livestock grades: The rise and fall of quality measurement institutions

Carcase grading systems reduce transaction costs at the producer–processor interface. Producers benefit from lower quality information costs if they have a clearer signal of the carcase characteristics for which processors will pay a premium. Negotiation costs are reduced for both parties if prices are based on a transparent, objective grading system. Producers' monitoring costs are lower if they trust that an objective method of quality measurement has been used.

Despite these initial transaction cost advantages of traditional grading institutions, consumer tastes have evolved gradually to encompass a wider variety of quality attributes. As a result, traditional carcase grading systems alone may no longer be the most efficient

transaction cost-reducing institution. Traditional grading systems, which are based on broad indicators of carcase quality related to conformation, fat cover and intra-muscular marbling, are poor proxy measures of credence quality attributes. They are poor predictors of tenderness, which is widely recognised to be a critically important quality characteristic to many consumers. The grades are based on search attributes that can be evaluated visually in the slaughter plant. They do not provide quality signals on credence attributes such as origin (country, region or farm) or production methods such as organic, environmentally sound, animal welfare-friendly, the use (or absence) of growth promoting hormones or sub-therapeutic antibiotics, etc.

Consumer demand for experience and credence attributes in meat products creates new transaction costs. Downstream firms and consumers incur search costs in determining the true quality of a product, for example, tenderness and eating quality in beef products. Search costs arise in locating reliable suppliers. Price discovery becomes more difficult if existing quality measurement institutions provide an imperfect measure of the product quality preferred by consumers. Negotiation costs are higher if it is more difficult to establish clear links between product quality and payment in the absence of accurate quality measurement.

The characteristics of the animal, the on-farm production process and the procedures used at slaughter and during processing all affect the quality of the final meat product. Processors incur monitoring costs in ensuring that producers have adopted the animal husbandry practices conducive to consistent meat quality. If the return to the producer is based on a post-slaughter carcase grade, a producer may incur monitoring costs in ensuring that slaughter plant procedures (e.g., pre-slaughter handling) maximise meat quality, for example, by minimising stress. Animals that are stressed prior to slaughter produce poorer quality meat. Evolving consumer preferences for new food quality attributes increases uncertainty and may require asset-specific investments by producers and processors as the industry moves from a commodity to a value-added focus.

Developments in the Australian meat industry illustrate how institutional adaptation has occurred in response to these new sources of transaction costs. The Australian beef industry was faced with a declining trend in beef consumption; a pattern seen elsewhere in developing countries. Inconsistent product quality was a particular problem for the industry. Product quality information signals throughout the supply chain were poorly developed, and consumers faced significant quality uncertainty when purchasing a beef product. In 1996, Meat and livestock Australia, an industry association, established Meat Standards Australia (MSA) in an attempt to address these problems (Meat Standards Australia, 2003).

MSA developed a new beef grading system based on palatability analysis at critical control points (PACCP). Rather than traditional measures of carcase quality such as conformation and fat cover, the PACCP system used research from extensive consumer sensory panels to identify critical control points for eating quality. These include genetics, nutrition, pre- and post-slaughter factors, chilling, processing and cooking. Specific controls were designed for each quality control point. The grading system is keyed directly to these critical control points. Producers receive feedback on each carcase graded. A DNA sample is taken from each carcase and stored. In the event of a poor-quality eating experience for a consumer, the DNA sample and a voluntary national

livestock identification system can be used to trace back the identity of the packaged meat product to the individual animal. The direct feedback in the event of a problem provides the vehicle for improvement in quality over the long-run.

The MSA system reduces transaction costs in a variety of ways. First, it reduces consumers search costs at the point of purchase. It reduces search and monitoring costs for downstream retailers and processors who can source carcases or meat products from MSA-assured suppliers. It also reduces search costs for producers by providing clearly established production protocols and a pre-approved list of MSA-certified processors. Feedback on individual carcase performance informs on-farm production decisions and encourages improvements in animal husbandry techniques.

13.4.2. Institutions in ascendancy: Quality assurance programs

An interesting comparison with the Australian situation is provided by the institutional adaptations that have occurred in the UK beef industry in the wake of BSE. In 1996, the Meat and Livestock Commission (MLC), a quasi-government institution, introduced the "beef Burger Quality Mark" to re-assure consumers about the quality of the ground meat used in burgers and other processed food products. Products displaying the quality mark are made from prime cuts of beef and do not contain offal. "Quality Meat Scotland" is a quality assurance system for Scottish beef, pork and lamb encompassing several stages of the supply chain, including livestock feed suppliers, farmers, livestock hauliers, auction marts, processors and retail butchers shops. Protocols are developed and monitored for each stage of the supply chain. The emphasis is on animal husbandry, health and welfare and traceability of both the meat products and the raw materials, as well as food safety and food handling practices at the processing plant.

The primary transaction cost impact of the MLC burger quality mark and the Scottish meat quality assurance system is to reduce search and monitoring costs with respect to upstream (farm and input supply) production methods. In contrast, in the Australian case, the focus was on providing consumers with credible signals with respect to eating quality. The transaction costs imposed on the British beef industry by the exogenous BSE shock were quite unique. Meat quality assurance schemes and a compulsory UK national cattle identification system are institutional responses to this shock. An emphasis on traceability and the need to lower search and monitoring costs for retailers and processors reduced the transaction-cost efficiency of spot market transactions. As a result, the UK beef supply chain has undergone significant changes with respect to vertical co-ordination. Direct sales from farmers to processors and contracting have become more important as auction markets have declined (Hobbs, 1996, 1997).

13.4.3. Institutions in demise?: Price reporting agencies

Price reporting agencies traditionally have been an extremely important information institution in commodity markets. In some jurisdictions, this function is performed by government (or quasi-government) agencies such as the MLC in the UK or the agricultural marketing service in the US. In other cases, private sector agencies collate

and disseminate average price information through producer commodity associations or the agricultural press, for example, CANFAX, a service operated by the Canadian Cattlemen's Association (www.canfax.com).

Price reporting agencies gather and publish average market price information from spot market transactions for a wide range of commodities, including live animals, carcase grades, fresh produce, etc. Price information is important in reducing search costs for buyers and sellers and in facilitating transactions. However, average price information is less effective at reducing these transaction costs as the market shifts away from a commodity basis towards differentiated products with experience or credence attributes produced in closed supply chains. If quality is not average, then average prices do not correspond to the quality being transacted. As a result, average price reporting institutions become less relevant when supply chain alliances produce differentiated food products with a range of credence quality attributes.

13.5. TECHNOLOGICAL CHANGE AND INSTITUTIONAL ADAPTATION

New transformative technologies can shock an agri-food system out of institutional equilibrium, changing the source and distribution of transaction costs and leading to institutional adaptation. Innovation leads to short-run disequilibrium and almost always creates winners and losers. Typically, those able to adopt the new technology benefit from lower production costs. Those not able to adopt the technology become uncompetitive and eventually exit the industry, in the absence of market or policy barriers to exit. In a simple neoclassical economic world, consumers win from technological change as it lowers costs, thereby lowering prices and leading to a gain in consumer welfare. Transformative technologies, however, may not fit this simple neoclassical model of gains from technological innovation. In particular, the consumer welfare gains are ambiguous in the face of information asymmetry. That is, some consumers could be made worse off if technological change results in products that are perceived as lower quality and if information asymmetry is pervasive, creating high transaction costs.

Agricultural biotechnology provides a prime example of the effects of a transformative technology with ambiguous outcomes. The initial products of agricultural biotechnology contained enhanced input traits, such as pest resistance and herbicide resistance in crops. The agronomic benefits provided by these crops translated into production cost and yield advantages for many producers. Where approved for use, adoption of transgenic varieties of soybeans, corn and canola has been rapid and widespread among farmers, due to the perceived agronomic advantages of these new varieties. At the same time, growing public unease has surfaced regarding the long-term effects of GM crops.

Food derived from GM organisms (GMOs) is perceived as lower quality by some consumers for a variety of reasons, including ethical objections, specific food safety concerns, uncertainty over the long-run effects of consumption, and environmental concerns. The technological change inherent in agricultural biotechnology creates a new source of information asymmetry. Genetic modification is a credence attribute for consumers. While it may be possible for food processors or handlers to test for the

presence of a modified gene, testing is not feasible for consumers. Even for food firms, testing may be technologically difficult or not economically viable in further processed products containing a multitude of food ingredients. In the absence of a credible quality signal, consumers are unable to distinguish between conventional and GM food. Retailers and downstream food firms are faced with high monitoring costs in attempting to establish whether GMOs are present.

13.5.1. New crop variety licensing: Institutions in flux

New or revamped policy institutions are required to deal with the outcomes of agricultural biotechnology research, for example, institutions for approving the release of new crop varieties and the commercialisation of new food products containing GMOs. The approval process for new crop varieties typically focuses on proven agronomic benefits or problems. Canada uses a kernel visual distinguishability (KVD) system that requires new varieties to be visually distinguishable from existing varieties so that they can be easily detected and handled separately in the bulk commodity grain handling system. Prior to the introduction of GM varieties, the approval process and KVD system was an appropriate institutional structure, allowing easy recognition of new varieties, thereby reducing search and monitoring costs.

Agricultural biotechnology shocked this system into institutional disequilibrium. The approval process for GM crops is complicated by potential market externality effects for conventional varieties. If the GM and conventional varieties are visually indistinguishable and segregation post-farm is not economically feasible, buyers of conventional crops will not have a credible assurance that the product they are purchasing is non-GM. The resulting "market for lemons" effect reduces prices and causes economic harm to the non-GM sector (Furtan et al., 2002).

Incorporating potential market effects into a new variety approval process is complex and controversial. Furtan et al. (2002) show that a regulator is faced with a trade-off between producer welfare and the welfare of the biotechnology innovating firm. On the other hand, extending new product approval processes beyond scientific concerns to incorporate potential market effects on incumbent firms has implications for the competitive structure of an industry. Existing firms have an incentive to lobby for the exclusion of technologies that would allow new entrants to compete away existing economic rents. The challenge lies in finding the correct balance between a sound scientific basis for regulatory decisions and legitimate socio-economic concerns. Designing new policy institutions in the wake of a major technological change is complicated by the need to consider transaction cost impacts, incentives for competitive behaviour and externality effects, in addition to the scientific risk and benefit assessment that forms a standard part of new variety approval.

13.5.2. New food product approval and labelling: Institutions in disarray

Perhaps even more complex is the institutional adaptation necessary for new food product approval in the face of GM technology. Fundamentally, different regulatory approaches

to GM food are being adopted. Canada and the US have adopted a regulatory stance based on a scientific risk-assessment process. GM products are subject to the same set of regulations as non-GM foods if it is shown that they are substantially equivalent. There is no mechanism for treating GM foods differently. This approach flows from the scientific rationality that forms the basis of the Canadian regulatory trajectory (Isaac, 2002). While this is a logical extension of a science-based approach to new product approval, it has been unable to deal effectively with the public concerns that cannot be addressed through scientific risk analysis, such as ethical concerns and the fear of any unknown long-run consequences of consuming GM food. In Canada, the institutional disequilibrium resulted in three separate regulatory reviews in 2002 to examine different aspects of the institutional environment for scientific risk assessment, regulation and labelling of GMOs. Only a partial assessment of the institutional environment was forthcoming as the separate reviews could not consider key inter-relationships, for example, between product approval and labelling (Isaac and Hobbs, 2002).

Faced with uncertainty in the wake of significant technological change, the EU imposed a moratorium on the production and importation GM products in 1998. After considerable debate, and a WTO challenge launched by the US and Canada, in July 2003 the European Commission proposed lifting the EU moratorium and imposing mandatory labelling of GM foods. The EU regulatory framework for agricultural biotechnology began as a purely science-based risk assessment approach but was unprepared to deal with the eruption of public concern over the technology. Weakened public confidence in the food regulatory system as a result of previous food safety scares has left EU policymakers anxious to avoid previous mistakes and regulatory failures. The resulting moratorium to a large extent avoided the need to make an immediate decision on the approval of GM products. The moratorium was primarily a stopgap measure to allow the EU institutional framework time to evolve.

Moving away from a solely science-based risk assessment decision-making process to incorporate more nebulous (but by no means less important) consumer and environmental concerns into new product approval and labelling decisions is fraught with difficulty. These "other issues" are open to manipulation through rent-seeking behaviour by those with a vested interest in maintaining the status quo with respect to new technologies and competition from new products or producers.

The EU proposed regulatory framework for GMOs includes the existing Novel food and Novel Food Ingredients Regulation (EC 258/97) and a traceability and labelling requirement for all products containing GMOs (including animal feed). Mandatory labelling is proposed for all foods containing GM content above a threshold (e.g., 0.9%). Labelling addresses the information asymmetry inherent in GM food. The incentive for firms voluntarily to label GM foods is weak if there are few direct benefits to consumers and if firms expect a negative consumer reaction. There is a stronger incentive for voluntary labelling by producers of non-GM food. In contrast to the EU approach, Canadian and the US allow voluntary labelling of non-GM but are not mandating GM food labelling.

A mandatory labelling requirement imposes new transaction costs on some supply chain parties and reduces transaction costs for others. While labelling reduces search costs for consumers, it significantly increases monitoring costs for retailers applying the labels.

To avoid costly end product testing — assuming it is even technologically feasible — retailers will monitor the source and content of food inputs. They will pass this monitoring requirement back down the supply chain to their suppliers, and to their suppliers' suppliers — requiring documentation to demonstrate the absence of GM content to avoid the need for a GM label. Here lies the real impact of a mandatory GM content label. The additional transaction costs, supply chain segregation and documentation costs will fall on the non-GM sector in proving that its products have not been contaminated with GMOs and therefore do not need to be labelled. In contrast, for a simple "may contain GMOs label", it should be relatively straightforward for a GM-producing farmer, miller or processor to acknowledge the possible presence of GMOs rather than needing to prove their absence.

Perhaps recognising this potential transaction cost burden for the non-GM sector, the EU proposal for traceability and labelling of GMOs has a more explicit information requirement than simply labelling "may contain" that alters the burden of transaction costs. At each stage of the supply chain, records will be kept identifying the upstream supplier and downstream buyer of the product containing GMOs. The GMO that the product may contain will be identified by a food or feed operator who will also be responsible for informing the next operator in the supply chain that the product is produced from GMOs. All this information must be kept for 5 years (European Commission, 2003: 8). These proposals shift the information burden back onto the GM-producing sector and may mitigate some of the deleterious effects of mandatory labelling on the relative competitiveness of the non-GM sector. Nevertheless, firms wishing to maintain a pure non-GM product will still incur supply chain segregation costs and transaction costs in ensuring the integrity of their product.

The transaction costs arising from a mandatory labelling requirement are likely to enhance the relative transaction cost efficiency of contracts and vertical integration over occasional spot market transactions between unrelated parties. The additional information available through long-term contractual relationships or within a vertically integrated firm facilitates the provision of GMO and other product quality assurances.

Agricultural biotechnology is awash in high levels of uncertainty. There is uncertainty over the long-term impact of transgenic crops on the environment, uncertainty over the long-term effects of consuming GM food and, in particular, uncertainty over how consumers will react if GM foods are clearly labelled. This uncertainty contributes to the disequilibrium in which policy institutions are evolving to deal with new variety approval, new food product approval and food labelling decisions. Over time, these uncertainties should dissipate if the products become more widely used and as consumers' reactions to actual GM food labels in the marketplace can be observed. In the meantime, policy institutions straddle a precarious balance between the need to remain flexible enough to deal with new technologies and new sources of transaction costs without stifling innovation and competitiveness through over-regulation or regulatory impasse.

13.6. CONCLUSIONS

This chapter has focused on three external forces causing agri-food markets to undergo a process of metamorphosis: food safety, food quality and technological change.

The discussion has illustrated how these changes affect transaction costs in the agri-food sector and how policy and private market institutions have evolved in response to these driving forces for change. Information asymmetry is pervasive throughout.

The relationship between transaction costs, vertical co-ordination and institutional adaptation is complex and dynamic. The institutional environment affects transaction costs. A plethora of examples attest to this relationship and lie beyond the scope of this chapter to explore in detail. Lessons from the process of transition in Central and Eastern Europe have demonstrated quite clearly how the absence of key institutions leads to prohibitively high transaction costs, creating severe hold-up problems and curtailing economic development. In the EU, food safety policy institutions have affected the transaction costs for food firms by forcing closer monitoring of supply chain partners. In the long-run, these higher transaction costs are expected to result in closer vertical co-ordination (e.g., contracts, supply chain alliances, vertical integration).

In some cases, private sector institutions have emerged as a market response to high transaction costs. Transaction costs arising from product quality uncertainty in agri-food markets, and the subsequent development of third party quality measurement and certification agencies, are examples of private sector institutional evolution. Policy institutions create the over-arching regulatory environment to facilitate the development of credible private sector quality assurance and certification systems. They also provide consumers with legal or regulatory redress in the event of fraudulent misrepresentation of product quality.

The issues of information asymmetry, quality measurement, transaction costs and institutional adaptation in agri-food markets are a fertile ground for further research. Theoretical models examining the relationship between transaction costs and institutional development warrant further investigation. Empirical applications investigating the relationship between transaction costs, the institutional environment, and vertical co-ordination outcomes continue to add to our understanding of agri-food markets in metamorphosis and the changing role of policy institutions.

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CHAPTER 14

Food System Value Chains: Implications for Agricultural Policy

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Abstract

Today's agricultural and food systems are composed of sets of economic enterprises that interact through chains and networks to jointly create greater value than achievable through independent action. As a result of the evolution in their environment, these new systems differ significantly from the traditional conceptualisation of the system economic transactions that determine primary commodity prices and incomes. These changes challenge the validity of commonly accepted or still-debated rationales for public sector intervention to manage or facilitate the function of the farm economy and its effects. The threshold scale of production at which firms would shift to the value chain system is identified and the comparative-statistics of that scale with respect to a stylised characterisation of agricultural policy is considered. Results show that a value chain system that requires stronger standards is not scale neutral and discriminates against small-scale production.

14.1. INTRODUCTION

Today's agricultural and food systems continue in a process of transition. A decade ago they were predominately composed of the independent businesses that populated an economy driven by market-based transactions. In today's world, these systems are composed of sets of economic enterprises that interact through a variety of chains and networks to jointly create greater value than achievable through independent action (Porter, 1985). These chains and networks operate within a global economy that spans national boundaries and cultures to co-ordinate the transformation of global resources to meet global needs. As a product of the past decade's evolution of information

technologies, expanded efficiency and function of financial markets, and continued development of consumer purchasing power, these new systems invert the traditional conceptualisation of the system economic transactions that determine primary commodity prices and incomes. In doing so, these changes challenge the validity of the commonly accepted or still-debated rationales for public sector intervention in food systems to manage or facilitate the function of the farm economy and its effects.

The motivation for this transition toward value chains follows from both demand forces and technological change that has made satisfaction of those demands feasible. On the demand side, consumers have continued to demand an increasingly diverse set of products and services to meet their specific needs, placing supply of the right quality at the right place and time as a primary requirement of value creation. While it could be argued that demand for such diversity has always existed, its satisfaction has become feasible as a result of more recent technological changes associated with what has been labelled as the "information revolution". At its core, this revolution has fundamentally changed the ability of producers to track and respond to consumer preferences as they are expressed through purchase behaviour. Throughout developed economies, this revolution has expanded optimal scale and scope of production and dramatically reduced transactions costs. In doing so, it has resulted in an important change in the economic performance of chain and network co-ordinated relative to market-based transactions. In food systems, this revolution has resulted in a new feasibility of satisfying consumer demand for food quality and safety. By generalising our notion of quality to include both private and public good aspects of a private good output flow, it is clear that this revolution has fundamentally changed the implications for public policy of issues such as green performance, worker safety, and health implications of food. This effect is apparent from increasing evidence of voluntary effort by the private sector to address these issues resulting in private sector supply of food quality and safety that often goes beyond regulatory standards set by public policy (von Witzke, 2003).

Within this context, it is appropriate to reassess the rationale for public policy that aims to alter food system performance. Central within such a reassessment must be a reconsideration of the role of agricultural policy that attempts to improve performance of the system's provision of quality attributes across a wide range of private and public good characteristics. Here, quality is considered in full generality, spanning quality that is associated with private good quantity flows (quantity-related quality), quality that is not quantity-related such as reputational or characteristics of technology or region of origin, and public good type quality attributes such as environmental effects. Most recently, Vatn (2002: 315) has noted the importance of transaction costs in the rationale for, feasibility of, and nature of policy. For example, a specific target-oriented agriculture environmental policy may involve high transaction costs relative to a more general policy. Less specific target-oriented policies can reduce transaction costs and environment benefits, while the earlier one dominates. Importantly, this type of issue emerges throughout the food system, including R&D functions as noted by Weaver (2004).

In this chapter, one aspect of the implications for policy of the new value chain-orientation in food systems is considered. The focus is on a simple case in which a food system producer such as a farmer is confronted with the opportunity to participate in one

of the two transaction systems. In the first, transactions take place through a competitive market, leaving the producer to face exogenous prices that are uniform across quality for products that meet an implicit legal standard of quality enforced by litigation over liability for damage caused by products below this standard. Within this setting, transactions are anonymous implying that the risk of litigation is small due to search and information costs. For the same reason, the implicit standard for quality is low. In a simple case, the damage caused by substandard products might be limited to disposal costs, though in other cases actual damage may occur due to the use of a substandard product (e.g., Listeria-contaminated raw milk). Finally, in the competitive market case, anonymous transactions are assumed. This implies the origin of products is difficult to trace, yielding a high cost of enforcement of liability.

In the second system, transactions occur within a value chain in which the production is co-ordinated bilaterally between the producer and the processor in a contract that formalises an equilibrium relationship by specifying product characteristics (quality) and price. This specification may involve a single standard and a price, or a menu of quality-price pairs. In this case, quality is assumed to be readily observable at least post-transaction and the origin of the product is presumed to be observable. In this chapter, the consideration is limited to the following two issues. First, how does scale of operation vary across the two transaction systems? That is, can it be expected that firms that choose the market-oriented traditional system are smaller than those choosing a value chain co-ordinated system? To consider this issue, the implicit legal standard under value chain management is supposed to be more stringent than under competitive market transactions and it is examined how scale of operation responds to a change in the legal standard.

To proceed, first the framework for the analysis that focuses on the differential in benefits and costs between the two transaction systems is presented. The case of certainty is considered first and then generalised to uncertainty and multiple periods allowing for irreversibility. In each case, the threshold scale of production at which firm's would shift to the value chain system is identified and the comparative-statistics of that scale with respect to a stylised characterisation of agricultural policy are considered. In the end, conclusions for future agriculture policies will be drawn.

14.2. THE THEORETICAL FRAMEWORK

Value creation is considered from the perspective of a producer who faces a choice of the system in which products will be valued and transacted. Two possibilities are set forth. In the first, the producer faces a competitive market for a scalar quantity flow of private good output y produced. The production process jointly produces a scalar quality attribute, q, that is not priced in the market and is the object of public policy regulation. Following the Weaver (2004) classification, the quality attribute is not necessarily quantity-related. For example, this quality flow might be an environmental effect, the human health implications of consumption of the good, or a characteristic of the technology of production, e.g., worker safety. In these cases, the quality attribute takes on public good characteristics. Production follows from application of a vector of private inputs, x, and a scalar quality control input (effort), e, that results in cost of effort, $C(e)$. Quality control

effort and quality output is assumed one-to-one, allowing focus to be placed on regulation of effort. Under both market and chain-based transactions, the existence of a legal system enforces an implicit legal standard, $\bar{e}$, that is conditional on that legal system's enforcement and litigation culture is assumed. This exposes the producer to liability risk of being forced to pay damages associated with substandard product quality. This specification parallels that of Kolstad et al. (1990) though extends that specification to explicitly consider the issue of quality regulation.

14.2.1. Scope and reversibility dimensions

Consider the implications of a producer's choice of transaction system. In a competitive market system, a uniform price is available for commoditised products sold anonymously. Commoditised means the product quality is standardised, not necessarily uniform, though meeting an implicit legal standard. In contrast, in a value chain transaction, the quality flow produced by the firm is assumed to be observable ex post. Thus, quality-labelled, differentiated products are transacted bilaterally. When the quality attribute is quantity-related it may be a private good that is exclusively consumed, however, when quality is not quantity-related, its public good character motivates a role for regulation. Ex post inspection is supposed to establish true quality. Operationally, these transactions might typically be governed by contracts. By comparison, the two transaction systems involve important differences that imply differences in policy. The focus is here on their implications for implicit legal standards, as well as for ex ante standards.

Clearly, each system can be expected to exhibit uncertainty about the future benefits and costs. Both, costs and benefits, can partly be reversible and partly be irreversible. Because of the jointness of private (e.g., quantity) and possible public good (e.g., quality) output flows associated with the production process, the costs and benefits generated will include both private and public costs and/or benefits. The private benefits and costs can be purely private, i.e., affecting only one agent, or bilateral, i.e., affecting both parties, buyer and seller. Importantly, the benefits and costs may be incurred at some points along the value chain and not at others. For example, consider the production of string beans in Kenya under contract for the European market, where the local buyer provides inputs and technical assistance to producers (Wesseler and Njenga, 1999). Suppose the consumer in the EU has preferences with respect to some characteristic of the technology of production, e.g., worker safety implications of the pest management technology used by producers. Perhaps in conflict with these preferences, the first-handler local buyer returns are conditioned on the extent of damage from pests that is visible at purchase or that might emerge at a later date as a result of infestation of the product. In a competitive market transaction system, producer products would be pooled, perhaps after sorting to grade or reject unacceptable products. High quality products would not be paid an incentive over grade acceptable products. Given that technology of origin would not be identified at this transaction level, the supply would not respond to consumer interests in quality. In contrast, under a bilateral value chain transaction system, the local buyer may find incentive to invest in low toxicity pesticide use training, dissemination, etc., to affect the quality of the output that is of interest to upstream consumers. The result may involve

reversible and irreversible benefits and costs. In the case considered, Rola and Pingali (1993) noted the possibility of irreversible worker health effects. Going a step further, suppose consumer preferences are transmitted through market transactions — even in this case, tracking and tracing system investments would constitute irreversible costs. Examples for public reversible benefits that might differ across the transaction systems would include feasibility and speed of identification of product quality. As an example of public irreversible benefits and costs, consider a decrease or increase in the emission of greenhouse gases associated in a shift from commoditised to differentiated products co-ordinated through chains. The emission of greenhouse gases has a long-term effect on climate change. An example is the change in greenhouse gas emissions resulting from a shift from animal protein to novel vegetable protein production (Zhu et al., 2003). As Pindyck (2000) has pointed out, greenhouse gas emission may contribute to negative impacts due to climate change in the future.

To proceed, a generic real options model that looks at private sector incentives for the investment in producing goods is set up. A profit-maximising producer, who produces a commodity good and sells the good to a wholesaler, and the existence of an implicit legal standard and the possibility of an ex ante standard set by the government are assumed. Because the implicit legal standard is uncertain, or as result of imperfect enforcement of liability for compensation to cover damages, negligence on the part of the producer is allowed for. Next, the implications of transactions co-ordinated within a value chain are considered.

14.2.2. The case of reversibility and certainty

The starting point of the conceptual framework is the definition of the farmer's value function for a general transactions system. Based on this notation, the specific cases of competitive market and value chain co-ordinated transactions are considered. Pecuniary returns from production are defined as profits from private good transactions, (Π), and net returns to quality that include a quality premium when quality is identifiable and priced and costs of quality (L) for substandard quality. Without loss to our argument, quality premia are assumed to be zero. Liability costs are supposed uncertain. Incremental producer returns emerge as:

$$V = E(\Pi - L) \tag{14.1}$$

Private returns are assumed to be determined by choice conditioned by p, a vector of unit revenues, c a vector of variable input prices, s a scalar, quasi-fixed factor of production interpretable as a measure of scale of production, e.g., area cultivated, and $\bar{e}$ as defined below.

The expected costs of quality are defined as the sum of the certain costs of quality control effort $C(e)$ and the expected value of liability resulting from quality not meeting an implicit legal standard, (TL):

$$L = E(C + TL) \tag{14.2}$$

Following Kolstad et al. (1990), L is rewritten as:

$$L = C + \mu DR \tag{14.3}$$

where μ is the probability that liability action is taken by an offended buyer (e.g., due to contamination of the food product with pesticides), D is the monetary value of the damage award resulting from litigation, and R is the subjective estimate by the producer of the probability that quality resulting from applied control effort, e, does not meet the implicit legal standard, $\bar{e}$, at which litigation triggers the damage award. Both μ and D are conditioned by observable effort, e, and the scale of the producer. In addition, μ could be argued to be conditioned $\bar{e}$. Clearly, R will be conditioned by the particular culture of the court, implying the implicit legal standard is uncertain for the producer. Based on this notation, the producer's value function is defined as following the partial reduced form:

$$V = \Pi(p, c; \bar{e}, s) - C(\bar{e}, s) - \mu(\bar{e}, s)D(\bar{e}, s)R(\bar{e}) \tag{14.4}$$

Note, given elements of producer returns are conditional on chosen level of quality effort, those elements are rewritten in the value function as conditioned by $\bar{e}$ that is exogenous to the firm. Though general, this specification can be specialised to describe each of the two transaction systems of interest. It starts with considering the implications of a simple change in the implicit legal standard that triggers liability damages. Of interest is the impact of such a change on the threshold scale $\underline{s}$ at which value chain transactions become preferable to the producer. To proceed, Equation 14.4 is interpreted as representing the value function under value chain co-ordinated transactions. Thus, each of its elements is assumed to be specialised for this case. This threshold scale $\underline{s}$ is defined as the solution to:

$$\Pi(p, c; \bar{e}, s) - C(\bar{e}, s) - \mu(\bar{e}, s)D(\bar{e}, s)R(\bar{e}) = 0 \tag{14.5}$$

where

$$\partial\Pi(s, \bar{e})/\partial s > 0 \qquad \text{and } \partial^2\Pi(s, \bar{e})/\partial s^2 \leq \text{or} \geq 0$$

$$\partial\Pi(s, \bar{e})/\partial \bar{e} > 0 \qquad \text{and } \partial^2\Pi(\bar{e})/\partial \bar{e}^2 \leq \text{or} \geq 0$$

$$\partial C(s, \bar{e})/\partial s > 0 \qquad \text{and } \partial^2 C(s, \bar{e})/\partial s^2 \leq 0$$

$$\partial C(s, \bar{e})/\partial \bar{e} > 0 \qquad \text{and } \partial^2 C(s, \bar{e})/\partial \bar{e}^2 \leq 0$$

$$\partial\mu(s, \bar{e})/\partial s > 0 \qquad \text{and } \partial^2\mu(s, \bar{e})/\partial s^2 \leq 0$$

$$\partial\mu(s, \bar{e})/\partial \bar{e} > 0 \qquad \text{and } \partial^2\mu(s, \bar{e})/\partial \bar{e}^2 \geq 0$$

$$\partial D(s, \bar{e})/\partial s > 0 \qquad \text{and } \partial^2 D(s, \bar{e})/\partial s^2 \leq 0$$

$$\partial D(s, \bar{e})/\partial \bar{e} < 0 \qquad \text{and } \partial^2 D(s, \bar{e})/\partial e^2 \geq 0$$

$$\partial R(\bar{e})/\partial \bar{e} < 0 \qquad \text{and } \partial^2 R(\bar{e})/\partial e^2 \leq \text{or} \geq 0$$

An increase in quasi-fixed factors, $\underline{s}$, like land-size, increases profits and $\partial \Pi(s, \bar{e})/\partial s > 0$, as well as an increase in legal standards, $\bar{e}, \partial \Pi(s, \bar{e})/\partial \bar{e} > 0$. The latter are the benefits of participating in the chain transaction. The cost, C, of complying with exogenous quality standards increase with an increase in the quasi-fixed factors, $\partial C(s, \bar{e})/\partial s > 0$, and increase with an increase in quality standards. $\partial C(s, \bar{e})/\partial \bar{e} > 0$. An increase in scale increases the probability that the producer will be held liable, $\partial \mu(s, \bar{e})/\partial s > 0$, as the probability that quality standards are not met increases with the quantity produced. An increase in standards increases the probability of being held liable as well, $\partial \mu(s, \bar{e})/\partial \bar{e} > 0$, as the probability of not meeting the standard increases. The damage size for being held liable increases with an increase in scale in production, $\partial D(s, \bar{e})/\partial s > 0$, as the quantity of products being effected increases, while the damage size with an increase in standards decreases, $\partial D(s, \bar{e})/\partial \bar{e} < 0$. The decrease can be explained by the observation that with higher food quality standards, less food-borne health problems will arise. Also, higher food quality standards, will reduce the probability of being held liable by the court, $\partial R(\bar{e})/\partial \bar{e} < 0$.

Applying the implicit function theorem it is possible to write:

$$\partial \underline{s}/\partial \bar{e} = -\frac{\partial V/\partial \bar{e}}{\partial V/\partial s}$$

It follows that:

$$\partial \underline{s}/\partial \bar{e} = -\frac{\partial \Pi()/\partial \bar{e} - \partial C/\partial \bar{e} - (\partial \mu/\partial \bar{e})DR + \mu(\partial D/\partial \bar{e})R + \mu D \partial R/\partial \bar{e})}{\partial \Pi()/\partial s - \partial C/\partial s - R(\mu \partial D/\partial s + D \partial \mu/\partial s)} \tag{14.6}$$

At the threshold s, it is reasonable to suppose that an increase in $\bar{e}$ results in a greater increase in profit than in quality control implementation and liability costs. It follows that the denominator of the above equation can be assumed to be positive around s. Hence, the discussion can be focused on the numerator of the equation, noted as

$$\begin{aligned} \text{sign}[\partial \underline{s}/\partial \bar{e}] = \text{sign}\Bigg[& \underbrace{-\partial \Pi()/\partial \bar{e}}_{-} + \underbrace{\partial C/\partial \bar{e}}_{+} + \Bigg(\underbrace{\partial \mu(s, \bar{e})/\partial \bar{e} D(s, \bar{e}) R(\bar{e})}_{+} \\ & + \underbrace{\mu(s, \bar{e}) \partial D(s, \bar{e})/\partial \bar{e} R(\bar{e})}_{-} + \underbrace{\mu(s, \bar{e}) D(s, \bar{e}) \partial R(\bar{e})/\partial \bar{e}}_{-} \Bigg) \Bigg] \end{aligned} \tag{14.7}$$

The first term on the right-hand side of the above equation is negative. This indicates the effect of stronger regulations on monetary benefits of the producer. The higher those benefits are the smaller is the minimum size for adoption. The second term is positive and includes the effect on the ex-ante costs of meeting higher implicit legal standards. As these costs increase, so does the minimum scale of production. The third, fourth and fifth terms summarise the effects on ex post liability. The overall sign of this effect is ambiguous. If the positive effect of stronger food quality standards on the probability of being held liable

dominates the effect on damage costs and court decisions, higher quality standards have a positive effect on ex post liability and increase the minimum size of production. If the effect of a higher food quality standard on damage costs and court decisions dominates, the effect of ex post liability on minimum production size will be negative. Hence, it is not possible to conclude that an increase in the implicit legal standard inherent in a shift from market to chain co-ordinated transactions will exclude smaller scale operations. Indeed, if the decrease in expected liability is smaller than and the increase in benefits superior to the increase in implementation costs, it is possible to have smaller farms adopting the transactions system under value chain co-ordination.

14.2.3. The case of irreversibility and multi-period uncertainty in benefits and costs

In the previous discussion it was assumed that incremental profits Π are certain and the farmer did not face sunk costs while deciding to adopt the value chain. However, it could be the case that some of the costs are irreversible: for example, the value chain requires investment in scanners and other tracking and tracing technologies. The multi-period time frame adds also uncertainty to the farmers' adoption decision as future yields, prices and costs are not known with certainty.

In the presence of net-irreversible costs, uncertainty and flexibility the value of a value chain transactions system is not simply the difference between the present value of future benefits and costs, as from Equation 14.1, but the sum of this difference plus the value of the option to adopt the value chain. More formally, when some costs are irreversible, costs and benefits are uncertain and the decision to adopt can be postponed, the producer maximises the option value of adopting the value chain. Hence, Equation 14.1 can be reformulated as follows:

$$F(V) = \max E\left[(V(\Pi, C, TL) - IP)\mathrm{e}^{-\rho T}\right] \tag{14.8}$$

where $F(V)$ is the value of the opportunity choosing the value chain, $V(\Pi, C, TL)$ is the value of the reversible net-benefits, and IP are the net-irreversible costs, the difference between the private irreversible costs and the private irreversible benefits, of adopting the value chain. As the time frame gets longer than one cropping season, the benefit of producing a product complying with regulations becomes uncertain. Profit from farm practices can change over time and there is always the risk of liability. It is possible to represent this uncertainty by the following stochastic process:

$$\mathrm{d}(\Pi - C) = \alpha(\Pi - C)\mathrm{d}t + \sigma(\Pi - C)\mathrm{d}z + (\Pi - C)\mathrm{d}q \tag{14.9}$$

where $(\Pi - C)$ evolves under a combined geometric Brownian motion and Poisson process. The first two terms are common for modelling incremental benefits of producing a new product on the farm (Purvis et al., 1995; Winter-Nelson and Amegbetto, 1998; Wesseler, 2003). α is the drift of the Brownian motion, $\mathrm{d}z$ is the increment of a Wiener process, $\mathrm{d}t$ is the marginal increment in time and $\mathrm{d}q$ is the increment of a Poisson process. The third term represents tort liability modelled as the risk of a jump in the profit when the

farmer is held liable. More precisely,

$$\mathrm{d}z = \varepsilon_t \sqrt{\mathrm{d}t}, \text{ and}$$

$$\mathrm{d}q = \begin{cases} 0 & \text{with probability } 1 - \lambda \mathrm{d}t \\ -\phi & \text{with probability } \lambda \mathrm{d}t \end{cases}$$

where ε_t is normally distributed with zero mean and unit standard deviation, λ is the mean arrival rate of a Poisson process, and ϕ the percentage of the ex post liability costs of $(\Pi - C)$.

From the above equation and the opportune boundary conditions, as shown in Soregaroli and Wesseler (2004), it is possible to obtain the following relation defining the rule for the investment decision, assuming $\phi = 1$:

$$(\Pi - C)^* = \left(\frac{\beta_1}{\beta_1 - 1}\right)(\rho - \alpha + \lambda) IP \tag{14.10}$$

where

$$\beta_1 = \frac{1}{2} - \frac{\alpha}{\sigma^2} + \sqrt{\left(\frac{\alpha}{\sigma^2} - \frac{1}{2}\right)^2 + \frac{2(\rho + \lambda)}{\sigma^2}} > 1 \tag{14.11}$$

From the last two equations it is possible to evaluate the effect of a change in standards, $\bar{e}$. The same approach used in the case without irreversibility can be used to compare the effects of a change in the regulation on the minimum adoption size of the farm ($\underline{s}$). This can be solved by rearranging Equation 14.10 and applying again the implicit function theorem leading to the following derivative:

$$\partial \underline{s} / \partial \bar{e} = - \frac{\dfrac{\partial(\Pi - C)}{\partial \bar{e}} - \left[\dfrac{\partial\left(\dfrac{\beta_1}{\beta_1 - 1}\right)}{\partial \bar{e}} (\rho - \alpha + \lambda) + \left(\dfrac{\beta_1}{\beta_1 - 1}\right) \dfrac{\partial(\rho - \alpha + \lambda)}{\partial \bar{e}} \right] IP}{\dfrac{\partial(\Pi - C)}{\partial s} - \left(\dfrac{\beta_1}{\beta_1 - 1}\right)(\rho - \alpha + \lambda) \dfrac{\partial I}{\partial s}} \tag{14.12}$$

Given that a break even point is observed, as in the case under certainty it is possible to assume that the denominator or the above equation is positive. Hence, Equation 14.12 can be rewritten as:

$$\operatorname{sign} \partial \underline{s} / \partial \bar{e} = \operatorname{sign} \underbrace{- \frac{\partial(\Pi - C)}{\partial \bar{e}}}_{(-)} + \left[\underbrace{\frac{\partial\left(\frac{\beta_1}{\beta_1 - 1}\right)}{\partial \bar{e}} (\rho - \alpha + \lambda)}_{(-)} + \underbrace{\left(\frac{\beta_1}{\beta_1 - 1}\right) \frac{\partial(\rho - \alpha + \lambda)}{\partial \bar{e}}}_{(+)} \right] IP \tag{14.13}$$

Again, also considering uncertainty and irreversibility, the decision to adopt exchange of transactions within the value chain is not independent of size. The direction of the size

effect is not obvious. The overall sign of the terms in the square brackets cannot be determined and will depend on the specific parameter values. However, numerical examples show a very robust positive sign of the square bracket. The effect of the term in brackets will be magnified by the net irreversible costs. If this effect is relatively large, the overall sign of Equation 14.13 will be negative. In this case, stronger food quality standards will work favourably towards smaller farms.

If the effect on immediate profits is larger than the effect on the option value, stronger food quality standards discriminate against smaller farms. In this case, stronger regulations discourage smaller producers from adopting the value chain. In a dynamic setting, this provides incentives for co-operation among smaller producers. This is confirmed by observations in the field, where producers group themselves in organisations to access new marketing possibilities that require tracking and tracing systems.

The model for the private sector can easily be adjusted to consider public reversible and irreversible costs as well. Think about the value of the chain system covering not only a single seller–buyer relationship but the whole chain from the producer to the consumer. The liability in this case can be interpreted as liability of the regulator towards the final consumer. The net irreversible costs and benefits would include private as well as public irreversible costs and benefits.

A change from the competitive market exchange to the value chain often requires irreversible investments of the regulator in the form of training and educating staff for the implementation of new regulations as well as the purchase of hardware. As indicated previously, the decision of adopting a different value chain with stronger regulations is not scale neutral. In the context of regulators, products with a larger production size within the area of a regulators responsibility, say country, are more likely be stronger regulated from a cost-benefit perspective than smaller ones. These stronger regulations will also set incentives for introducing value systems, as a transaction cost-reducing response by the private sector.

Another interpretation of the results is related to the concentration of the different agents along the value system. As stronger exogenous regulations are not scale neutral they provide incentives for horizontal and vertical mergers and acquisitions. On the other hand, initial larger concentrations of agents increase incentives for the introduction of regulations by those agents, as this will increase their comparative advantage over smaller competitors. The development of regulations is endogenised. In this context, government policies that increase the regulation of food production by defining standards, like minimum pesticide residues, or asking for tracking and tracing of food products as in the case for beef in the EU, have an impact on the structure of agricultural producer. This impact works towards concentration of agricultural producers, ceteris paribus.

14.3. CONCLUSIONS

In summary, it can be concluded that the introduction of the value system will not be scale neutral. Indeed, firms that choose the market-oriented traditional system will be smaller than those choosing a value chain co-ordinated system. It should be possible to falsify this

hypothesis empirically. If the hypothesis will also be confirmed empirically, income-oriented agriculture policies have to consider implications of the emerging value chain system for the structure and organisation of agriculture. Policies that assume products will be traded through the traditional market system provide support for smaller producers in the short run. In the long run, such policies do decrease the pressure on smaller producers to participate in the value chain system. Policies that reduce the scale effect of the value chain system, like e.g., policies providing support for producer co-operatives, should be considered as well.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 15

Real Options: Institutional and Policy Implications for Competitive and Inter-related Markets

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Abstract

Participants along a production chain who exchange intermediate products on spot markets face price risks resulting from price fluctuations of the final product. In a real options environment this uncertainty may cause investment reluctance. This chapter analyses whether a stronger vertical integration allows reducing the investment reluctance. An agent-based competitive model of the pork chain is developed in which farmers use optimal investment strategies identified by genetic algorithms (GA). Simulations show that the spot market solution and a closed integrated system lead to the same production dynamics. The only precondition is that in the spot market system farrowers and hog finishers are aware of the investment strategies, respectively, the production capacities of the market partners. This finding is independent of different depreciation rates on the production steps, though the price dynamics change.

15.1. INTRODUCTION

According to the real options approach to investment (Henry, 1974; McDonald and Siegel, 1986; Pindyck, 1991) the net present value (NPV) criterion in investment theory can be misleading under certain conditions. These conditions are: the returns of the investment are subject to an ongoing uncertainty, the investment is (at least partly) irreversible (i.e., the investment causes sunk costs), and the investor can defer the investment decision for some time. If all these conditions are fulfilled, even in case of risk neutrality, it is not necessarily optimal to invest if the expected present value of the future returns covers the investment outlays. Rather, one should assign a positive value to the

preservation of the flexibility whether to invest or not; in other words, waiting for new information has a value.

Recently, several studies showed that the real options approach may also be relevant for investments in agricultural production such as pork (Pietola and Wang, 2000; Odening et al., 2004). Pork production requires irreversible investments in buildings, and returns are uncertain due to demand and supply fluctuations, and usually investment decisions can be deferred. Based on price time series for Finland, Pietola and Wang (2000) find arguments for significant investment reluctance for piglet production (farrowing) and for pork production (hog finishing). Since piglets are an intermediate product in the hog production chain and prices for piglets cause additional uncertainty, Pietola and Wang (2000) analyse the potential impact if farrowers and hog finishers would not trade piglets on spot markets but by contract production which defines piglet prices as a fixed multiple of the actual pork price. Pietola and Wang (2000) find that contracting between farrowers and hog feeders would reduce the uncertainty and that investment reluctance could be reduced significantly. In addition, contracting creates welfare gains.

In this contribution this finding is challenged with regard to theoretical consistency. Instead of deriving investment strategies for each subsector individually based on the empirical price data, the subsectors and the spot market interaction are explicitly modelled. Because closed analytical solutions to determine optimal investment criteria only exist for rather simple situations, for example if the value of the project follows a geometric Brownian motion (GBM) and the option never expires, Monte Carlo simulation is utilised. The main advantage of Monte Carlo simulation is its flexibility with respect to the stochastic process of the asset. However, instead of looking at the market at an aggregate level, a bottom-up approach is followed by explicitly modelling the individuals (i.e., the farms) and their behaviour.

In a discrete-time model of market interaction, N agents represent N identical farms, which compete in each subsector. Each of these farms can invest irreversibly into production assets (buildings) without knowing how the market environment will evolve in the future. Every farm invests according to its individual investment trigger, which is derived by linking the agent-based model with a GA (cf. Arifovic, 1994). GA can be understood as a certain form of computational intelligence, which is based on a heuristic optimisation technique that is related to concepts of natural evolution, such as selection, crossover, and mutation. These mechanisms are repeatedly applied to a set (population) of solutions to the problem in order to find superior solutions. A fundamental advantage of using GA for complex optimisation problems is the low prerequisites. Essentially, one just needs to specify the variables to be optimised, an environment that allows the evaluation of potential solutions, and the respective GA operators, which breed the solutions.

Two production systems are compared. As example for a perfectly integrated system, it is considered that every farmer can invest in closed systems in which piglets (the intermediate product) and finished hogs (the final product) are produced in equal amounts. In an alternative production system, farmers can either invest in farrowing (i.e., the production of piglets) *or* in hog finishing. The intermediate product, i.e., piglets, is traded on a spot market. Simulations will be used to compare the spot market solution and the closed system.

15.2. THE MODEL

15.2.1. The investment problem

Consider a number of $N = 50$ firms, each having repeatedly the opportunity to invest in identical assets or a fraction thereof, i.e., the assets are divisible. Initially, no firm invests. The asset has a maximum size of 1 and can be used by firm n to produce up to $x_{t,n} \leq 1$ units of output per production period. Size, investment outlay and production are proportional, i.e., there are no economies of scale. If a firm invests for the first time, its maximum initial investment outlay $M_{t,n}^{\max}$ is I. The investment outlay $M_{t,n}$ is considered to be totally sunk after the investment is carried out. For every future period, a geometrical decay of the asset is considered. The asset's productivity declines to $(1 - \lambda)$ of the previous period's output, i.e., a depreciation rate λ is considered such that $x_{t+\Delta t,n} = (1 - \lambda)x_{t,n}$. The use of the decay parameter λ is analogous to the probabilistic approach presented in Dixit and Pindyck (1994: 200). However, in every period, each firm can invest or reinvest in order to increase production or to regain a production capacity of up to one unit of output. The outlay $M_{t,n}$ then has a maximum amount $M_{t,n}^{\max}$ depending on the missing production capacity, i.e.,

$$M_{t,n}^{\max} = [1 - (1 - \lambda)x_{t,n}]I \tag{15.1}$$

such that $x_{t+\Delta t,n}^{\max} = 1$. Each firm's investment decisions aim to maximise the expected NPV of the future cash flows by choosing a specific investment trigger P_n^*, i.e., the goal of firm n can be formulated as

$$\max_{P_n^*} \left\{ \hat{\Pi}_n(P_n^*) = E\left[\sum_{l=0}^{\infty} \left(x_{l\Delta t,n} P_{l\Delta t} - M_{l\Delta t,n}\left(x_{l\Delta t,n}, P_n^*, \nabla_{l\Delta t,-n} \right) \right) (1 + r)^{-l\Delta t} \right] \right\} \tag{15.2}$$

with P_t as the output price in period t and $\nabla t, -n$ denoting a market operator that captures demand developments which are assumed to be stochastic as well as to be dependent on the behaviour of the other firms. Equation 15.2 implicitly assumes risk neutrality. Accordingly, we consider that the firms compete and interact on a market. To capture competition, the firms and their interaction are represented in an agent-based setting in which the firms are represented as agents that perceive their environment and respond to it individually and autonomously (Russel and Norvig, 1995).

The environment of a firm n can be considered as consisting of two parts. One is the behaviour of the other firms. The other is the demand for outputs, which is modelled in terms of a demand function. The environment can be described as follows:

total supply in period t is

$$X_t^{\mathrm{S}} = \sum_{n=1}^{N} x_{t,n} \tag{15.3}$$

and the demand is

$$X_t^{\mathrm{D}} = \frac{\alpha_t}{P_t} \tag{15.4}$$

For identity of demand and supply, we get

$$P_t = \frac{\alpha_t}{X_t^{\mathrm{D}}} = \frac{\alpha_t}{X_t^{\mathrm{S}}} \tag{15.5}$$

Consider now that the demand parameter α_t follows GBM. Assuming discrete time this can be modelled as

$$\alpha_t = \alpha_{t-\Delta t} \exp\left[\left(\mu - \frac{\sigma^2}{2}\right)\Delta t + \sigma\varepsilon_t\sqrt{\Delta t}\right] \tag{15.6}$$

with a volatility σ, a drift rate μ, a standard normally distributed random number ε_t, and a time-step length Δt.

Firm n invests in period t if the expected price $\hat{P}_{t+\Delta t} \geq P_n^*$ with

$$\hat{P}_{t+\Delta t} = \frac{\alpha_{t+\Delta t}}{X_{t+\Delta t}} \text{ and } \hat{X}_{t+\Delta t} = \sum_{n=1}^{N} x_{t+\Delta t,n} \text{ with} \tag{15.7}$$

$$x_{t+\Delta t,n} = \begin{cases} 1 & \text{if } n \text{ invests } M_{t,n}^{\max} \\ (1-\lambda)x_{t,n} + \dfrac{M_{t,n}}{I} & \text{if } n \text{ invests } 0 < M_{t,n} < M_{t,n}^{\max} \\ (1-\lambda)x_{t,n} & \text{if } n \text{ invests } M_{t,n} = 0 \end{cases} \tag{15.8}$$

The questions now are: which firms invest? And how much do they invest? Therefore, let us assume that firms with lower trigger prices P_n^* have a stronger tendency to invest. Consequently, all firms can be sorted according to their trigger prices, starting with the lowest investment trigger, i.e., $P_n^* \leq P_{n+1}^*$. The following propositions are straightforward:

Proposition 1. *If firm n does not invest in t then firm n + 1 will also not invest in t*:

$$M_{t,n} = 0 \Rightarrow M_{t,n+1} = 0$$

Proposition 2. *If firm n does invest in t then firm n − 1 will invest* $M_{t,n-1}^{max}$ *in t:*

$$M_{t,n} > 0 \Rightarrow M_{t,n-1} = M_{t,n-1}^{\max} \Rightarrow x_{t+1,n-1} = 1$$

Proposition 3. *In every period t, a marginal (or last) firm* n_t^o *exists which invests* M_{t,n^o} *such that the expected price for the next period is equal to the investment trigger of firm* $n_t^o : P^{n^{o*}} E(P_{t+\Delta t})$ *with* $0 < M_{t,n^{\mathrm{o}}} \leq M_{t,n^{\mathrm{o}}}^{\max}$ *and* $0 \leq n_t^{\mathrm{o}} \leq N$.

Note that n_t^{o} is zero if there is no investor in period t. The investment of firm n_t^{o} can be computed as follows:

$$P_{n^{\mathrm{o}}}^{*} = E(P_{t+\Delta t}) = \frac{\alpha_{t+\Delta t} = \alpha_t \exp(\mu \cdot \Delta t)}{x_{n^{\mathrm{o}},t+\Delta t} + (n^{\mathrm{o}} - 1) + (1-\lambda)^{\Delta t} \sum_{n=n^{\mathrm{o}}+1}^{N} x_{t,n}} \tag{15.9}$$

$$\Leftrightarrow x_{n^{\mathrm{o}},t+\Delta t} = \frac{\alpha_t \exp(\mu \Delta t)}{P_{n^{\mathrm{o}}}^{*}} - \left((n^{\mathrm{o}} - 1) + (1-\lambda) \sum_{n=n^{\mathrm{o}}+1}^{N} x_{t,n} \right) \tag{15.10}$$

$$\Leftrightarrow \frac{M_{t,n^{\mathrm{o}}}}{I} = \left(\frac{\alpha_t \exp(\mu \Delta t)}{P_{n^{\mathrm{o}}}^{*}} \right) - (n_t^{\mathrm{o}} - 1) - (1-\lambda)\Delta t \sum_{n=n_t^{\mathrm{o}}}^{N} x_{t,n} \tag{15.11}$$

Now, n_t^{o} can be identified by iteratively testing all firms for $P_{n_t^{\mathrm{o}}}^{*} \leq \hat{P}_{t+\Delta t}^{n^{\mathrm{o}}}$. The last firm with a positive investment is n_t^{o}.

Equation 15.11 is an equilibrium condition. All firms that fully invest and hence produce at maximum capacity have trigger prices, which are less or equal to the trigger price of firm $n^{\mathrm{o}} + 1$. This trigger price is also equal to the expected price for $t + \Delta t$. All firms that do not invest have trigger prices, which are higher than or equal to the expected price for $t + \Delta t$.

For a given set of trigger prices P^{*} and arbitrary initialisations for α_0, the expected profitability of each strategy

$$\hat{\Pi}_n(P_n^{*}) = E\left\{ \sum_{l=0}^{\infty} \left(x_{l\Delta t,n} P_{l\Delta t} - M_{l\Delta t,n}\left(x_{l\Delta t,n}, P_n^{*}, \nabla_{l\Delta t,-n} \right) \right) (1+r)^{-l \cdot \Delta t} \right\} \tag{15.12}$$

can be determined simultaneously by a sufficiently high number of repeated stochastic simulations of the market. For our analysis, 5000 repetitions are considered to be sufficient.

As presented to this point, the model resembles a farm's investment problem for a closed system of pork production in which the intermediate product piglets and the final product pork are produced in appropriate amounts, such that trade of the intermediate product is not necessary. The investment costs I cover the costs for both production assets, i.e., $I = {}^{\mathrm{pi}}I + {}^{\mathrm{ho}}I$. The superscript on the left side self-explanatory marks the **pi**glet producers and the **ho**g finishers, respectively.

What are the consequences for a spot market relationship between hog finishers and piglet producers for their investment triggers? Naturally, in such a system the

production capacity of the hog finishers corresponds to the demand parameter of the piglet producers:

$$^{\mathrm{ho}}X_t = {}^{\mathrm{pi}}\alpha_t \tag{15.13}$$

Considering iso-elastic demand with demand elasticity -1, Equation 15.14 holds in the market equilibrium for the piglet producers.

$$^{\mathrm{pi}}P_t = \frac{^{\mathrm{pi}}\alpha_t}{^{\mathrm{pi}}X_t} = \frac{^{\mathrm{ho}}X_t}{^{\mathrm{pi}}X_t} \tag{15.14}$$

Piglet producer n invests if the expected price for piglets $^{\mathrm{pi}}P_{t+\Delta t}$ is larger than or equal to the trigger price $^{\mathrm{pi}}P^*$. Total production of piglets in period $t + \Delta t$ is:

$$^{\mathrm{pi}}x_{t+\Delta t}^{n^{\mathrm{o}}} = \frac{\alpha_t}{^{\mathrm{ho}}P_n^{*\mathrm{pi}}P_n^*} - \sum_{^{\mathrm{pi}}n=1}^{^{\mathrm{pi}}n_t^{\mathrm{o}}-1} {}^{\mathrm{pi}}x_{^{\mathrm{pi}}n}^{\mathrm{Max}} - {}^{\mathrm{pi}}\lambda \sum_{^{\mathrm{pi}}n=n^{\mathrm{o}}+1}^{^{\mathrm{pi}}N} {}^{\mathrm{pi}}x_t^{^{\mathrm{pi}}n} \tag{15.15}$$

Note, in contrast to the description above the net return for hog finishers $^{\mathrm{ho}}G_t$ must be adjusted by the piglet price (i.e., the variable costs of pork production). Additionally, since finishers would not spend more money on buying piglets than the expected return for pork, the net return is zero in these cases:

$$^{\mathrm{ho}}G_t = \begin{cases} 0, & \text{if } {}^{\mathrm{pi}}P_t \le {}^{\mathrm{ho}}\hat{P}_t \\ \dfrac{^{\mathrm{ho}}\alpha_t}{^{\mathrm{ho}}X_t} - {}^{\mathrm{pi}}P_t, & \text{otherwise} \end{cases} \tag{15.16}$$

Based on this conception, Equation 15.17 should hold for hog finishers:

$$^{\mathrm{ho}}X_t = \frac{^{\mathrm{ho}}\alpha_t}{^{\mathrm{pi}}P_t^*} \tag{15.17}$$

The remaining question is, how to determine appropriate sets of trigger prices $^{\mathrm{ho}}P_n^*$ and $^{\mathrm{pi}}P_n^*$? For this, the *multi*-firm market models are combined with a GA.

15.2.2. The genetic algorithm and its implementation (Balmann and Happe, 2001)

GA are a heuristic optimisation technique which has been developed in analogy to the concepts of natural evolution and the terminology used reflects this. Even though there is no "standard GA" but many variations of GA, there are some basic elements, which are common to all GA (cf. Holland, 1975; Goldberg, 1989; Forrest, 1993; Mitchell, 1996). For other GA-applications to real options, see Balmann et al. (2001) and Diaz (2000). The first task of an application of GA is to specify a way of representing each possible solution or

strategy as a string of genes, which is located on one or more chromosomes. Usually this is achieved by representing solutions (e.g., strategies, numbers, etc.) as binary bits (zeroes or ones), which form the genes. Since the current problem is relatively simple, i.e., searching for a single value (i.e., every strategy just consists of a certain trigger price), the investment trigger can be taken as a real value and the GA operators can be applied to the trigger price itself. The second task is to define a population of N genomes to which the genetic operators, i.e., selection, crossover and mutation, can be applied. The population size here is 50 genomes. This allows us to directly map the set of genomes to the firms' strategies, i.e., every firm's trigger price in our model is represented by one genome of the genome population. Vice versa every genome can be understood as the strategy of a certain firm.

Each application of the genetic operators to the population of genomes creates a new, modified generation of genomes. The number of generations depends on the problem to be solved. It can range from some 50 to a couple of thousand. In most GA applications the first generation of genomes is initialised by random values or it is set arbitrarily. During the following generations, the genome population passes through the following steps:

15.2.2.1. Fitness evaluation

Each time before the GA operators described in Sections 15.2.2.2–15.2.2.4 are applied, the goodness of every genome is evaluated by applying a fitness function. This function assigns a score to each genome in the current population according to the capability of the genome strategy to solve the problem at hand. The better the strategy performs the higher its fitness value. For our applications, the fitness value is directly derived from the strategy's average profitability $\prod_n(P_n^*)$ or payoff in 5000 stochastic simulations of the market model.

15.2.2.2. Selection and replication

Selection determines the genetic material to be reproduced in the next generation. The fitter the genome (i.e., the better adapted it is to the problem) the more likely it is to be selected for reproduction. Selection can be implemented in many different ways. In this model the 20 most successful genomes always survive. The next 15 genomes are replaced with certain likelihood by the 15 most successful genomes of the last simulation series. The next 10 genomes are replaced by the 10 fittest genomes with a higher likelihood. And the least five successful genomes are always replaced by the five most successful genomes. Summarising, the five most successful genomes can quadruplicate, the next five can triplicate, and the next five most successful strategies can double.

15.2.2.3. Crossover

Figure 15.1 shows the simplest case of a one-point-crossover, where the coded strings of two parent genomes are split at a randomly chosen locus and the sub-strings before and after the locus are exchanged between the two parent genomes resulting in two offspring genomes. This technique is also used for our GA implementation. With a certain

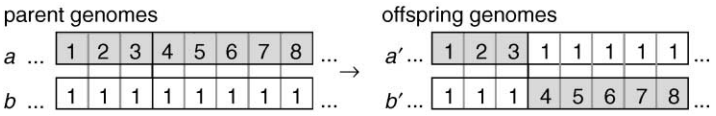

Figure 15.1: Example of a 1-point-crossover after the third digit.

likelihood, for every genome a a partner b is randomly chosen from the selected genomes. The values are cut at a randomly chosen digit. If, for e.g., the numbers are cut after the third digit, offspring a' gets the first three digits of parent a and all further digits of parent b and vice versa. Thus the triggers $a = 1.2345678$ and $b = 1.1111111$ become $a' = 1.2311111$ and $b' = 1.1145678$.

15.2.2.4. Mutation

Mutation also brings new genetic varieties into the population of genomes. Furthermore, mutation serves as a reminder or insurance operator because it is able to recover genetic material into the population which was lost in previous generations (Mitchell, 1996). This ensures the population against an early and permanent fixation on an inferior genotype. Mutation is implemented here by multiplying every solution with a certain, but small likelihood with a random number between 0.95 and 1.05. The mutation likelihood as well as the range of the random number may be chosen according to experience as well as according to the already obtained results.

In one particular point our GA application deviates from conventional applications. Here, the GA is not just used to solve a more or less complex optimisation problem in which the goodness of the solution and the problem at hand are directly related. In our case, the goodness of a solution rather depends on the alternative solutions generated by the GA. In other words: in conventional GA applications, the fitness of a genome can be obtained directly from a comparison of payoffs of the different solutions because the payoffs are independent of the competing solutions. Here, a solution's payoff depends on the other solutions. Thus, we are applying the GA to a game-theoretic setting and we are not searching for an optimal solution, but for an equilibrium solution, i.e., the Nash-equilibrium strategy. A number of publications during the past 10 years show that agent-based GA approaches function quite well. Examples and discussions are given for instance in Arifovic (1994, 1996), Dawid (1996), Axelrod (1997), Chattoe (1998), Dawid and Kopel (1998) and Balmann and Happe (2001).

15.2.3. The scenarios

The model as it is presented above can be used for many different scenarios. One motivation is to validate our approach for the standard case of a one-step production system, i.e., the closed farrowing–finishing system, by showing that it leads to the same conclusions as analytical approaches. The calculations are based on an interest rate of $r = 6\%$. The drift rate μ is assumed to be zero and the volatility σ is assumed to be 20%. Depreciation rate λ equals 5%. Thus, investment costs $I_{\lambda=5\%} = 8.36364$ imply total

production costs of one per unit of output. The total time span T simulated in every stochastic simulation is determined at 100 years. For later periods the expected returns are set equal to the returns in year 100. The possible error can be assumed to be negligible since later returns are discounted by more than 99.7%.

In order to validate the agent-based model of multiple competing farms, it will now be shown that the agent-based approach leads for the closed system to the same dynamics like a direct simulation of the price dynamics that would have to be expected. For these reference experiments, it is assumed that output prices directly follow GBM for competitive markets. This idea is based on the seminal finding of Leahy (1993) showing that the market impacts of, e.g., depreciation and competition can be ignored in the way that myopic behaviour leads to adequate decisions if volatilities and the drift rate of the price process are estimated properly. For an analysis with particular regards to depreciation and demand elasticities, cf. Odening et al. (2004).

15.3. RESULTS

15.3.1. Validation

Consider the existence of an equilibrium investment trigger P^* at which all firms invest and assume that in period $t - \Delta t$ firms have invested according to $\hat{P}_t = P^*$. From Equations 15.5 and 15.6 we know that after the investment decisions are made, P_t purely depends on the relation of α_t and $\alpha_{t-\Delta t}$. Hence, the price in t will be

$$P_t = P^* \exp\left[\left(\mu - \frac{\sigma^2}{2}\right)\Delta t + \sigma\varepsilon_t\sqrt{\Delta t}\right] \tag{15.18}$$

Consider now that the actual price in period t is $P_t \geq P^*$. Then the firms will respond and invest such that $\hat{P}_{t+\Delta t} = P^*$. Now consider $P^* \geq P_t$. Then, two cases have to be differentiated. If $P^* \geq P_t > (1-\lambda)^{\Delta t}P^*$ then some firms will reinvest, such that $\hat{P}_{t+\Delta t} = P^*$. Otherwise, if $P_t \leq (1-\lambda)^{\Delta t}P^*$ no firm will reinvest and $\hat{P}_{t+\Delta t} = P_t/(1-\lambda)^{\Delta t}$. With this knowledge and in accordance with Equations 15.1–15.12 the price dynamics can be described as

$$P_t = \begin{cases} P^* \exp\left[\left(\mu - \dfrac{\sigma^2}{2}\right)\Delta t + \sigma\varepsilon_t\sqrt{\Delta t}\right] & \text{if } P_{t-\Delta t} \geq (1-\lambda)^{\Delta t}P^* \\ \left.\begin{array}{l} \dfrac{P_{t-\Delta t}}{(1-\lambda)^{\Delta t}} \exp\left[\left(\mu - \dfrac{\sigma^2}{2}\right)\Delta t + \sigma\varepsilon_t\sqrt{\Delta t}\right] = \\ P_{t-\Delta t} \exp\left[\left(\mu - \log(1-\lambda) - \dfrac{\sigma^2}{2}\right)\Delta t + \sigma\varepsilon_t\sqrt{\Delta t}\right] \end{array}\right\} & \text{otherwise} \end{cases} \tag{15.19}$$

With Equation 15.19 price dynamics can be simulated directly, i.e., without the explicit representation of firms. Moreover, Equation 15.19 can be used to determine the equilibrium

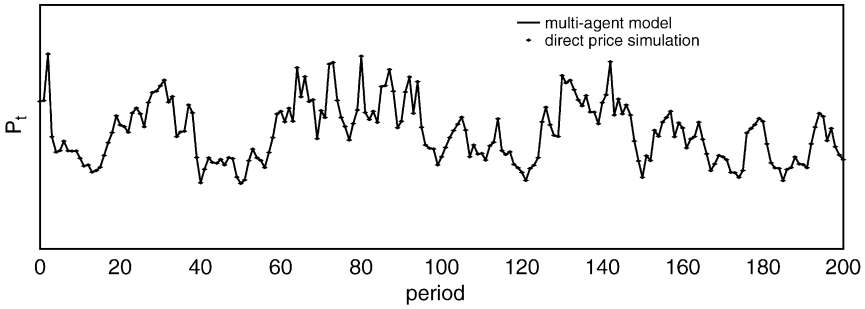

Figure 15.2: Price dynamics in the agent-based model and in the direct price. Simulation (identical trigger prices for all genomes).

investment trigger P^*. Repeated stochastic simulations of Equation 15.19 for various values of P^* should reveal that the zero-profit condition will only be fulfilled if P^* is equal to the equilibrium investment trigger. If P^* is higher, the dynamics should allow for profits. If P^* is smaller, this should imply losses. Accordingly, the equilibrium trigger price P^* can be determined by minimising the square of the expected profits, i.e.,

$$\min_{P^*}\left\{E^2\left[-\Pi(P^*)\right] = E^2\left[\sum_{l=0}^{\infty}\left(x_{l\Delta t,n}P_{l\Delta t} - M_{l\Delta t,n}\left(x_{l\Delta t,n},P^*\right)\right)(1+r)^{-l\Delta t}\right]\right\} \qquad (15.20)$$

with $P_0 = P^*$ and P_t follows Equation 15.15.

Figure 15.2 shows that for identical trigger prices and identical α_t, the agent-based model and the direct price simulation lead to an identical price path. Moreover, the direct price simulations lead to practically identical trigger prices. Hence direct price simulation allows validating the results of the agent-based approach. Unfortunately, this approach is not as general as the agent-based approach and cannot be applied directly to production chains in which farms interact on spot markets.

15.3.2. Closed systems vs. spot market interaction

Table 15.1 presents the trigger prices for investments under alternative assumptions. As a result the trigger prices of the closed systems correspond to the sum of the trigger

Table 15.1: Trigger prices dependent on vertical integration and depreciation.

	Closed system	Spot market		
		Piglet producer	Pork producer	Sum
Risk neutrality	2.362	1.018	1.345	2.363
Risk aversion[a]	2.375	1.017	1.354	2.371

[a]Considering the utility function $U = (a + X)^{1/2}$, with $a = 2$ for piglet producers and $a = 10$ for pork producers where X as the present value of all cash flow streams achieved with the respective strategy in a simulation.

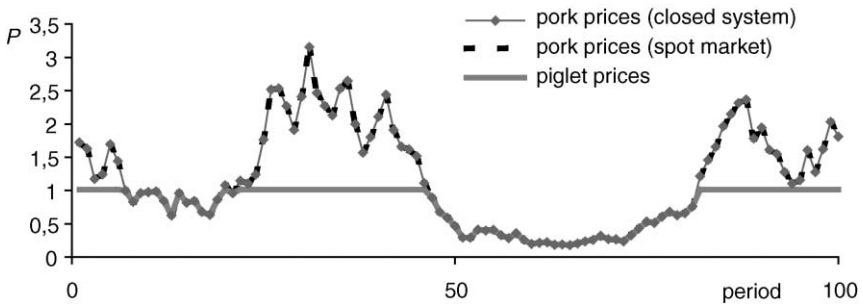

Figure 15.3: Price paths as results from alternative scenarios.

prices of the spot market solution. Accordingly, one can conclude that stronger vertical integration does not increase investments and welfare. Moreover, vertical integration does not influence the production volume — even if farmers are risk avers. This is shown by Figure 15.3. For given dynamics of demand for pork, the scenarios lead to identical price paths.

This result contradicts the empirically based results of Pietola and Wang (2000). How to dissolve this contradiction? On the one hand, the simulation experiments are based on several specific assumptions, e.g., identical useful lifetimes of barns for piglets and hogs by using a fixed depreciation rate of 5%, rational expectations about the behaviour of the market partners as well as on the assumed piglet market which is based on a price elasticity of -1. On the other hand, the results are surprising. While real piglet prices show significant fluctuations, the piglet prices as represented in Figure 15.3 are constant over wide phases. This can be explained by several assumptions of the model: the implicit synchronicity of the useful lifetime of the barns, the fixed depreciation rate, and the rational expectations hypothesis. These assumptions enable that the capacities of piglet production can be optimally adjusted to the hog finishing capacities.

A variation of the useful lifetime of the farrowing barns changes the price dynamics for piglets. Nevertheless, this has no significant effect on total pork production. According to Table 15.2, variations of the depreciation rate for farrowing barns do not affect the sum of trigger prices for piglets and for pork. Higher depreciation rates for farrowing barns lower their trigger price, while equilibrium gross margins for finishing barns increase in the same amount. This is a consequence of the higher flexibility of the piglet production. Vice versa lower depreciation rates for farrowing barns leads to a higher volatility of the piglet prices and therefore to higher trigger prices. Simultaneous equilibrium gross margins of

Table 15.2: Trigger prices dependent on different depreciation rates for farrowing barns (${}^{pi}\lambda = 5\%$).

	${}^{pi}\boldsymbol{\lambda} = \mathbf{2.5\%}$	${}^{pi}\boldsymbol{\lambda} = \mathbf{5\%}$	${}^{pi}\boldsymbol{\lambda} = \mathbf{7.5\%}$	${}^{pi}\boldsymbol{\lambda} = \mathbf{10\%}$
${}^{ho}P^*$	1.2555	1.3450	1.4013	1.4238
${}^{pi}P^*$	1.1184	1.0180	0.9601	0.9393
${}^{ho}P^* + {}^{pi}P^*$	2.3739	2.3630	2.3614	2.3631

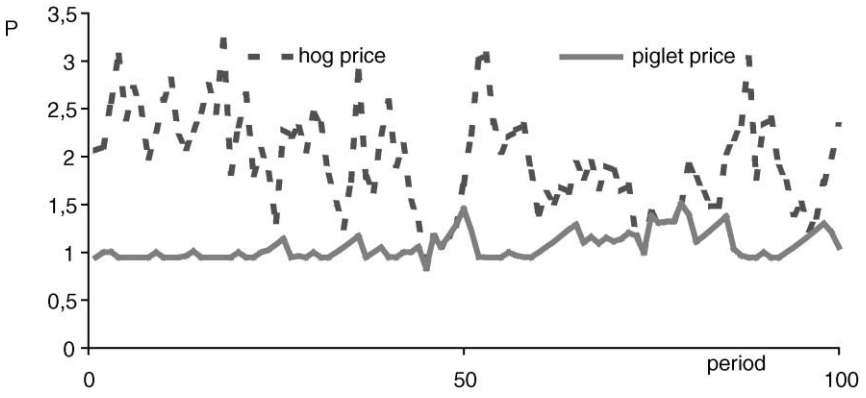

Figure 15.4: Price dynamics for ${}^{ho}\lambda = 5\%$ and ${}^{pi}\lambda = 10\%$.

finishers can be reduced because finishers benefit from the farrowers' inflexibility. For high depreciation rates of farrowing barns the trigger prices are even smaller than 1. The reason is that in the short run the piglet producers benefit from the small flexibility of hog finishers in the case of moderate demand declines for pork. In this case the trigger price forms a kind of lower reflecting barrier. Figures 15.4 and 15.5 illustrate this effect by showing exemplary dynamics of prices for hogs and piglets for different depreciation rates for farrowing barns (i.e., ${}^{pi}\lambda = 10\%$ and ${}^{pi}\lambda = 2.5\%$ for ${}^{ho}\lambda = 5\%$).

The considerations above show that certain assumptions have a strong effect on specific results, such as the investment triggers on the different production steps. However, the fundamental result that closed systems are not superior compared to spot market solutions is not affected, even if the assumptions are changed. Probably, the results would alter if one would assume some kind of bounded rationality, such as that farmers cannot observe the production capacities of competitors and market partners in real time but with a certain time lag. However, this assumption would also affect stronger vertically integrated systems because one would need a kind of sectoral planning agency.

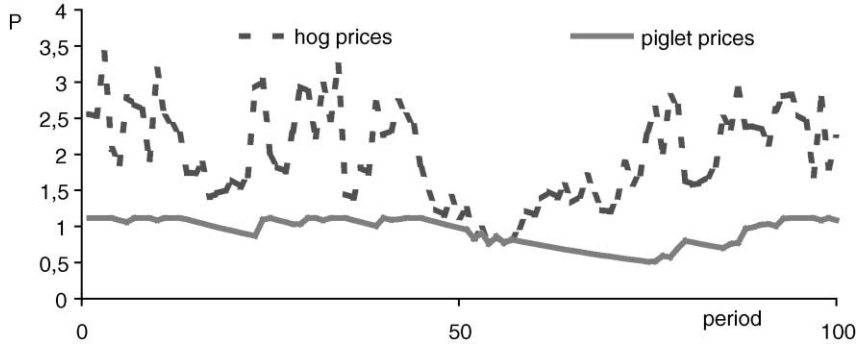

Figure 15.5: Price dynamics for ${}^{ho}\lambda = 5\%$ and ${}^{pi}\lambda = 2.5\%$.

15.4. SUMMARY AND CONCLUSIONS

Participants along a production chain who exchange intermediate products on spot markets face price risks, such as the transmission of price fluctuations of the final product. In a real options environment this uncertainty may cause investment reluctance on the different steps of the production chain. This chapter analyses whether a stronger vertical integration along the production chain allows to reduce the investment reluctance. Therefore, an agent-based competitive model of the pork production chain has been developed in which farmers use optimal investment strategies, which are identified by GA. Two production systems are compared: as example for a perfectly integrated system it is considered that every farmer can invest in closed systems in which piglets (the intermediate product) and finished hogs (the final product) are produced in equal amounts. In an alternative production system, farmers can either invest in farrowing (i.e., the production of piglets) or in hog finishing. The intermediate product, i.e., piglets, is traded on a spot market. Simulations show that the spot market solution and the closed system lead to the same production dynamics. The only precondition is that in the spot market system farrowers and hog finishers are aware of the investment strategies and the production capacities of the market partners. This general finding is independent of different depreciation rates on the production steps, though the price dynamics for the intermediate product changes. Though this result is intuitively surprising, it is in accordance with several other insights of the real options theory such as that myopic investors who ignore impacts of competition behave efficient (Leahy, 1993) and that real options theory does not justify political interventions such as price stabilisation (Dixit and Pindyck, 1993). However, as already mentioned, our findings are based on certain restrictive assumptions. Accordingly, the next steps of research will be to relax certain assumptions, such as the demand elasticity (respectively, price flexibility) of -1.

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CHAPTER 16

Vertical Alliances for Origin Labelled Food Products: What Is the Most Relevant Economic Model of Analysis?

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Abstract

This chapter first reports the characteristics of the vertical organisations of PDO–PGI supply chains. The second part deals with the choice of a relevant economic model to analyse markets and supply chains. All assumptions of the neo-classical model and the work done during one century for modifying the hypotheses of the model are integrated in a single theoretical corpus. Contributions of New-Institutional Economics as for the assumptions of information and rationality show the prospects and open the field of the diversity of organisational choices of markets. Part three shows the benefits of vertical alliances of PDO–PGI chains, compared to conventional markets. Finally, the consequences of this analysis as regards antitrust and agricultural policy are discussed.

16.1. INTRODUCTION

All the case studies conducted in Europe on PDO–PGI (PDO: Protected Designation of Origin; PGI Protected Geographical Indication — EU regulation 2081/92) supply chains show the construction of a vertical organisation of producers and transformers of small size. These organisations are a co-ordinated system of collective management, in order to build a credible promise to the consumer and to keep it. The members do not only decide to co-ordinate their strategic decisions but also entrust a part of their tasks to a common piloting centre (Barjolle and Sylvander, 2000).

The object of this chapter is to understand the "raison d'être" and the benefit for the agricultural producers of these hybrid organisations, which are called "vertical alliances". This discussion is interesting on two accounts: first to improve the management of the supply chain, while proportioning competition, this mix of collaboration and competition between the members, correctly; second for a better consideration of these organisations by public policies (agricultural policy, and in particular, right of the inter-professional bodies, and antitrust policy). With this view, it is fundamental to rely on a relevant economic model. Economic theories offer from now on very enlightening concepts, resulting from the work carried out for one century to modify the hypotheses of the neo-classical model. Work of New-Institutional Economics concluded this programme and completed the theoretical corpus. This allows showing why vertical alliances of PDO–PGI supply chains are a beneficial alternative to conventional markets.

This chapter is organised into four parts: the first part points out the characteristics of the vertical organisations of PDO–PGI supply chains, which justify calling them "vertical alliances"; the second part deals with the choice of a relevant economic model to analyse markets and supply chains of real products. On this basis, the third part shows the benefit brought by vertical alliances of PDO–PGI supply chains, compared to conventional markets. Finally, the issue of the consequences of our analysis as regards antitrust policy and agricultural policy is raised.

16.2. CHARACTERISTICS OF PDO–PGI VERTICAL ALLIANCES

The construction of the code of practice of a PDO–PGI labelled product goes together with the construction of a common vertical organisation, which creates intersected bonds between the members, while preserving broad sides of their decision-making autonomy. These arrangements have been studied in depth (Barjolle and Chappuis, 2000a,b; Chappuis and Sans, 2000; De Roest, 2000; Albisu et al., 2002). More generally, initiatives for labelling quality food products lead to co-ordinated systems of collective management (Verhaegen and Van Huylenbroeck, 2002; Raynaud et al., 2004).

The members of the group preserve their financial autonomy, are owners of their assets, deal commercially with the partners of their choice within the group, benefit from a technical freedom within the limits of the common code of practice. On the other hand, they regroup certain tasks within a piloting centre, which they control, in order to benefit from industrial type services. Within the framework of concerted action DOLPHINS (Development of Origin Labelled Products: Humanity, Innovation, and Sustainability), it was shown that the supply chains of origin labelled products could be controlled by several organisational and legal forms. In this contribution the inter-professions, gathering several levels of the supply chain (Barjolle and Thévenod-Mottet, 2003) are highlighted.

The benefit expected by the members are mainly economies of scale which enable them to reach technical (quality control) or commercial (marketing plan, access to new markets)

A vertical alliance: the example of the Gruyere supply chain

Gruyere is a traditional Swiss cheese whose production goes back several centuries, which owes its name to the city and area located in the canton of Fribourg. Gruyere was registered as a Protected Designation of Origin (PDO) in 2001.

The supply chain (*filière*) of the Gruyere counts 3500 milk producers, 210 artisanal cheese dairies and 10 cheese ripeners for an annual total production of almost 27,000 t. In 1992, the enterprises of the supply chain constituted an association (Interprofession du Gruyère) of which the first objective was the registration of the Gruyere denomination as PDO.

The general assembly and the committee of the association gather elected representatives of the various professional "families" of the supply chain (milk producers, cheese makers and cheese ripeners). The decisions are made by the majority of the various colleges, i.e., by the majority of each level of the supply chain. Once the AOC Gruyere was registered, the association began "piloting" the supply chain and the co-ordination of the enterprises around the shared designation. The tasks assumed by Interprofession du Gruyère are today: quality control of the product with respect to its code of practice, information and advice to the enterprises, collective promotion of the designation "Gruyere", research and development, development of a standard contract between cheese makers and ripeners, arbitration between the members of the inter-profession, management of volumes and fixing of internal indicatory prices within the supply chain.

All the enterprises of the supply chain preserve their legal independence. At the commercial level, individual action remains possible within the limits of the code of practice of the product and the associative rules defined within the inter-profession.

As regards alliances, the supply chain of Gruyere has two dimensions. The first one is vertical since there is a co-operation between various levels of the supply chain; the second dimension is horizontal since it implies collaboration between competing enterprises of the same level.

services that their small size would otherwise make impossible. This advantage is often a condition for the upkeep of the activity. The risks that they take are related to the sharing of the products' reputation, which makes opportunistic behaviour particularly, dangerous and implies the need to set up performing internal audit systems.

Zylbersztajn and Farina (1999) explain that market strategy (i.e., product differentiation) is not the only reason for setting up a strict vertical co-ordination. One other reason is the transaction costs savings allowed by the strict co-ordination. Zylbersztajn and Farina (1999) consider a firm competing with others but organising its transactions in a different way. The nexus of contracts built up by this firm confers it a market advantage. Strictly co-ordinated vertical sub-systems compete within a sector/an industry with other sub-systems, and in particular with integrated firms where transactions are organised in a hierarchical way (Barjolle, 2001; Chappuis and Réviron, 2002).

The proposal is to name this hybrid organisation "vertical alliance". The term "strategic alliance" was defined by Dussauge and Garette (1991, 1999) as "an association between several competing companies, or potentially competing companies, who choose to bring to a successful issue a project or a specific activity by co-ordinating their competencies, means and necessary resources rather than:

To implement this project or activity on an autonomous basis, facing directly the competition of the other firms engaged in the same activity.
To share, in a definitive way, and on the whole range of their activities, the totality of their resources.

The term "alliance" has been mainly used for "horizontal alliances", of joint venture type, when development or technology transfer is the stake (Oxley, 1997; Gulati, 1998; Baker et al., 2002). The definition of Dussauge and Garette is much broader and appears particularly relevant to us to characterise the organisation of PDO–PGI supply chains.

This definition insists initially on the idea of a third way between the (spot) market and the firm, and relates to the concept of hybrid form suggested by New-Institutional Economics. Alliances are constituted because neither the (spot) market, nor the firm, is satisfactory in comparison with the project built by its initiators (Williamson, 1991). They must therefore be analysed as a reaction to the imperfections of these two modes of organisation. In the second place, the definition insists on the selection of the partners, the pooling of means and the co-ordination of the members' strategic decisions. These features are characteristic of hybrid organisations (for a review and identification of the main issues on hybrid organisations, see Ménard (2004)).

Why are vertical alliances constituted and which are the consequences on the dynamics of the supply chains? For which reasons would it be justified to support them? To answer these questions, it is fundamental to adopt a relevant theoretical economic approach.

16.3. WHICH THEORETICAL ECONOMIC MODEL FOR THE ANALYSIS OF REAL MARKETS?

To choose a relevant theoretical model for analysing real markets and supply chains is always tricky. Some experts just give up, stating that economists deal with questions that are too far from the problems that users struggle with. The classical marketing methods and the strategy approach would be more useful, because they are dedicated to management and decision-making. Other experts find that the economic theory proposes interesting concepts that open new perspectives and enrich the users' know-how. This approach is shared based on the conviction that the economic theory may allow us to better analyse and understand our case studies, in order to make recommendations to the supply chain operators and the public institutions. The aim is to build an efficient toolbox from the Economic Theory concepts and results.

Problems then arise because economists do not help us when they do not agree and defend apparently different competing theories. Which theory is "the best" and which one to adopt? How to justify this choice? This chapter proposes another point of view.

It defends the idea that there is in fact a unique theoretical corpus (Réviron, 2000). Its starting point is the neo-classical model (proposed by Walras (1874), following Cournot (1838)) and its end is the concept of procedural rationality that was proposed by Simon in 1976. The neo-classical model needs six very strong hypotheses and it took a century for analysing what happens when one of the hypotheses does not hold. At each step, it looked as if a new theory had bloomed but the new theory was not replacing the old one but was, in fact, completing it.

This unique corpus does not lead to the uniformity of a unique solution but on the contrary opens the diversity of possible market positions that reflects the diversity of real market organisations and operations observed. More than that, it provides key for understanding this diversity.

The neo-classical model was built by Walras (1874), following the mathematical approach of the demand curve that had been proposed by Cournot (1838). Marshall (1890) introduced later the supply curve, under some specific hypotheses. The aim of the model was to identify laws for the determination of prices. The neo-classical model objective was not to be realistic. The approach was driven from the physics sciences epistemology. The idea was to extract from reality some "ideal" types (without frictions), in order to determine their operation laws. These types are "perfect" according to the physics meaning, because they work without perturbations (Cournot, 1838: 37; Walras, 1874: 30). There is often a misinterpretation of the word "perfect", because of its very different common sense (Friedman, 1953: 16–19; Williamson, 1985: 19).

This model needs a very specific practical organisation of the transactions that has never been practised on a real market. The negotiation is multilateral. An auctioneer proposes prices. Sellers and buyers, according to specific rules of decision-making, propose quantities. No price is fixed, no quantity is exchanged until the total quantity that is collectively proposed by the buyers is equal to the total quantity collectively proposed by the sellers; the market will not be opened again in the future.

For the model to be valid it needs a set of specific hypotheses:

- Sellers and buyers atomism: a large number of agents, each with a very small size, guarantees a behaviour of "price taker" and prevents from opportunistic strategic decisions and market manipulations.
- Free entry of new operators (and free exit).
- Undifferentiated product: the good is standard and products may be substituted.
- Perfect information on quality (this is linked to the hypothesis of undifferentiated product) and on prices (because of the very specific multilateral transaction).
- A "complete" market system, which avoids strategic anticipations about the future. The exchange market place will not be open again.
- Substantial rationality: the buyer maximises its utility according to a given preference. He takes his decisions by himself, without any anticipation of the other agents' decisions.

These hypotheses played a very important role in the construction of the micro-economic theory during the last century. Different research groups intended to highlight

the effects of relaxing one of theses hypotheses on the market operation and organisation. It is then possible to organise this theoretical work around the issue of each hypothesis.

The modification of the atomism hypothesis was started by Cournot (1838) and Bertrand (1883) before the construction of the neo-classical model), and was developed later by Industrial Economics (following Mason (1957); Bain (1959)), which studied the effects of a monopoly, a duopoly or an oligopoly on the firms' strategic behaviours. Game theory (von Neumann and Morgensten, 1944) highlighted the effects of a strategic interaction between firms.

The modification of the free entry hypothesis gave birth to the concepts of barriers to entry (Bain, 1956; Tirole, 1988) and disputability of markets, which were developed in Industrial Economics.

The modification of the goods homogeneity hypothesis was introduced by Sraffa (1926) and Hotelling (1929) and finalised by Chamberlin (1933). Chamberlin highlighted the effects of the goods differentiation on the individual demand curve for a firms' product, under the pressure of its direct competitors. His theory of the monopolistic competition destroyed—when the goods are differentiated—the comforting classical views of the crossing collective supply and demand curves. Each firm defines its product specificities/quality and fixes its price on its own individual demand curve. The quantity that is bought by the consumers is a result of these strategic decisions. Chamberlin's conclusions opened the way to a new approach of Marketing. Unfortunately, Chamberlin did not study the issue of consumer welfare, when the goods are differentiated. This gap in the theory persists. It is evident in our daily life that consumers express a strong preference for differentiated products but this is not yet enough taken into consideration by economists.

After Chamberlin, the micro-economic theory objectives changed in-depth. The issue of price determination was over and the issue of market organisation became critical, when relaxing the perfect information hypothesis and the complete market system hypothesis. The New-Institutional Economics stated that actors make their decisions under a limited rationality, because of uncertainties on quality, prices, distribution and future. Introducing an asymmetry of information on quality between the seller and the buyer has strong effects on the market operation, because it opens the issue of trust. What are the capacity and the willingness of the producer to respect the expectations of the buyer? Uncertainty on quality may even lead to the death of the market if buyers judge that the risk is too high to be taken (Akerlof, 1970).

Introducing the future in the sellers' and buyers' mind, who expect to deal again on the market later, may change behaviours. First, the actors have to anticipate the market evolution. This is quite impossible on unstable markets. To decide to buy or to sell today, without any idea of what the future will be, is, on this kind of markets, very risky. After the conclusion of the contract, actors may discover that they took the wrong decision (because prices went up/down or because a "better" partner appeared). The temptation of opportunism and cheating to escape from the agreement is very high. Second, actors may look for long-term gains. They could prefer to select their partners and renounce to what seems to be the best deal at that given moment. The frequency of the relationship, the construction of common knowledge and trust is thought to be more profitable than a one shoot deal.

When trying to explain the existence of firms, Coase (1937) highlighted different transaction costs when dealing on a market, such as partners research, negotiation costs, type of information search on quality and prices, protection against opportunism. According to the theory, actors should select the kind of organisation that lowers these transaction costs. When uncertainties on quality and future are very high, actors try to protect themselves against unbearable risks. They select specific governance structures, "hybrid forms", between the spot market and the firm (Williamson, 1985). Partners are selected and intend to continue their partnership in the future, with a commitment to make investments that create significant and durable mutual dependence. They are linked by incomplete contracts and have to imagine ways for facing ex post problems.

The hypothesis of substantial rationality was studied most recently. Information asymmetries were introduced in the game theory (following Harsanyi, 1967). In 1976, Simon proposed the concept of procedural rationality: in a context of limited rationality, actors make their decisions according to a set of past experiences, that reinforces distrust and trust. The economic theory of conventions studied how actors make their decisions according to risk measure, beliefs and rational anticipations.

It took a century to modify all the hypotheses of the neo-classical model. Rather than considering these results as competing theories, it is more interesting to include them in one theoretical corpus. Each hypothesis gives birth to two positions: the hypothesis holds, the hypothesis does not hold. Intermediary positions are observed. This approach opens the issue of the diversity of markets operation and organisation (Table 16.1).

Not considering the complete range and sticking to the neo-classical model, which is an interesting but limited theoretical case study (all the hypotheses hold—this has never been realised on real markets), leads to deprive oneself of the richness of one century of economic theory and to an incorrect diagnostic. The following discussion shows how an extended point of view may help to analyse vertical alliances.

Table 16.1: Modification of the hypotheses of the neo-classical model: a brief review of the literature.

Hypotheses of the neo-classical model	**Modification of the hypothesis**	**Diversity of market positions**
Seller and buyer atomism	Monopoly, duopoly, oligopoly, market structures (Cournot, 1838; Mason, 1957; Bain, 1959)	Degree of sellers concentration, degree of buyers concentration
Free entry (and free exit)	Barriers to new entry, exist costs (Bain, 1956; Tirole, 1988)	Height of barriers, exit conditions and costs
Undifferentiated product	Product differentiation (Sraffa, 1926; Hotelling, 1929; Chamberlin, 1933)	Degree of product differentiation
Perfect information	Uncertainty on dispersion of prices (Stigler, 1961)	Degree of difficulty in inquiring about negotiated prices
	Uncertainty on quality (Akerlof, 1970; Williamson, 1985)	Degree of risk on quality, degree of information asymmetry on quality
"Complete" market system	Uncertainty regarding the future, relations frequency (Arrow, 1974; Williamson, 1985)	Degree of possible opportunism, degree of trust
Substantial rationality	Limited rationality, procedural rationality, conventions (Harsanyi, 1967; Arrow, 1974; Simon, 1976)	Number of negotiated clauses, difficulty of decision-making

16.4. POSITION OF VERTICAL PDO–PGI ALLIANCES ON THE AXES OF THEORETICAL DIVERSITY

The analysis of PDO–PGI vertical alliances raises two basic issues. The first one is that the economic theory is interested in "markets", as a pitch where salesmen and buyers meet. These markets are thought to be isolated and not dependent, within more or less long supply chains. In the case of the markets of agricultural products, it appears not very legitimate to be confined within the upstream of the supply chain, without taking into account the "markets" downstream, where the retailers operate. For vertical alliances, the question is all the more crucial as the system embraces several levels of the supply chain. However the positions are not identical on the various levels of the supply chain and must be distinguished.

The second issue is that the effects of an organisation should not be judged in itself but relatively to alternate organisations, when the producers cannot or do not want to enter a vertical alliance. Analysis with the same scheme conventional markets is proposed. In a second step the modifications caused by the constitution of a PDO alliance are shown.

Figure 16.2 indicates the position of the actors in a conventional supply chain. To illustrate our matter, the example is taken of dairy products in Switzerland. Figure 16.1 presents the two main systems of milk marketing in Switzerland.

The *industrial system* is represented on the left of the card. Producers do not know how their milk will be processed. They deliver the milk to a local group of producers that is affiliated to a federation. The federation has contracts with a dairy company. There are eight large processing companies that make up to 96% of the market. These dairy companies decide on the use of milk either for generic products (consumption milk, milk powder, butter), special products (yoghurts, deserts) or industrial cheeses based on pasteurised milk.

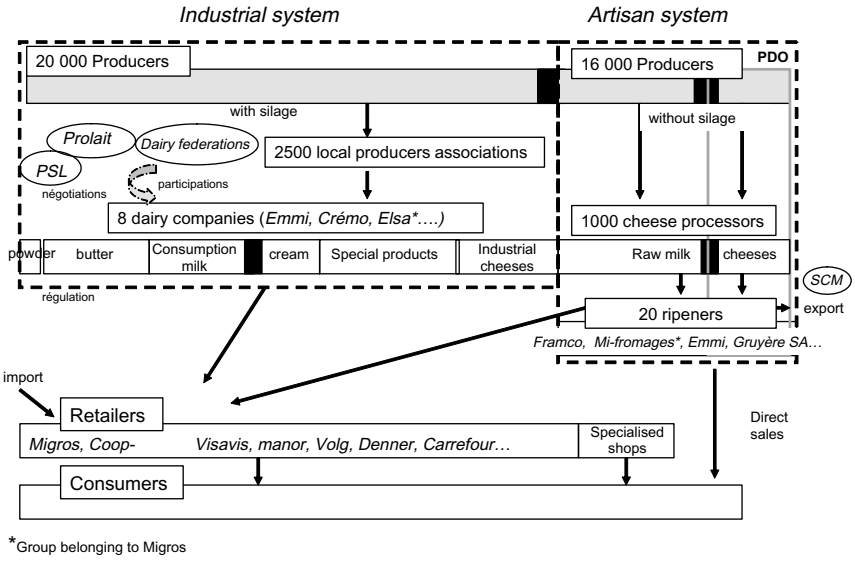

Figure 16.1: Map of the dairy sector in Switzerland, 2003.

The *artisan system* of production of matured cheeses is represented on the right side of the card. The producers produce milk without using silage. They are in direct link with an artisan type of cheese-dairy (approximately 1000 in Switzerland). These dairies usually belong to the local producers association and sell the cheeses to a maturing company (20 in Switzerland, with four major ones) that then trades the product in Switzerland and abroad. Within this artisan system, the PDO alliances occupy a specific position. The PDO-labelled products can be in competition with industrial or artisan type copies.

Which is the position of these two systems in comparison with the assumptions? The comparison starts with the industrial system, insofar as it is the dominating model.

The producers deliver their products to a local group of producers. They are often requested to respect minimal quality norms. They do not know the final use of their product and receive an average price. The processors produce a range of products, both generic (milk powder) and highly differentiated products (yoghurts, pasteurised cheese, etc.). The retailer sells an assortment of products to the consumer, some with a private label or a trademark.

Figure 16.2 highlights the imperfections of the conventional agro-food supply chains in the dairy sector in Switzerland.

- *Seller and buyer atomism*: 20,000 producers, eight large dairy processing enterprises and two main retailers (nearly 80% of the sales of dairy products). The atomicity of the producers faces the extreme concentration of the sectors downstream, in spite of the attempts of the dairy federations for better control of the dairy companies (negotiations of collective agreements, acquisition of shares).
- *Free entry*: free entry is limited at all levels in the dairy sector, because of lawful transferable quotas for the producers, the importance of the permanent assets for the milk processing and the legislation on the establishment of retailers' stores.
- *Undifferentiated products*: the producers are invited to produce standard milk according to minimal quality standards. The dairy companies arbitrate their production between generic products (powder, butter, drinking milk) and highly differentiated products (milk desserts, yoghurts, cream collared with coffee, yoghurts drinks, pasteurised cheeses), which they seek to sell under their own brand, according to a marketing plan. The retailers have generic and ultra-transformed products manufactured, for sale under their own brand. They develop elaborated marketing strategies. The added value thus tends to be created and to remain downstream of the supply chain.
- *Information on prices*: the conventional markets are characterised by an asymmetry of information to the advantage of processors and retailers, which have precise information on the selling prices, and the production costs of each product. The producers have access only to very imperfect quotations, which are established by equalisation of various origins of the milk and uses.
- *Uncertainty on quality*: the buyer always suffers from an asymmetry of information on quality, as soon as he does not process himself. The set up of quality controls upon arrival of the product or at the supplier during the processing phase are now traditional tools in the distribution and processing enterprises. For the producers, the problem is the recognition of quality at delivery and the payment of the bonus/deductions.

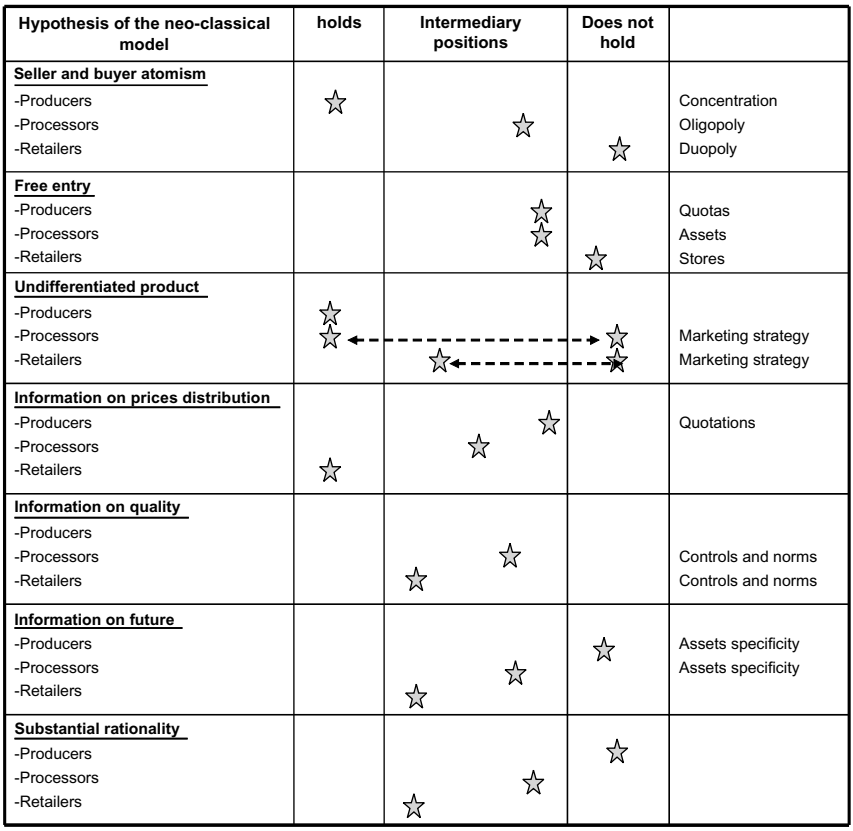

Figure 16.2: Verification of the hypotheses on a conventional supply chain (case study of the industrial system in the Swiss milk sector).

- *Uncertainty on future*: the risks with regards to the future are high for all the operators, but the visibility is particularly low for the producers who have only little information on market trends. The processors, except if they own brands of the greatest notoriety, lie at the retailer's mercy, who can take the product out of the shelves. The retailers have certainly the clearest vision, insofar as consumption trends are relatively regular and because they can arbitrate between various suppliers.
- *Substantial rationality*: decision-making in a context of limited rationality is difficult for all the operators. It is particularly difficult for the producers, with regard to uncertainties on the dispersion of prices and on future market developments.

This analysis highlights that taking into account the concepts suggested by the new-institutional theory opens new prospects. An approach only based on the assumptions of atomicity and free-entry masks "imperfections" of the conventional markets, which are very heavy on the side of the producers. The next step of this analysis shows the effects of the construction of a PDO alliance, with the case of Gruyere (Figure 16.3).

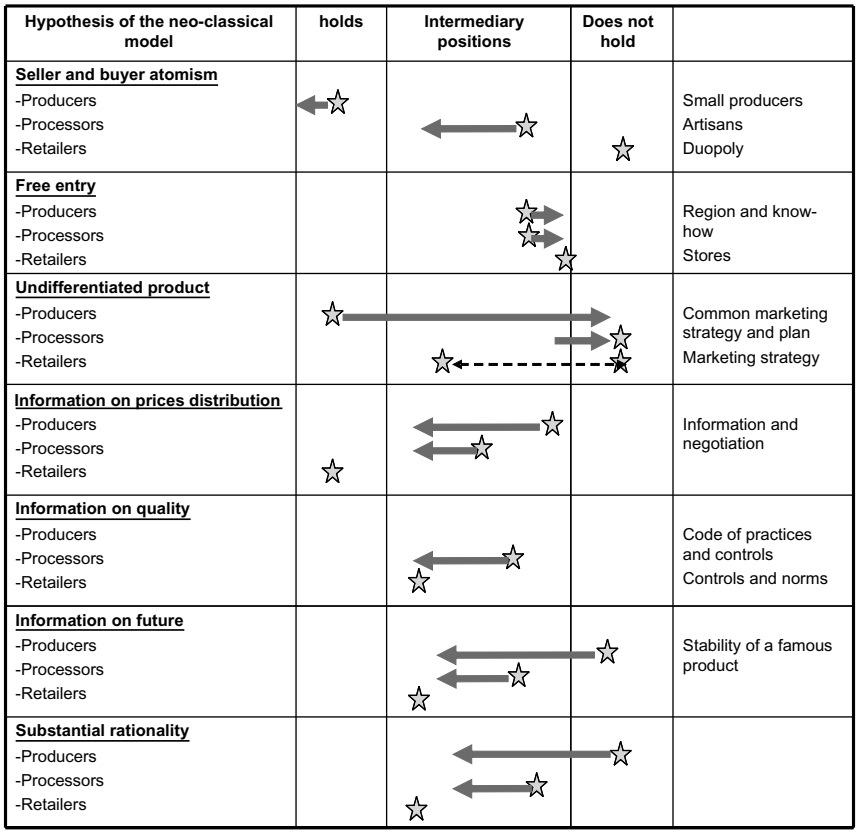

Figure 16.3: Verification of the hypotheses on a PDO alliance (case-study: "Le Gruyère" cheese PDO alliance).

The producers deliver their products to an artisan cheese maker. They have to respect the PDO code of practice. They know the final use of their product and the price of the milk is discussed within the alliance. The processors are often specialised. The retailer sells an assortment of products to the consumer, some with a private label or a trademark or a PDO label.

The construction of the PDO alliance moves the position of the operators in the following sense:

- *Seller and buyer atomism*: there are 3500 producers, 210 village cheese dairies, 10 ripeners and two main retailers. The code of practice, by limiting voluntarily productivity, for the benefit of the quality and the typicity of the product, slows down the concentration process and allows keeping up many small producers and artisan cheese dairies in villages.
- *Free entry*: free entry is limited by the geographical area of production and processing. However, in the geographical area, free entry is possible for any operator who respects the code of practice.

- *Undifferentiated products*: the Gruyere, as it is defined in the PDO code of practice, is a highly differentiated product made with raw milk, and positioned on the segment of high ranking cheeses. The alliance defines a marketing strategy, equivalent to one of the brand. The producers are fully associated to this strategy.
- *Information on prices*: one of the missions of the centre of piloting is to ensure the collection of information in marketing research (panel data) and the transparency between its members, who share information.
- *Uncertainty on quality*: the certification of the product by an independent body allows quality control of the industrial type and guarantees traceability. It ensures the information flow between the members and the necessary adjustments. It allows fighting against opportunism and reinforces the security of the buyers. For the producers, the recognition of quality at delivery and the payment of the bonus/deductions are clear.
- *Uncertainty on future*: the risks with regard to the future are still present for all the operators but the visibility is clearly improved. The efforts to increase collectively the notoriety of the product go in the direction of a greater stability of volumes and prices.
- *Substantial rationality*: decision-making in a context of limited rationality is difficult for all the operators. Reduction in uncertainties on the dispersion of price and on future developments facilitates the construction of strategies and the transmission of the farms.

Taking into account the concepts suggested by the new-institutional theory highlights the beneficial effects of PDO alliances on the information of the producers, the reduction in uncertainties on quality and on future market development. This approach also entails the capacity to explore the future in a context of limited rationality.

16.5. CONSEQUENCES ON PUBLIC POLICIES

The construction of vertical alliances in the agro-food sector must be put in relation to two public policies, namely the antitrust policy and the agricultural policy. Many authors raised the difficulty of antitrust authorities of appreciating the economic effects of hybrid forms of co-ordination, which are between the spot market and the integrated firm (Coase, 1972; Williamson, 1975, 1985, 1996; Joskow 1991, 2000; Ménard, 1996, 1998, 2001a,b). The hybrid forms show characteristics, which concern the spot market, and other characteristics, which concern the single firm. Antitrust authorities often tend to consider inter-professional firms, which are not integrated, under the restricted view of the spot market. Under these conditions, the agreements made between independent enterprises are generally regarded as an attempt of the operators to constitute a cartel, i.e., to reduce the offer and to increase the prices.

In Switzerland, the Secretariat of the Competition Commission inquired into the agreements made within the supply chain of Gruyere and into the contracts of purchase negotiated between the cheese ripeners (RPW/DPC, 2002/1: 62–67). Other cheese supply chains were investigated too (Appenzeller, Emmentaler). It is interesting to note that if the totality of the milk producers, Gruyere processors and ripeners had constituted an

integrated firm, a co-operative for example, this firm would not have been challenged by the antitrust authorities, because of a market of reference of European size. Bovet and Chappuis (2001) and Chappuis (2002) showed that a negative attitude of the antitrust authorities with regard to the hybrid forms of co-ordination within artisan cheese supply chain would support the development of integrated firms of an industrial type to the detriment of the small artisan type cheese dairies. This evolution would have several negative consequences. The concentration of the artisan cheese dairies in integrated structures of industrial type would be accompanied by a reduction in the number of operators on the market. This first consequence would go against the principle of atomicity of supply and demand, which characterises the model of pure and perfect competition. For the consumer, the effect would be double: he would undergo a loss of *intrabrand* qualitative diversity (of the concerned PDO product) with the reduction in the number of producers in the supply chain, as well as a loss of *interbrand* qualitative diversity with the standardisation of the production and the "banalisation" of the product. Note that in this case, intrabrand diversity refers to diversity inside the same supply chain, e.g., shared by the various cheese dairies that produce Gruyere. On the reverse, interbrand diversity refers to diversity between various products, like Gruyere and Emmental for instance.

The investigations opened by the Secretariat of the Competition Commission against the organised cheese supply chains during years 2000 and 2001, is to be put in relation to the decision of May 2003 of the Competition Commission to authorise the purchase by the retailer Coop of its competitor Waro. This authorisation did not fail to surprise agricultural circles, when it is known that Switzerland faces a record concentration in the food retailing, with two retailers (Coop and Migros) totalling more than 80% of market shares (purchase to the production). The authorisation of the purchase of Waro (2% of the market) by Coop was justified by the fact that this operation would not change things dramatically in the retail sector. If the argument is not wrong from the technical point of view, one can, however, question the mission of the antitrust authorities with regard to the dynamics of the markets, and wonder whether there is not one law to analyse the co-operation agreements within the agricultural sector and another for mergers and acquisitions on the level of the distribution.

This difference in analysis is to be put, according to us, on the account of a rudimentary "toolbox" of the antitrust authorities. New-institutional economics shines extremely interesting light on the issues of organisation and co-operation between juridical independent enterprises. It highlights in particular the serious problems of uncertainty on the side of the producers in the conventional markets. The dynamics of a market are neither limited to the number of operators, nor with the possibilities of entry and exit. It thus seems paramount that the antitrust authorities recognise the importance of hybrid forms and their role of co-ordination of the transactions. They must also develop specific tools to appreciate their conformity with the objectives of the competition policy.

The agricultural policy, on its side, cannot ignore asymmetries of information in the conventional markets. It should thus support the regrouping and the collective action of the producers, in particular by supporting the inter-professional bodies, which intend to fix rules of the game for the whole of a supply chain or a sector, and help small producers and processors to balance the commercial power of the retailers. In relation to the decline of

agricultural support, producers are for their majority ready to face the markets and to explore differentiation strategies, satisfying thus the demand of today's consumers. The agricultural policy cannot leave them almost completely stripped vis-à-vis the power of the retailers. There is a direct link between the objectives of multifunctionality claimed by the European agricultural policies, and in particular rural development, and the mechanisms of distribution of the added value in the supply chains.

16.6. CONCLUSION

The use of a complete theoretical economic model, which integrates the contributions of New-Institutional Economics, highlights the imperfections of the conventional agricultural markets. The constitution of vertical alliances enables producers to partly remove these imperfections, to be fully associated to the product marketing strategy and to benefit from an equitable part of the added value. PDO vertical alliances, moreover, maintain an important number of artisan farm enterprises and small size processors in less-favoured areas. There is then a link between the objectives of multifunctionality claimed by the European agricultural policies and the organisational choices of the supply chains.

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CHAPTER 17

Time Series Analysis of a Principal-Agent Model to Assess Risk Shifting in Agricultural Marketing Channels: An Application to the Dutch Ware Potato Marketing Channel

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Abstract

In this chapter, the classic agency model is applied to investigate risk shifting in the Dutch potato marketing channel. It is shown that if the principal is risk-neutral and the agent is risk-averse instead of risk-neutral, then a linear contract can still be optimal if the fixed payment is negative. Empirical results over the period 1946–1996 indicate that while since the 1970s fixed payments to farmers (agents) have decreased, the incentive intensity has approximately doubled, and the risk-premium the farmers ask for has remained considerable. Moreover, since the mid-1980s risk has shifted from wholesalers, processors, and retailers to farmers. It is argued that this shift could be the consequence of chain reversal, i.e., the transformation of the traditional supply chain into a demand-oriented chain.

17.1. INTRODUCTION

Marketing firms that convert raw farm products into finished consumer goods by performing a set of marketing services, such as collection, cleaning, processing, transportation, and retailing (see Helmberger and Chavas, 1996: 134) have become much

larger than farms. Hence, risk shifting has become an important topic of study for agricultural economists and policy makers. In spite of marketing co-operatives, concern is growing that the increasingly large processors and supermarket chains will be able to dictate the terms of trade and transfer the market-level risk to farmers (Weaver and Kim, 2000).

However, if marketing firms can dictate the terms of trade, they will do so to maximise profit. Transferring risk to farmers, who have fewer opportunities to spread risk compared with marketing firms and therefore find it more costly to bear, simply reduces the gains from trade. In contrast, marketing firms would prefer to bear the risk themselves (reducing the risk-bearing costs of the farmers for which the farmers want to receive a risk premium from the marketing firms to be included in the price that the marketing firms pay to the farmers) and extract the gains from this by lowering the price they pay to farmers. Consequently, if marketing firms transfer market-level risk to farmers, there must be another reason for doing so than mere risk-aversion. In this chapter, it is argued that the classic agency model (Milgrom and Roberts, 1992; Furubotn and Richter, 1997; Gibbons, 2001; Valimaki, 2001) provides a tool to investigate risk shifting in agricultural marketing channels. The usefulness of this model for indicating risk shifting in a food supply chain is tested through using sector-level time series data.

Originating in economics literature, agency theory has been the backbone of research on corporate governance (Jensen and Meckling, 1976; Fama and Jensen, 1983; Schleifer and Vishny, 1997). It has been applied to, amongst others, budget control in business research (Demski and Feltham, 1978), domestic franchising (Rubin, 1978; Mathewson and Winter, 1985; Brickley and Dark, 1987), retail sales compensation (Eisenhardt, 1988), and supplier–distributor relationships (Lassar and Kerr, 1997). Knoeber and Turman (1995) applied the agency model to assess risk shifting. However, they used contract-specific information instead of the widely available data used in this chapter, where by using sector-level time series data a more indirect approach is followed.

The classic model in agency theory is based on the concept of the principal–agent relationship. The agent performs a task for the principal, and the principal values the agent's output and pays compensation as specified in a contract. To generate the output required and/or desired by the principal, the agent has to put in effort. As well as depending on the effort invested, an agent's output also depends on a random component: unexpected events that are beyond his control. While the principal is observing the agent's output, he does not usually have access to the know-how necessary to be able to make the agent's effort; but even if the principal does get hold of the necessary know-how, he does not have the ability to interpret it. This information asymmetry in the principal–agent relationship is not a problem per se. However, it becomes a problem when principal and agent have or develop different goals, creating a moral hazard on the part of the agent in the supply of effort. The principal might consider a contract that allows for a trade-off between incentives and insurance to obtain an optimal relationship with the agent. This is particularly valid if an agent is risk-averse, thus preferring a certain reward over an uncertain one.

Receiving a fixed salary independent of the output realised would provide the agent with full insurance but no incentive. Receiving a percentage of the output value obtained by the principal would give the agent full incentive, yet no insurance. It may be

hypothesised that the optimal contract lies somewhere between these extremes, consisting of a fixed payment plus a bonus rate of the value received by the principal for the agent's output. Such a mixed share–wage contract or share contract, is consistent with Stiglitz's (1974) theory from tenancy literature, in which the distribution of the output in a sharecropping context is based on the trade-off between the landlord's (principal's) need to provide both incentives and insurance to his tenants (agents). This trade-off is the core of the principal–agent problem and provides a useful framework from which Knoeber (1999) reviews the literature on agricultural contracting.

The agency model offers a possible explanation for why marketing firms (the principal) wish to transfer risk to farmers (the agent), in spite of the higher risk-bearing costs. These higher risk-bearing costs might not outweigh the higher profits the supply chain achieves when farmers are given more incentives to meet the delivery conditions that enable marketing firms to increasingly produce high value-added products in addition to the mainstream homogeneous products. This phenomenon, whereby traditional supply-oriented chains are transformed into demand-oriented chains, can be denoted as "chain reversal" (cf. Boehlje's (1996) "industrialization of agriculture"). Chain reversal has been growing in importance now that consumer food markets in the Western world have become saturated, international competition is growing by the day, and agri-food companies must concomitantly meet the rising demand for product differentiation and deal with the stiffer competition in their markets. On top of this, consumers and governments expect improvements in production quality and environmental care.

Given that the marketing firms are eclipsing the farmers because of the need to produce more products with greater added value, it is important to note that although the fixed payment can be thought of as equivalent to the reservation wage (the wage that an agent receives for an alternative job without risk), the classic agency model shows that a Pareto-optimal solution is not inevitable (e.g., Valimaki, 2001: 35). Upon reflection, solutions with a negative fixed payment can be Pareto optimal. In such cases, the agent's degree of risk-aversion allows for a mixed share–rent contract. This entails the agent paying a fixed amount to the principal for the opportunity to perform for the principal, in exchange for a percentage of the total value that the principal receives for the agent's actual output. In these cases, the agent has no insurance, despite his risk-aversion. Such a contract implies shifting the risk from the marketing firm to the farmer, to increase the latter's incentive—possibly to involve the farmer more in the investments of the marketing firm that has to develop products that better satisfy consumer needs.

In line with the classic agency model, a linear contract is chosen because it corresponds to real-world settings. Holmstrom and Milgrom (1987) have shown that the optimal compensation scheme for providing incentives over time to an agent with a constant absolute risk-aversion is a linear function of the end-of-period results, such as revenues, costs, or profits. This result is based on the fact that a linear contract provides more uniform incentives. In contrast, if for instance the annual output is considered as the result of many small daily actions performed by the agent, a non-linear contract may create unintended or non-uniform incentives for the agent in the course of the year, depending on the agent's performance so far (Gibbons, 2001).

17.2. THE CLASSIC AGENCY MODEL

Physical performance in the classic model of principal and agent is assumed to satisfy

$$q = e + \varepsilon \tag{17.1}$$

where q is the physical quantity produced by the agent and delivered to the principal, and with respect to q both principal and agent form the same rational expectation $e = E(q|I)$ conditional on their common knowledge (I), and ε are the events in the performance process that are beyond the agent's control ("noise"). The random term ε is normally distributed, with zero mean and variance σ^2. In spite of the fact that both principal and agent have the same rational expectation e, the principal cannot simply reward the agent proportionally to e, because that could invite the agent to put the blame of a disappointing physical return on ε instead of on his own lack of effort which cannot be observed by the principal.

The costs incurred by the agent when performing for the principal are described by a cost function $C(e)$, such that $\mathrm{d}C/\mathrm{d}e > 0$ and $\mathrm{d}^2C/\mathrm{d}e^2 > 0$, i.e., cost is a convex function of e. For ease of demonstration, but without loss of generality for the main conclusions, the following specification is adopted

$$C(e) = 0.5ce^2 \tag{17.2}$$

where c is a positive parameter.

The principal pays a compensation w to the agent according to the linear function

$$w = \alpha pq + \beta \tag{17.3}$$

where p is the price received by the principal for the output produced by the agent, αpq and β are the variable (uncertain) and fixed (certain) compensation components, respectively, and α represents the output-value sharing rate, such that $0 \leq \alpha \leq 1$. The function in Equation 17.3 is referred to as a linear incentive contract if $\alpha > 0$. The magnitude of α measures the strength of the incentives. Absence of incentives, i.e., $\alpha = 0$, reduces Equation 17.3 to a fixed-wage contract. A mixed share–wage contract is obtained if $0 < \alpha < 1$ and $\beta > 0$. It is assumed that both principal and agent have perfect expectations regarding p, which, in fact, can be reduced to the assumption of a fixed-price contract between principal and agent.

In the classic agency model, the principal is assumed to be risk-neutral, while the agent is risk-averse. This assumption is based on the observation that the principal can usually diversify, while the agent cannot. The agent's utility function is

$$U(w, e) = -\exp\{-\rho[w - C(e)]\} \tag{17.4}$$

where $\rho > 0$ is the agent's coefficient of constant absolute risk-aversion (henceforth CARA and implying $\rho = -[\mathrm{d}^2U/\mathrm{d}e^2]/[\mathrm{d}U/\mathrm{d}e]$). Consequently, a principal trying to maximise his expected payoff will solve

$$\max_{e,\alpha,\beta} E(pq - w|I) \tag{17.5a}$$

subject to

$$E\big(-\exp\{-\rho[w - C(e)]\}|I\big) \geq U(\bar{w}) \tag{17.5b}$$

and

$$e \in \arg\max_{e} E\big(-\exp\{-\rho[w - C(e)]\}|I\big) \tag{17.5c}$$

where $\bar{w}$ is the certain monetary equivalent or reservation wage, so that Equation 17.5b represents the agent's participation constraint and Equation 17.5c reflects the agent's incentive compatibility constraint.

Let us first consider Equation 17.5c. If the agent's net payoff $w - C(e)$ is assumed to be a normally distributed random variable, then the certainty equivalent $\hat{w}$ of $w - C(e)$, i.e.,

$$U(\hat{w}) = E\{U[w - C(e)]|I\} \tag{17.6}$$

has a particularly simple form under CARA preferences, namely

$$\hat{w} = E[w - C(e)|I] - 0.5\rho \operatorname{var}[w - C(e)|I] \tag{17.7}$$

where the difference between the mean of the random net payoff, i.e., $E[w - C(e)|I]$, and its certain equivalent $\hat{w}$ is referred to as the risk-premium: $0.5\rho \operatorname{var}[w - C(e)|I] = E[w - C(e)|I] - \hat{w}$. Working out $E[w - C(e)|I]$ using Equations 17.1–17.3 and, given that in the finance literature the risk of a random variable is usually measured by the variance conditional on the available information, deriving the agent's risk to become

$$\operatorname{var}[w - C(e)|I] = \alpha^2 p^2 \sigma^2 \tag{17.8}$$

shows that the optimisation problem of the agent in Equation 17.5c is equivalent to

$$\max_{e} \{\alpha p e + \beta - 0.5ce^2 - 0.5\rho\alpha^2 p^2 \sigma^2\} \tag{17.9}$$

which yields

$$\alpha = ce/p \tag{17.10}$$

Equation 17.10 is called the incentive constraint and must be satisfied by any feasible contract. It says that the agent will select the amount of input effort in such a way that his marginal gains from more effort, αp, equal his marginal personal cost of effort, ce.

Inserting Equation 17.10 into the participation constraint Equation 17.5b yields

$$(\alpha p)^2/c + \beta - 0.5(\alpha p)^2/c - 0.5\rho\alpha^2 p^2 \sigma^2 = \bar{w} \tag{17.11}$$

from which the following expression for the fixed compensation β results

$$\beta = \bar{w} + 0.5\rho\alpha^2 p^2\sigma^2 - 0.5(\alpha p)^2/c \tag{17.12}$$

Substituting the expressions for e, see Equation 17.10, and β, see Equation 17.12, into Equation 17.5, where $E(pq - w|I) = pe - \alpha pe - \beta$? as can be derived from Equations 17.1 and 17.3, the principal solves

$$\max_{\alpha} \{\alpha p^2/c - (\alpha p)^2/c - [\bar{w} + 0.5\rho\alpha^2 p^2\sigma^2 - 0.5(\alpha p)^2/c]\} \tag{17.13}$$

of which the first-order condition yields

$$\alpha = 1/(1 + \rho c\sigma^2) \tag{17.14}$$

Equation 17.14 can be referred to as the incentive intensity principle and shows that since ρ, c and σ^2 are positive, the optimal incentive parameter α is between zero (full insurance) and one (full incentive). Furthermore, α is smaller if the agent is more risk-averse (ρ is higher), if the marginal cost of effort increases more quickly (c is higher), or if there is more uncertainty in production (σ^2 is higher).

Now that the optimal incentive parameter has been determined in Equation 17.14, the fixed part of the agent's compensation can be derived by substituting Equation 17.14 into the participation constraint 17.12, giving

$$\beta = \bar{w} + 0.5p^2(\rho\sigma^2 - 1/c)/(1 + \rho c\sigma^2)^2 \tag{17.15}$$

Equation 17.15 reveals that β should not necessarily be positive since $\rho\sigma^2 - 1/c$ can be smaller than zero, such that $|0.5p^2(\rho\sigma^2 - 1/c)/(1 + \rho c\sigma^2)^2| > \bar{w}$. Moreover, this situation may occur while still having $\rho\sigma^2 > 0$. In other words, the classic agency model allows for a contract in which the principal obtains $pq - w = (1 - \alpha)pq - \beta$ and hence, is exposed to income risk given by

$$\text{var}(pq - w|I) = (1 - \alpha)^2 p^2\sigma^2 \tag{17.16}$$

where a negative β represents the lump sum of pq (i.e., rent) received by the principal and $(1 - \alpha)pq$ is the variable amount assigned to the principal, leaving the agent with a variable compensation of αpq minus the lump sum taken by the principal. Such a contract is called a mixed share–rent contract and provides the agent with no insurance, even though the agent is still risk-averse.

17.3. ECONOMETRIC CONSIDERATIONS

The solutions of the game–theoretic model in the previous section are given by the expressions for α in Equation 17.14 and β in Equation 17.15. The unknown parameters in the expression for α are ρ, c and σ^2. If these unknown parameters are considered as

constant parameters over time, then α will be a constant as well. However, according to the incentive constraint given by Equation 17.10, α is equal to ce/p. Although, c may be considered as time invariant, this cannot be imposed on e/p. Hence, in terms of time-series variables, the incentive constraint implies that α varies with time:

$$\alpha_t = ce_t/p_t \tag{17.17}$$

where the index $t = 1, \ldots, T$ refers to observations over time.

For annual data as used in the empirical part of this research, it can typically be assumed that σ^2, i.e., $\text{var}(q_t - e_t|I_{t-1})$, is constant in the food supply chain where the farmers are the agents and the marketing firms the principals. There is a negative relationship between the frequency of data and the constancy of the variance of the distribution of those data over time. Thus, for example, annual data are expected to have a more constant variance over time as compared with daily, weekly, or monthly data. Consequently, in order to comply with the time-varying behaviour of α, the other time-varying coefficient in Equation 17.13 must be ρ:

$$\alpha_t = 1/(1 + \rho_t c\sigma^2) \tag{17.18}$$

From this and the fact that $\bar{w}$ can be considered to vary with time as well, it can also be expected that β varies with time:

$$\beta_t = \bar{w}_t + 0.5p_t^2(\rho_t\sigma^2 - 1/c)/(1 + \rho_t c\sigma^2)^2 \tag{17.19}$$

Now given that w is also a time-varying variable, substituting Equations 17.18 and 17.19 into Equation 17.3 and using

$$\rho_t = (p_t - ce_t)/(c^2\sigma^2 e_t) \tag{17.20}$$

as can be derived from Equations 17.1, 17.17 and 17.18, the following equation is obtained

$$(w_t - \bar{w}_t - 0.5p_t e_t) = ce_t(q_t - e_t) \tag{17.21}$$

in which c is the single unknown parameter.

Before c, as parameter of interest can be estimated, it should first be identified (cf. Ackerberg and Botticini, 2002). If $(w_t - \bar{w}_t - 0.5p_t e_t)$ and $e_t(q_t - e_t)$ are stationary, then the estimation model

$$(w_t - \bar{w}_t - 0.5p_t e_t) = d(t) + ce_t(q_t - e_t) + u_t \tag{17.22}$$

in which u_t is an unobserved component and $d(t)$ is a linear function of deterministic components including a constant and linear trend which might be necessary to be added to Equation 17.2 to complete the empirical specification of the cost function, does not typically allow for simple OLS estimation. This is because $e_t(q_t - e_t)$ and u_t could well be correlated, in particular with e_t included on both sides of Equation 17.22. This problem,

however, vanishes when $(w_t - \bar{w}_t - 0.5p_te_t)$ and $e_t(q_t - e_t)$ are co-integrated (Engle and Granger, 1987). But if these variables, as well as $(w_t - \bar{w}_t))$ and e_t, are stationary, then a test can be performed for the absence of simultaneity bias by performing the omitted variable version of the Hausman (1978) test, as in

$$(w_t - \bar{w}_t) = d(t) + \lambda_1 e_t(q_t - e_t) + \lambda_2 e_t + \gamma_1 \hat{v}_{1t} + \gamma_2 \hat{v}_{2t} + u_t^* \qquad (17.23)$$

to first test the null hypothesis $\gamma_1 = \gamma_2 = 0$, i.e., $e_t(q_t - e_t)$ and e_t are exogenous, by an F test, where $\hat{v}_{1t}$ and $\hat{v}_{2t}$ are the residuals of a bivariate VAR(k) (including $d(t)$) for $e_t(q_t - e_t)$ and e_t, with k being much smaller than the sample size. If the null hypothesis cannot be rejected, the restriction $\lambda_2 = 0.5$ can be tested by checking for the absence of e_t in the regression of $(w_t - \bar{w}_t - 0.5p_te_t)$ on $d(t)$, $e_t(q_t - e_t)$ and e_t.

Suppose that c has been estimated. Then, from Equation 17.17, the estimate of α_t is obtained. Next, ρ_t can be derived from Equation 17.20, and then β_t from Equation 17.19 (adding $d(t)$ to the right-hand side of Equation 17.19). Finally, substituting α_t and β_t in Equation 17.3, w_t can be estimated as

$$\tilde{w}_t = \alpha_t p_t q_t + \beta_t \qquad (17.24)$$

and compared with the actual values of w_t. This comparison evaluates the validity of the model. If it is valid and the empirical model shows a situation in which α_t (and hence, $\alpha_t^2 p_t^2 \sigma^2$) have been increasing over time, β_t has been decreasing to (more) negative values, whereas ρ_t has always remained positive, it can be concluded that although farmers are risk-averse, marketing firms still find it optimal to increase farmers' rent instead of reducing the risk farmers have to be compensated for. This allows hypothesising that marketing firms need farmers in the marketing channel for more than just supplying the primary produce: as sales and profit tend to become a responsibility of the chain as a whole in reversed chains, marketing firms also need farmers to finance some of the activities they want to initiate (or they want farmers to initiate) to successfully process and market the final consumer goods. By way of example, with respect to the empirical case of the Dutch ware potato chain outlined in the next section, it is known that farmers have increasingly become involved in storing the raw potatoes they produce.

17.4. EMPIRICAL APPLICATION

Every year, some eight million tons of potatoes are produced in the Netherlands, mainly on family farms. About half are ware potatoes, approximately 20% are seed potatoes, while the remaining 30% are potatoes grown for starch. Most ware potatoes are sold to wholesalers. A negligible amount is sold directly by the farmer to the processor or retailer (De Graaf, 1981; Smidts, 1990). The basic marketing problem facing wholesalers is how to optimise the supply of potatoes in terms of time (storage), quantity and quality (assembly and sorting), and place (transport), so as to meet the requirements of the different users.

Most of the wholesale trade has become concentrated in relatively few hands. The major users, particularly the large retailers, processors and export markets, demand large quantities with tight specifications, which only the larger wholesalers can meet. Because

of this development in the market, the need has arisen to procure potatoes before harvest. Hence a number of different arrangements to do so have emerged with fixed-price contracts and pooling contracts being the most important (Young, 1977; Smidts, 1990).

The fixed-price contract involves selling a net amount of potatoes at a fixed contract price. This marketing strategy entails transferring the entire price risk from the farmer to the wholesale company. In the pooling-contract system, the potatoes delivered by the farmers are sold by wholesalers throughout the season. The resulting gross returns from these sales, minus the wholesalers' expenses, are distributed across the producers, proportional to the amount of potatoes delivered. The reason non-fixed price arrangements have been adopted is because wholesalers wish to retain their core suppliers by offering them contracts that bear some relation to the market price. Note that this complies with the concept of chain reversal and, more specifically, the fact that potato farmers have increasingly invested in storage facilities on their farms in order to be able to anticipate on the highest prices in the marketing season. The assumption of perfect price expectations can be underpinned by the use of fixed or partly fixed price contracts and the availability of a potato futures contract in Amsterdam for hedging purposes.

For this empirical analysis of the Dutch ware potato marketing system, Statistics Netherlands supplied annual data over the period 1946–1996, for the following variables: the farm and retail prices (Euro/kg) of ware potatoes, both deflated by the consumer price index (1990 = 1.00), the area planted (1000 ha), the yield per hectare (100 kg/ha), and the rent price of land (Euro/ha), deflated by the consumer price index.

First, the output quantity (million tons), q_t, is computed as the yield per hectare times the area planted (divided by 10^4). The yield per hectare shows a clearly positive trend. Hence, to compute the expected output quantity e_t, the fit of the linear trend is used as a proxy for the expected yield per hectare. Consequently, e_t is derived as the expected yield per hectare times the area planted (divided by 10^4). The output price p_t (Euro/kg) is represented by the retail price. Lastly, w_t (billion Euro) is computed as the farm price times the yield per hectare times the area planted (divided by 10^4), and the rent price of land times the area planted (divided by 10^6) is taken for $\bar{w}_t$ (billion Euro).

Before estimating c in Equation 17.22, the order of integration of the time series of $(w_t - \bar{w}_t - 0.5p_te_t)$ and $e_t(q_t - e_t)$ are first investigated. The graphs of these two time series reveal a pattern that might be considered to be stationary around a constant which is smaller than zero for $(w_t - \bar{w}_t - 0.5p_te_t)$, or to be difference stationary without drift. Consequently, Johansen's co-integration test is applied (Johansen and Juselius, 1990; Osterwald-Lenum, 1992) to test the hypotheses according to which the rank of matrix Π is not a full row-rank in the model

$$\Delta X_t = \Pi(X_{t-1'}, 1)' + \sum_{j=1}^{k-1} \Gamma_j \Delta \mathrm{X}_{t-j} + \varepsilon_t \tag{17.25}$$

where $X_t = [(w_t - \bar{w}_t - 0.5p_te_t), e_t(q_t - e_t)]'$ and $\{\varepsilon_t\}$ is Gaussian white noise. However, before testing for rank hypotheses, the order of the VAR, k, is first determined. Using AIC, $k = 1$ is selected. Next, applying Johansen's *trace* statistic shows that Π is of full row-rank, implying that X_t is stationary. Unfortunately, the trace test has poor small sample

properties and hence, the two regressions in Equation 17.25 with Π of full row-rank are checked. The results are presented in Table 17.1 and show that $(w_t - \bar{w}_t - 0.5p_te_t)$ displays error-correction while $e_t(q_t - e_t)$ does clearly not. Hence, it is concluded that an equilibrium relationship exists between $(w_t - \bar{w}_t - 0.5p_te_t)$ and $e_t(q_t - e_t)$.

When normalised to $(w_t - \bar{w}_t - 0.5p_te_t)$, the equilibrium relationship is

$$(w_t - \bar{w}_t - 0.5p_te_t) = c_0 + ce_t(q_t - e_t) + u_t \tag{17.26}$$

where the deterministic component c_0 is considered as an extension of the cost function specification in Equation 17.2:

$$C(e_t) = 0.5ce_t^2 + c_0 \tag{17.27}$$

The reduced-rank (rank $(\Pi) = 1$) estimates in Equation 17.26 are $c_0 = -0.424$ (asymptotic standard error $= 0.016$; asymptotic t value $= -25.819$) and $c = 0.042$ (asymptotic standard error $= 0.017$; asymptotic t value $= 2.475$), cf. Table 17.1.

Using the estimate of c, Figure 17.1 presenting α_t from Equation 17.17, is obtained. The graph shows a negative trending pattern between 1949 and 1965, according to which α_t decreases from 0.50 to 0.20. After that α_t slightly rises to 0.40 at the end of the 1970s. Thereafter, α_t shows a much more positive trend and increases to 0.73 in 1996. This sharp rise in α_t allows for a decrease in ρ_t, see Equation 17.18, as shown in Figure 17.2, i.e., less risk-aversion among farmers. Moreover, at the same time, the risk-premium $0.5\rho_t\alpha_t^2p_t^2\sigma^2$ decreases from an average of about 0.50 billion Euro in the 1970s (disregarding 1976) to 0.25 billion Euro in 1996, while $C(e_t) + 0.5\rho_t\alpha_t^2p_t^2\sigma^2 - \bar{w}_t$ seems to perform reasonably well as an expectation of w_t, conditional on the information set available at time $t - 1$, see Figure 17.3.

However, if the cost function $C(e_t)$ without c_0 included, as in Equation 17.2, is compared with the actual compensation w_t, the risk-premium $0.5\rho_t\alpha_t^2p_t^2\sigma^2$ and $-c_0$ (Figure 17.4), it can be seen that $-c_0$ could be considered as a correction factor that the farmers subtract to reduce the risk-premium that they actually would like to receive,

Table 17.1: Estimation results for the equation with right-hand-side given by $\delta_1[w_{t-1} - \bar{w}_{t-1} - 0.5p_{t-1}e_{t-1} - \delta_2 - \delta_3e_{t-1}(q_{t-1} - e_{t-1})]$.

Parameter	**Dependent variable**					
	$\Delta(w_t - \bar{w}_t - 0.5p_te_t)$			$\Delta(e_t(q_t - e_t))$		
	Estimate	**Standard error**	***t* value**	**Estimate**	**Standard error**	***t* value**
δ_1	−1.206	0.134	−8.978	−0.741	0.965	−0.768
δ_2	−0.424	0.017	−25.04	−0.349	0.218	−1.601
δ_3	0.047	0.018	2.587	−1.052	1.389	−0.757
Sample period		1947–1996			1947–1996	
T		50			50	
R^2		0.65			0.37	
σ		0.14			1.03	
SSR		0.94			49.62	
DW		2.13			1.88	

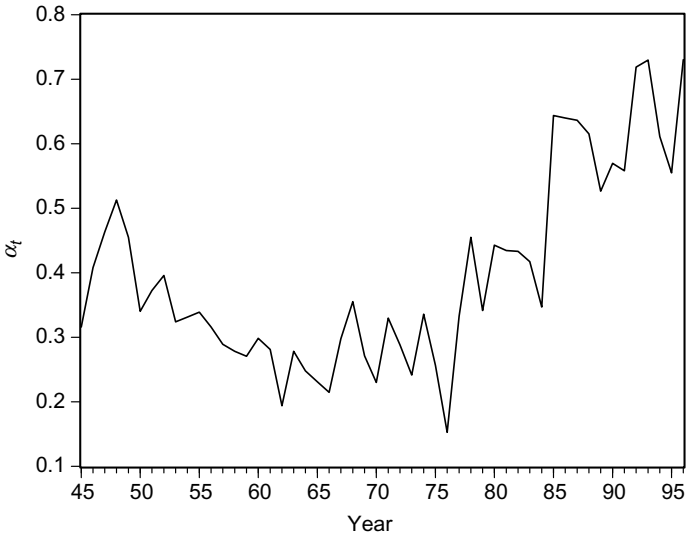

Figure 17.1: The output value-sharing rate (α_t).

to zero. Consequently, in spite of the result that the farmers are still asking for a positive risk-premium—one which, compared with the total production costs $C(e_t)$ (without c_0 included) and compensation w_t, is considerable—, the fixed compensation β_t, computed as

$$\beta_t = \bar{w}_t + 0.5p_t^2(\rho_t\sigma^2 - 1/c)/(1 + \rho_t c\sigma^2)^2 - 0.424 \tag{17.28}$$

where $c_0 = -0.424$ originates from the extended cost function, declines steadily after the 1970s to become more and more negative (Figure 17.5). Figure 17.5 also reveals that the

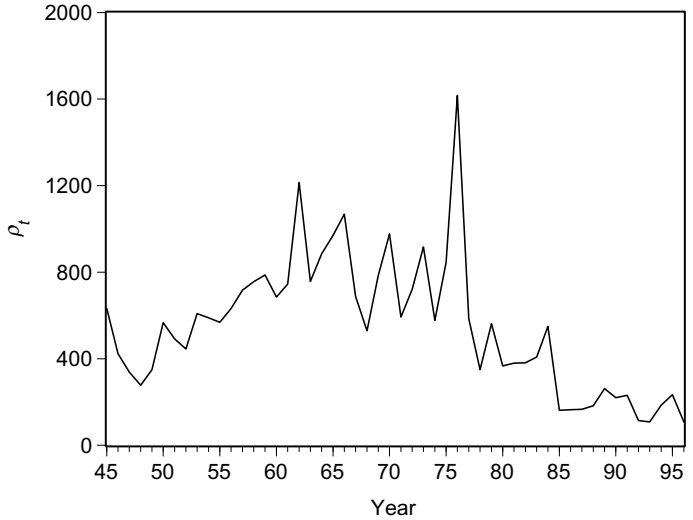

Figure 17.2: Constant absolute risk-aversion coefficient (ρ_t).

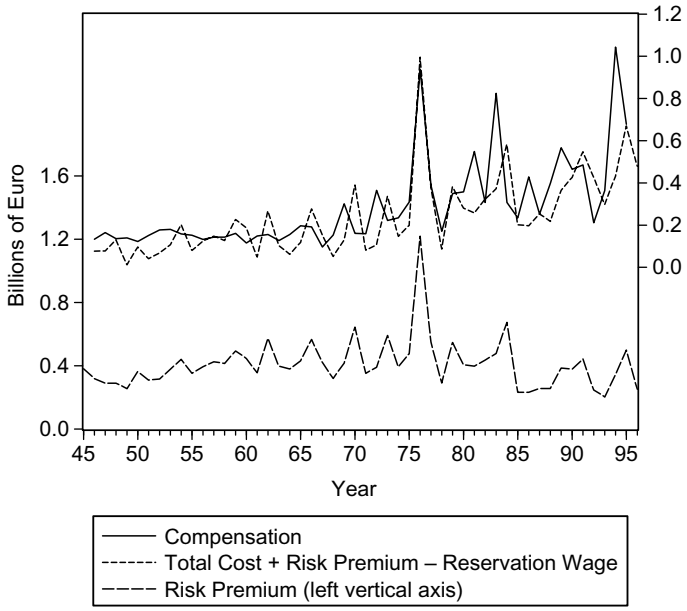

Figure 17.3: *Right vertical axis:* compensation for farmers (w_t), and the sum of the farmers' total cost and risk-premium minus the reservation wage ($\bar{w}_t$); *Left vertical axis:* risk-premium ($0.5\rho_t\alpha_t^2 p_t^2\sigma^2$).

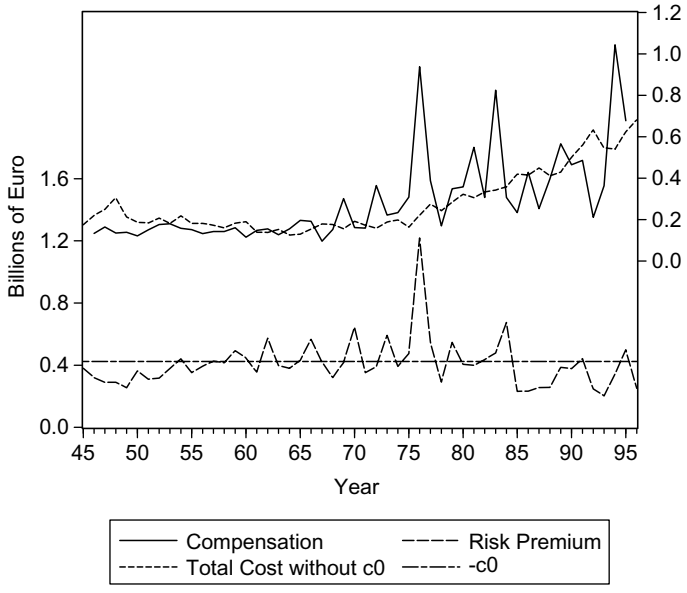

Figure 17.4: *Right vertical axis*: compensation for farmers (w_t), and farmers' total cost without c_0 (i.e., $0.5ce_t^2$); *Left vertical axis:* risk-premium ($0.5\rho_t\alpha_t^2 p_t^2\sigma^2$), and correction factor $-c_0$.

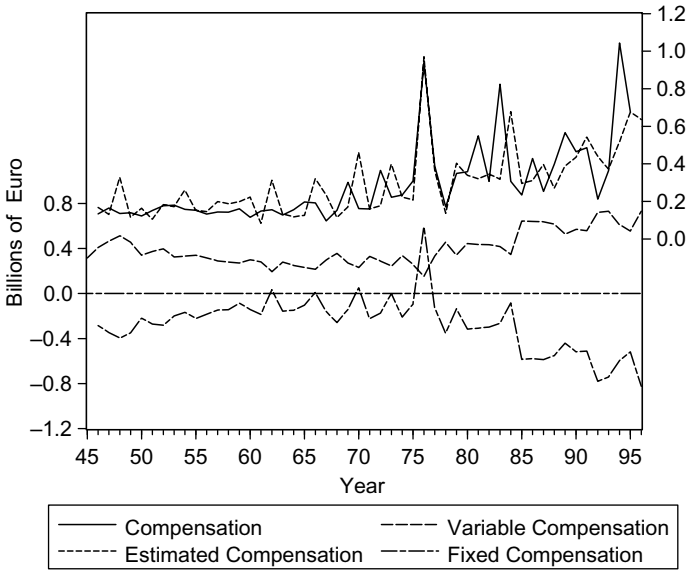

Figure 17.5: *Right vertical axis:* compensation for farmers (w_t), and estimated compensation ($\alpha_t p_t q_t + \beta_t$); *Left vertical axis:* variable (uncertain) compensation ($\alpha_t p_t q_t$), and fixed (certain) compensation (β_t).

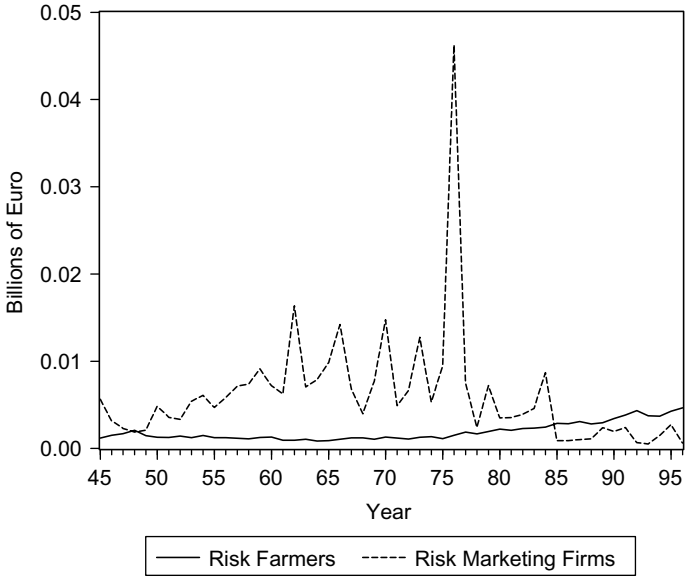

Figure 17.6: Income risk of the farmers, var$[w_t - C(e_t)|I_{t-1}]$, and income risk of the marketing firms, var$[p_t q_t - w_t|I_{t-1}]$.

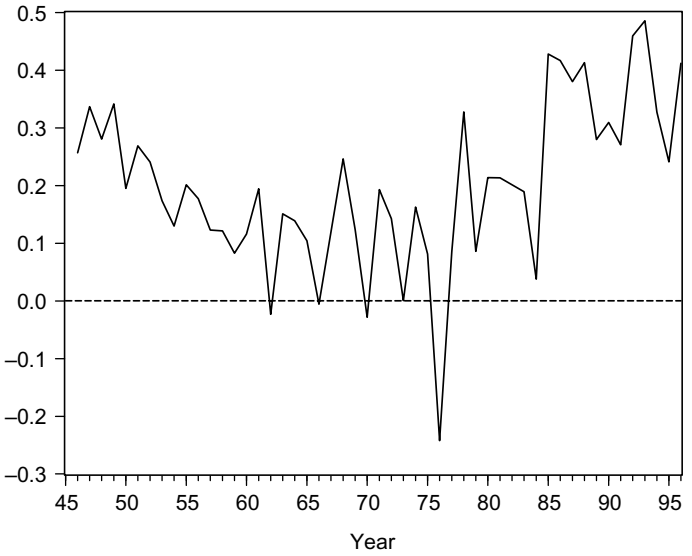

Figure 17.7: Part of output value of potatoes at consumer prices received by marketing firms without risk ($-\beta_t/(p_t q_t)$).

model explains w_t quite well for many of the years studied. Conditional on this and Figure 17.6, in which the income risks of the farmers (Equation 17.8) and the marketing firms (Equation 17.16) are displayed, it can be concluded that risk has been shifted to the potato growers. This shift indicates that instead of receiving a lump sum payment, farmers have to transfer an increasing amount of such a payment to the marketing firms, even though the risk-premium they asked for is still considerable. It is the marketing firms, however, who have been able to compensate for some of their expenses without risk. They have done so by steadily increasing the proportion of the output value at consumer prices obtained without risk: from 0% or less in the mid 1970s to 40% in 1996, see Figure 17.7.

Given that the marketing firms can be assumed to be risk-neutral, they might be expected to behave differently and bear all the risk themselves, so as to reduce the risk-bearing costs of the farmers. This would also be in their own interest, since it would allow them to lower the price they pay to the farmers. The above results, however, suggest that farmers play a crucial role in the process of chain reversal, as they seem to be the ones who have to finance some of the activities wanted by marketing firms in order to meet consumers' needs and demands in the increasingly saturated consumer food market, amidst growing competition and globalisation. The fact that growers have become more involved in storing potatoes is a clear example of this development.

17.5. CONCLUSION AND DISCUSSION

In this chapter, the classic agency model is applied to shed light on risk shifting and chain reversal in a food supply chain. The model involves a mixed share–wage/rent contract with a time-varying fixed wage/rent and output value sharing rate. It can be

tested on sector-level time series data that are widely available. To perform this test, it was outlined how to take the time-series properties of the data into account, in relation with the simultaneity problem regarding the parameter of interest to be estimated. If the model complies with the data, it can be used to detect risk shifting as a possible indication of a marketing channel changing from a traditional supply-oriented chain into a demand-oriented chain. The estimates may then reveal a situation where the fixed wage becomes an implicit rent, while the risk-premium the agents demand remains considerable.

This empirical application to the Dutch marketing channel of ware potatoes has shown that risk has been shifted from the purchasers of potatoes to the potato growers. From the mid-1970s on, the potato growers have to pay an increasing amount of fixed compensation to the marketing firms. This compensation is determined as a percentage of total output value at consumer prices as received by the marketing firms, and has increased from 0% in the mid 1970s to 40% in 1996. This, despite the fact that the growers are still demanding a hefty risk-premium. Nevertheless, together with the rise in the output-value sharing rate the farmers became less risk-averse. This finding contributes to the debate on whether risk attitude is a stable concept (Pennings and Garcia, 2001).

The method used in this chapter differs from the procedure in Knoeber and Turman (1995), who already knew which contracts were used in the course of time. Using simulation methods along with production and payment data from a panel of individual farmers, they measured the risk shift between principal and agent, based on these contracts. By estimating the parameter of interest, the method presented here is also able to reveal how the contracts have changed over time. However, for this purpose it uses only sector-level data on prices and quantities that are widely available.

Knoeber and Turman (1995) applied their method to the US broiler industry, where the agents are the growers and the principals are the integrator firms. They concluded that risk had shifted from the agents to the principals. In contrast to their study, the current application to the Dutch marketing channel of ware potatoes includes the retail sector among the principals. The results show risk shifting from principals to agents. This is consistent with the fact that retailers have become a powerful player in the channel (Kuiper and Meulenberg, 2002). As a result, they can force processors and wholesalers to better fit the needs and wants of the consumer which, in turn, processors and wholesalers can only do with the farmers' support. The difference in the results shows the importance of extending the classic agency model to more than two stages in the marketing channel. It also indicates a future avenue of research, namely the possibility of testing for different strategic interactions between these stages.

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PART VI

Arrangements in input markets

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 18

Policy Intervention on a Market with Pervasive Agency Relations: Lessons from the Polish Agricultural Credit Programme

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Abstract

The aim of this chapter is to study the effects of government intervention on the Polish agricultural credit market, based on a micro-econometric analysis of Polish farm-level data. It highlights the importance of credit-rationing and a questionable targeting of funds in the farming sector, which is poorly addressed by the existing interest subsidy. Non-price factors play a decisive role, such as the reputation of borrowers and the demographic composition of households. Whereas short-term credit to finance current production is undersupplied, the volume of long-term loans exceeds the availability of productive investment objects. To adjust public policy, a careful analysis of the existing problems and their inter-relatedness is required. However, suitable instruments may not be available and a policy change may be impossible due to political constraints.

18.1. INTRODUCTION

In recent debates on reforms of the common agricultural policy (CAP), rural development measures in the framework of the so-called "second pillar" have figured prominently. In the future, a further shift away from classical market and price policy under the CAP makes an extension of these second pillar programmes likely. The conditions of success for such policies and potential pitfalls in implementing them are, therefore, of prime relevance for policy-makers. Among the major instruments available within this framework are investment support and aids for setting up young farmers, both involving a credit subsidy. Similar types of support programmes have already been implemented on a national basis not only in the current EU member countries, but also in several of the

new member States (NMS) joining the EU in 2004. The aim of this chapter is to study the effects of such programmes on the performance of the farming sector in Poland and to learn the lessons for similar policies to be implemented in the future. Poland is a particularly interesting case because: (a) it is one of the NMS where the structural problems in agriculture are exceptionally acute (see Petrick et al., 2002) and (b) experience with similar policy instruments has already been made.

In a theoretical view, the analysis of credit markets is of interest due to the widespread importance of incentive problems resulting from an asymmetric distribution of information between market participants, which creates an agency relation. For example, lenders may face adverse selection when acquiring clients or moral hazard after the loan contract has been concluded. Although the current debate in the literature is far from being settled, it seems to become a widely accepted view that a theory of credit markets with pervasive agency relations concedes government activity a potential role in improving market outcomes. The problem is that although unfettered markets are likely to lead to sub-optimal allocation of funds, it is almost impossible to predict from a theoretical analysis alone which type of government intervention is optimal. It is widely agreed upon that any policy measure should tackle the causes of undesired market outcomes. Although theory suggests potential causes, such as a lack of collateral or other screening devices, their ultimate identification has to be made on empirical grounds.

The chapter therefore draws on the findings of a larger research project aiming at a micro-econometric analysis of credit market outcomes in Poland (Petrick, 2003). This research is based on cross-sectional survey data from about 460 farms in different rural areas of Poland and provides a host of valuable information for policy advice. To the knowledge of the author, it is among the first rigorous micro-econometric studies of the rural credit market in Poland. The objective of this chapter is to make the findings of this empirical research fruitful for policy advice concerning markets with pervasive agency relations.

The plan of the chapter is as follows. Section 18.2 briefly reviews the theoretical literature regarding policy intervention on markets characterised by agency relations. Section 18.3 introduces the Polish case and presents empirical results on the national credit programme. Section 18.4 attempts to draw the policy conclusions from this experience and derives some lessons of potentially more general applicability.

18.2. THEORETICAL CONTROVERSIES REGARDING GOVERNMENT INTERVENTION ON MARKETS WITH AGENCY RELATIONS

The traditional assumption of neo-classical economic theory is that markets clear and there is no rationing. Any excess demand or supply is eliminated by the “invisible hand” of the price mechanism. This stands opposite to real world observations of, for example, persisting unemployment or credit-rationing, i.e., a persistent excess supply or demand with no clearing by a price mechanism. Although explanations of these phenomena have been sought and proposed for a long time, only recently did economists seriously call into question the general applicability of the standard textbook model to certain types of markets. Drawing on pioneers such as Akerlof (1970), a branch called “agency theory”

developed models in which persistent excess demand could be established. A central feature of these models is the assumption of an asymmetric distribution of information between market participants which gives rise to principal–agent problems, for example adverse selection and moral hazard (for an overview see Bamberg and Spremann, 1987).

The major contribution of this branch of literature is the demonstration that "contractual arrangements […], and in this sense 'institutions', can be analysed through the use of the basic behavioural hypothesis of neo-classical economics: self-interest as expressed by *homo oeconomicus*. […] The result is a genuine extension of the neo-classical standard model" (Furubotn and Richter, 1997: 249). Although, this can be regarded as an important theoretical progress, the implications are problematic. As soon as information asymmetries are introduced, most of traditional welfare analysis breaks down. As shown by Greenwald and Stiglitz (1986), in economies with imperfect information, market equilibria are rarely efficient. This implies that much of received economic reasoning (such as "government intervention on competitive markets is welfare decreasing" or "unfettered markets are efficient") loses its basic foundation.

The question is hence whether the neo-classical standard model of clearing markets is a permissible simplification. Are credit markets really distinct from markets for chairs, tables, or pencils (Jaffee and Stiglitz, 1990: 838)? The decision has particularly serious consequences due to the fact that once information asymmetries are allowed for, the models do not provide clear-cut policy advice anymore. A recent case in point is the inter-relatedness of credit-rationing and underinvestment. From a standard neo-classical perspective, one would assume that, by its very name, credit-rationing necessarily implies too little investment as compared with a first-best solution, so that subsidising interest rate could be a reasonable policy option. De Meza and Webb (1987, 2000) show that this is in no way the case, since credit-rationing may both imply too much or too little funding. Whether one or the other applies in a given real-world situation is therefore an a priori open question. Compared with the standard welfare arguments usually put forward by trade theorists when it comes to an assessment of border protection or customs regulation, agency theory provides much less straightforward guidance. There are hence theoretical controversies on two levels: whether information asymmetries are a relevant phenomenon at all and, if yes, what their implications are. It is no surprise that the basic positions concerning government intervention on credit markets are widely varying, as the following two quotes may illustrate:

> There is a role for the State in financial markets; it is a role motivated by pervasive market failures. In most of the rapidly growing economies of East Asia government has taken an active role in creating financial institutions, in regulating them, and in directing credit, both in ways that enhance the stability of the economy and the solvency of the financial institutions and in ways that enhance growth prospects (Stiglitz, 1994: 50).

> In summary, there may be good arguments for intervention, and some may be based on market failure. But as one unpacks each argument, the realization grows that, given the current State of empirical evidence on many relevant questions, it is impossible to be categorial that an intervention in the credit market is justified.

> Empirical work that can speak to these issues is the next challenge if the theoretical progress on the operation of rural credit markets is to be matched by progress in the policy sphere (Besley, 1994: 45).

A first general lesson is hence that serious policy advice will have to take the specific conditions within a country or region into account. The following section, therefore, aims at a closer look at the Polish case.

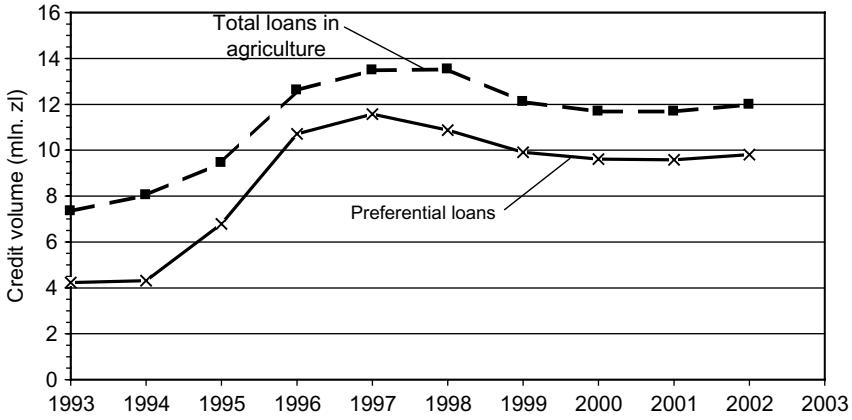
18.3. A MICRO-ECONOMETRIC ANALYSIS OF THE POLISH AGRICULTURAL CREDIT PROGRAMME

This section summarises results of an analysis of the Polish rural credit market (for a detailed methodology and report, see Petrick (2001, 2003)). First, some background information on the Polish credit programme is presented. Next, the focus is on two questions deemed particularly relevant in the Polish context: (a) Does government intervention contribute to eliminate credit-rationing of farmers (provided there is some)? and (b) Are programme funds in fact used in such a way that the stated objectives of the programme are met? Both questions address the agency dimension of government intervention. Credit-rationing is a prime example of a market failure due to asymmetric information, it is therefore useful to look at the interactions between this phenomenon and government policy. The actual use of funds by farmers reflects the (potential) difference between the interests of the government and the policy beneficiaries, since farmers may have incentives to employ funds in a different way than the government likes them to do.

18.3.1. Form and importance of government intervention on the Polish rural credit market

The major form of State intervention on rural credit markets in Poland is the extension of preferential loans to agricultural producers. Borrowers pay only a part of the commercial interest rate, whereas the remainder is paid by the government. There is hence a subsidy on interest rates. Since 1994, preferential credits have been handed out by the Agency for Restructuring and Modernisation of Agriculture (Agencja Restrukturyzacji i Modernizacji Rolnictwa; ARiMR), which in the following years has provided more than 30 different credit lines for various purposes (Czerwińska-Kayzer, 2000: 9). These credit lines comprise loans for the purchase of inputs, basic investment, land purchases, investments by young farmers, sector programs (milk, cattle, poultry, etc.), and others (Christensen and Lacroix, 1997: 18). The different credit lines are grouped into the two major categories “working capital” and “investment”. Interest rates vary between credit lines. For each credit line, ARiMR establishes a maximum rate that a bank can charge, which is a multiple of the bank’s refinance rate. Borrowers then pay one-quarter to one-half of this maximum rate, according to the credit line, and ARiMR pays the rest (Christensen and Lacroix, 1997: 19).

Figure 18.1 depicts the outstanding amounts of total and preferential credits in the agricultural sector between 1993 and 2002. Monetary values are given in 1999 prices. The foundation of ARiMR marked the start of a phase of rapid credit expansion, with growth



Credit volume as outstanding on 31 December. Monetary values in 1999 prices, using the consumer price index. 1 zł = .237 euro in 1999. Source: Author's calculations based on Kulawik (2003: 77) and unpublished data of National Bank of Poland.

Figure 18.1: Outstanding volume of total and preferential credits in the Polish agricultural sector 1993–2002 (in 1999 prices).

rates of the preferential credit volume of almost 60% in 1995 and 1996. In 1997, the volume of subsidised credits reached a peak, whereas it declined in the following years. This is consistent with the fact that the number of credit lines for agriculture and the volume of public funds earmarked for subsidising interest rates were considerably cut down in 1998 (Czerwińska-Kayzer, 2000: 12). Since 2000, the volume of preferential credits has been almost stable in real terms.

In the phase of credit expansion, the share of preferential credits in the total credit volume temporarily increased from 53.7% in 1994 to 85.9% in 1997, whereas it decreased afterwards. Assumed there is a given amount of projects also viable under non-subsidised rates, this is evidence for a crowding-out effect, which means that borrowers turned to the cheaper government loans although they would have also borrowed under fully commercial terms. However, it seems that the total amount of credit outstanding was mainly driven by the changes in governmentally sponsored credit supply.

In the first half of 1998, at the peak of intervention, preferential interest rates ranged between 6.13 and 15.31% p.a. In the same period, the inflation rate was at 13.7%, and the difference between subsidised and non-subsidised interest rates ranged between 17 and 25% points. Interest subsidies hence led to a substantial reduction of interest costs for farmers, even implying negative real interest rates (figures taken from Poganietz and Wildermuth, 1999: 537).

Preferential loans under the government programme are extended through the existing network of banks. In Poland, there are two types of lending organisations specialised on agriculture, namely the Bank for Food Economy (Bank Gospodarki Żywnościowej, BGŻ) and the system of co-operative banks (Klank, 1999). However, preferential credits can also be received via most of the commercial banks in Poland. The BGŻ was the primary channel for financing state-managed agriculture during the socialist period, which implied

that the bank inherited quite a number of bad loans in the course of market reforms. Similar to other formerly state-owned banks in Poland, there were several attempts to comprehensively restructure or liquidate the BGŻ during the past decade. However, this was successfully blocked, inter alia by agricultural lobby groups. Local co-operative banks had often been founded prior to World War II, and existed under the umbrella of the BGŻ during socialism. In 1990, most of them left the BGŻ in order to form regionally oriented co-operative banking structures. Even so, their reconsolidation has remained incomplete to date. Furthermore, Khitarishvili (2000) provides evidence based on a stochastic frontier analysis that the efficiency of Polish co-operative banks lags behind international standards. Whereas the general privatisation and liberalisation activities in the Polish banking sector have proven largely successful, agricultural banking is still an exception. Milczarek (2003: 9) argues that the banks already existing under socialism are neither particularly innovative nor supportive to entrepreneurs but adhere to their traditional role of simply channelling certain amounts of liquidity into the sector. These attitudes are supposed to still impede the development of an efficient and professional rural banking sector in Poland.

Prospective borrowers have to submit a loan application at a local bank branch, together with a business plan describing the envisaged use of the loan. The latter is usually evaluated by the public extension service prior to loan application. The bank then applies for subsidy payments at ARiMR. The bank bears the full default risk of the loan and, therefore, is also responsible for screening and monitoring of borrowers as well as possible enforcement of repayment or liquidation of collateral (Poganietz and Wildermuth, 1999: 539). In contrast to other transition countries, mortgaging loans is less of a problem because most of the land remained in private property during the period of socialism. Accordingly, mortgaging is currently a commonly used instrument to collateralise loans (Prosterman and Rolfes, 2000: 128–129). However, as stressed by Karcz (1998: 96), the reliability or reputation of a borrower as indicated by previous punctual repayment of loans is at least as important for obtaining credit as is the sufficient availability of collateral. In general, default rates in rural Poland are quite small, according to Karcz (1998), about 2%. Delayed payments are relevant in markedly less than 10% of the cases (World Bank, 2001: 74).

18.3.2. Credit-rationing

The aim of this subsection is to analyse the quantitative importance of credit-rationing in rural Poland, to identify its determinants, and to see how government policy has failed to address the problem of credit-rationing. The survey data allowed classifying farmers into groups corresponding to different types of credit-rationing as shown below. From this classification, a dichotomous variable indicating the status of the farmer (credit-rationed yes/no) was extracted and subjected to a Probit analysis.

A farm household was regarded as being credit-rationed if at the prevailing interest rate, the credit volume demanded exceeded the volume offered by the lender. During the survey, the definition was operationalised by asking respondents about their credit market experience in the years 1997–1999. Credit applicants were asked whether they would

have liked to borrow more at the same interest rate. If so, this is taken as evidence for excess demand and the respondents were classified as being credit-rationed. Rationed applicants who obtained some credit were called partially rationed. Applicants who did not obtain a loan at all were classified as completely rejected. Non-applicants were asked whether they had the intention of applying for credit at a particular place in the past but did not do so because the application might have been turned down. Respondents who answered positively were classified as discouraged non-borrowers (see Jappelli, 1990). Borrowers who obtained as much as desired and non-discouraged non-applicants were regarded as *not credit-rationed*.

Table 18.1 shows that by far the most important groups are the satisfied and the partially rationed applicants. About 16% of respondents were not interested in borrowing at all, and only a small minority was completely rejected or discouraged. It can hence be concluded that about 80% of farmers in the sample are borrowers, and that perceived excess demand is a relevant problem for almost half of the borrowers.

The fact that the majority of farmers were partially credit-rationed makes it unlikely that the depletion of government funds is the reason for credit-rationing, since loans are extended according to the first-come first-served principle. Rationing due to exhaustion of government funds would therefore have taken the form of complete rejection of borrowers (Poganietz and Wildermuth, 1999: 539).

Due to the relative unimportance of fully rejected and discouraged respondents, these two groups together with the partially rationed group were considered as the pool of credit-rationed respondents in the following. In contrast, satisfied applicants and not interested non-applicants were regarded as not credit-rationed. Hence, a dichotomous classification was used.

The following explanatory variables were chosen (expected signs are given in parentheses) to explain the dichotomous classification of respondents in a Probit model. Land owned (+) was taken as an indicator of the volume of collateralisable wealth, which is expected to play a key role in the presence of loan market imperfections (Coco, 2000). For land owned, the nominal value of land owned by the farm in the beginning of the period (in thousand zŁ) was used, which was calculated by subtracting land investment carried out in the period 1997–1999 from the stated value of owned land in 1999. Land quality was hence captured as well, at least as long it is reflected in monetary land values. A dummy indicating a previously rescheduled loan (+) was taken to illustrate the credit

Table 18.1: Frequency of rationing experience in the period 1997–1999.

Rationing experience	**Frequency**	**(%)**
Satisfied applicant	185	41.4
Partially rationed applicant	168	37.6
Completely rejected applicant	4	0.9
Not interested non-applicant	71	15.9
Discouraged non-applicant	19	4.3
Total	447	100.0

Missing observations were skipped.
Source: Petrick (2003).

history of the borrower, and a dummy indicating the expressed habit to regularly engage in conversation with neighbours (?) was used as a measure of village-internal information flow. The rescheduled loan variable was taken from the interviews where respondents were asked whether they did reschedule the repayment of another loan taken earlier in the reporting period. This was regarded as evidence for a relatively poor reputation of the borrower. The conversation dummy was used as a measure of village-internal information flow. Good intra-village communication might reduce the probability of being credit-rationed if it increases the information available to the local bank. It is taken as a proxy for how well the respondent is known in the village. Liquidity shortages may also be due to consumption behaviour of the farm household. The absolute number of adult males (?) and females (?) were therefore taken to reflect household characteristics. The effect of the number of adults in the household is indeterminate since a higher number of household members may both increase (via increased consumption) and decrease (via generation of unearned income) the liquidity shortage. The separate inclusion of males and females is motivated primarily by the fact that Polish women tend to benefit more from social transfer payments than men (World Bank, 1995: 117). In addition, the number of males or females may take on a signalling function for the bank. For example, more men in the household labour force may indicate that more resources are devoted to actual farm production, and hence may imply greater creditworthiness. Finally, two dummies indicating the year in which the loan was approved by the bank were added to the model, to account for price or other changes in the overall economic environment. All explanatory variables were assumed to be exogenous or predetermined at the time of loan application. Note that further plausible explanatory variables are the age or years of experience of the farmer as well as his degree of education. The coefficients of these variables turned out to be not significantly different from zero.

The regression results are shown in Table 18.2. Somewhat surprisingly, the coefficient of "Total land owned at beginning of 1997" was not statistically significant. To the extent that the volume of available collateral is appropriately measured, it can hence be concluded that it is of less importance in the general observation of credit-rationing.

Table 18.2: Probit estimates of the probability of being credit-rationed.

	Coefficient	***t*-value**	**Marginal effect[a]**
Constant	−0.272	−1.163	–
Total land owned beginning of 1997 (thousand zℓ)	<−0.001	−0.300	−0.010
Adult males in household (no.)	−0.217	−2.652	−8.581
Adult females in household (no.)	0.149	1.813	5.894
Previous loan rescheduled (dummy)	0.737	2.998	29.151
Conversation with neighbour (dummy)	0.448	2.850	17.711
Applied in 1997 (dummy)	−0.258	−1.691	−10.199
Applied in 1998 (dummy)	−0.086	−0.453	−3.402
Chi-squared (significance)			26.985 (<0.001)
Percent correctly predicted			0s: 70.9, 1s: 47.4
Observations			345

[a]Dependent variable is credit-rationed yes/no. Marginal effects in percentage points, calculated at sample means.
Source: Petrick (2003).

On the other hand, the reputation effect as measured by the "Previous loan rescheduled" dummy was statistically significant, with a *t*-value of almost three.

The positive sign of the dummy on village internal information flow supports the above-mentioned view concerning reduced diligence of the borrower. A second explanation is that better information about farming activities of a given borrower as a result of this information flow led the bank to the impression that this borrower is in fact not creditworthy. He may thus have obtained less credit than expected and consequently be classified as credit-constrained. Regarding the household characteristics, the coefficient of the number of males is statistically significant at less than 1%. Apparently, more women in the farm household tend to tighten the credit constraint, which is in contrast to the conjecture that higher public transfer payments for females increase the available liquidity. An alternative interpretation is that more women in the household make the farm less creditworthy because they devote more labour to household work than to farm production, which signals a lower farm performance to the bank. The reverse holds for men, although it is less significant. The regression also reveals that having applied in 1997 significantly reduced the probability of being credit-rationed. This finding is quite in line with the fact that governmentally subsidised credit expansion in the farm sector showed a clear peak in this year, as noted above.

The marginal effects display the slope of the probability function. At sample means, the subgroup of respondents who rescheduled a loan in the past had a 30%-points higher probability of being credit-rationed than the subgroup with a better reputation. Reputation thus plays a key role in determining credit access of farm households.

An important conclusion regarding the assessment of policy is hence as follows. Despite continuing government intervention on rural credit markets, almost half of the interviewed farmers wish to borrow more at the going interest rate or are otherwise discouraged from borrowing. The subsidisation policy is clearly *not successful* in eliminating credit-rationing. This is of no surprise if a lack of reputation is one of the key problems. On the other hand, collateralisation of loans seems not to be a significant problem.

18.3.3. Targeting of funds

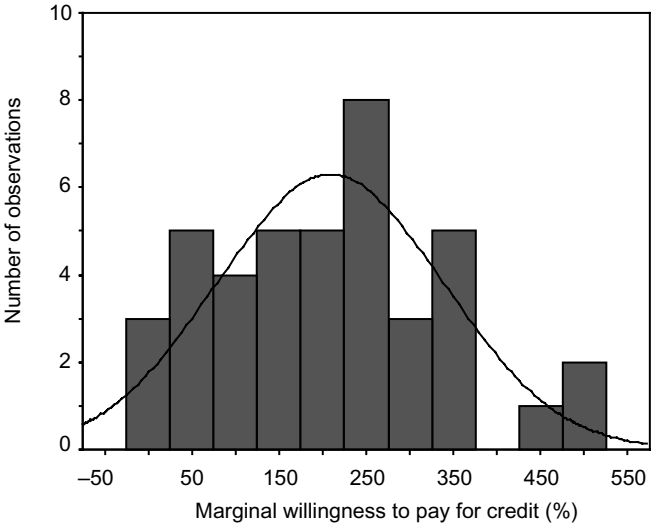
In this subsection, the aim is to analyse how credit funds are used on Polish farms. The analysis makes a principal distinction between short-term and long-term loans. The former have a repayment period of maximal 12 months and are mainly used as working capital. The latter are to be repaid within more than 12 months and are primarily investment loans.

For short-term loans, the marginal willingness to pay for credit on credit-rationed farms in the production year 1998/99 was estimated. Note that about half of the loans in the sample are short-term loans. However, since only one production year is used for the analysis, the number of observations reduced to 41. A marginal return substantially above the going market interest rate would be strong empirical support for credit-rationing and indicate a severe scarcity of working capital.

To estimate the marginal willingness to pay for short-term loans, an appropriately specified production model was required. The present study used a reduced-form output supply model, following Sial and Carter (1996). The model was only estimated for credit-rationed borrowers, to assure that credit is in fact an exogenous variable in the model. Beyond short-term credit, other explanatory variables were the fixed production factors land and capital, the number of adult males and females in the household and a dummy indicating the location of the farm in one of the three voivodships under study. Details on the methodology and the results can be found in Petrick (2004). The estimations revealed a statistically significant effect of short-term credit on output. The model was flexible enough to allow the computation of the individual marginal willingness to pay for all of the farms in the sample. The results are presented in Figure 18.2.

On average, credit-rationed farm households were able to yield a return of 209% per annum on an extra unit of credit, with principal already deducted. Given an average nominal annual interest rate on credit of 10% in the sample, the presented estimations point to an extreme scarcity of working capital on credit-rationed farms. The qualitative separation examined above is hence supported for short-term borrowers.

For long-term loans, the relation to farm profits could not be analysed, since many of the loans observed extend far in the future and the present values of the investments are unknown. However, the relation between the volume of credit borrowed and the volume of productive investment on farms was estimated, which yields the marginal effect of credit on investment. An effect larger than one implies that additional funds are completely used for productive investment. This describes a situation where subsidised



Mean = 208.8; Std. Dev. = 129.5; N = 41. Solid line in figure shows a normal distribution based on mean and variance of the underlying sample.

Figure 18.2: Distribution of marginal willingness to pay for credit (short-term loans). *Source*: Petrick (2004).

credit is fully used for investment and even triggers the additional mobilisation of other (particularly own) financial sources, which is clearly desirable from the point of view of the government. On the other hand, a marginal effect smaller than one implies that the marginal unit of credit is only partly used for the supposed investment purpose.

The estimation was based on an empirical investment function. Apart from long-term credit, the explanatory variables were land owned as a basic measure of the size of the farm and two dummies indicating whether the farm has permanent book-keeping and whether it is located in the more advanced northern district. Since the dependent variable investment volume was censored, a Tobit model was employed, which included quadratic and cubic terms for the credit variable. The latter allowed computing farm-individual marginal effects. Similarly as above, the estimation was carried out for credit-rationed farms only. Whereas the output model was estimated for credit-rationed short-term borrowers only, the investment model was estimated for all rationed farms independently of the type of loan they received. This allowed the inclusion of observations with zero credit volume.

Figure 18.3 indicates that almost all observations display marginal effects of long-term credit on investment that are smaller than one. The interpretation is that almost always only a part of the state-sponsored credit funds is used for productive investment, whereas a relevant share is used for other purposes. This is in accordance with the farmers' reported use of credit funds for what could be called "durable consumption goods", for example renovating residential buildings or automobile purchases. Since complete defaults are of minor relevance in Poland irrespective of credit use, it must be assumed that many investment loans used for consumptive purposes are repaid out of current household income rather than direct investment returns. Only for 50% of borrowers does the amount of productive investment exceed the credit volume.

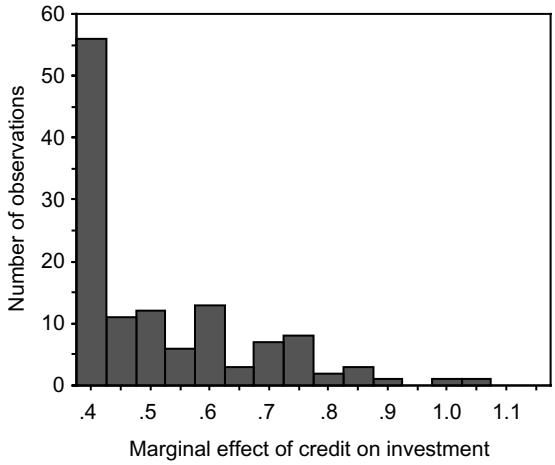


Figure 18.3: Distribution of marginal credit effects (long-term loans).
Source: Petrick (2003).

With regard to an assessment of government policy, these results suggest that the credit programme was not able to channel funds to their (socially) desired uses. Whereas the programme did not overcome the scarcity of working capital, there appears to be even a kind of saturation on the market for investment loans, since funds are only partly used for productive investment. Note that this is not the classical textbook case of moral hazard, since, because of low default rates, the lenders (banks) are not the ultimate victims of a diversion of funds. The question is whether funds are employed in a socially desirable way.

Given this evidence, one may suspect that farmers have a large incentive to divert investment loans to use them for working capital. However, borrowers of long-term loans and borrowers of short-term loans are two almost completely separate groups. Among the 168 partially credit-rationed survey respondents (Table 18.1) only four borrowed short-term loans and in the same time period a long-term loan. Only one of these reported that he used some part of the investment loan for purchasing inputs.

18.4. LESSONS FOR POLICY ADVICE

The previous section highlighted the following characteristics of the Polish agricultural credit market: (a) The credit market is a major field of government activity in agriculture. The main policy instrument is a subsidy on interest rates of both working capital and investment loans. (b) There is substantial evidence of credit-rationing of farmers, i.e., an excess demand at given interest rates. However, the major source of this is not a lack of available funds, but reputation effects and demographic household characteristics. (c) The scarcity of credit appears to take quite different forms with regard to short-term and long-term loans. Whereas the marginal unit of a short-term loan is employed quite productively on credit-rationed farms, long-term loans are often not used for productive investment.

These results demonstrate the importance of agency problems on the credit market. First, farmers cannot satisfy their demand for credit due to non-price factors. The importance of the credit history and the household composition for credit-rationing is pointing to unresolved problems of asymmetric information and unavailable screening devices. Furthermore, loans are not necessarily used in a way that is in accordance with the objectives of the government programme.

There is hence a clear mismatch between the policy instrument and the actual problems on the loan market. The relatively simple instrument of an interest subsidy on all types of loans is not able to address the complex spectrum of allocation problems in a sufficiently specific way. Whereas it uniformly lowers the nominal price of credit, the relevant factors determining the access to and the use of credit are mostly of a non-price nature. In addition, they vary between different types of credit. To improve the allocation of credit, a more differentiated approach would be required. Adequate policy measures should address the problem of poor borrowers' reputation. For example, it should be examined how far macro-economic factors or a widespread policy uncertainty were relevant for the earlier repayment problems of borrowers. It should also be investigated what is behind the fact that household characteristics play a role in the probability of credit-rationing. Are

these characteristics taken into account by the banks' decision to grant a loan, and, if yes, why is this the case? Does this point to some sort of discrimination? More attention should be paid to the availability of working capital loans, whereas the diversion of governmentally sponsored investment funds should be avoided.

The presence of agency relations suggests the following general lessons. Even more than with regard to markets for standard goods such as agricultural raw products, a careful analysis of the actually existing problems and their inter-relatedness is required. This is an indispensable prerequisite for the design of a sufficiently differentiated mix of policy instruments in a further step. Unfortunately, the government may be unable to appropriately respond to these problems should they become visible, either because it simply lacks the suitable instruments or it cannot adjust its policy for political reasons.

Hoff et al. (1993: 19) argue that as a result of asymmetric information, the justifications for market interventions grow not only in number but also in complexity and side effects. They plausibly assume that if asymmetric information is at the core of market failures, better information and more transparency in markets and institutions will be at the core of any solution. However, it is quite an open question whether governments possess an advantage over private agents in dealing with these problems (Stiglitz, 1987). To cite the empirical results presented in this chapter, the government will hardly be in a better position than banks to assess the reputation or creditworthiness of a borrower, and it will likewise fail to control the uses of thousands of loans extended to dispersed rural borrowers. Both will perhaps be performed in a more successful way by a strengthened rural banking sector.

Furthermore, the Polish government is subject to important political constraints. As argued above, legacies of the socialist past are still weighing on the shoulders of many rural banks. Whereas the overall transition of the Polish banking industry has been widely successful, there is evidence that the unfinished restructuring and reconsolidation process of the *rural* banking sector might be partly responsible for still inefficient banking practices. In Poland, the government plays a crucial role in restructuring the banking sector, since it has direct control over wide parts of it, notably the still governmentally owned BGŻ bank. Political considerations have hampered its privatisation so far. Similarly, the interest subsidies granted by the government have for long created their own constituency, so that they cannot be easily removed for political reasons. For example, in the early 1990s, farmers' protests against "unaffordable" credit were among the driving forces behind the establishment of the AriMR; and the "Samoobrona"-movement ("Self-Defense"), which currently is among the major anti-EU forces in Poland, was founded by a group of farmers with high debt liabilities. Political constraints and the associated "government failure" therefore may be a major reason why market failures are not appropriately addressed by public policy.

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CHAPTER 19

European Integration, Foreign Investment, and Institutional Restructuring in the Polish Agri-food Sector

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Abstract

The process of European integration and liberalisation of trade and international finance is a powerful source of institutional reform in the Polish agri-food sector. This chapter analyses how the opening of the Polish economy, especially for inflows of foreign capital, know-how, and technology is inducing institutional restructuring in the dairy sector. This analysis is based on a 2001 survey of 290 dairy producing rural households and six dairy companies in the Northeast of Poland. Findings show that foreign investment does not cause a rapid consolidation of the supply base. Instead, foreign companies introduce farm assistance programmes as part of a process of vertical integration to overcome market imperfections. Through vertical and horizontal spillover effects, this leads to improved access to finance, increased investments, product quality improvements, and growth of small local suppliers.

19.1. INTRODUCTION

The process of European integration and liberalisation of trade and international finance is a powerful source of institutional reform in the Polish agri-food sector. These changes have major implications for the competitiveness of this sector, rural welfare, and for the future EU agricultural market. This chapter analyses how the opening of the Polish economy, especially for inflows of foreign capital, know-how, and technology is inducing institutional restructuring in the Polish dairy sector, and what the implications are.

Many companies in transition countries are (or were) in severe need of restructuring and upgrading of capital, technology, and management. This holds across the transition world, but is especially pronounced in those countries, which are now most open to external competition, either because trade restrictions were liberalised in the transition process, or, for several Central and Eastern European countries, because they will soon be integrated into a single EU market in which they will have to compete with other EU companies. At the same time, transition countries, and in particular those closer to the EU, have received a large inflow of Foreign Direct Investment (FDI) over the past years. For these reasons, studying the impact of FDI in transition countries can provide very useful insights.

A major problem in transition countries is the breakdown of exchange systems and contract enforcement mechanisms (Blanchard, 1999; Konings and Walsh, 1999). Private institutional innovations have solved these problems in some countries (Johnson et al., 1999; McMillan and Woodruff, 1999). Case studies suggest that foreign investors have played an important role in this process through vertical integration (Foster, 1999; Gow et al., 2000). At least in some cases such FDI-induced vertical integration has contributed to improved access to finance and inputs, and productivity growth of suppliers (Gow and Swinnen, 2001). The existing papers are based mainly on case-study evidence. This analysis will provide representative evidence on these effects.

The empirical analysis uses data from Poland and specifically from the Polish dairy sector. The Polish dairy sector is selected for several reasons. First, Poland is the largest of the EU accession countries, yet a small economy in the world market. Poland produced around 12 million tons of milk in 2000, which represents 2.5% of total production in the world. The accession of Poland alone would increase total milk output in the EU with 10% (FAO, 2003).

Second, agriculture is a very important sector in the Polish economy and characterised by unfavourable structures and low incomes. Almost 20% of the population is employed in agriculture, mostly on small farms. Poland is unique among the transition countries in that it had a mixed institutional structure in agriculture under the Communist regime. Small private family farms survived the Communist collectivisation and occupied 76% of total agricultural land. The remaining land was used by large-scale State farms. Hence, in contrast to other Communist countries where small farms resulted from the fragmentation and decollectivisation of the former collective farms, both small farms and large farms have a strong historical and institutional basis in Poland.

Third, dairy plays an important role in Polish rural areas since many of the small farms have at least some milk production. Out of approximately 1.3 million dairy farms, 89% had only 1–4 cows in 1996. Farms with less than 10 cows produced 75% of Poland's milk. Less than 60% of total milk production was delivered to dairies; the rest was used for self-consumption or directly sold on the local market. By 2000, 85% of Polish dairy farms still had less than 5 cows (GUS, 2001).

Fourth, the dairy sector—both the processing companies and the farms—were (and still are) in need of substantial restructuring in order to be competitive on the international market. In the early 1990s Polish milk production was generally characterised by low productivity and low quality. While the situation has improved importantly since the mid-1990s, even in 1999 only 20% of the 450,000 producers delivering milk to dairies delivered exclusively milk of the highest quality (Swedish Board of Agriculture, 2001).

The small scale of the family farms creates specific investment problems for upgrading milk quality, as well as problems for investors in the dairy processing companies, because of transaction costs of milk collection.

Fifth, Poland has attracted significant FDI in the dairy sector, yet at the same time local companies continue to have a large share of the market. The liberalisation of the Polish trade system and the privatisation of the processing industry in the 1990s opened the Polish dairy sector to increased competition from abroad, allowed Polish exporters to search for new markets, and allowed foreign companies to invest in the Polish dairy sector. By 1999 there had been a total inflow of 4.6 billion USD of foreign investments into the Polish agri-food sector, 5% of which has gone to dairy processing and dairy equipment companies.

In combination, these characteristics make that the Polish dairy sector is a very interesting sector and potentially a rich source of insights for the study of FDI impacts, in particular regarding vertical spillover effects and the impact on small suppliers. Moreover, continued FDI in the Polish dairy sector could have very significant repercussions for the sector, for the many small supplying farms, and obviously for rural welfare and development more generally. Therefore understanding the impacts is useful both for Poland itself and more widely through lessons one can draw more generally.

The chapter is organised as follows. First, data collection both at the dairy processing level and through a unique survey of local milk producers is discussed. Next, evidence on the impact of foreign direct investments and vertical integration in the dairy sector on supplier restructuring is provided. The last section draws conclusions.

19.2. DATA

To identify both the effects of FDI and the process through which these effects occur, data were collected through a series of in-depth interviews with domestic and foreign-owned dairy processing companies and through a random survey of local dairy farms which are potential suppliers to these companies.

19.2.1. Small suppliers

The farm-level data collection focused on small suppliers and the data were collected in a 2001 survey of 290 dairy producing rural households in the Warminsko-Mazurskie region in the Northeast of Poland. Warminsko-Mazurskie is an interesting region for this analysis because it is an important dairy region in Poland and because it has a mixture of large scale and small-scale farms — unlike some other regions in Poland. At the start of transition large-scale State farms (co-operatives were almost non-existent in Poland) farmed between 30 and 50% of agricultural land in the region, as estimated on the basis of data on old voivodship classifications (Wies I Rolnictwo, 1999).

A total of 290 rural households who had at least had some dairy production in the past six years were interviewed. This survey was performed in the fall of 2001 and included retrospective questions on changes that had occurred over the previous six years — more or less the period after the arrival of foreign investors in dairy companies in the region.

The households were selected randomly in certain municipalities. As in the rest of Poland, domestic dairies still far outnumber foreign-owned dairies. To ensure that the sample included a considerable number of farmers that had been in contact with foreign-owned dairy companies and their policies, municipalities in the vicinity to the three foreign-owned dairies in the region (ICC, Paslek; Warmia Dairy; Kraft/Bel, Chorzele) are over-represented. Using a list of supplying farmers from the foreign-owned dairy companies would create a selection bias since a list of current suppliers will exclude any farmers that have stopped supplying over the past years.

Table 19.1 shows how the 290 households in the survey deliver (or delivered) milk to 24 different dairy companies, which greatly vary in size. Around 45% of the households in the survey supplied milk to foreign-owned dairies, 55% to domestically owned.

Most of the so-called "farms" listed in the official Polish statistics as dairy farms are merely households producing for home consumption. They account for the vast majority of the one and two cow "farms" which make up 70% of the total number of dairy farms in Poland, and 36% of dairy farms in Warminsko-Mazurski (Table 19.2). Because of the focus of our analysis, i.e., to understand how the changes in the processing sector introduced by FDI affected the suppliers, our survey concentrated on those households, which delivered at least some milk to dairies at the start of the period, covered by the survey (1995). As a consequence, households with 1–2 cows represent a smaller group in our survey sample: 3% in 1995 and 10% in 2000.

However, even with this selection focus, the vast majority of the farms in the sample are very small by (West or East) European standards. The majority of farms in the sample (57%) had less than 10 cows and 96% of the farms had less than 20 cows in 1995 (Table 19.2). The average size of dairy farms in the sample was 8.8 cows in 1995 and 10.5 cows in 2000.

19.2.2. Dairy companies

Six dairy companies were selected for in-depth interviews with the management. The selection of the dairy companies was based on three criteria: FDI, ownership structure, and size. In terms of foreign investment, two of the selected companies are majority foreign owned, two have important links to foreign companies, and two are purely domestic. Four are medium-sized companies (50–70 million litres of milk), one large (420 million litres) and one small (2.5 million litres). Three are co-operatives, two private, and one a joint venture of a co-operative and a private company. More specifically:

- MLEKPOL is one of the largest dairy co-operatives in Poland, 100% domestically owned, and currently receives milk from 14,000 dairy farmers. It produces a wide variety of products.
- MLECZARNIA is a small domestically owned private company. Its main production consists of yoghurts. The Polish yoghurt market is highly concentrated, with 70% of the market dominated by only three companies: Danone (French); Zott (German); Bakoma (Polish). Mleczarnia only sells its products to local shops.
- KURPIE is a middle-sized domestic co-operative. In 2000, Hochland (a German/French investor) opened a processing plant next to Kurpie. "Kurpie" is the sole

Table 19.1: Dairy companies in the survey.

Dairy	**Actual # farmers delivering to this dairy in 2001**	**# Farmers in the sample delivering to this dairy in 1995**	**# Farmers in the sample delivering to this dairy in 2001**	
OSM Elblag	n.a.	30	20	
Nowy Dwor	n.a.	0	6	
ICC Paslek	461	42	25	
Olsztyn	232	4	3	
Warmia Dairy	2600	58	56	
Lukta	130	13	7	
Ostroda	n.a.	4	0	
Morag	n.a.	3	10	
Mostkowo	n.a.	1	0	
Marowieckie	n.a.	1	2	
Milejewo[a]	n.a.	1	0	
Lecza	n.a.	1	0	
Mazowsze, Chorzele	2500	26	25	
Szczytno	500	9	2	
Gizycko	2200	19	26	
Nidzicki	540	0	1	
Mragowo[a]	(2300)	34	0	
Olecko	1500	28	25	
Mlekpol, Grajewo	14,000	1	26	
Ostrolecka	n.a.	0	5	
Kurpie, Baranowo	3450	3	7	
Jeziorany[a]	n.a.	2	0	
Gdansk	n.a.	1	1	
Other	n.a.	2	1	
	#	%	#	%
FDI processors total	126	45	106	43
No-FDI processors total	157	55	143	57
Total (%)	283	100	249	100

[a]Bankrupt in 2001. Mragowo dairy merged with Mlekpol in Grajewo.

supplier of cheese to Hochland, which produces secondary level processed cheeses.

- MAZOWSZE is also a middle-sized Polish dairy co-operative. Since 1993 they started supplying pasteurised milk to the dairy multinational Kraft, who had bought the co-operative's debts from the bank and in this way acquired part of the co-operative's buildings. In 1998, the Kraft operation was taken over by Bel, a French company. Bel still buys milk from Mazowsze.
- ICC PASLEK was founded in 1994 when Land O' Lakes (USA) entered into a 50–50 joint venture with the local dairy co-operative in Paslek. Through consecutive capital injections, Land O' Lakes currently has a 70% ownership share in "ICC Paslek".
- WARMIA DAIRY started as a joint venture between Hoogwegt, a Dutch dairy company, and a local dairy co-operative in 1995. Since 1997, Hoogwegt has acquired 100% ownership.

Table 19.2: Share of farms in our survey by size classes and processor.

	Number of cows per farm						
	1	**2**	**3–4**	**5–9**	**10–19**	**≥20**	**Total**
Sample 1995	1.7	1.4	12.8	40.7	39.3	4.1	100
Sample 2000	5.1	5.9	10.3	26.9	35.9	12.4	100
W-M[a] 2000	22	13.8	19.1	29.1	13.1	2.9	100
no-FDI[b] 1995	1.3	1.3	12.1	40.1	42	3.2	100
no-FDI 2000	6.4	3.8	10.2	29.9	31.8	12.7	100
FDI 1995	0.8	0.8	12.7	42.1	38.1	5.6	100
FDI 2000	3.2	5.6	10.3	23.8	42.9	12.7	100

[a]Warminsko-Mazurskie region.
[b]no-FDI is the group of farmers that were delivering to a domestic dairy company in 1995; FDI includes farmers delivering to a foreign-owned dairy in 1995.

In Section 19.3, it is indicated how the foreign investments have affected dairy company policies vis-à-vis their suppliers based on the information collected in both the interviews and the surveys. Later on an econometric model to assess how these changes have affected the survival and growth of small suppliers to the dairy companies is developed.

19.3. FOREIGN INVESTMENT, VERTICAL INTEGRATION, AND SUPPLIER RESTRUCTURING

There is a growing empirical literature on the impact of FDI, which can be separated in two strands. A first group of studies focuses on horizontal spillover effects of foreign investment on domestic firms. The conclusions from these studies are mixed: some studies find positive effects (Hu and Jefferson, 2002; Liu, 2002), others, no significant effect (Kokko et al., 1996; Konings, 2001), and yet other studies conclude that the impact on local firms is negative (Aitken and Harrison, 1999). The difference in the findings comes from two opposing effects of FDI. On the one hand, FDI can introduce new products and technologies, and domestic companies can benefit from this through personnel turnover, demonstration effects and knowledge spillovers. However, these horizontal spillovers are only important if the technology gap between the foreign and domestic firms are not too large (Kokko, 1994). A negative FDI effect can come from FDI cutting into the local companies' market share. Hence, the different findings of the studies reflect the relative importance of these two factors in the various countries and sectors.

A second group of studies focuses on vertical spillover effects. Studies find that foreign firms facilitate the adoption of new technologies and can solve contract enforcement problems (Gow and Swinnen, 1998; Key and Runsten, 1999). Yet most studies conclude that the impact on local suppliers is mostly negative, in particular for small suppliers in developing countries (Dolan and Humphrey, 2000; Weatherspoon and Reardon, 2003). The latter often cannot comply with the higher standards and grading requirements for the supplied products (Reardon et al., 1999; Farina and Reardon, 2000; Henson et al., 2000). Moreover, foreign investors prefer to deal with a few large suppliers to minimise transaction costs, forcing consolidation of the supplier base and hence separating many small suppliers from their traditional outlets (Runsten and Key, 1996; Holloway et al., 2000; Winters,

2000). Reardon and Berdegué (2002) show, in the case of retail investors in Latin America, how this process can lead to the rapid exclusion of thousands of small suppliers.

19.3.1. Foreign investment and vertical integration

Foreign companies played an important role in demonstrating the importance of supplier assistance programmes and quality improvement strategies. For example, when Land O' Lakes invested in ICC Paslek in 1994, milk quality of its supplying farms — as everywhere in the region — was poor. From the start, the foreign investor set out a clear strategy to increase the quality of delivered milk. The strategy included basic changes and investments. One of the first changes was to invest in cooling tanks in collection points where small suppliers delivered their milk. Formally, the foreign investor was in a joint venture with a local co-operative and leased the collection stations from the co-operative. It was the co-operative, which, under strong pressure from the foreign investor, made the investments in the cooling equipment at its collection stations. Furthermore, they invested in agricultural extension to raise small farmers' awareness of the importance of milk quality and to teach farmers about basic hygienic rules in handling the milk. From the beginning, the foreign investor also required germ count and cell count tests (in accordance with EU standard tests for milk quality classification). Farmers were also allowed to have their milk tested for antibiotic residues free of charge in the dairy's laboratory. This was especially helpful for farmers who had had a cow disease in their farm and who needed to make sure that no antibiotics residue was left in the milk.

Faced with small suppliers unable to make basic investments and restricted in their access to basic inputs (such as feed, working capital, etc.) due to a variety of market imperfections, foreign investors also introduced other farm assistance programmes, such as input (feed) supply programmes, trade credit, investment assistance programmes, etc. (see further). Payments for this supplier assistance and the loans is done typically through deductions of the "milk check" at the time of payment for the milk.

Enforcement of the payments is done by effectively interlinking output and input markets: assistance programmes are restricted to farms supplying to the company and part of an (implicit) contract between the farm and the company. The process of interlinking markets is traditionally studied extensively in the development economics literature, typically focusing on landlord–tenant or trader–farmer relationships in developing countries (see, e.g., Bardhan and Udry, 1999). In other words, if successful, this process of FDI-induced vertical integration between supplier and company enhances the farms' access to basic inputs, credit, and output markets, while it ensures timely delivery and high quality supplies for the company. Note that success of these programmes and contract enforcement is not obvious, e.g., Gow and Swinnen (2001) discuss several cases of failure.

19.3.2. Spillover effects

These initiatives by foreign investors not only had important direct vertical spillover effects on their own suppliers, but also much wider spillover effects. Local dairy

companies quickly learned about the change in company policies implemented by foreign owners and they started to copy the successful programmes and adjust their own company policies. The interviews show that by 2001 all the interviewed dairies have programmes that assist their supplying farms:

- All companies have an *input supply programme*: the companies provide suppliers access to feed and to inputs for on-farm feed production, such as seed and fertiliser. Farmers purchase the inputs through company shops and the inputs are paid from the milk checks.
- Five out of six companies assist farms in investing through *credit and investment assistance programmes*. Investment assistance takes the form of leasing of milk equipment and leasing of cows, as well as loans for buying new or second hand cooling and milking equipment. Payments are deducted from future payments for milk deliveries.
- Five of the dairies provide *bank loan guarantees* for bank loans to farmers. Almost all bank loans for farm investments are with preferential interest rates (subsidised interest rates around 5% compared to commercial loans with interest rates often above 20%). In order to obtain such a loan, the farmer needs collateral. However, in many cases land or buildings are not accepted as a bank guarantee. Therefore, most interviewed dairies provide an additional service to their suppliers by co-signing the bank loan. In this way the dairy provides the bank loan guarantee and facilitates its farmers' access to bank credits.
- The companies also provide *extension services* to their suppliers. The only dairy that did not provide credit assistance programmes or agricultural extension services to its suppliers was the small dairy, Mleczarnia, probably because it did not have sufficient means (size).

The conclusion that horizontal spillover effects have caused a rapid replication of these programmes by domestic companies is confirmed by data from our farm survey, as summarised in Table 19.3. By 2001, more than 70% of the farms deliver to companies with input supply and credit programmes, and there is no significant difference between foreign and local companies. The only difference is in access to bank loan guarantees, which is significantly higher for those delivering to foreign companies (46%) than for those delivering to local dairies (30%).

19.3.3. Impact on farm investments

The assistance programmes had an important impact on dairy farm investments in the region. More than three quarters (76%) of all farms in the survey made investments in the

Table 19.3: Foreign ownership and financial assistance programmes (% of farms delivering).

	Total	Foreign owned	Domestic
Credit programme on-farm investment	71.5	71.6	71.4
Credit programme cows	72.1	73.9	70.7
Input supply programme	78.1	78.9	77.5
Loan guarantee programme	37.2	46.2	29.8
Average	71.5	71.6	71.4

Table 19.4: Investments and loans of farm households.

Size (# of cows)	Invests (% of total) *A*	Uses loan to invest (% of A) *B*	Uses dairy loan (% of B) *C*	Uses bank loan (% of B) *D*	Uses dairy loan (% of A) *E*	Uses bank loan (% of A) *F*
1–5	52	54	41	50	21	26
6–10	78	51	43	70	22	36
>10	92	74	43	75	31	54
All	76	58	43	69	25	40

past 10 years, and 92% of all farms with more than 10 cows (Table 19.4). Of those that invested, 58% used loans, almost half of which came from the dairies.

However, these numbers underestimate the impact of the dairy company programmes on farm investment for three reasons. First, dairy loans are more important for dairy-related investments than bank loans which are more generally used: 86% of all loans from dairy companies are used for investments in enlarging and upgrading the livestock herd (30%) and cooling tanks (56%). In contrast, only 29% of all bank loans are used for these types of investments.

Second, loans from dairies are only a partial indicator of the financial assistance offered by dairies. As explained above, assistance also includes guarantees for bank loans. Hence, part of the loans given by the banks is indirectly due to these loan guarantee programmes of dairies. The importance of the loan guarantee programmes should not be underestimated. Almost half (45%) of the households who could not obtain preferential bank loans identified lack of sufficient collateral as the main reason.

Third, the programmes which assist farms in accessing inputs (mainly feed) enhance investment indirectly by lowering input costs, or reducing transaction costs in accessing inputs, and consequently, through improved profitability.

19.3.4. Impact on quality

The combined impact of these programmes is also reflected in the quality of the milk delivered. Figure 19.1 illustrates how the quality of the milk delivered to the six interviewed dairy companies improved dramatically over the 1996–2001 period. While in 1996 only around 30% of the milk delivered to the dairies was, on average, of the highest (extra) class of milk quality (the highest quality by EU standards), this share has increased to more than 80% by 2001.

19.3.5. Dynamics of spillover effects

The evidence suggests that foreign investment has played a more important role early on in transition as an initiator of change and institutional innovation. No significant difference in 2001 of assistance programmes provided by foreign-owned companies and domestic dairies was found, except for the loan guarantee programmes, which were more extensively provided by the foreign dairies.

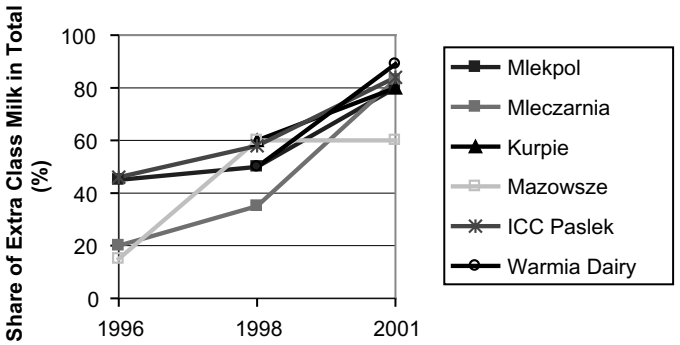

Figure 19.1: Change in share of highest quality milk (EU standard) by dairy company.

The survey data confirm that important convergence has occurred in milk quality between domestic and foreign-owned dairies and their suppliers as spillover effects in company programmes have multiplied. In 1995, the supply of extra class milk was significantly larger among farmers delivering to foreign-owned dairies (58%) than among farmers delivering to domestic dairies (38%). However, by 2000 this gap had almost disappeared: 83% of foreign vs. 79% of domestic dairy suppliers (Figure 19.2).

Adjustments and convergence are slower when they require important investments. In 1996 very few of the suppliers to the six dairy companies we interviewed had on-farm cooling tanks: the share of suppliers with on-farm cooling tanks was 3% on average for the four domestic companies and only 9% on average even for the two foreign-owned companies. By 2001, the share had grown to 51% on average for the foreign-owned companies, while only to 22% on average for the domestic companies.

19.3.6. Impact on survival and growth of small suppliers

How did the opening of the dairy sector to foreign investment, competition and increased quality requirements affect the survival and growth of dairy farms? Were small dairy

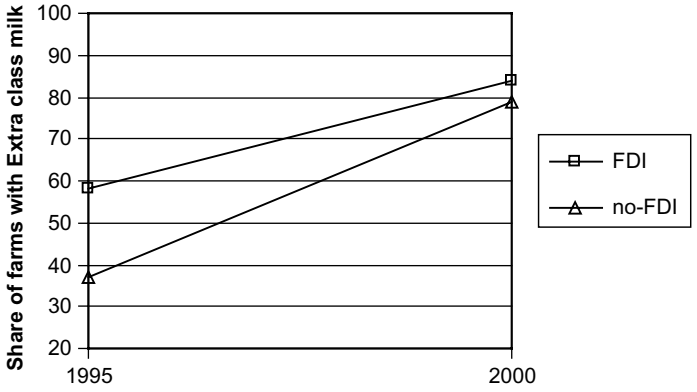

Figure 19.2: Change in share of highest quality milk (EU standard) in the farm survey.

farmers forced out of the market or did they manage to survive and upgrade their farms with the assistance of the programmes discussed above?

The survey data show that of the 283 households delivering milk to dairy companies in 1995, 36 (13%) stopped delivering milk between 1995 and 2000. Ten of them (4%) stopped producing altogether while the rest (9%) kept some cows for home consumption. Hence, 87% continued delivering to dairies despite radical restructuring of the dairies and tightened quality demands. Moreover, most of those who stopped delivering probably would have stopped anyhow: the average age of those who stopped is 56 years, compared to 45 years for the entire sample. In fact, the average annual decline in delivering farms in our sample (−2.6%) is less than the average annual decline in agricultural employment in Poland over the same period (−3.3%).

The size distribution changed importantly (Figure 19.3). Three quarters of the households (211) had between 4 and 12 cows in 1995. The share of farms in the 4–12 cow category has reduced significantly with about the same amount upgrading to a larger size and falling back to smaller, presumably subsistence, farms producing for home consumption. More specifically, of the 211 household farms, 135 (65%) had still between 4 and 12 cows in 2000; 35 (17%) had less than 4 cows in 2000, while 41 (19%) had more than 12 cows in 2000. Farmers with growing farms were significantly younger (42 years on average) than farmers whose farm size declined (51 years on average).

In summary, these data suggest that most small dairy farms have survived this restructuring process well. They have not been cut out, made important investments, upgraded their farm business, and improved quality. Farmers who fell out were mostly older farmers that may have gone out of business anyhow.

19.4. CONCLUSIONS

The process of European integration and liberalisation of trade and international finance is a powerful source of institutional reform in the Polish agri-food sector. These changes

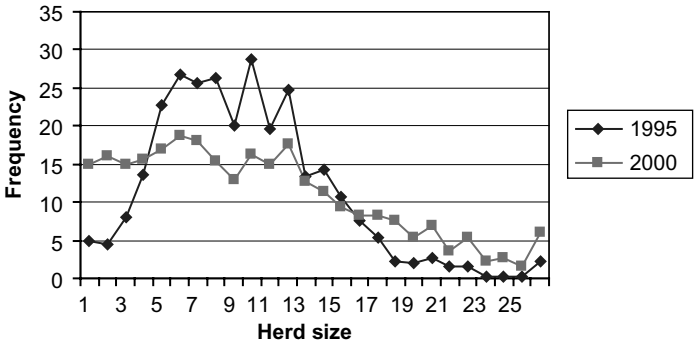

Figure 19.3: Size distribution of dairy farms in total survey sample (moving average).

have major implications for the competitiveness of this sector, rural welfare, and for the future EU agricultural market. This chapter analyses how the opening of the Polish economy, especially for inflows of foreign capital, know-how, and technology is inducing institutional restructuring in the Polish dairy sector, and what the implications are.

Previous studies conclude that foreign investment leads to a rapid consolidation of the local supplier base with negative implications for those suppliers who cannot comply with higher standards and grading requirements, or who are cut out by the company in order to reduce transaction costs. Studies argue that this effect can be especially dramatic for small suppliers in developing countries.

The conclusions of our analysis are different. The present study does not find that foreign investment leads to either a rapid consolidation of the local supplier base or to small suppliers being cut out. On the contrary, this analysis shows that foreign investment and its spillover effects leads to improved access to finance, increased investments, and (dramatic) quality improvements by small local suppliers.

The mechanism through which this happens consists of two steps. First, after foreign investment, processing companies start a process of vertical integration through contracting with local suppliers in which input and output markets are interlinked. The contracting is associated with enhanced standards requirements of supplies while at the same time the companies provide assistance programmes to improve supplier management, and to enhance access to technology, credit and other inputs. In combination, the contracts and assistance programmes are designed to overcome market imperfections. The contracts are enforced by interlinking the various markets. This process leads to important positive vertical spillovers for the suppliers. Our estimations show that the assistance programmes had a significant effect both on the survival and the growth of suppliers.

The second step is that of horizontal spillovers. When domestic companies observe these successful vertical integration strategies, they start copying the strategies. The analysis presented in this chapter shows that these horizontal spillover effects are strong and rapid. For several of the effects, after five years there is no longer a significant difference between foreign owned and domestic companies, and their suppliers. Only in some aspects, such as medium-term investments, convergence had not yet occurred.

In combination these effects have caused significant improvements in small suppliers' investments, productivity and product quality over the five-year period studied here. More than 85% of all suppliers continued supplying despite restructuring of the dairy companies and strong tightening of quality requirements. The reduction in suppliers over the period is less than the average reduction in agricultural employment in Poland, and most of those who stopped supplying were older farmers who most likely would have stopped delivering milk anyhow. Younger and better-educated managers were associated with stronger supplier growth. The average size of the farms increased, but relatively little, and the vast majority of suppliers remain small.

In summary, this study finds that foreign investment through this process of vertical integration had a significant positive effect on small suppliers, but that the most important effect was, over the period analysed here, indirect through vertical and horizontal spill-over effects.

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CHAPTER 20

Emerging Institutions in East European Land Markets: Evidence from Hungary

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Abstract

In this contribution, the determinants of household farms' participation in land rental markets in transition countries are analysed. Hypotheses on the impact of households' management ability, land endowment, land quality and prices, transaction costs in the land market, rural credit and labour market constraints are derived and tested combining a representative dataset on land rental activities of more than 1400 Hungarian household farms with data from the Hungarian Central Statistical Office. The findings reveal that land rental markets reallocate land to households with better farm management capacities and less endowed with land. Households combine buying and renting of land to extend their farms. The continued domination of large farm organizations in some regions restricts household's access to land. Rural credit and labour market imperfections have an important impact on land rental markets.

20.1. INTRODUCTION

Land reform and the creation of optimal land institutions receives renewed attention because of its importance in transition processes such as in China, Vietnam, South Africa, the former Soviet Union, and Eastern Europe and because of new political pressure for land reforms in countries with highly unequal land distributions such as Zimbabwe and Brazil. New insights in the functioning of land markets and institutions have also induced renewed attention to land access as a poverty-reducing tool (de Janvry et al., 2001).

Much attention has been paid to land sales markets—or, more generally, the transfer of ownership—as an important instrument to enhance efficiency, and reduce poverty. Land

ownership transfers come with a number of benefits, such as the potential to use land as collateral. However, in an environment with large uncertainties and high transaction costs, where credit markets and insurance markets are imperfect, land sales markets are typically thin and land sales may be limited to distress sales (Platteau, 2000). In such circumstances, land rental markets can play an important role in improving efficiency—and possibly equity—in land use and access (Sadoulet et al., 2001). As such, the role of land rental markets has recently been re-emphasized as important for providing access to land for the poor and as an efficiency-enhancing institution in environments characterized by large uncertainties, such as countries in transition (Deininger and Binswanger, 2001; Swinnen, 2001).

Transition countries provide a unique opportunity to study the development of land markets as land reforms have re-allocated property rights and liberalized land exchange restrictions. While much has been written on land reforms and farm restructuring in transition countries (Swinnen et al., 1997; Lerman et al., 2002), few studies have provided a formal analysis of the development of land markets and their determinants. The few studies have focused on China and Vietnam where transition started earlier (Brandt et al., 2004; Deininger and Songqing, 2003). This paper provides a formal analysis of the role of households in land market developments using data from Central and Eastern Europe or the former Soviet Union.

The focus on households in analysing the development of markets in transition countries is important because in many transition countries, household farms are using a large part of the agricultural land, although there is large variation. The share of agricultural land used by household farms varies from less than 20% in countries such as Belarus, Slovakia, Russia, and Ukraine to more than 80% in Albania, Armenia, Romania, and Poland (Lerman, 2001). But even in countries such as Russia where household farms use less than 20% of the land, they produce 60% of total output. Furthermore, the land used by large-scale farms is often rented from households.

The household focus is also important to study the equity effects of land market developments. An important question is whether the land reforms and liberalized land rental and sales markets will contribute to growing efficiency in agriculture and to improved access to land for small farms and poor rural households in transition countries. There is concern that land market liberalization will lead to a re-concentration of land. While the evidence on this effect is mixed and mostly limited to Latin America, a continent characterized by high inequality in access to land (see Deininger and Songqing (2003) for a review), Lerman et al. (2002) point out that in an environment characterized by asymmetric access to information, capital, and legal means of enforcement, as is typical of transition economies, re-concentration may be a realistic outcome, with undesirable social and economic consequences.

The paper first develops a conceptual model to analyse the decision-making of farming households to participate in the land market, which incorporates transition characteristics of land ownership, land use, and rural market imperfections. From this model, a set of hypotheses on land market participation of rural households is derived.

The second part of the paper is empirical and uses a unique and representative dataset on land rental activities of more than 1400 Hungarian rural households. These data are combined with county-level data collected by the Hungarian Central Statistical Office

to estimate the determinants of household rental activities during transition. We selected Hungary for the empirical analysis for several reasons. First, Hungary has an interesting mixture of household farms, farming companies and co-operative farms: all these farming organizations use a significant share of the land, with household farms using slightly more than 50%. Moreover, there are important regional variations in their relative importance, which allows testing for the impact of land market domination of large farms on household farms' access to land.

Second, Hungary is, certainly in comparison with other transition countries, well advanced in its land-reform process. Land titles have been largely distributed. By studying land market developments and household access to land through land rental and sales markets in this advanced transition stage, we can analyse whether "everything will be alright when the land reform is finished". In other words, is it sufficient for policy-makers in other countries to focus their attention on implementing the land reform and titling process in order to get the land market going, or are complementary reforms and policies needed?

A related issue which can be addressed in Hungary, in contrast to many other transition countries where progress is less advanced, is the relationship between land sales and the land rental market. While restrictions on land sales still exist, a significant amount of land sales occurred in Hungary in the years preceding the survey. The survey includes evidence on household land purchases in the past years and current land rental activities. By incorporating both sets of information, we can derive important conclusions on the relationship between both.

The empirical part of the paper starts with a discussion of the data and general characteristics of land use and ownership in rural Hungary. Next, we present profiles of households who rent in land and of those who rent out land and we provide evidence how the behaviour of large farm enterprises affects small farmers' access to land through rental. Afterwards, we estimate the impact of household and farming characteristics, such as physical and human capital, as well as land market and regional characteristics on land rental activities.

20.2. CONCEPTUAL FRAMEWORK

Our analysis of the determinants of participation in the rental market is based on theoretical models where households maximize their utility derived from income and leisure (Carter and Salgado, 2001; Skoufias, 1995; Yao, 2000; Sadoulet et al., 2001). The theoretical model to analyse the decision-making of farming households to participate in the land market is derived in Vranken and Swinnen (2003). Some key assumptions underlying these models are imperfections in the labour, land and credit market, heterogeneity in the distribution of initial wealth and specific human capital, and rationing of off-farm labour opportunities. The assumption of labour market imperfections is related with moral hazards in hired labour: supervision of workers is required so that the effective labour supplied by hired workers depends on the amount of family labour working on the farm as well as the area of land cultivated. Land market imperfections are assumed because of the presence of transaction costs, such as search costs and costs related

to negotiating the terms of the tenure contract. Hence, the models incorporate that effective rent paid is larger than the effective rent received. If the credit market is imperfect, a farmer may not borrow against future profits so that the loan he can get depends on the amount of land in his possession. Consequently, the available working capital is constrained by the farmers' initial wealth status, the land area that the farming household owns, the income from wage labour and the payments received from renting out their land. The assumptions of households' heterogeneity and rationed off-farm employment opportunities are incorporated in the models by allowing that the wage paid to hired labourers differs from the wage the household members can gain off farm. These theoretical models yield several hypotheses on which factors affect the participation of rural households in land rental markets (all in *ceteris paribus* terms).

A household is more likely to rent in land (and less likely to rent out) if the marginal product of land is higher. The marginal product of land is affected both by the intrinsic quality of the land and by the skills of the household in managing the land and farming it.

The land endowment of the household will affect the decision to rent. Given some fixed inputs, and market imperfections that constrain extending some other inputs, the marginal productivity of land will decrease with land use. If the marginal productivity of the land at the level of land owned by the household is still larger than the marginal costs of renting in additional land, then the household will rent in additional land. This will depend on the amount of land owned by the household. The more land the household owns, ceteris paribus, the less it is likely to rent in and the more it is likely to rent out.

The household is more likely to rent in land if the land rental price is lower, and vice versa for renting out. Notice that with given transaction costs, changes in the market rental price will affect both decisions to the same extent.

Transaction costs in the rental market will cause a gap between the price for land rented in (r^{i}) and the price for land rented out (r^{o}), and consequently will reduce both renting in and renting out. Such transaction costs can come from a variety of sources, such as search costs. In transition countries, an important cause of the gap between r^{i} and r^{o} may also be obstructions or imperfect competition in the land market by large farm organizations. The latter may complicate access to land for small farms and use their scale advantages in administration as well as in negotiating with small and dispersed land owners to increase the land rental price for small farms competing for land and decrease the rental price for households renting out.

Imperfections in the credit market also affect land rental markets. More credit market constraints will reduce the likelihood that a household will rent in land. It makes it more likely that it rents out land. There is a secondary effect that reinforces this. Credit market constraints will also reduce labour use on the farm. More credit market constraints will result in less farm labour use. This will, in turn, cause a decline in the marginal productivity of land, and consequently, further reduce renting in of land and increase renting out of land.

If off-farm labour opportunities are scarcer, more family labour will be used on the farm. This will increase labour input on the farm and therefore raise the marginal product of land. Through the increased marginal productivity of land, scarcer off-farm labour opportunities will induce a farming household to rent in more land (or rent out less land). The size of this effect depends on whether the household is using only household labour

or whether it is hiring labour (in addition to its own household labour). The effect on land renting will be smaller when hired workers are employed on the farm because the supervision cost of monitoring hired labour weakens the effect. For the same reason, the household labour supply on the farm will affect the land rental decisions. With supervision costs making hired labour more expensive than household labour, the household labour supply will positively affect the decision renting in of land, and renting out of land.

Higher wages, either for off-farm employment or for hiring farm labour, or both, reduces renting in of land and increases renting out of land as employing labour on the farm becomes more expensive either in terms of actual wages or in terms of opportunity costs—which reduces the marginal productivity of land.

20.3. LAND SALES VERSUS RENTAL CONTRACTS

So far we have assumed that buying or selling land was not possible. This is the case in several transition countries, and in most transition countries for at least some period. For example, agricultural land sales were forbidden during the 1990s in Russia and most of the CIS countries. Hence, the hypotheses so far provide a sufficient framework for analysing rental markets in several transition countries. However, in other countries significant sales of agricultural land occurred in the past years. Moreover, land sales are likely to become a more important form of land exchange in the future. Therefore, it is important to consider how land rental activities are likely to be affected when land sales are possible.

Consider a situation where basic reforms have been implemented such that land rights are sufficiently well defined for land sales to take place and that prices of inputs and outputs have become much more stable. Yet, important transaction costs and imperfections remain in land, credit and labour markets. If a household wants to acquire more land for farming, the key factors in the household's decision are the trade-off between security of operation and investment and credit constraints. Buying land (compared to renting) ensures the household that it can capture the benefits of its investment in the land; that it is certain to have sufficient land at its disposal for future cultivation; and guarantees the location and quality of its land. Further, it allows better production decisions as multi-year production cycles (e.g., perennial crops) can be included in its production plans. Other benefits are that land can be used as collateral for future investments and as an asset in the household's investment portfolio. Moreover, land ownership may play an important role as hedge against inflation for the household, and, in the absence of insurance markets, as a basis for employment and food security. Finally, it may bring social status and political influence (Deininger and Feder, 2002; Platteau, 2000).

The main advantage of renting land over buying is that it requires less liquidity or access to credit. With credit market imperfections, this is a very important consideration in the household's choice. Credit constraints will reduce the demand for land by the household, as shown in the previous section, but will also make it more likely that additional land will be rented instead of bought by the household. Renting land may also be preferred when increases in the household's land demand is temporary, for example due to temporary fluctuations in some of the other inputs.

This trade-off between security of operation and liquidity for the farming household is not only important in transition countries. It also affects the decision between renting and buying of land in most western farms. For this reason, farms often combine owned and rented land. A minimum amount of owned land ensures security of operations while extending the farm by rented land prevents them from investing all their capital in land and to use it for working capital or other investment purposes (Sommer et al., 1995; Swinnen, 2002).

20.4. DATA

The data used in the empirical analysis are household level data collected in a 1998 rural household survey in Hungary and county-level data from the Hungarian Statistical office. The survey is a representative country-wide survey of rural households "with some farming activities". The dataset includes data on more than 1400 households.

Household ownership of land and household farming has grown strongly since the beginning of transition. Under the communist regime, only 10% of agricultural land was used by households, mostly as garden plots. Around 66% of land was used by collective farms, the rest by State farms. One-third of the land used by collective farms was formally owned by individual members of the collective farms, but they had very little effective rights (Mathijs and Mészáros, 1997). These rights were restored during the land reform in the early 1990s. In addition, the land reform process compensated former landowners, who had lost their land in the collectivisation process, through vouchers that could be used for purchasing land in the privatisation process. People eligible for compensation were farmers whose land was seized just after Second World War and farmers who were forced to sell their land to the collective farm for a low price in the 1970s and 1980s. About 2.5 million hectares of collective land and 0.2 million hectares of state-owned land were privatised through voucher-based auctions. The remaining land from the collective farms was allocated to their members (European Commission, 1998). The land cultivated by State farms was not subject to privatisation. The State Property Agency allocated the land as follows: 40% was used for compensation of private persons, 37% is used by companies which remain State property, 27% was leased (mainly to former State farms) and 6% was allocated to employees of State farms (Mathijs and Mészáros, 1997).

Legal restrictions constrained land ownership and sales. Land received through compensation or as a share from the collective farms could not be sold for 3 years after receipt. There is an upper limit of land ownership of 300 ha for individual ownership and legal persons and non-resident foreign citizens cannot own agricultural land in Hungary.

By 1998, households owned 84% of all agricultural land in Hungary, and used around 51% in household farms (or "individual" or "family" farms). The rest of the land is used by large-scale co-operative farms and farming corporations, who each use around a quarter of Hungarian land.

Household farms are small on average and use mostly their own land: on average they cultivate 5 ha and also own 5 ha (Table 20.1). They provide only a small part of total household income: on average less than 20% of household income comes from farming (Table 20.2). Many of the farms are run by older (55 years on average) and

Table 20.1: Regional differences in rental activities of Hungarian family farms.

	Share of households renting in ≤ 5%	**10% ≤ Share of households renting in**	**Total sample**
Land cultivated (ha)	2	8	5
Owned land (ha)	4	7	5
Average amount of land rented in (ha)	1	17	13
Average amount of land rented out (ha)	6	5	5
Share of households renting in	2	13	7
Share of households renting out	8	16	16
Land quality reported by households (source: survey data)	15	20	20
Land quality at county level (source: national statistics)	18	20	20
Ratio quality reported by households county-level quality	83	100	99
Share of agricultural land cultivated by corporate farm	79	53	65
Share of households member/partner of co-operatives/companies	9	23	19
Land price adjusted for quality	140	175	163

Source: Own calculations based on survey.

less-educated (9 years schooling on average) heads of households. Income from pensions makes up around 40% of total household income.

Three-quarters (76%) of the households in the sample do not participate in the rental market. Sixteen percent of households rent out land, while around 8% of the

Table 20.2: Household characteristics by rental activities.

	Households that rent			**All**
	Out	**Not**	**In**	
Number observations	238	1123	108	1469
Share of total sample (%)	16.2	76.4	7.4	100
Cultivated land area (ha)	2.9	4.2	23.3*	5.4
Own land area (ha)	6.7	4.7	9.7*	5.4
Land endowment (ha)	5.6*	2.8	5.4*	3.4
Land bought (ha)	1.1	1.9	4.3	2.0
Member co-operatives/partner companies (%)	47.9*	12.6	25.9*	19.3
Age household head (Years)	58.6*	54.6	50.7*	55.0
Education household head (Years)	9.0	9.2	10.4*	9.3
Adult household members	2.7	2.6	3.1*	2.7
Loan access (%)	2.5	3.2	11.1*	3.7
Machinery access (%)	40.8	43.4	69.4*	44.9
Machinery index	0.2*	0.3	1.3*	0.4
Share owning machinery (%)	19.3*	25.1	58.3*	26.6
Share income from wages (%)	31.9*	36.7	33.2	35.7
Share income from farming (%)	11.7*	15.9	39.9*	17.0
Share income from pensions (%)	49.7*	41.6	21.7*	41.5

*Test for equal means household categories is rejected at a 0.1 significance level.
Source: Own calculations based on survey.

households rent in land. Land is rented out to other households and to collective farms and farming companies. The average amount of land rented in is 15 ha, and that of land rented out is 5 ha.

There are important differences between households which rent in land and those who do not participate in the rental market or rent out land (Table 20.2). On average, the heads of households renting in land are significantly younger and slightly better educated. The households cultivate much more land and also own more land and machinery. More households in this group have access to machinery services and credit. Around 40% of their household income comes from their farming activities on average, compared to less than 16% in the other categories, and pensions accounts for around 20% of household income, significantly less than in other groups.

These average numbers already suggest important conclusions. In the next section, we use an econometric model to formally test which characteristics are important determinants of household participation in the rental market, and to see to what extent external factors, such as regional variations in land quality and in competition in the land market affect land rental activities.

20.5. THE EMPIRICAL MODEL

The empirical estimation includes two models. One model uses the amount of land rented out as dependent variable, the other model uses the amount of land rented in as dependent variable. Both empirical models have the following structure:

$$y_i = \alpha_0 + \mathbf{x}_i\boldsymbol{\beta} + \mathbf{l}_i\boldsymbol{\gamma} + \mathbf{r}_i\boldsymbol{\delta} + \varepsilon_i$$

where y_i represent the dependent variable, $\mathbf{x}_i$ is a vector of variables measuring household characteristics, $\mathbf{l}_i$ a vector of county-level indicator variables of land market characteristics, $\mathbf{r}_i$ a matrix of regional dummy variables to capture fixed effects not captured by the other explanatory variables, and ε_i refers to the error term. $\boldsymbol{\beta}$, $\boldsymbol{\gamma}$ and $\boldsymbol{\delta}$ are vectors of parameters related to, respectively, the household characteristics, the county level indicators of land market characteristics and to regional variables.

The first set of variables are AGEHH and EDUCHH, measuring the age and the education level of the household head. Both are expected to affect the marginal productivity of the land, and hence rental activities; although the impact may be non-linear (Rizov et al., 2001). Age may have a negative impact on renting in (and a positive impact on renting out) as younger household heads are expected to be more dynamic and entrepreneurial. On the other hand, experience will increase with age, which would lead to higher marginal productivity and hence more renting in of land. The trade-off between both effects may cause a non-linear effect with renting in first increasing with age and later declining.

Education, which is measured as years of schooling, is expected to have a positive impact on renting in because it increases the management capacity of the household. However, beyond a certain education level, household heads may get access to better off-farm opportunities, and hence reduce their labour allocation to farming and shift to off-farm employment. We test for non-linear effects of the age and education variables by including the squared terms of both variables.

Another factor which affects the marginal productivity of the land is the quality of the land. The information on the quality of the land plots used by the households provided by the household surveys had many missing observations. Therefore, we use based on data from the Hungarian statistical office, an indicator of the average land quality at the county level, QUALITY, which is measured in Gold Crown. Households working on better quality land are expected to rent in more land and rent out less.

We use two indicators for the land endowment of the household. LANDOWNED is the amount of land owned by the household when the survey was implemented in 1998. We expect this variable to be negatively related with the amount of land rented in, and positively with the amount of land rented out. Some of the households purchased part of this land during the previous years. To test whether there is a difference in whether the land was purchased in the past few years or whether the land was owned by the household before transition or given to them in the land-reform process, we split up the land owned by the household in its initial land endowment and land purchased by the household over the 1990–1997 period (LANDBOUGHT). As explained in Section 20.3, the household faces a security-liquidity trade-off in the decision whether to purchase or to rent in land. Therefore, we expect a positive relationship between LANDBOUGHT and the amount of land rented in.

The sales price of the land is also likely to affect the decision whether to buy or rent land. We do not have data at the household plot level on land prices. Therefore, we include as a proxy, the average land sales price at the county level, adjusted for quality, SALESPRICE.

To capture transaction costs in the land rental market, we include three variables. First, DOMFCO reflects the extent of domination of the land market by farming companies and co-operatives. Table 20.1 shows how in regions where only a very small share of the households (less than 5%) are renting in land farming corporations and co-operatives still cultivate on average 79% of the agricultural land. This is considerably larger than in regions where the percentage of households who are renting in land is larger than 10% (53%). Moreover, not only fewer households are renting in land, they rent in much smaller amounts of land (1 ha versus 17 ha). Further, not only are they renting less, they are using less fertile land. Comparing results from our survey with land quality indicators of the Hungarian statistical office indicates that in regions with domination of large co-operatives and companies, land used by households is of significant lower quality than the average land quality of the county (17% less on average), while in other regions we find no difference between the average quality of the land used by households and that of the county as a whole. All this suggests that households face important transaction costs in accessing land in regions dominated by large farming co-operatives and companies. To capture this, DOMFCO is a dummy variable which equals one if more than 85% of the agricultural land in a county is cultivated by farming co-operatives and companies.

The two other transaction costs indicators are MEMCOOP and PARTCOMP, which are dummy variables which equal one if a member of the household is a member of a co-operative farm or a partner in a farming company, respectively. These relationships are expected to reduce transaction costs either in renting land out to these large farms, or in accessing land for the household farm. They are expected to have a positive impact on access to land (renting in) and also on renting out land.

We included several proxy variables to capture household credit constraints and market imperfections. LOANACCESS is a dummy which is one if the household answered positively to the question "whether it had any outstanding loans", reflecting the households access to loans and credit. MACHACCESS is a dummy equalling one if the household had access to external machinery services. MACHINDEX is a weighted index of machinery (weights given according to the importance of investment) owned by the household. With significant credit market imperfections our theoretical model predicts that all these variables would be positively related to renting in land, and negatively to renting out.

The share of household income coming from wage employment, WAGESHARE, may capture both credit and labour market imperfections. Access to off-farm income may reduce household credit constraints and as such lead to more renting in of land. On the other hand, a larger share of income from wage employment reflects less labour market constraints and, for reasons explained in Section 20.2, would imply more renting out of land and less renting in.

The number of adult household members, ADULTS, measures the household labour supply and, in the presence of off-farm labour market constraints or moral hazard problems for on-farm labour use, will have a positive impact on renting in of land by the household.

Finally, three regional variables, EAST, WEST, and SOUTH, are included to capture additional fixed effects. The reference region is North-Central Hungary, which includes Budapest, the capital city.

20.6. RESULTS

Two models were estimated using single censored Tobit regression (Table 20.3). Renting in of land is affected by the age and education of the household head. Age has a non-linear impact on renting in of land. Renting increases with age up to the age of 45 years (Figure 20.1). The productivity gains from experience more than offset any reductions due to potential reductions in entrepreneurship or risk aversion over this age interval. After 45 years, the latter factors become more important than any further gains in experience and renting in of land falls with age, and strongly so after 55 years.

Education generally has a positive effect on age, especially when people have more than 8 years of education (Figure 20.2). Over the interval 3-20 years of education, which covers 98% of all observations, renting in declines slightly between 2 and 8 years of education. The significant effect occurs when household heads have more than 8 years of education. Then there is a strong positive effect on renting in.

We do not find non-linear effects of age and education on renting out of land. There is a strong positive effect of age on renting out: older people rent out their land instead of using it themselves. There is no effect of education on renting out.

We also find no significant effect of the average land quality in the county on household decisions to rent out or rent in land. This may imply that the data (county averages based on old indicators) do not sufficiently reflect household effects, or alternatively that other factors, such as land transaction costs and imperfections in labour and credit markets are

Table 20.3: Tobit regression with the amount of land rented as dependent variable.

	Land rented in		Land rented out	
AGEHH	+	*	−	
AGEHH2	−	**	+	
EDUCHH	−		−	
EDUCHH2	+	*	+	
QUALITY	−		+	
LANDOWNED	−		+	***
LANDOWNED2	+		−	***
LANDBOUGHT	+	***		
LANDBOUGHT2	−	*		
SALESPRICE	+	***	+	
DOMFCO	−	**	−	
MEMCOOP	+		+	***
PARTCOMP	+	***	+	***
LOANACCESS	+	**	−	
MACHACCESS	+	***	−	**
MACHINDEX	+	***	−	***
WAGESHARE	−	***	+	
ADULTS	+	***	+	
EAST	−	***	−	
WEST	−		+	**
SOUTH	−	***	+	
CONSTANT	−	***	−	**

*, **, *** indicate that the effect of a variable is statistically significant at the 1, 5 or 10% level.
Source: Own calculations based on survey.

much more important factors in determining household land rental decisions. The estimated coefficients on the landownership variables are all significant and indicate some interesting relationships between landownership and renting. The impact of the land variables is mostly non-linear, with significant coefficient estimates for several of the squared terms of the variables. However, over the relevant domain of the analysis (99% of the observations fall within the 0–75 ha rental area range) the first order effects dominate.

The coefficient of LANDOWNED in Table 20.3 confirms our hypotheses that households who own more land are more likely to rent out land and less likely to rent in land, ceteris paribus. However, we find a highly significant and positive relationship between buying of land in the previous years (LANDBOUGHT) and renting in of land in the current period. This suggests that households who want to extend their cultivated area do so by a combination of buying and renting land. While they may prefer buying land for property rights security reasons, faced with important liquidity and credit constraints, they opt for renting of additional land. More land bought in the previous periods is likely to both increase the credit constraints in the current period because of the investments in the land purchase, and to reduce the marginal benefits of security, which falls with more land purchased already. Both forces explain the positive effect of the LANDBOUGHT

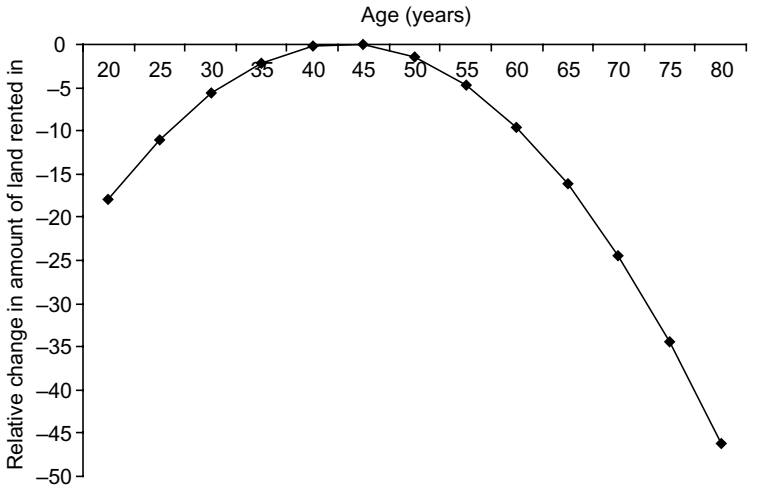

Figure 20.1: Change in land rented in by age of the household head.
Source: Predicted values based on regression model.

coefficient. Hence, with credit market constraints, both buying and renting in of land go together in the household's decision to increase its land use.

The coefficient of SALESPRICE is significantly positive. Land renting is more important in regions where the sales price of land, corrected for land quality, is higher. Where buying land is more expensive, ceteris paribus, households prefer renting land. Notice that this trade-off in the current period is not inconsistent with the complementary

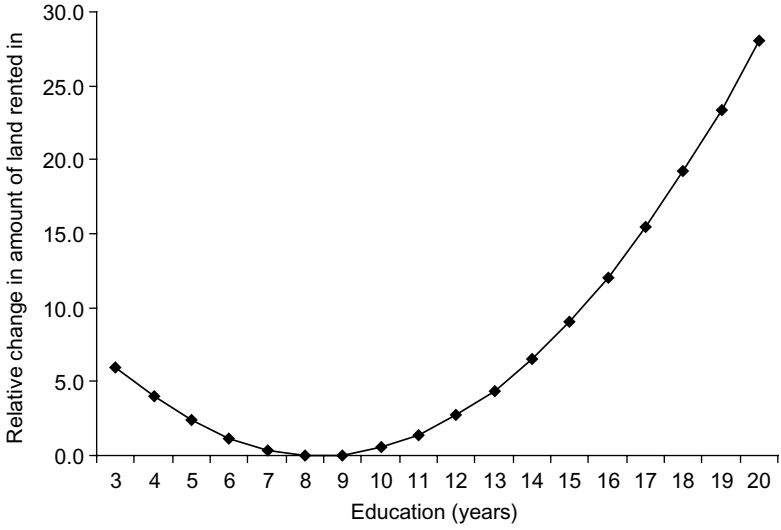

Figure 20.2: Change in land rented in by years of education of the household head.
Source: Predicted values based on regression model.

relationship between buying and renting of land in an intertemporal perspective, as explained above.

The estimation results are consistent with our hypotheses on the importance of transaction costs in the land market. DOMFCO, MEMCOOP and PARTCOMP all have a highly significant effect on renting in of land by households. The domination of large farm organisations reduces access to land by households through the rental market. When households are partners of farming companies or members of co-operatives it is easier for them to rent land. Hence, these large farm organisations continue to have an important impact on the development of farming by household through their impact on the land market, in particular in regions where they continue to use most of the land.

The estimated coefficients of LOANACCESS, MACHACCESS and MACHINDEX all confirm that credit market constraints play an important role in the land rental decisions. All the variables have a very significant positive effect on renting in of land, and most are significantly negatively related to renting out of land.

The share of household income coming from wage employment (WAGESHARE) has a highly significant negative effect on renting in of land. This result suggests that in rural Hungary labour market constraints may be more important than credit market constraints in the farm decision-making process on land allocation. When households get access to additional financial sources through off-farm employment, this, presumably positive effect on renting in of land, is more than offset by the household's decision to allocate less labour on the farm and, as a consequence, to rent in less land.

The importance of labour market imperfections is also confirmed by the highly significant effect of the ADULTS variable, confirming that households with more adult members rent in significantly more land.

Finally, the coefficients of the regional variables show that renting in of land is considerably less in Eastern and Southern Hungary, and renting out is considerably higher in Western Hungary. Western Hungary borders Austria and considerably renting in this region is going on by Austrian farmers, sometimes in collaboration with local farms. At the same time, the closeness of this region to the Austrian border and of the North-Central region to the capital suggests that renting in of land is more active in regions in geographical proximity to places where high incomes are concentrated.

20.7. CONCLUSIONS

This study derives several theoretical hypotheses on what determines the participation of household farms in land markets in transition countries. Households' management ability and land endowment, land quality and prices, transaction costs in the land market, credit market imperfections and constraints on off-farm employment were identified as important factors affecting land rental activities of rural households. Our empirical analysis, using data from a representative survey of small Hungarian household farms, provides empirical support for several of these hypotheses. More specifically, we draw the following conclusions.

First, we find that land rental markets allow households with higher farm management capacities to access more land. Better education of the household head is positively

correlated with renting in of land. Ceteris paribus, middle-aged farmers, who combine experience with sufficient entrepreneurship, are renting in most land. When households grow older, they rent in less and rent out more. As such rental markets play an important role in re-allocating land between households with different needs and capacities in managing farms.

Second, a similar conclusion follows from the results on the impact of land endowment and ownership on land renting. Households use the rental market to rent in more land if their land endowment is small compared to their optimal farm size, and to rent out land in the other case. In combination, the first and second conclusion support the findings of Deininger and Songqing (2003) on land markets in rural Vietnam that rental markets allow "poor (in terms of land endowment) but able" producers to access land and extend their farm.

Third, households combine buying and renting of land to adjust their land holding to the optimal farm size. Buying of land provides them with a number of advantages over renting of land, such as security of operation and improved investment incentives. However, liquidity constraints in the presence of important credit market imperfections restrict buying as a strategy to enlarge the farm. Renting in of land is used to complement buying of land for enlarging the farm size. We find strong evidence that households who buy more land also rent more land. This conclusion is consistent with observations in Western Europe and the United States where many private farms also combine renting and buying of land to extend their farm size (Sommer et al., 1995; Swinnen, 2002).

Fourth, even in transition countries where the land reform is largely implemented and land titles distributed, important transaction costs may remain and can hinder efficient land transactions. In some regions of Hungary where large co-operative farms and farming companies use the vast majority of the land, the efficiency of the land market and positive equity effects are constrained by imperfect competition and unequal access to information and uneven enforcement of land rights and exchange. Moreover, in general, households with connections to these large organizations, e.g., because household members are partners or members in them, have privileged access to land.

Fifth, we find that imperfections in the rural credit and rural labour markets play an important role in the functioning of the land market. Access to credit is strongly related to participation in the rental market: those households who can access loans or own machinery are renting in more land and renting out less. Credit constraints will also influence the land buying versus renting trade-off that households make.

Our analysis provides some evidence that constrained access to off-farm employment may have an even larger impact than credit imperfections on the land rental market. Access to off-farm income has a strong negative effect on renting in of land, suggesting that labour market constraints are inducing many households to hold on to land, or to rent in more land, compared to a situation when more alternative employment opportunities would be available.

In summary, these findings imply that land rental markets are playing an important role in re-allocating land in transition economies to those most in need, i.e., households with relatively better farm management capacities and relatively less endowed with land. Land rental markets will continue to play an important role even when the importance of land sales transactions grow, and should not be seen as a temporary institution that will

disappear. Therefore, it is important to focus policy attention on a set of issues that need to be addressed in order to allow the rental markets to contribute to further efficiency improvements and poverty reduction in rural areas. These attention areas are, first, imperfect competition in the land market and transaction costs caused by the presence of large farm operators, and, second, constraints in other rural factor markets, in particular markets for credit and labour.

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PART VII

New institutions in agro-environmental policies and public good delivery

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 21

Borderlines for a Common Agricultural Policy of Multifunctional Agriculture

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Abstract

Externalities and public goods are mainly associated with high transaction costs. In a neo-classic economics framework, many problems relating to environmental goods and services and other amenities of traditional European farming stem from market failures. These failures often depend on positive transaction costs. A better analysis of the fundamental characteristics of the environmental goods and services produced by agriculture allows to better understand the essential meaning of transaction costs. The farmer's ability to supply these amenities depends on future governance structures. Harmonisation between the public demand for these amenities and their provision by farmers require governmental policies aimed at facilitating the excludability of such goods and transforming the jointness in consumption into tradable characteristics of consumption goods, such as food and fibre.

21.1. INTRODUCTION

With the mid-term review, the common agricultural policy (CAP) has been once again reformed. This reform is claimed to make European agriculture more competitive, to increase the flexibility of European farmers while simultaneously guaranteeing the so-called European model of farming. Characteristic of this European model is its ambitiousness in relation to the environment, animal welfare and the cultural values of European farming, i.e., its focus on the multifunctionality of farming. OECD has recently done some major work on developing a theoretical framework within which multi-functionality can be understood (OECD, 2000, 2001, 2002) and the potential trade distortion effect of agricultural support schemes for multifunctionality analysed.

Many of the aspects included in the concept of multifunctionality are described as so-called public goods and/or external effects stemming from various situations of jointness within agricultural production. Along with the production of food and fibre, the European agriculture is said to produce many valuable amenities. The political ambition to include an increasing number of objectives, however, does not only make policy more complex and the analysis to measure whether each goal is reached more difficult, but also illustrates some apparent shortcomings in the approach towards fundamental aspects relating to the new areas addressed.

The possibility to reach an "optimal" policy will be restricted with an increased number of objectives. As the number of objectives within the CAP increases, the number of areas where different measures might conflict increases too, as well as the number of potential shortcomings. Since compared to the established CAP, the general knowledge concerning the new areas of political interest is relatively low, the efforts to introduce a homogeneous political agenda is even more troublesome.

In a neo-classical framework, the concepts of externalities and public goods have a number of clear characteristics although to a great extent these features are defined in relation to a logic theoretical model, i.e., the traditional neo-classical textbook presentation. When this model is relaxed following Williamson (1985), to include bounded rationality, uncertainty and positive transaction costs, many of the characteristics of so-called externalities and public goods drastically change.

Confronted with real world limitations, as described in the pure economic model, many of the choices become unreachable. The fact that this is often named a "limitation", and that many economic concepts are defined in relation to the theoretical first best solution, illustrates how strong the traditional economic model influences our mindsets and economic vocabulary. Within a new institutional economics framework, alternative concepts are used. Many of the features of the European model of multifunctional agriculture may be understood differently and in a broader setting by using a new institutional analysis framework.

The objective of this contribution is, therefore, to define and analyse aspects of multifunctional agriculture in a new institutional economics setting. To evaluate the scope to establish new property rights schemes and to develop new private, governmental or mixed control strategies, the characteristics of agricultural production, agricultural commodities and agricultural policy are investigated in order to recognise the conditions where public, private or mixed governance structures will be suitable in order to establish schemes and markets in which consumer preferences can be signalled to producers. Given the poor knowledge in relation to many of the subjects mentioned, the scope for a broader application of market transactions for what are sometimes referred to as non-excludable and non-rival goods is investigated.

The structure is as follows: in the first part some of the amenities of a multifunctional agriculture are analysed from a transaction cost economics point of view. The second part focuses on the transaction costs in the CAP. This is followed by an analysis of the different governance structures that exist in the provision of agricultural amenities. The paper ends with conclusions and suggestions.

21.2. TRANSACTION COSTS IN RELATION TO PUBLIC GOODS AND EXTERNALITIES

Externality and public goods are often described in terms of the properties of non-excludability and non-rivalry in consumption (Randall, 1987). Different levels of excludability reflect differences in enforcement costs and costs to protect property rights. The so-called market failure of non-excludability is, in a transaction cost perspective, merely an illustration of the fact that the marginal costs to exclude potential consumers from the good are higher than the benefits that can be derived from doing so. Technology, consumer preferences and property rights may change, however, and either reduce the transaction costs or increase the value of the amenities so that exclusion may pay. Analysis of the transaction costs related to measuring the quality and attributes of amenities, the establishment and enforcement of contracts are therefore of high interest in designing suitable governance structures for many of the aspects included in the European model of farming.

The non-rival aspect is relevant in relation to both consumption and production (Slangen and Polman, 2002). Goods may be non-rival in production if they are jointly produced. This is, for example, the case if one amenity is provided as the result of a production of a traditional commodity and the use of inputs of the commodity does not conflict with the production of the amenity, or vice versa. Non-rivalry in consumption occurs if simultaneously the consumption of one individual does not reduce the consumption possibility of other individuals. If goods are non-rival it will be expensive to establish a market for them, i.e., it will not be possible to enforce payments from consumers who are unwilling to pay, once the good is provided. The cost of setting up a joint contract where every consumer contributes according to his/her marginal willingness to pay will in such a case be extremely costly.

By combining the degree of excludability and rivalry in consumption, a two-dimensional continuum is obtained that describes goods as "pure private goods" or "pure public goods" or something in between. An important subgroup are the club goods; these are excludable goods which are to some extent non-rival. A simplification of this continuum is illustrated below (Figure 21.1).

Using a transaction cost perspective rather than a traditional economic framework changes to a certain extent also the interpretation of externalities. These can be described as phenomena for which in a transaction between two parties it does not pay for a third to interfere, even if the transaction increases its costs (benefits). In other words, under existing property rights the marginal transaction costs of the third party are higher than the marginal benefits. Unclear property rights leads to high transaction costs, or, as described by Dahlman (1979: 142) in his seminal article on externalities: "Ultimately, the relevance of externalities must lie in the fact that they indicate the presence of some transaction costs. If there were no costs of transacting, then the potential Pareto improvement could be realized by costless bargaining between self-interested economic agents".

Whether certain goods or amenities are described as examples of market failures, i.e., public goods or externalities, or explained by their high transaction costs is of course partly a semantic question and will not change the real nature of the phenomenon.

Excludability / Rivalry	Non-excludable (very high costs to exclude)	Excludable at reasonable cost	Excludable at very low cost
Non-rival	Pure Public Goods		
Partly rival (Rival over certain levels)		(Potential) Club Goods	Club Goods
Rival	Open Access Resources		Pure Private Goods

Figure 21.1: Categorisation of goods or amenities.

However, as discussed by Randall (1999), the interpretation of what the society can do in relation to their provision may well change. As long as we make use of the traditional, neo-classic planning paradigm we might end up in suggestions of political interference in terms of taxes, social subsidies or regulations in order to "repair the market failure", i.e., the traditional Pigouvian solutions. The work within the OECD is an obvious illustration of this. Their guidelines regarding how to treat "non-commodities" (OECD, 2002: 62–64) demonstrate how strong the "ideal textbook market" influences their treatment of the subject.

A deeper and broader description and analysis, making use of the new institutional economics framework and transaction costs, will add nuances to various aspects of the governance of the "European model of agricultural production". But before entering into the discussion of potential governance structures, one other aspect of the new political targets needs to be mentioned.

A fundamental problem within many aspects of the multifunctinality of agriculture is the lack of knowledge. The whole idea of multifunctionality is new, at least in comparison to many other features of agricultural policy. For decades, economists and bureaucrats have analysed and worked with (the shortcomings of) production regulations, structural change and farm income, while multifunctionality has hardly had a usable analytical framework yet. During recent years, some knowledge has been built up concerning the jointness in production and the effect of different political measures on it (Abler, 2001; OECD, 2001; Vatn, 2001; Vatn et al., 2002). Our knowledge about the costs of production and trade of many of the amenities involved remains, however, limited and our knowledge about the demand side even poorer. Even if economists have put huge efforts into exploring different ways of measuring non-market amenities, we still seem to have a poor knowledge in this area, at least when it comes to the possibilities of making use of such analysis in actual policy implementation (OECD, 2000; Naverud, 2000; Santos, 2000).

It means that the increased ambition under the CAP (and agricultural policies elsewhere within the OECD) opens an area where our knowledge of production technology and costs is weak and our understanding of demand or social values even weaker. At the same time, the phenomenon of interest is still conceptually unclear and in many respects ill posed for the traditional toolbox of economic regulation.

21.3. TRANSACTION COSTS AND THE CAP

Before starting a discussion of useful political or market-driven governance structures, a few general notes on the CAP will be given.

21.3.1. Politically sunk costs and inertia

Just as any other policy, the CAP evolves over time and the institutional changes related to it are strongly linked to its different actors. The institutional structure of the CAP can be described in many ways. Here we will briefly mention aspects related to transaction costs and institutional change. North (1990) has developed a theory of institutional change in which transaction costs are fundamental. Institutions, understood as rules of the game, may be formal (i.e., legislation and written rules) or informal (i.e., conventions and working habits) and operate on at least three different levels: governmental, organisational and individual (see Fahlbeck (1996) for an elaboration of this theme). Institutions at all levels are inter-linked and the actions at one level will lead to changes at others over time. Once a formal legislation is put into operation, the stakeholders within organisations and companies will have to adapt to the new rules. The formal and informal institutions that will be the outcome of the changed legislation may in turn lead to new legislation itself. One of the driving forces in this process is the effort for actors to reduce transaction costs. North States that actors tend to be driven by self-interest and that by doing so they may become more efficient in adapting to the incentive structures given within the overall institutional setting. This process may lead to a higher degree of economic development for the whole society or sector, but it may as well lead to better conditions for those in positions of power at the expense of the society or sector.

Dixit (1996) develops a transaction cost framework for the analysis of policies. He claims that the traditional public choice explanations of certain policy areas are useful but need to be complemented by other aspects. One of Dixit's points is that problems with time and credibility have to be added to the public choice/interest group explanation.

It is clear that a small group of actors that gains substantially from a certain policy will have strong incentives to lobby for continuous and even increased support while a large majority of the population has little to gain and will have problems to form a pressure group in opposition to the policy. As illustrated by Dixit's example of the sugar policy in the US, it would still be possible in such a case to pay a lump sum transfer to the producers, or any other interest group that would suffer from a specific change in policy. Such a lump sum should cover the sunk costs created by the political change and the alteration of occupation. However, such lump sums are often problematic to realise because of budget constraints. The alternative is to offer a transfer stream that could be paid out annually

over several years. Such an offer will be uncertain, however, as it builds on the credibility of the politician(s) and maintained support from the identified voter group. The interest group cannot be sure that the politician(s) will stick to their promise and this calls for strategic behaviour. In such cases, it could be better to stay in the old situation, as a high degree of fixed assets gives a strong bargaining position. Dixit suggests that this is one important reason for the slow political change, i.e., the inertia within many areas.

There are of course many other theories and more developed explanations as to why the CAP appears as it does, but the argument made by Dixit seems useful in relation to the CAP. Once the CAP was introduced, farmers become an interest group for whom it paid to lobby for sustained and increased support. Over time new member States and problems with overproduction lead to a significant increase in bureacracy, regulations and complexity. The more complex and regulated the policy became, the more specific assets could be identified, not least among groups other than farmers. Following the ideas of Johnson (1991), it is apparent that even when the number of farmers has decreased, the complexity of the policies has resulted in an ever-increasing number of agents, bureaucrats, politicians and lobbyists with specific skills that have low value in alternative uses and who thus have interest in the maintenance of the actual system. For every reform, for every new regulation, support scheme, national exception and so on a new group of stakeholders appears. The more complex and specific the scheme is, the higher is the degree of asset specificity on the side of stakeholders. An example is that there are now national experts on the tobacco scheme in all member States, even if a majority of the States have almost no tobacco production. We have also witnessed a strong increase in Sweden of experts in various environmental and cultural aspects of farming. This helps to shape the policy into a direction that might be favourable for the EU and its member States, but following North it might well turn into a system that becomes increasingly efficient in protecting the interests of its internal actors at the expense of others. One other potential lock-in effect comes from the fact that the majority of the policy preparatory analysis work is done by those experts that benefit the most from the existing system because they have the required knowledge.

The combined interests of various groups within the agrarian complex, a progressively more specific set of assets, a multifaceted situation of politicians coming from an increasing number of member States, uncoordinated national elections and political majorities that limit long-term commitments indicate the difficulty to achieve substantial changes in policy.

21.3.2. Regulation versus incentives

Since the problems of overproduction started, the EU has leaned heavily on political regulations. A common market needs common rules, after all, but as the CAP is implemented by each member State, there is a high need to monitor and control the national use of the commonly provided money. Regulations and control are essential under the CAP. The same holds for relatively new policy areas under the CAP such as the environmental schemes. Support is conditional on positive environmental effects relatively easy to control and can cover increased costs or reduced profits of farmers, in relation to changed production technology.

The preference for such policy is another illustration of what Randall (1999) classifies as a traditional neo-classical, social planning interpretation of society. Regulators are supposed to be able to collect relevant data in order to set a rule structure correcting the shortcomings of the existing situation. Within this tradition, the collected knowledge among experts and bureaucrats becomes highly important. By collecting information at a central level a top-down implementation of regulations is seen as the solution to various problems, with the EU-commission as head of the CAP-hierarchy.

An alternative to regulation is to make use of incentives. Given the fact that we have limited and asymmetric information, economic incentives make an alternative to regulations. Incentives might be used in relation to many of the aspects of a multi-functional agriculture. Instead of starting at the cost side of various amenities or negative environmental effects, it is possible to focus on benefits and their value to society. Compared to the regulation strategy, incentive payments give lower possibilities for homogeneously operated and easily compared control, at least if the implementation and its principals are situated at regional or national level rather than that of the EU commission. This will be the case if, e.g., a certain incentive scheme leads to a diversity in provision or completely new technologies, significantly changed levels of the amenities in question or other unforeseen effects. The use of incentive schemes builds upon the idea that the farmers have useful knowledge that the experts and bureaucrats do not, i.e., that farmers have an information advantage in relation to the provision of the amenities in question.

As noted above our knowledge in relation to many of the aspects related to the multifunctional agriculture is rather poor. One of the most important conditions for any new policy or governance structure may therefore be to lay the foundation of knowledge creation. Loasby (1999) discusses the importance of this. A natural point of departure is the article of Hayek (1945) about the use of knowledge in society. In his viewpoint, the importance of the price mechanism and the market process cannot be overestimated. The role of the price is to bring about and concentrate all information the individual actors have. Given the general problem with incomplete information, bounded rationality and uncertainty it is logical to take a position similar to that of Dixit (1996) or Loasby (1999) for positive analysis of political and economic systems. Combined with North's theories of institutional change, such systems can be viewed as structures under continuing evolution, where changes come about very slowly and where we can never get close to the theoretical concept of a first best optimum. One novel rule for economists might be to do comparative institutional analyses and to suggest small changes that in one way or another improve different parts of the system.

21.4. DIFFERENT GOVERNANCE STRUCTURES IN RELATION TO MULTIFUNCTIONALITY

The reference point within comparative institutional analyses is not the first best solution or the social optimum, as in a neo-classical framework. Instead, a comparison is performed between a limited number of existing or potential governance structures. The

purpose of such analysis is not to find the optimal institutional setting, but rather to examine the strengths and weaknesses of one system in relation to another. In other words, it is a limited exercise compared to an optimisation objective. Yet it has its merits, especially in relation to the slow progress that actually takes place within the CAP.

The increased ambitions makes the CAP more complex, more far reaching and covering areas that might be of conflicting interest. The new policy areas expand into topics where the degrees of uncertainty are high and knowledge low. These new areas create also potentially new interest groups that hope to benefit from it in the future. We do not consider all implications of the recent reform with all its national options, but only focus on those parts that relate to the multifunctionality of agriculture. Multifunctionality is hereby restricted to environmental functions and the provision of amenities by agriculture and does not include aspects such as food security or rural employment (just like Challen (2001)).

21.5. SOME NOTES ON THE EXISTING SCHEMES

Within the CAP, a broad range of schemes is directed towards multifunctionality, environmental programmes especially. Schemes vary a lot between member States. Many of them, however, are examples of governmentally decided contracts that a farmer may or may not accept. If the farmer accepts, he is obliged to follow the contract. The fulfilment of the contract is controlled by the governments who are in turn controlled by the EU-commission. Such centralised contracts may be a low-cost provision of standards and a form of economising on transaction costs and the fact that the enforcement is centralised might be potentially efficient.

Some studies have recently been made analysing the costs of environmental schemes within the EU. An interesting overview is given in Van Huylenbroeck and Whitby (1999); other examples are Kumm and Drake (1998), Eklund (1999), Falconer and Whitby (1999), Falconer (2000) and Vatn et al. (2002). Although these studies vary in their focus, they all include measures of the transaction costs in relation to environmental schemes. Transaction costs at different administration levels are in many cases considerable, ranging from very low levels of about 1% up to considerable shares of well over 25% in certain schemes. Kumm and Drake (1998) measure transaction costs of the farmers and in the three programmes investigated these costs are calculated to levels slightly above 10% of the total payments. Although, none of these studies cover all the transaction costs, they all indicate that they are in most cases substantial in relation to the payments made by the government (the EU). In some cases, it is questionable whether the schemes represent the lowest possible cost of governance for the goods or amenities provided.

Fahlbeck (1995), Gatto and Merlo (1999), Challen (2001), Hagedorn et al. (2002) and Lippert (2002) all present frameworks that can be useful in analysing the appropriate governance structures for the provision of agricultural amenities. Within a transaction cost framework finding a most suitable governance structure is defined as looking for an appropriate way to organise the production and transactions of goods and amenities related to multifunctionality. A detailed analysis must therefore examine both technology and transaction determinants. Apart from the transaction directing aspects such as asset

specificity, frequency in trade, uncertainty and (quality) measurement problems also property rights are of importance.

Both national authorities and the EU can use the legal and policing system in order to lower some of the transaction costs involved. One possibility for the State is to change property rights, or in the words of Randall: "When exclusion is feasible, the specification of exclusive property rights is a political decision. But when the establishment of exclusive, non-attenuated property rights is infeasible, the range of political choices is more limited" (Randall, 1987: 167). Such changes may move an amenity to the right of Figure 21.1. In such a case, it becomes possible for individual producers and consumers to realise benefits from trade, assisted by a reduction of the free rider problem.

Public authorities can also involve other stakeholders in the implementation of an institutional solution. Slangen and Polman (2002) discuss in this respect the role of Dutch environmental co-operatives. Lippert (2002) discusses alternative modes where some kind of "nature agent" may be active. Fahlbeck (1995) and Challen (2001) and especially Hodge (2000) give examples of the private provision of various parts of so-called public goods. In the UK (and elsewhere), there exist a number of organisations and/or clubs that are in one way or another involved in the protection or provision of landscape amenities and other aspects of the multifunctional agriculture, such as the protection of endangered birds, the provision of footpaths or the protection of special historical or cultural surroundings.

Another interesting case is the labelled commodities signalling a specific production technology or origin. Such labels can cover organic production, other forms of environmental practices, animal friendly breeding systems or regional produce. Many of these examples illustrate the fact than a number of consumers want to pay for aspects that within a traditional framework, are seen as non-rival or non-excludable.

Challen (2001) mentions four principal sources of transaction costs in relation to the goods or services (non-commodities) of interest:

- imperfect knowledge of production processes and technologies, and imperfect communication of demand;
- spatial characteristics of non-commodity outputs;
- credence good characteristics of non-commodity output; and
- public good characteristics of non-commodity output.

Based on these principles Challen (2001) identifies four "general mechanisms for the private provision of production of non-commodities":

- discrete purchase of non-commodity agricultural output by consumers acting individually;
- discrete purchase of non-commodity agricultural output by consumers acting collectively;
- joint purchase on non-commodity agricultural outputs with commodity outputs by consumers acting individually; and
- joint purchase on non-commodity agricultural outputs with commodity outputs by consumers acting collectively.

The principle sources of transaction costs identified by Challen can be described as well by the use of other terms but the existence of substantial transaction costs in relation to many of the multifunctional aspects of agriculture must not necessarily hinder the private provision to take place. One way to reduce and partly overcome transaction costs seems to be the introduction of some kind of non-profit intermediate actor, such as the UK Royal Society for the protection of birds, a local organisation for a district, an environmental co-operative or an organic labelling organisation as the Swedish KRAV. Such an intermediary seems to establish the credibility that enables many consumers to overcome some of the potentially high transaction costs, in relation to quality measurement, enforcement or other aspects.

All the examples illustrate that it is possible to move a phenomenon or a good away from the upper left in Figure 21.1. So what might look like pure public goods asking for Pigouvian taxes or subsidies in a traditional neo-classical framework turns out to be a number of incongruent examples of a highly complex nature. The related transaction costs may vary a lot. A governance structure for biodiversity in alpine regions is something very different from environmentally friendly wheat production or the protection of a traditional farming in the Baltic archipelago.

Although an increasing number of studies try to measure transaction costs of such management schemes, few compare these transaction costs with those of private provision. Likewise, there is a lack of comparative institutional analysing other aspects influencing the choice between private and governmental governance of such provision schemes.

To find the most suitable governance structure for each aspect of multifunctionality is an intricate analysis, which requires a comparison of transaction costs. It is unlikely that provision by public authorities comes out as the most favourable governance structure in all cases. The strong preference for centrally planned payment schemes covering the increased costs and lost earnings from changes in production technology thus appears to be a shortcoming of the existing policy.

21.6. CONCLUSIONS

One of the most striking observations in relation to the multifunctionality of agriculture is our low level of knowledge. We know little about the production costs of various non-traditional technologies, even less about the levels of transaction costs in different governance structures able to provide such goods and services and almost nothing about the actual values that individuals attach to these goods.

Given this it seems most urgent to increase the level of information available. Within the EU, each member State is obliged to investigate the efficiency as well as the environmental effects of existing programs. One of the ideas behind this obligation is that the evaluations would enable a learning process for the EU-commission and the member States. Yet very little of this has been seen. The existing institutional structure does not seem to be of much help in this area.

Since it is so hard to measure the value of non-marketed goods and services it could be in the interest of planners, producers and consumers to increase the efforts of establishing

markets, i.e., to reduce transaction costs. A much stronger focus on the possibilities of the market to provide the lacking knowledge seems most desirable because it is only when people can actually trade the amenities desired that their true marginal willingness to pay will be revealed.

Another argument for market provision comes from the fact that political bureaucracy, farmers and others develop knowledge and competence attributes specific for existing policy and will try to protect these sunk assets against policy changes. Market provision might therefore have to compete with transaction specific investments from such interest groups making new markets even less likely.

Of course governmental provision will continue to play a role in the future. Adding a transaction cost perspective certainly helps in identifying these areas. The examples given by Hodge (2000) and Challen (2001) reveal that the role of the market is heavily underestimated in the field of environmental provision. In some cases, producers need to take collective action in order to provide some services. In other cases, collective actions of consumers may be required. The scope for non-profit and profit-oriented intermediaries seems to be largely unexploited. Governmental funds could be used to create such intermediaries as non-governmental organisations can also play the role of mediator.

Governance structures for a multifunctional agriculture definitely need to take into account the possibilities of non-profit organisations in establishing commodity labels and other forms of private provision of public goods and externalities. The borderline given by a traditional economic analysis, i.e., the non-rivalry and/or the non-excludability of existing services and commodities is not something that is given once and for all. The EU, the member States or individual producers may implement different governance options in order to reduce the transaction costs of the provision of outputs of multifunctional agriculture.

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CHAPTER 22

The Role of Agri-Environmental Measures in the Definition of Property Rights

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Abstract

In the last decade, new forms of public intervention regulating the environmental implications of agriculture have been developed. The introduction in the Common Agricultural Policy of environmental standards and agri-environmental payments has shaped a new framework of rules and incentives conditioning agricultural activity. Agri-environmental policies—as any other environmental policy—require a previous allocation of property rights. From the operational point of view, the definition of such thresholds is possible either explicitly by setting environmental standards, or implicitly by remuneration of activities. The role of agri-environmental policies in both the definition and the characterisation of property rights is analysed from theoretical point of view based on empirical evidence of environmental policies applied in Spain.

22.1. INTRODUCTION

Historically, the State has treated the agricultural sector very differently from other economic sectors. Over time, this protective feature of public intervention has resulted in a kind of "social contract," in which society has accepted and institutionalized "the right of farmers to be protected from income instability, particularly downward instability" (Batie, 1990: 566). Farmers have translated this institutional and political coverage into property rights. A property right is, according to Bromley (1991: 2), "a claim to a benefit stream that the State will agree to protect through the assignment of duty to others who may covet, or somehow interfere with, the benefit stream". It means that these others have not only the responsibility of respecting the boundaries of property rights, but also the right of demanding socially acceptable uses (Bromley, 2000: 88).

The implicit content of this social contract, however, goes beyond income protection through either price support or direct payments. Indeed, the implicit terms of this contract together with the historical strength of private land property in industrialised societies, have introduced an institutional structure that recognises the inalienable right of farmers to freely decide how to use the available resources (Bromley and Hodge, 1990). And these resources were not restricted to land—whose property is explicitly owned—but also involved other resources whose property was not clearly specified (air and subsoil). Thus the right of farmers to obtain the expected production of food and fibres was free from restrictions related to the potential impacts on the environment. In other words, it was an enlarged "social contract".

Nevertheless, property rights—as any other institutional structure—are in a changing world not absolute and far from static. In fact, the evolution of institutions can be regarded as an interesting indicator of the evolutionary perception of the relationship between society and nature. According to Hodge (2001: 99): "these institutional arrangements have evolved in response to the demands made for the potential outputs and to the relative power exercised by different interest groups."

What citizens are considering as "normal" and "fair" has started to change as new social demands have emerged (see Bromley and Hodge (1990) for an explanation on the role of normality and fairness in the modification of institutions regulating the relationship between agriculture and environment). This has resulted in a growing public intervention over the linkage between agriculture and nature. And this intervention has led to a debate between two ideological positions:

(a) The first position is that public intervention means the first definition of property rights. From this point of view, farmers were using the environment in a way for which they had no rights. Property rights had not been granted because of the lack of divergences between the objectives of farmers and society. So, what the State does is simply to recover those rights due to the emergence of divergences in objectives. Once these reference levels are defined (Scheele, 1999)—also implying a partial cession to farmers—they have to be respected. Hence, the State/society is protected by an "inalienability rule" (Bromley, 1991).

(b) The second opinion is that agricultural practices have been traditionally acknowledged as a part of farmers' rights to use the environment in the best way possible to reach their objectives. Unlike the first case, this approach does recognise a previous property right structure of farmers, consolidated by way of a social tacit legitimacy. Therefore public intervention means a "redefinition" of property rights, implying an expropriation that gives right to an indemnity. Hence the State can modify the content of previous farmers' property rights, but may simultaneously compensate them, in a kind of recognition of the prior appropriation institution (an institution regulating an important part of water management in the American West) "on a first come, first served basis". This argument coincides with the position defended by Buchanan and Stubblebine (1962). In other words, the recognition of the ex ante political and institutional status quo—opposite to the environmental status quo (Bromley, 1996: 6)—becomes from this viewpoint a part of the social contract, which both legitimates and consolidates the position

of farmers towards the environment. Hence, farmers would be protected by a "liability rule" (Bromley, 1991).

The European Common Agricultural Policy (CAP) is a nice example of how this conceptual framework has evolved in the European Union. On the one hand, the CAP has been, from its conception in 1957 a clear example of "social contract" (Moyano and Paniagua, 1998: 129). Increasingly, it has evolved toward a model of agricultural support which has become a "given" institutional context in which farmers carry out their activity. In this sense, farmers have enlarged this social contract to environmental aspects (Paniagua, 2001: 84). However, on the other hand, this context is not fixed. Therefore, the CAP Reform of 1992, with its change from price support to direct income support, signifies a time bomb for the pillars of the European format of the social contract (Arnalte, 2000). The reform made visible for society both the inequalities and the inefficiencies of the public intervention model in agriculture. This crisis of legitimacy has also spurred on social concern about the environmental implications of farming activities (Hodge, 2001: 102).

These changes have pushed decision-makers (politicians) to look for new ways to respond to new social demands and environmental challenges. In the early nineties new policy tools emerged to regulate the linkage between agriculture and the environment. For the first time ever, a policy in Europe focused clearly on the environmental impacts of agriculture. Inexplicitly, it means an attempt to define property rights.

This chapter presents a theoretical analysis of the role developed by agri-environmental schemes in both the definition and the characterisation of property rights. This theoretical approach is based on empirical evidence from an analysis of agri-environmental policies applied in Spain within the CAP framework.

The theoretical argument is developed in Section 22.2 with a brief discussion on the concept of externality, and its link with the question of property rights; a question which deals with the political treatment of the problem. In Section 22.3, the analysis focuses on the two different ways in which agri-environmental measures could define and affect property rights. Finally in Section 22.4, the fact that both approaches entail differences in the characterisation of property rights is discussed. During the theoretical discourse, the Spanish case is introduced in order to illustrate how the political process fits the theory.

22.2. FROM THE THEORETICAL TO THE POLITICAL PROBLEM

In economic literature, externality is a concept that received a treatment closely linked to the definition of property rights. Nevertheless, neither the definition of externality nor its classification as positive or negative depends on the property right structure. Indeed, externalities arise when a situation fulfils two conditions: (i) the action of an agent A has effects on the utility (a broader concept than benefit because it also includes effects on consumption activities) of another agent B, and (ii) there is no compensation between the parties—that is, there is no internalisation.

Therefore, in order to classify an externality as positive or negative, it is only necessary to observe the sign of the variation of utility. If A's action implies a reduction of B's

utility, a negative externality is found. If, on the contrary, the effect produces a rise of B's utility, the externality will be conceived as positive. Thus far the concept neither involves property rights, nor are property rights necessary to quantify either the gain or the loss of utility due to changes in A's activity.

The role of property rights only appears at the moment one is searching for a solution to this problem produced by the failure of the market. This is the sense pointed out by Ronald Coase in its well-known paper "The Problem of Social Cost" (Coase, 1960) when he redefines the solution to the problem of externalities as market failure. The great contribution of his approach is based on the symmetric treatment received by the economic agents who both produce and experience negative externalities (but this treatment is also valid for positive externalities). The agent inducing an external cost (loss of utility) over others by its activity is penalised with a cost so that he is forced either to stop the activity or reduce its negative effect. Thus, it is the answer to the question "who has the right to what?" that requires an earlier definition of parties' property rights. According to Coase it is only then that a negotiated solution equal to the social optimum becomes possible. Without going into considerations about the operational and theoretical obstacles avoiding this solution, his contribution reflects the depth of the political problem.

In the case of negative externalities, Bromley (1996) translates this political problem into a simple question. If agent A stops or reduces an activity that is producing negative externalities, what is he doing? Is he providing benefits or preventing damages? This distinction has a broad political scope, since it discriminates between those decisions deserving compensation, and those actions who have no right to such remuneration, although both actions lead to a reduction in the loss of others' utility. In other words, the delimitation between both kinds of consequences is defined by the property rights allocation. Therefore, any political decision that results in a classification of activities eligible for receiving remuneration according to their environmental implications is tacitly recognising a certain property right structure of these activities over nature. Thus, the passing of some agri-environmental measures means the tacit recognition—from an operational point of view—of a specific structure of farming's property rights with regard to the environment, an idea already discussed by other authors (Braden, 1982; Colby, 1995).

Bromley also connects the property rights consideration with the nature of the environmental impacts. He identifies three categories:

- *Amenity implications*, are the visual attributes of the rural countryside which generate pleasant or unpleasant effects for those who contemplate them.
- *Habitat implications* are the farm's attributes which provide both space and sustenance for flora and fauna that are not part of the agricultural enterprise.
- *Ecological implications*, finally, are those Accession which have effects on the ecological process beyond the boundaries of the farm.

Obviously, this is not an exclusive separation, since there are certain impacts that could simultaneously be included in more than one category. However, the distinction is useful, due to its relationship with the way legislators define property rights linked to these

external effects. Indeed, as Bromley states, the first two types of implications—visual and habitat—have been traditionally dealt with as a part of farmers' property rights, and they have seldom been limited by means of direct regulations. Consequently, farmers have the right to stop their production and if society wants to avoid this, a positive incentive is required.

On the contrary, legislation has often considered that ecological implications such as soil, water or air pollution do not belong to agents' property rights. Therefore, if farmers stop the production of negative ecological implications, this is not regarded as providing social benefits but as avoiding damages. Consequently this conception would not give rise to positive incentives (payments), but only to the duty of complying with environmental regulations. However, as explained below, this rule is not always applied.

22.3. AGRI-ENVIRONMENTAL EXTERNALITIES AS A QUESTION OF PROPERTY RIGHTS

A basic idea emerges from the previous discussion namely that agri-environmental policies, as any other environmental policy, require a previous allocation of property rights in order to implement measures allowing for a differentiation between social benefactors and those who damage it. From the operational point of view the definition of this threshold can be done through two different ways, explicit or implicit, by the setting of environmental standards or by the use of payments, respectively.

22.3.1. The setting of agri-environmental standards

The first way to define property rights lies in the setting of environmental standards, defining a minimum level of environmental protection demanded from farmers (or a maximum damage allowed). This forms the reference level or threshold. If this level is not respected then farmers are considered to have damaged society. In contrary, above this level it is assumed that they are providing a social service (Figure 22.1). The reasoning in this figure is independent of the distinction between positive and negative externalities.

One of the clearest examples of this approach within the agricultural European context is the policy concerning the protection of water against pollution caused by nitrates from agricultural sources (Council Directive 91/676/EEC of 12 December 1991). This

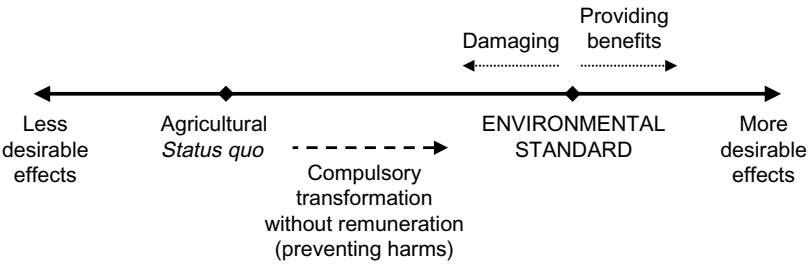

Figure 22.1: Application of an environmental standard.

Directive was later transposed to Spanish legislation through the Royal Decree 261/1996 of 16 February 1996. Following the EU instructions, the Royal Decree urges regional governments to delimit those areas where nitrate concentration in the water is above 50 mg/l. In those areas, farmers have to follow the guidelines included in the good agricultural practices code with regard to: (i) fertilisation doses for each crop, (ii) systems and seasons of application, and (iii) measures for the storage of manure. Since it states what farmers can and cannot do according to a certain level of emission, the interest of this regulation lies in the clear specification of property rights. For example, in Eastern Spain it is forbidden to use more than 300 kg N/ha on citric crops in areas whose nitrate concentration in groundwater exceeds 50 mg/l. In this way, it is clearly stated that farmers have the right to fertilise until that dose. Farmers may perceive this a granting of property rights on nitrate fertilisation up to that level. Going above that level is considered to be a forbidden damage.

Such an approach, which is less respectful for the farmers' status quo situation, can be explained due to nitrate pollution having mainly ecological implications that go beyond the boundaries of the farm with implications on human health. Additionally, the severity of this problem in certain European countries forces authorities to apply compulsory and collective programmes. Furthermore, in many European agricultural systems—and certain Spanish systems are not an exception—farmers apply nitrate fertiliser excessively. Therefore, the issuing of limits may mean a dose rationalisation without a reduction of yields. If this is true, it would justify the lack of payments to compensate a non-existent forgone income.

But, undoubtedly, the main innovation in the definition of property rights by means of standards is introduced by Council Regulation (EC) No 1259/1999, establishing common rules for direct support schemes under the Common Agricultural Policy. This regulation introduces the so-called cross-compliance. Article 3 states that Member States "shall take the environmental measures they consider to be appropriate in view of the situation of the agricultural land used or the production concerned and which reflect the potential environmental effects". These measures may include: (i) support in return for agri-environmental commitments, (ii) general mandatory environmental requirements, or (iii) specific environmental requirements constituting a condition for direct payments (cross-compliance). The Regulation also includes, for the first time, the possibility for Member States to "decide on the penalties that are appropriate and proportionate to the seriousness of the ecological consequences of not respecting the environmental requirements". In order to do that, the Regulation puts at their disposal the ability to reduce, or where appropriate, to cancel benefits from the support schemes concerned, that is, the Common Market Organisation schemes.

From the CAP creation—and in Spain since accession to the European Community—farmers have carried out their activities in a framework characterized by an important public intervention which has consolidated the social contract by means of guaranteed prices and income compensations. And this support has been exempted from environmental conditions. Therefore, the introduction of cross-compliance criteria means a way of modifying the property rights structure.

This instrument paves the way for a blended application to agriculture of "the polluter-pays" principle as it allows public authorities to sanction those farmers who do not

respect environmental standards. This sanction must be understood as a reduction of the payment that they received before unconditionally. Implementation requires a clear definition of the minimum standards that can be expected from farmers in the area of environmental protection. In other words such regulation requires a clear definition of property rights.

In Spain, the Royal Decree regulating the application of cross-compliance was only passed by the Ministry of Agriculture, Fisheries and Food (MAFF) at the end of 2002 (with a three-year delay). This legislation includes the following environmental criteria as reference levels (Table 22.1).

These conditions are mainly based on previous "good agricultural practices codes", which were elaborated by national and regional administration. According to this Royal Decree, reductions that could be accomplished should not exceed 20% of total aid received by the farmer. Once passed, this regulation serves as a national framework for the elaboration of regional rules, since agricultural responsibilities belong to regional governments.

Two comments can be pointed out regarding this legislation. Firstly, from the perspective of Figure 22.1, it should be noticed that there is scarcely any gap between the status quo and these new environmental standards, in other words between what farmers do and what they have to do. It means, it has been very considerate from the farmers' point of view. Secondly, cross-compliance obviously affects only those agricultural systems that receive CAP direct payments (cereals, oilseeds and protein seeds, cattle, olive grove) and remains toothless in other systems (fruits, vegetables, poultry, pigs) although these are precisely the sectors that are the most environmentally damaging. In other words it is a useless instrument for most pollutant activities.

Both cases (nitrate standards and cross-compliance) focus mainly on ecological implications. They are both examples of environmental implications of agriculture that go beyond the boundaries of the farm. And they are both treated, in accordance with Bromley (1996), through putting restrictions on farmers' property rights.

Table 22.1: Environmental requirements in Spanish cross-compliance.

Environmental requirements for crop activities	**Environmental requirements for livestock activities**
The prohibition of burning stubble field without phytosanitary reasons and administrative authorisation	The obligation to observe rules of the compulsory programmes for the stamping out of livestock diseases
The obligation of maintaining set-aside and fallow land in accordance with agricultural practices established in the COP regulation	Livestock farms may have watertight tanks in order to store up manure without lixiviation risks
Not to plough land in the same slope direction	Farmers have to remove dead animals in accordance with the rules in force
Irrigation practices may be in accordance with regulations in the subject of water concessions, as well as those limitations and conditions established by basin administrations	The prohibition of burning pasture land, except for fire prevention objectives (and with administrative authorisation)

Source: Royal Decree 1322/2002, of 13th December.

22.3.2. The role of agri-environmental payments in the definition of property rights

The second way to define property rights is an indirect and less evident one: the remuneration of certain activities. Indeed, if government—as representing society—decides to pay for certain actions because of their environmental implications, the reference level is implicitly stated, at least in the status quo. This is the line followed by Regulation 2078/929 included in the MacSharry Reform within the package of accompanying measures. These accompanying measures are conceived as a way of relieving the negative effects of institutional price reduction on farm income. It was developed as an another way of subsidising agriculture at the moment that the EU tried to adapt its model of agricultural support according to the GATT (now WTO) rules.

The application of agri-environmental schemes throughout the European Union has shown two different situations. The Northern countries have used these programmes mainly to reduce the negative environmental impact of certain intensive agricultural systems, through the modification of farming practices (Figure 22.2a). In the Southern countries, with Spain as a clear example, agri-environmental programmes have been set up in two ways:

(a) Remunerating traditional farming systems that already had an adequate ecological balance. These are systems where no modifications were needed to fulfil environmental standards. In other words, agri-environmental programmes finished by paying farmers for doing the same as before. In this case the public authorities implicitly recognise that the minimum reference level is below the present status quo (Figure 22.2b), i.e., farmers may still freely decide to reduce the

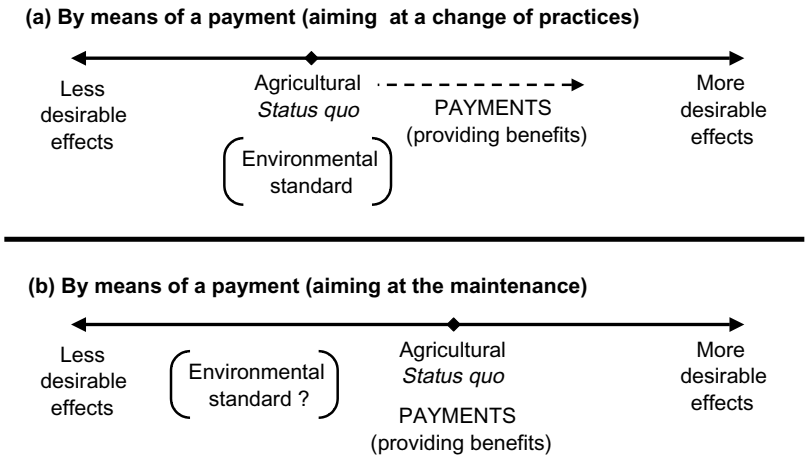

Figure 22.2: Application of agri-environmental schemes.

environmental benefits they are providing. In order to avoid this, a positive incentive is required. Such a situation can be considered as a remuneration of joint environmental production or as a clear example of valorisation of the so-called multifunctionality of agriculture. Nevertheless, some authors question the necessity of giving payments for a provision of joint environmental services that are already being provided: "[they] conform better a model of income support with cross-compliance than to the multifunctionality model of paying only for outputs that would not otherwise be produced" (Harte and O'Connell, 2003: 40).

(b) Compensating those farmers who were previously confronted with obligatory constraints due to the enforcement of other environmental legislation (e.g., National Parks legislation). Actually, approximately 40% of the Spanish 2078/92 payments in the 1993–1999 period were given to farmers who already faced limitations on their agricultural practices (Peco et al., 2000). This second situation allows for an interesting interpretation: In this case, it is other environmental legislations that have modified farming practices through direct regulation and environmental standards without looking at farmers' status quo (in the interpretation of Figure 22.1). Nevertheless, once such obligatory standards have been implemented, the State tries to improve farmers' situation through the creation of a positive incentive, i.e., remunerating the compulsory transformation. It is also interesting to highlight that while the legislation on protected areas is a responsibility of Environmental Agencies, agri-environmental schemes belong to Agricultural Agencies. This fact reflects the different treatment received by farmers by each type of public administrations.

During the nineties, the Spanish administration rarely used agri-environmental incentives to promote changes in the more intensive, damaging systems (horticulture, citriculture, greenhouse farming), but tried to conserve those systems that were already environmentally friendly.

The agenda 2000 reform continued on the line opened by the MacSharry reform, opposing those defending a more radical reform through a wider liberalisation. This spirit also marks the new agri-environmental policy included in the framework of the rural development Regulation 1257/199911. This regulation states very similar objectives and instruments to those introduced seven years before. The transposition of the new agri-environmental framework into the Spanish legislation appeared in the Royal Decree 4/2001, of 12 January 2001. As shown in Table 22.2 some of the nine programmes affect a wider spectrum of agricultural systems, although it is still too early to verify whether there have been significant changes within the real application.

Most programmes have so called "habitat implications", that is the ability of the farm to serve as support for flora and fauna not belonging to the firm. This supports the idea of Bromley about treating amenity and habitat implications as farmers' property rights, which would give rise to the use of compensations to strengthen them. But payments also reach initiatives trying to either eliminate or reduce pollution levels whose effects exceed farm boundaries. Therefore, the avoidance of external damages is considered in this case a public service worthy of being remunerated.

Table 22.2: Spanish agri-environmental programmes within the Royal Decree 4/2001.

Programme	Type of implication		
	Amenity	Habitat	Ecological
Extensification of agricultural production		•	○
Indigenous varieties under genetic erosion risk			○
Environmental techniques of chemical product rationalisation		○	•
Struggle against erosion in fragile systems		•	○
Flora and fauna protection in wetlands	○	•	
Special farming systems with high environmental value	•	•	
Efficient water use and promotion of production extensification			•
Landscape protection and fire prevention practices	•	•	○
Integral management of intensive livestock farms	○	•	•

•, main implication; ○, secondary implication.
Source: own elaboration.

22.4. ANALYSIS OF PROPERTY RIGHTS: SECURITY AND FLEXIBILITY

The analysis of property rights involves the analysis of the equilibrium between security and flexibility, security against other agents and flexibility to adapt its performance to changing circumstances. There are two reasons explaining the relevance of this duality: (i) because it defines the limits of property rights, both for the owner and for the others, and (ii) because they are to a certain extent opposed. Both aspects become richer and more marked when the private/social perspective is considered. Indeed, property rights are not an absolute concept, as they are subordinated to social recognition and delimitation. Therefore, public administration, as representative of social wills, defines a framework for property rights. In this way it is possible to talk about an allocation of property rights by the State.

Private security means that the individual has its property rights protected from violation or reduction from other economic agents, even governmental intervention. Nevertheless the interpretation is different when analysed from the social point of view. Indeed, if property rights are secure for their owners, they become inflexible for society, since society cannot adapt them to new circumstances or social goals through public intervention.

Private flexibility means that the individual has the power to alter the way in which they use their property rights due to modifications in either their objectives or in the framework in which they were developed. This flexibility, however, would entail a lack of social constrictions and therefore could lead to a certain degree of social insecurity as those changes could be incompatible with initial social objectives.

Security, from the social point of view, implies the ability of public authorities to guarantee that property rights allocated to certain stakeholders are not violated by them. Lastly, social flexibility means the ability of public agencies both to guarantee the recovery and to introduce modifications into the allocated property rights, in order to be able to obtain new social objectives and/or new strategies to get them. Obviously, this

would mean a high degree of insecurity on the side of the private owners, since they are always under the risk of losing their property rights due to administrative decisions.

This dichotomy acquires a wider significance in the case of environmental property rights as the rights of economic agents are both defined and modified by legislation. Figure 22.3 shows how both components act in the case of environmental property rights.

On the one hand, *social security* (Figure 22.3a) means the presence of sufficient guarantees, e.g., by means of control mechanisms that environmental standards, once fixed, are not violated. Thus, *private flexibility* (Figure 22.3a) remains limited to those agricultural practices and decisions already considered as provisions of social services.

On the other hand, *social flexibility* (Figure 22.3b) is related to the modification of the environmental standard. Indeed, a high degree of social flexibility would imply that the State, reflecting social will, is able to change this definitive element of property rights, either by increasing (as represented in Figure 22.3b) or reducing limitations of farmers' rights. Of course, this situation would also imply a lack of *private security*, since farmers are liable to political decisions that could unilaterally modify their position regarding the environment.

Under this theoretical framework the use of payments as a way to define property rights constitutes a balanced solution to both social and private positions. The achievement of new environmental objectives (social flexibility) is found by means of an instrument that does not modify the farmers' property rights. Therefore, the protection of these private rights means the maintenance of private security. Furthermore, payments are undoubtedly a flexible instrument, which can be changed by public agencies to confront new objectives. This is also an adequate solution from the private flexibility perspective, since farmers can balance the productive/conservative vocation of their farms within the different agri-environmental programmes, even by remaining outside of them.

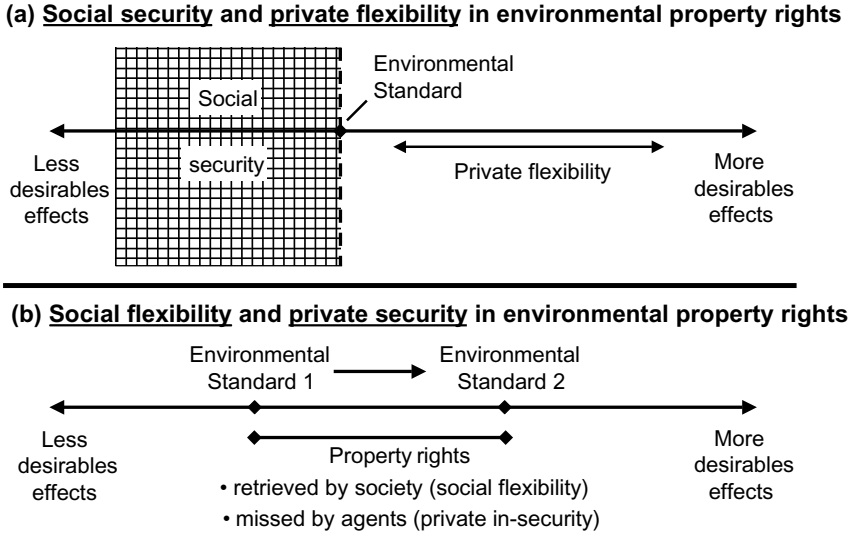

Figure 22.3: Environmental property rights.

An aspect that may be dealt with at this point is the time dimension of agri-environmental contracts. The goal of promoting adequate practices requires a medium and long-term approach. In the situation that the State demands changes in the way farmers carry out their activities, medium and long-term instrument are necessary to provide farmers a secure horizon. This is the reason why a five-year-period is applied within the present agri-environmental programmes, a period that at first sight seems appropriate in balancing both the necessary security of farmers and the public uncertainty linked to the endorsement of a new policy. Nevertheless, in some cases both the duration and the conditions of the contract are perceived by farmers as a problem from the point of view of private flexibility, e.g., when confronted with changes in the climate (Paniagua, 2001: 90).

From a social point of view agri-environmental payments do not promote social security because they are not suitable for avoiding undesirable agricultural practice. Hence, the statement of clear environmental standards by means of direct regulations could become an important contribution to the strengthening of this component. In other words, it is necessary to resort to other instruments, such as good agricultural practice codes, to reach a satisfactory level of social security. This would be the role of cross-compliance.

22.5. SOME THEORETICAL AND POLITICAL CONCLUDING REMARKS

Agri-environmental policy is, as the Spanish case shows, shaping a profile of farmers' property rights over the environment, albeit slowly and in an implicit and heterogeneous way. Nevertheless the way in which these rights are being defined need some considerations.

On the one hand, the statement of standards (e.g., nitrate legislation and cross-compliance) means an ex novo definition of rights, which does not give rise to any indemnity. This approach deals with the first of both alternative interpretations suggested in the introduction, namely that farmers were using the environment in a manner in which they had no right. Thus, when the considering this to be necessary, the State has intervened to mark off these rights. There is no expropriation, since rights were not previously granted and therefore there is no indemnity either.

The other method, the use of payments for actions considered environmentally desirable, also gives rise, although in a less explicit way, to a certain recognition of property rights. Because it is acknowledged that the farmer has the right not to accomplish, he might be remunerated in case he does. This second way implies a larger respect for the farmers' status quo underpinning the strength of the social contract.

Nevertheless, the confluence of both new political scenarios and social wills (Baneth, 1994; Ortiz, 2001) press increasingly towards a greater regulatory activity of the State. As stated by Bromley and Hodge (1990), in many cases the initial limitation of the farmer's "freedom" to decide how to produce could be attached to economic compensation. But once this new situation is perceived by society as "normal", the position of the farmer weakens, because at that moment this new situation may turn into a minimum requirement whose compliance does not deserve remuneration.

Such social flexibility is in the case of agri-environmental policies closely linked to two aspects. On the one hand, the social perception about what is either "normal" or "fair" evolves throughout time. On the other hand, the unilateral and indiscriminate modification of property rights might result in an undesirable, insecure framework for farmers. Consequently there is a need to balance both aspects in the future political and economical treatment of these issues. From the farmers' perspective, the property right configuration is being characterised by a certain degree of flexibility. Indeed, once the reference levels are stated, farmers have a set of management alternatives at their disposal which allow them to go beyond this minimum and to be paid for it.

However, it is unclear whether an adequate level of security from the social perspective exists, since there are deficiencies in the mechanisms of governance due to: (i) operational problems in the quantification of the impacts, agri-environmental indicators still being in a preliminary stage of elaboration; (ii) technical difficulties to control the implementation of these measures; and (iii) a paternalistic treatment by public agencies in the cases of non-compliance of contractual obligations by farmers.

In short, agri-environmental policy is at present in a decisive phase as it is establishing the basis of a new property rights structure. In the future political treatment of environmental impact of agriculture, the allocated property rights may become restrictive. In other words, politicians themselves are creating a set of ties that could condition their future freedom of movement, that is, they are limiting—or at least conditioning—social flexibility.

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CHAPTER 23

Institutional Analysis of the Flemish Buyout Regulation for Pig Holdings

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Abstract

As part of the Flemish nitrate policy, the government pays a fixed price to farmers who cease pig production. The effectiveness of this buyout decree is assessed. Outcomes are discussed using a new institutional economics framework distinguishing between institutional environment and institutional arrangements with special attention to the role of the public authority. Results indicate that the regulation is not fully effective in attaining the environmental objectives, partly as a result of an inadequate tuning of the buyout institutional arrangement with the institutional environment. As a consequence of the changing institutional environment, the buyout is gradually taken over by private arrangements. Farmers look for arrangements allowing them to trade the production right at a higher price than the buyout fee.

23.1. INTRODUCTION

The EU Nitrate Directive (91/676/EEC) forces member States to introduce national and/or regional policies to reduce nitrogen pollution due to agriculture. In Belgium, the political and legislative power regarding environmental policy belongs to the regional authorities (Flanders, Wallonia). In particular in the north of the country, which has a high livestock population and density, the Flemish government has created its own nitrate policy legislation. In terms of new institutional economics (Davis and North, 1971; North, 1990; Williamson, 1998, 2000), this legislation forms the institutional environment influencing the development of the pig sector. Since 2001 an additional policy to reduce the livestock number is the buyout regulation for pig holdings. This buyout regulation, which has to be

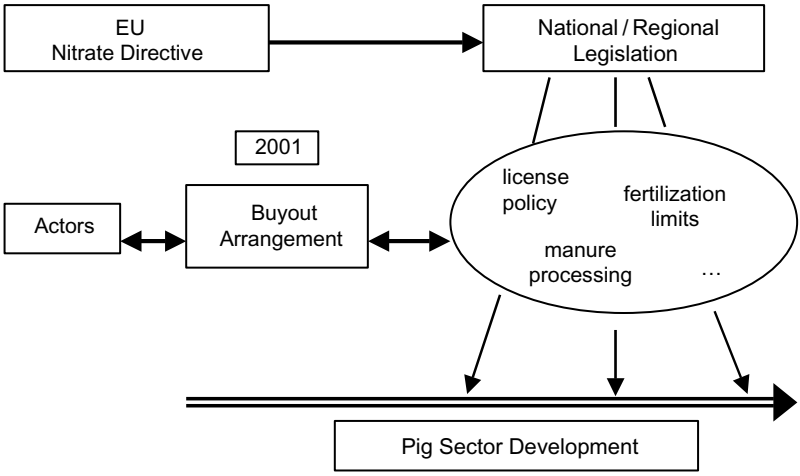

Figure 23.1: Schematic representation of the research problem using a new institutional economics framework.

seen as a specific institutional arrangement is interfering with the existing and subsequently modified institutional environment, creating new possibilities for the actors or players of the game. Together with the economic environment (market conditions) this has an impact on the development of the pig sector. The role of the public authority that creates both the formal rules of the game (institutional environment) and remains part of the arrangement as a trading partner, is crucial in this process.

The aim of this research is to assess the effectiveness of the buyout as a policy instrument using a new institutional economics framework. The research framework is illustrated in Figure 23.1. The following research questions are posed: (1) Is the buyout as an institutional arrangement adequately tuned into the institutional environment? and (2) How effective is the regulation in attaining the (environmental) policy objectives of the public authority? Effectiveness means the extent to which the instrument contributes towards the realisation of the public authority's objectives. This can be assessed through outcome variables such as the number of subscribers, the number of animals they represent, the reduction of nitrogen surpluses, etc. The outcome will largely be determined by the interplay of the modalities of the buyout regulation with the economic and institutional environment and the interference of the actors. Modalities of the regulation to be considered are the buyout fee, the contracting conditions, the available information and the uncertainties about the consequences of subscribing to the regulation. Features of the economic and institutional environment are, respectively, related to the pig market conditions and the strength of the nitrate policy regulation and manure surpluses, while actors can offer alternative arrangements or provoke institutional change by influencing the formal rules of the institutional environment.

Section 23.2 of this chapter provides an overview of the specific modalities of the buyout arrangement, some preliminary results of the three buyout rounds and a profile description of subscribers. Section 23.3 gives a historic outline of the institutional and economic environment related to nitrate policy and influencing pig sector profitability.

Their impacts on the pig sector development are estimated. Section 23.4 assesses the effectiveness of the buyout arrangement by combining its specific modalities with the institutional/economic environment and the role of the actors. Finally, conclusions are formulated and recommendations for further analysis are put forward.

23.2. THE BUYOUT INSTITUTIONAL ARRANGEMENT

In 2001, the Flemish Parliament approved a new nitrate policy instrument "the decree for the regulation of the voluntary, complete and definitive discontinuation of the production of animal manure originating from one or more livestock species" (buyout decree). The buyout decree can be considered as a specific institutional arrangement fitting in the first pillar of Manure Action Plan IIbis (MAP IIbis) that tries to implement the environmental constraints of the Nitrate irective (91/676/EEG). Until now, the Flemish Government has organised three buyout rounds (in 2001, 2002 and 2003) with a budget of 25 million euro each. At first, the intention was to restrict the regulation to the buyout of pig holdings only. The objective was to reduce the pig herd by 10% compared to 1999 with a similar decrease of manure production. This objective corresponds with 66,780 sow places and 410,220 slaughter pig places, in total reducing nitrogen production with 6.9 million kg. Because of the lower (insufficient) success in the second round, the third buyout round in 2003 was extended to cattle and poultry. The subsequent analysis, however, will only focus on the buyout of pig holdings.

The buyout institutional arrangement consists of a contract between the public authority and the pig farmer. The farmer voluntary ceases pig production for a fixed price of € 389.70 per sow and € 117.50 per finishing pig place. This reward is not exempt from taxation. In return the farmer has to give up his production licence for a period of 10 years. For the first five years the farmer gets exemption of inclusion in the inventory of unoccupied buildings. During that period he can give another destination to his stables or demolish them. Otherwise, after five years he has to pay a yearly levy for non-occupation. The whole procedure is dealt with within a pre-specified time schedule. If there are more applications than can be handled within the available budget, the ones who inscribed first receive priority. The others will get preference in the next buyout round. Farmers who have initially applied for the buyout regulation can still withdraw their application during the procedure. This is particularly important for an effective analysis and the impacts of the changing institutional environment.

In the first subscription period, 881 pig farmers applied for the buyout measure and finally 749 agreed with the proposed conditions (Table 23.1). In the second round, only 273 farmers were interested and 211 of them finally agreed to proceed with the terms of the regulation. The provisional results for the third round, indicate that 348 farms subscribed. In total for the three buyout rounds 1308 farms subscribed, corresponding with 417,564 slaughter pigs and 44,730 sows. Nitrogen production was reduced by 6.5 million kg at a budget cost of 66.5 million euro.

An exploratory analysis of the participants of the first buyout round reveals that most subscribing farms are from the pig finishing farm type ($>50\%$) and consist of older farmers (almost 60% is older than 55) who are uncertain about their succession. About

Table 23.1: Statistics of the three buyout rounds.

	Farms (number)	Sl. pigs (number)	Sows (number)	P_2O_5 (mln kg)	N (mln kg)	Budget (mln €)
1st round	749	226,106	17,225	1.5	3.4	33.3
2nd round	211	48,886	8700	0.4	0.8	9.1
Sub-total	960	274,992	25,925	1.9	4.2	42.4
3rd round[a]	348	142,572	18,805	1.0	2.3	24.1
Total	1308	417,564	44,730	3.0	6.5	66.5

Source: ALT (Administration for Agriculture and Horticulture).
[a]Provisional results.

half of the farms are situated in the category of 100–500 pigs per farm, almost 30% have less than 5 ha land and more than 60% have a manure surplus higher than 25%. Comparing the profile of the subscribers with those who have left the sector in the past indicates that relatively more of the buyout farms are from the farrowing and closed farm system. They also have a higher number of pigs per farm on average, and are somewhat less land related. This results in a somewhat more specialised and intensive profile, with a higher number of farms situated in the larger manure surplus categories.

For 730 of the 960 subscribers of the first and second buyout round, the reasons for subscribing have been surveyed. The age of the farmer, the availability of a successor, paperwork load and old stables are old are the most important reasons to subscribe. Environmental issues such as manure legislation, manure surpluses and high disposal costs, together with some economic criteria such as low prices for piglets and slaughter pigs, also receive high scores. Additionally, a small herd size, the increasing costs for animal welfare, lower profitability, not being land related and being tired of pig production are relatively important reasons to subscribe. About 24% of the farmers answered that they would not have stopped without the buyout regulation. This measures the direct effect of the arrangement. Some 33% would have stopped anyway while 43% would have stopped within a few years, so they have, in fact, anticipated their retirement.

23.3. EVOLUTION OF INSTITUTIONAL AND ECONOMIC ENVIRONMENT

The objective of this section is to describe the most crucial evolutions of the institutional and economic environment of the last decade and to have an initial discussion about their impact on the pig sector development. Figure 23.2 integrates various aspects of environment and sector development. Figure 23.2A shows the evolution of the institutional environment concerning the Flemish nitrate policy over the period 1991–2003. In Figure 23.2B the ratio of the surplus manure supply against the total remaining land for manure disposal is shown together with the pig prices in €/100 kg live weight as part of the economic environment. The ratio of surplus manure supply against total land remaining for manure disposal depends on the agricultural area and the numbers of animals but also on the standards set by the institutional environment (excretion coefficients for animals, fertilisation limits, etc.). Figure 23.2C presents the evolution of

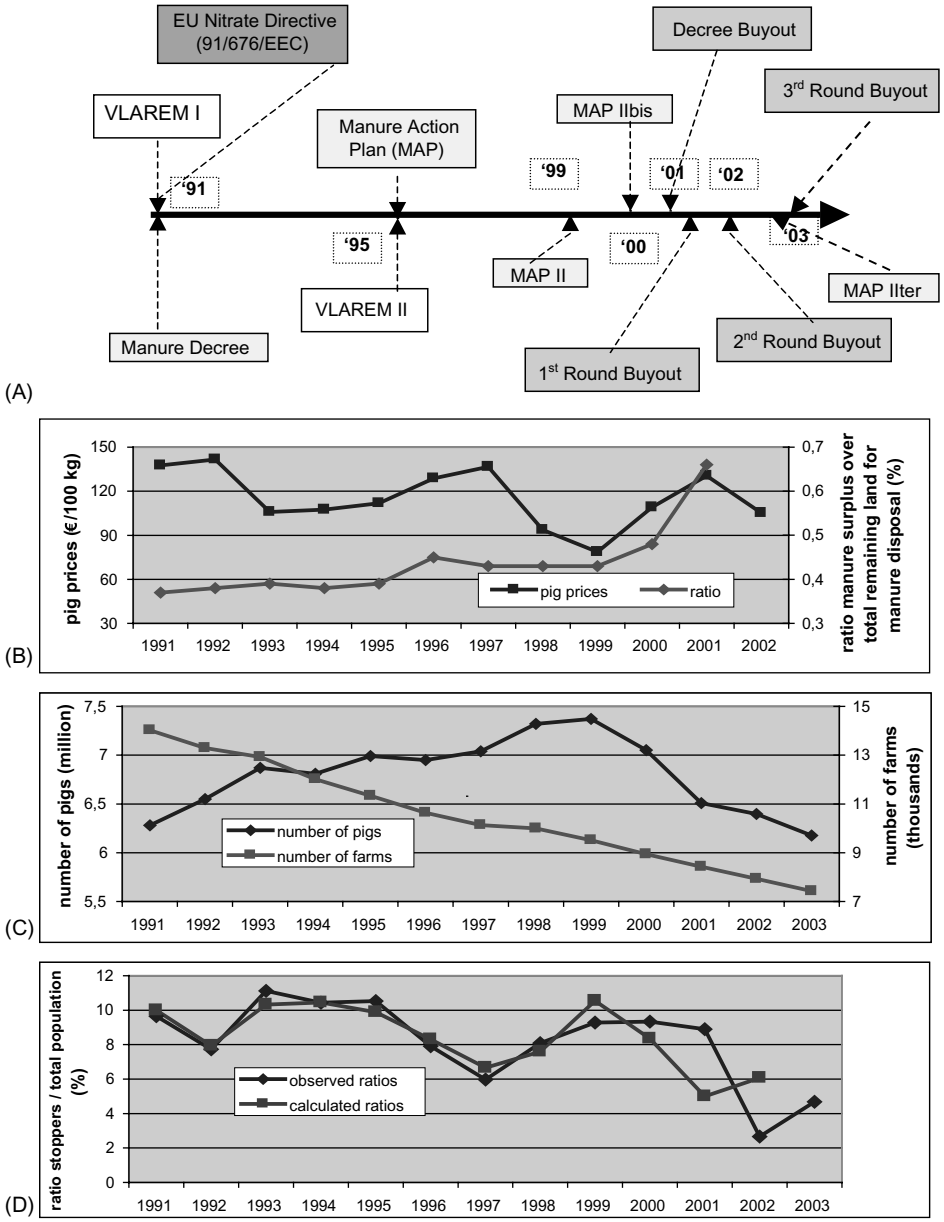

Figure 23.2: Evolution (1991–2003) of (A) institutional environment concerning Flemish Nitrate Policy; (B) pig prices (€/100 kg) and manure pressure ratio; (C) total number of pigs (millions) and farms (thousands) (D) observed/calculated ratio stoppers/total population (%).

the pig population and the number of pig farms from 1991 to 2003. Finally, Figure 23.2D shows the observed and calculated ratios of number of stoppers over the total number of farms (in percentage) for the period 1991–2000 and the three buyout rounds in 2001, 2002 and 2003, respectively. For the latter, the stoppers without the buyout are not taken into account.

Looking at Figure 23.2A a couple of milestones can be seen (1991, 1995 and 1999/2000). The Nitrate Directive was adopted at the EU-level in 1991. In the same year, at a more regional level, the "decree for the protection of the environment against pollution coming from manure"(Manure Decree) and VLAREM I "Flemish Regulation regarding Environmental Licences" were approved in Flanders. The Manure Decree forms the basic legislation with some general policy intentions. VLAREM I, a rationalisation of long lasting licence policy, contains all the legal stipulations about who is obliged to have a licence and how the application process to get such a licence works. The policy was not really effective in correcting environmental externalities, as proven by the increase of pig numbers in 1991 and 1992 (Figure 23.2C). Rules were not so stringent and farmers were by-passing legislation and anticipating more strict and sectoral future regulations. The ratio showing the manure pressure felt by farms in Figure 23.2B was also not increasing either.

In 1995 the first Manure Action Plan (MAP I) and VLAREM II were approved. With MAP I there was a standstill of manure production, a positive discrimination of the family farm and more severe manure limits. The effect of the new legislation is seen by an increase of the manure pressure ratio-indicator between 1995 and 1996 as shown in Figure 23.2B. VLAREM II contains all legal provisions concerning licence policy that holdings and activities have to fulfil. Important changes compared with VLAREM I are some limitations for both new as well as extension of existing pig holdings and distance rules mainly in function of farm size (number of pigs) and the farm type (closed system or not). But again the followed policy was not leading to the expected positive environmental effects. Figure 23.2C still shows an increase of the pig population, even in 1998–1999 when pig prices were very low, as can be seen in Figure 23.2B. This increase occurred despite the standstill principle adopted by the environmental licence policy. Farmers had anticipated the ban on new licences by asking for an extension of their licence before the new legislation became effective. They obtained an environmental licence for more animals than they had at the moment the new legislation came out. Therefore, they were able to extend pig numbers afterwards by filling up the unused capacity allowed for by their licence.

Some important adaptations of the manure policy occurred in 1999 and 2000, respectively, resulting in Manure Action Plan II (MAP II) and Manure Action Plan IIbis (MAP IIbis). Manure Action Plan II, because of a change of the government coalition by elections in 1999, has never been effective. Its revision resulted in Manure Action Plan IIbis, in charge from January 2000, which is based on a three-pillar policy. The first pillar "tackling the pollution at the source" combines policy instruments such as the use of new feed technology, low-nutrient feed, balanced feeding and nutrient balance sheets and a restructuring of the livestock population. The buyout arrangement is a policy instrument fitting in this pillar. The second pillar "expert fertilisation" consists amongst other things of performing a soil audit to check the nitrate residue after cultivation. There are

prescriptions for handling the animal manure to realise a nitrate–phosphate ratio better adapted to soil and cultivation. Further, more rules were established about the time, the way and the locations of manure disposal on agricultural land. The third pillar "manure processing" ascertains that 50% of the surplus must be processed in such a way that there is no transferring of the problem to the atmosphere or the water. A part of the surplus can also be exported outside Flanders. The three pillars have to result in a reduction of the manure surpluses by 25, 25 and 50%, respectively.

With MAP IIbis, rules are (for the first time) becoming real tight for the farmers and have been gradually strengthened over the 2000–2003 period. As can be seen from Figure 23.2B, the ratio indicating the manure pressure felt by farms increased dramatically in 2000 and 2001. The standstill principle became fully effective. Each farm got a total allowable nutrient level based on past production. Hence, an increase of the pig population is not possible any more. Manure disposal costs for many farms, especially the larger ones, increase, leading to a rise in production costs and lower profitability. A lot of uncertainty is created for the farmer because of uncertainty about the level of future manure disposal costs, the potential success of manure processing and possible future changes of the rules. In this environment farmers are forced to choose between staying in production, diminishing capacity or leaving the sector. This results in a gradual decrease of pig numbers as can be seen from Figure 23.2C, where the steadily increase of the pig population was halted in 1999, and even shows a sharp decline in 2000 and 2001. This happens despite the higher prices as shown in Figure 23.2B. After 2001, however, (when the buyout is organised) the decrease was mitigated, even with a decrease of pig prices (Figure 23.2B).

In March 2003 the public authority made some practical revisions of MAP IIbis, resulting in MAP IIter. Nevertheless, the major part of the three-pillar policy of MAP IIbis remained intact. Adaptations were the extension of the vulnerable area as requested by the European Commission, the possibility of substitution of obligatory manure processing, the recalculation and prolongation of the maximum allowable nutrient level till 2007, and the possibilities of merging farms if a 25% reduction of the nutrient level is realised. The latter offers extra perspectives for alternative arrangements with other stakeholders (see later).

There are no calculations yet for the manure pressure ratio in 2002 and 2003. Other studies reveal that the decrease of the pig (livestock) population leads to a significant decrease of the manure pressure ratio. Nevertheless, the gradual strengthening of the norms and the extension of the vulnerable area in 2003 may have counteracted this evolution. The obligatory manure processing also leads to higher disposal costs for the larger farms especially, putting pressure on the future development of the sector.

23.4. ASSESSMENT OF THE BUYOUT EFFECTIVENESS

The buyout effectiveness is discussed through combining the description of the buyout arrangement with the institutional and economic environment features. The role of stakeholders in offering alternative arrangements is also incorporated into the analysis. Voluntary schemes like the ones from the buyout can only be effective if a sufficient

numbers of farmers participate to achieve objectives. If payments are set too low or contracting conditions are too strict, then the scheme will fail through low uptake (Crabtree, 2000). The long-term uncertainties about the consequences of subscribing the buyout, such as what to do later with the unoccupied stables, can also reduce effectiveness. In contrast, the worse future economic prospects of pig production profitability (determined by pig prices and production costs), the stricter the nitrate policy legislation and the higher the actual manure surpluses, the more likely a farmer will subscribe. Furthermore, the result of the buyout will be influenced by the existence of alternative arrangements, especially for the larger and more performant farms. In other words, if an inconsistent change of institutional environment makes alternative arrangements more attractive, hence leading to the demise of the buyout arrangement, the number of applications will decrease.

The results reported in Table 23.1 already indicate that the effective result for the three buyout rounds (1308 farms subscribed, corresponding with 417,564 slaughter pigs and 44,730 sows and a 6.5 million kg of nitrogen reduction) are lower than the objectives put forward (a decrease with 66,780 sow places; 410,220 slaughter pig places and 6.9 million kg nitrogen production). Comparing the outcomes of the buyout with the objectives shows that the reduction of the number of slaughter pigs is slightly higher but results for sows are significantly lower. This results in a lower budget cost and a lower nitrogen reduction. This indicates that the number of applications is not sufficient to reach public authority's objectives and that the buyout is not entirely effective.

Only the first buyout round was a success. In fact, given the available budget, not all applications could be handled at that moment. In contrast, applications in the second round were much lower. Moreover, more than 20% of the subscribers withdrew their application during the second round, which is a much higher percentage than that of the first. Both the withdrawals from round one and round two are larger farmers with a higher average number of sows and/or finishing pigs as can be seen from Table 23.2. These farms are more attractive to engage in alternative arrangements offered by other farmers or integrators. For the third round, the number of inscriptions is higher than in the second round, but still a lot lower than in the first one. The preliminary results are more or less on course to realise one third of the public authority's objective. However, there is no information yet on the number of withdrawals.

The impact of the institutional environment on the buyout effectiveness is characterised by a strengthening of rules with MAP IIbis becoming effective from 2000 and a change from MAP IIbis to MAP IIter in 2003 (Figure 23.2A). Considering the economic

Table 23.2: Average number of sows and slaughter pigs per farm for accepting and withdrawing farms and 1st/2nd buyout round.

	Accepting farms		**Withdrawing farms**	
	Sows/farm	**Slaughter pigs/farm**	**Sows/farm**	**Slaughter pigs/farm**
1st round	50	350	73	573
2nd round	63	270	122	524

Source: ALT (Administration of Agriculture and Horticulture).

environment, Figure 23.2B shows that slaughter pig prices were high during the subscription period of the first round in 2001, lower for the second round in 2002 and still lower for the third round in 2003. With MAP IIbis, a lot of uncertainty is created, putting a burden on the future prospects of the pig sector. The buyout arrangement, as a new nitrate policy instrument is interfering from 2001 on and creates some certainty. Farmers can choose to stop in return for compensation. As can be seen from Figure 23.2C the pig population first increased to reach a maximum of about 7.37 million in 1999 and then decreased to 6.20 million in 2003. In 2001, just before the start of the first buyout round, there were 8421 pig farms and a total pig population of 6,508,442 of which 4,006,920 were slaughter pigs (>20 kg) and 667,056 were sows. This means that during the two years just before the buyout, there was already a decrease of pig population by 4% and 7% respectively. This corresponds with about 485,000 slaughter pigs and 54,000 sows, which is already more than the buyout objective of a 10% decrease as postulated by the public authorities. Moreover, the decrease of the pig population after 2001, when the first and second buyout round were organised, was only 1.7 and 3.4%, meaning that the rate of decrease had slowed down after instalment of the buyout arrangement.

Figure 23.2D compares the observed and calculated percentage of stoppers over the total number of farms. The economic environment has had an impact on the farmer's decision of whether to stay in production or to retire. The stoppers' ratio was inversely related with the pig prices, at least till 1999/2000. Thereafter the stop ratios have been influenced by the change of the institutional environment and by the buyout arrangement. A linear regression analysis of the stoppers' ratio as the dependent variable and the slaughter pig price, delayed by 9 months, and the trend variable as explanatory variables is highly significant ($R^2 = 0.79$; $P_{\text{Fstat}} = 0.004$). Using the model to calculate the ratios for 2001 and 2002 gives an effect of the two buyout rounds of 3.89 and -3.41%, respectively. Given the fact that the stoppers without the buyout are not taken into account, it seems that in 2001 there was an extra effect of the buyout, leading to a higher stop ratio than would normally be the case given the high prices that year (Figure 23.2B). This extra effect, however, was almost completely counter-balanced in 2002, where the observed stop ratio was much lower than the calculated one. This leads to the hypothesis that a number of subscribers have advanced retirement. This is confirmed by results of the survey, where we found that more than 40% would have stopped anyway within a few years. These analyses indicate that it is likely that the buyout has not really accelerated the autonomous decrease of the number of farms and animals.

The results of the buyout arrangement show that buyout round 2 was especially ineffective and this despite a less favourable pig market condition (Figure 23.2B) and further strengthening of the nitrate policy. The change of formal rules from MAP IIbis to MAP IIter (Figure 23.2A) was a possible explanation. The discussion leading to the final approval of MAP IIter in March 2003, occurred during 2002 and thus interfered the subscription period of buyout round 2. The debate about the extension of vulnerable areas leading to an increase of actual manure surpluses, the 100% manure processing obligation for larger farms and new, but conditional, development possibilities (in particular farm fusion possibilities) resulted in a hold-up situation. Facing the buyout arrangement, and hearing about the possibility of farm mergers, farmers realise that their production licences have become explicit production rights with an economic value. So, they are

looking for new arrangements for trading the production right at a higher price than the buyout fee. This hypothesis seems likely given the results of Table 23.2, indicating that the withdrawing farms for buyout rounds 1 and 2 are the larger farms which are more viable and attractive for other actors. Lack of effectiveness may partly be ascribed to uncertainties created by the government (although government is part of both environment and arrangement) and more in particular to the changing rules with respect to other nitrate policy instruments. This reveals an inadequate tuning of the institutional arrangement with the changing institutional environment.

In this changing process the actors c.q. organisations (farmers' organisations, other farmers, environmental interest groups, compound feed industry, political parties, scientific, economic, social organisations, etc.) are involved in two ways. The first way is by influencing the decision making process through the change of formal rules. If one or more policy consequences are not satisfactory, pressure groups try to change or create new formal rules by lobbying public authority and influencing public opinion. The most active here are farmer organisations and ecological interest groups. Within the public authority, there is the interplay of different political parties and the interaction with the opposition and bureaucracy, constrained by judiciary, economic and budgetary possibilities and higher authority levels such as the European Commission, which is one of the main external driving forces for change of formal rules (e.g., for increase of vulnerable areas). The latter controls whether the Flemish Government takes sufficient measures to reach the objectives of the Nitrate Directive. However, with outcomes highly dependent on the political play and the bargaining power of interest groups, the result cannot automatically be expected to be socially efficient. The second way in which stakeholders interact is by offering alternative arrangements for the buyout regulation. Hereby the buyout fixed compensation is acting as a bottom price. The most important stakeholders in offering these alternative arrangements are other farmers or the integrators from the compound feed industry.

For the individual decision-maker, namely the farmer (influenced by family and surroundings), the decision whether or not to subscribe to the buyout is highly dependent on complexity and uncertainty, both of which are given rise to incomplete information and thus incomplete contracting conditions. Major sources of uncertainty are the future economic conditions, the alternative arrangements that other actors can and will offer, the costs for manure disposal and processing, the actual manure surplus and the possible further change of the nitrate policy legislation by the public authorities. This results in a climate of uncertainty for the individual farmer. Rather than restricting this uncertainty, our analysis reveals that the public authority contributes to it.

23.5. CONCLUSION AND DISCUSSION

The buyout arrangement can be seen as a policy instrument complementary to the environmental constraints of the Nitrate Directive. Using a new institutional economics conceptual framework, the buyout has been described in terms of an institutional arrangement. Its performance depends on specific modalities such as the buyout fee, the contracting conditions, the available information and uncertainties about the

consequences of subscribing to the regulation. Besides this, the outcome depends on economic factors such as the pig market conditions and features of the institutional environment, in particular the nitrate policy legislation and the actual manure surplus. Besides the farmers, other stakeholders such as the compound feed integrators also belong to an actor-network system and can be seen as crucial players in the game. They not only offer alternatives for the buyout but also provoke institutional change by influencing the formal rules of the institutional environment. The role of the public authority is ambiguous in the sense that it creates the formal rules of the game (institutional environment) but is also part of the arrangement as a trading partner.

The particular outcome pattern reveals that the decision of whether or not to subscribe is highly dependent on complexity and uncertainty, both giving rise to incomplete information and thus incomplete contracting conditions. Causes of uncertainty are the future economic conditions, the alternative arrangements actors offer, the inconsistent changes of the environmental legislation, the costs for manure disposal and processing, the actual manure surpluses and the unknown success of manure processing. In a lot of cases the public authority fails to reduce uncertainty and even creates it, neglecting one of its primary tasks.

Some years before the start of the buyout, there was already a decrease in the pig population, which was larger than the buyout objective postulated by the public authority. Furthermore, the decrease of the pig population slowed down after instalment of the buyout arrangement. The buyout has not accelerated the autonomous decrease of the number of farms and animals. A high number of farms initially applying for the buyout withdrew later on. These are larger farmers, who are more attractive for stakeholders offering alternative arrangements. The buyout becomes gradually counter-balanced and taken over by other arrangements. In fact, farmers have realised that their production licences have become an explicit production right and thus obtained an economic value. The latter has been highly influenced by new development possibilities such as the merging of farms. This reveals the inadequate tuning of the institutional environment and the buyout arrangement.

The analysis has only assessed the effectiveness of the regulation, not the efficiency. In certain literature the efficiency of a fixed payment system has been questioned because of the policy-deadweight of paying a rent to producers who plan to leave the sector even without payment or at a much lower compensation (Crabtree, 2000). The efficiency can be assessed by analysing what kind of farmers have subscribed to the regulation and in how far they are different from those who would have left the sector with or without a lower payment. This can be done by comparing the profile of farmers who have ceased their pig husbandry activities in the past with those who have subscribed the buyout regulation. The first results of such a survey indicate that there is indeed a policy-deadweight.

One way for improving the effectiveness and efficiency is by adapting the current arrangement into a modulation system (e.g., severing the conditions of eligibility), or the installation of a bid system (farmers offering a price at which they want to cease activities) with the lowest price per kg N accepted first. Negotiated payment systems, however, have been discredited by several authors (Crabtree, 2000). The compensation process is characterised by hidden information where the public authority is not well informed about the decision-making and opportunity costs of the farmers. Fixed payment systems are

simpler and thus reduce transaction costs. They also remove the conflict that often occurs when prices are negotiated separately with each producer (Crabtree, 2000). Furthermore, given the rather limited budget, the question remains of whether these more cost-efficient options are socially acceptable and politically or administratively feasible.

The types of arrangements discussed still imply an active role of the public authority in the transaction. Another possibility that needs further exploration is the establishment of a more transparent system of production rights combined with a tradable permit system. In this arrangement the sector is paying the regulation itself, while the role of the government is limited to the creation of a consistent institutional environment. As this analysis has revealed, whatever the option taken, it is important for the public authority to recognise the role of other actors when creating the institutional environment.

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CHAPTER 24

Policies and Institutions for Agriculture and Environment in Central and Eastern European Countries

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Abstract

Finding adequate institutions to implement agri-environmental policies presents a particular challenge for all new Member States of the EU. In this contribution, it is shown that it is not sufficient to adopt a new legislation, but that the formal institutional change needs to be accompanied by evolutionary processes of changes in civil society. Certainty, trust and economic possibilities need to be present before sophisticated institutions, to protect the environment, can be successful. Therefore, public provisions to strengthen social and human capital building in rural communities, are necessary conditions for institutional sustainability.

24.1. DIMENSIONS OF INSTITUTIONAL CHANGE

Institutions evolve at the interface of social and ecological systems (Gatzweiler and Hagedorn, 2002). The challenges faced by Central and East European Countries (CEECs) in building institutions can broadly be placed into two categories: (1) those related to re-organizing socio-ecological relations; (2) those related to re-organizing social, political, and economic systems. In all CEECs, institutional dimensions of change such as evolution and accession affect both types of relationships to a varying degree. Accession-related change is usually fast, top-down, and refers to changes such as the legal harmonisation with EU and the establishment of new administrative structures. Evolutionary change is slow, mainly (but not exclusively) bottom-up and requires a strong civil society as well as social and human capital. According to Williamson (2000) institutions that comprise

values and attitudes change very slowly. Usually there are no simple and rapid solutions for solving resource management problems and therefore evolutionary change is relevant for building institutions of sustainability. However, without a democratic political environment, effective economic structures and people who trust each other and who have the resources to engage in a process of communication, it is difficult or impossible to build institutions for sustainable resources in agriculture (Figure 24.1).

Apart from those broader institutional changes, institutions for agri-environmental sustainability need to take into account specific problems of environmental governability. For example, as ecological and political systems do not share the same boundaries, policy makers from different countries need to co-operate and allow for participative decision-making. This is not easy because: (1) there are numerous, often-conflicting interest groups; (2) policy solutions are subject to a high degree of uncertainty; (3) failure of previous government intervention leads to scepticism about public authorities' ability to solve environmental problems; and (4) finally, people attribute different values to the environment (Baker and Jehlicka, 1998; Baker, 2001a,b).

Therefore, governance should not only be "brought closer to the citizens" by bridging the gap between "governance and the governed" and making environmental governance made more democratic (Wind, 2001), but also needs to be brought closer to and matched with the requirements of the natural laws of ecosystems (Costanza et al., 2001). In the EU Commission's attempt to make decision-making more efficient there is the danger threat of governance becoming more undemocratic. The suggestion to abolish the management and regulatory committees (Avery, 2001: 13) is perceived by some authors

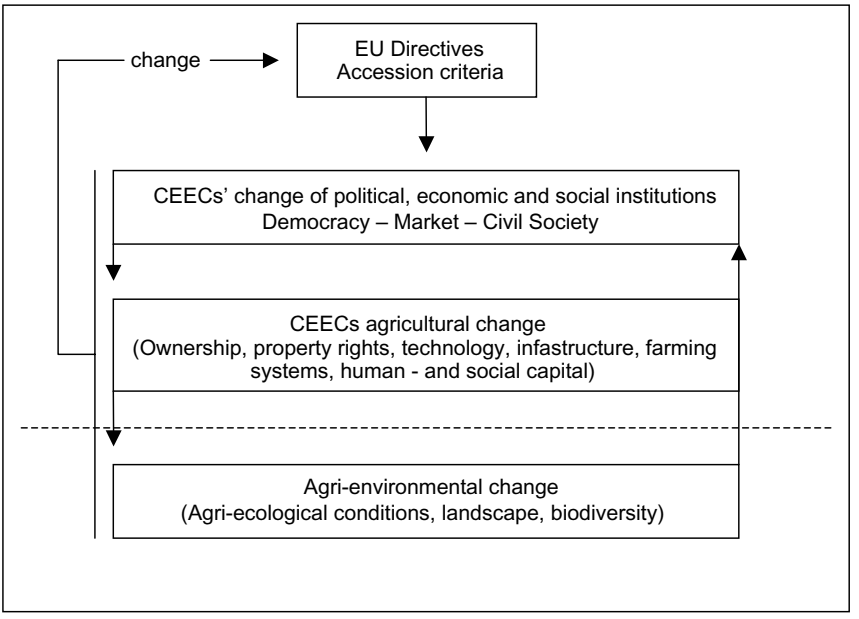

Figure 24.1: Influence of institutional change on the development of institutions for sustainable resource use in agriculture.

(Scharpf, 2001) as a sign that "the greatly enhanced role of the Commission is not that of a faithful agent of either the Council or the Parliament. Instead it amounts to the creation of a 'benevolent dictatorship'. In addition, in its attempt to make the implementation side of decision-making more efficient, the Commission also aims at enhancing its relations with, for example NGOs, with a tendency to elide the political legitimacy and institutional integrity of the Member States."

While western European agriculture itself is only at the beginning of its transformation towards sustainability, this is a challenging task for the candidate countries (Wilson et al., 1999). Achieving sustainable agricultural development while political and economic systems are undergoing a fundamental process of change is indeed more difficult and requires alternative strategies for policy implementation, power allocation and resource appropriation.

The effects of the different forces of institutional change faced by the CEECs also need to be understood from the perspective of these countries' initial transition conditions. Many rural areas were affected by spontaneous extensification and land abandonment. Numerous new landowners could not be identified and were either not interested or not able to work on their land. This caused large areas of agricultural land to be set aside. Land abandonment is one of the main reasons for environmental degradation of formerly cultivated landscapes. In Latvia, e.g., land abandonment led to soil acidification and the development of shrubs and forests of low biodiversity value on formerly drained land (Busmanis et al., 2002). Emigration and an elder rural population is another problem affecting rural areas of CEECs. People also have still limited access to information and participation in decision-making. Investments in building new social and human capital in agriculture are desperately needed, as specific knowledge and skills for managing the landscape are scarce. Major obstacles experienced by CEECs in building institutions and agri-environmental governance include: (1) the priority given to economic over environmental concerns, (2) rural development problems, (3) the lack of administrative capacities (for implementation, monitoring, control, and evaluation) and coordinative abilities of responsible authorities, (4) the lack of financial resources, (5) insufficient experience in the use of incentive payments, and (6) a lack of capacity building, training, and mutual learning (Zellei, 2001; Zellei et al., 2002; Petersen and Feehan, 2003).

Accession-related institutional change originates from a belief in the prominent role of the State in establishing and enforcing property rights that make trust and co-operation possible and in its equally significant role of establishing peace among otherwise combative groups (Levi, 1996). In this perspective, political structure has an important impact on the behaviour and attitudes of citizens. Social capital institutions (Ostrom, 2001) are mainly affected by the operation of government institutions rather than by voluntary organisations. This thesis views social capital as subordinate in reasoning and as a by-product of institutional incentives. Knack and Keefer's (1997) cross-country investigation supports this view point; they find that trust and civic co-operation norms are stronger in countries with formal institutions that effectively protect property and contract rights. Formal institutions that restrain public authorities from acting arbitrarily are associated with the development of co-operative norms and trust. Other authors (North and Thomas, 1973; North, 1981; De Soto, 2000) also support this view and come to the conclusion that States with the most progressive economic growth are those that permit

citizens to associate freely and that have supported free enterprise by instituting appropriate rules and legal systems. This institutionalist perspective is also supported by Bowles (1998), who claims that policies, constitutions, markets, and other economic and political institutions, apart from allocating goods and services, substantially influence the evolution of motivations, values, and preferences by: (1) having framing effects, (2) constituting the reward structures of markets, (3) effecting the evolution of norms, (4) structuring the tasks people perform and consequently affecting their capacities, values, and psychological functioning, and (5) altering cultural learning processes.

Within the context of accession to the EU, forces of institutional change are mainly related to the need to comply with the *acquis communautaire*, the legislative body of the EU. Problems arise from conflicts between formal and informal institutions and from the difficulties of matching formal requirements with conditions "on the ground". At the beginning of the transition process, there was an optimistic tendency to assume that transition would result in a more or less rapid implementation of numerous economic and political reforms. Experiences to date, however, show that transition in several CEECs—with respect to democratisation processes and the building of institutions—has been less rapid than initially expected and has developed its own dynamic. Frequently suggested types of institutional reform were either replications of institutions operating in the western EU and/or transaction cost minimizing solutions (Ibrahim and Galt, 2002). This approach disregarded evolutionary and path-dependent aspects of the transition process in the new Member States. The speed with which the environmental *acquis* harmonizes legislatively with the level of actual compliance differs considerably among CEECs. A fundamental conflict generated by the concurrency of accession and transition is the gap between formal compliance with the *acquis*, the capacity to implement and enforce legislation and the ability to co-ordinate specific agri-environmental policies. Moreover, the present environmental *acquis* is the result of a political bargaining process in which the new members did not participate.

The adoption of the *acquis* in CEECs surely can be viewed as an important step in the process of institution building and as a guarantee for sustainability in agriculture and environment. Nevertheless, it will remain symbolic as long as the implementation of laws is inefficient or absent. This touches the core of the problem. The ability to effectively implement and enforce policies requires downstream changes following formal harmonisation. Rural communities need to be equipped with more resources and with the financial power to strengthen their role in monitoring and enforcing agri-environmental schemes. New priorities and working methods are required for civil service agencies. Administrative capacities must be improved and concerted efforts made to engage all actors of the agri-environmental action scenario, such as farmers, civil servants, and politicians.

In other words, accession is both a necessity and an obstacle in the process of institutional change towards sustainability. Following formal harmonisation with the EU *acquis*, the new Member States will have to continue in their efforts of crafting institutions, responding to and meeting the specific needs of the rural environment, countryside and people. The Copenhagen Conference of December 2002 made clear that being in "harmony with the EU" is currently more important than being in "harmony with nature". The EU has granted significant periods of transition in numerous environmental

problem areas, especially with regard to water quality, emissions, and waste treatment. But, although the CEECs were offered the possibility of including agri-environmental measures in their rural development plans (within the Special Accession Programme for Agriculture and Rural Development (SAPARD)), the environmental issues were not given top priority (Zellei, 2001).

Evolutionary processes of institutional change can be related to the "social capital thesis", which states that social capital is necessary and sufficient for explaining societal outcomes. It is necessary because low institutional performance corresponds with low social capital. For the most part, this thesis is based on the analysis of Putnam et al. (1993) of restructured regional governments in northern and southern Italy, which shared a common set of legislative reforms and were endowed with identical administrative powers and relatively equivalent financial resources. Neither economic variables nor State structure could explain differences in institutional performance. The thesis argues that societies who are well supplied with social capital will be able to adapt to new organisational forms more readily than others. Such society will also be able to innovate organisationally, as a high degree of sociability fosters the emergence of a wide variety of social relationships. This "social capital thesis" also says that democratic institutions cannot be built from the top-down. They must be created in the everyday traditions of trust and civic virtue among its citizens. This perspective takes levels of trust as given and not subject to change. Social capital is regarded as exogenous to the institutional building process.

In the Central and Eastern European context, the evolution of institutional change can be explained by history and the legacies of the past. A legacy of communism was that central planners sought to dismantle traditional forms of land use and rural communities. Lenin's socialist Cultural Revolution, aimed at abolishing the differences between the city and the village. Socialism led to a vast re-engineering process in the rural areas of CEECs. Landscape and society were re-engineered beyond their capacity to provide and establish self-regulating functions and self-organisation capabilities. These were replaced by central planners, not sufficiently able to respond to change because of lacking feedback and monitoring mechanisms and because of a general reluctance to change and adaptation of the political system. Traditional pre-socialist ties between the land and the people were disrupted in many countries by turning farmers into rural workers, treating the land as no more than a production factor and the "farm" as a firm which also served as a platform for social and cultural interaction.

Institutional reform paths were also affected by the existing stock of material and of physical, financial and human resources. For example, Bulgaria and Romania, who are less successful in transforming their political systems (and therefore do not belong to the first wave of accession countries), are confronted with the persistence of an old nomenclature, "which has a history of eschewing environmental regulations and who has proved to be the least public spirited section of society" (Baker, 2001a,b). Dobrinsky (2000) also describes the transition crisis of Bulgaria as a result of the deeply rooted trade relations between Bulgaria and the USSR. The dependence of Bulgaria's economy on trade with the Soviet economy and the breakdown of this trade relationship constituted a major economic handicap after 1990. The CEECs adopt different strategies to establish new institutions in agriculture and the environment and have varying success. One reason

for this variation can be found in the legacies of central planning. The collapse of the communist party has marked a specific regime change at the constitutional level (Haggard, 1997). Nevertheless, it did not automatically alter the informal and formal routines of society (Hedlund, 1999). Thus, the institutional environment that existed at the moment of the collapse of the communist party defined the paths for change open to former centrally planned economies.

24.2. THE NITRATES DIRECTIVE: CASES FROM POLAND, LITHUANIA AND SLOVAKIA

The Polish, Lithuanian, and Slovakian cases analyse the problems with the transposition and implementation of requirements imposed by the Nitrates Directive 91/676/EEC. In March 1998, when the EU officially launched accession negotiations with Poland, the screening process confirmed the assumption that Poland would not be able to implement the requirements of this Directive until the provisional date of accession. For this reason, Poland requested a transition period of eight years. However, for the EU the transposition of the environmental *acquis* into national legislation had a high priority. They encouraged Poland to reconsider their request and to establish an implementation programme within four years. Despite this earlier assessment, Poland judged that—given the current level of water pollution—designating agricultural areas vulnerable to nitrate pollution was not justified and, that there was, therefore, no need to prepare an implementation programme. The Institute of Meteorology and Water Management prepared a report on "the designation of zones vulnerable to nitrate pollution from agricultural sources" and concluded that agriculture did not present serious problems of nitrate pollution and that the State of Polish waters was generally better than in most EU countries (Karaczun, 2002; Karaczun et al., 2003).

In their attempt to harmonise with the EU, discrepancies such as, e.g., different storage capacities proposed by EU and Polish law (four- and six-month capacities) do not seem to receive much attention. Karaczun (2002) concludes that, instead of negotiating on specific issues in which both sides try to solve the environmental challenges of accession, position-based negotiations are carried out in which both parties endeavour to achieve superiority. "This might lead to the situation that Poland tries to find a legal interpretation," allowing them to proclaim the fulfilment of all accession requirements in this field. These diplomatic and rhetoric acrobatics, however, cannot conceal the continued lack of co-ordination and co-operation between local and central authorities as well as between the relevant ministries and the absent training capacities for civil servants, farmers, and trainers in the field. The Polish case exemplifies well the strategy of repudiating an environmental problem for the sake of compliance with the EU environmental *acquis*. It exemplifies further how the accession negotiations have transformed the political status of the farm pollution problem in Poland.

The case study area in Lithuania was carried out in the northern Karst region, which covers one-fifth of the entire country. After privatisation, the large State and collective farms of socialism were dispersed in an extremely fragmented farming structure with high variations in farm size, specialisation, and education levels. In Lithuania, water protection

laws were in force since 1972. Protected water management zones were declared in the mid-1970s. In 2001, the agricultural and environmental ministries issued a joint order as part of the implementation of the Nitrates Directive, which regulates stocking densities. Administrative penalties for visible actions are effectively enforced. The advisory service that existed during socialism was rebuilt during the 1990s. Small farmers, however, need better access to information and training. Following an advice from the Danish authorities, the government envisages the entire country to be designated as a nitrate-vulnerable zone. Such an approach implies a commitment to uniform environmental standards across sectors.

In contrast to the fragmented farming structure in Lithuania, the large-scale farm structure in Slovakia continued after land restitution. The Slovakian case deals with one of the most productive agricultural areas in Slovakia: Corn Island. Rich in groundwater resources, 80% of the area is under agricultural production, and most crops are irrigated. In addition, Slovakian water protection laws were already in force by 1973. In 1978, Corn Island was declared a protected water management area. In 2002, the New Water Act was adopted, which defines the storage, manipulation, and application of mineral and organic fertilisers and appropriate soil cultivation. It also limits the number of animals per land unit. The degree of continuity of enforcement mechanisms is higher compared with Lithuania or Latvia, as the farming community and structures were less fragmented following privatisation. The Slovakian water monitoring system is very comprehensive and meets EU requirements because such network already exists since the 1960s. However, as in Poland, a well-functioning agricultural advisory service, in particular for small farmers, hardly exists.

To summarise, a great deal of effort has been put into the formal harmonisation of legislative bodies within the context of accession. Nonetheless, it is only one small step towards regional sustainability. In order to move towards Nitrates Directive goals, continued efforts are required to strengthen the social and human capital stocks in rural areas of Poland, Lithuania, and Slovakia. This involves informing and training farmers on the environmental impacts of nitrate pollution, providing incentives for pollution prevention measures, and supporting structural change for viable and environmentally sound farming systems. The task of designing institutions for sustainability will be difficult in areas where farming structures remain fragmented, landowners are absent, and fields are abandoned. Yet another challenge for all countries is the lack of financial resources. The funds provided by pre-accession programmes are very limited. Farmers would be financially overburdened to pay for manure tanks, and banks are unwilling to provide loans. In the long run, resources for investments need to be generated from viable farming activities.

24.3. GOVERNING AGRICULTURAL BIODIVERSITY AND LANDSCAPES IN CZECH REPUBLIC, SLOVENIA AND HUNGARY

The cases in Slovenia, the Czech Republic, and Hungary (Gatzweiler et al., 2002; Gatzweiler and Hagedorn, 2003) deal with biodiversity issues and the implementation of agri-environmental schemes in protected areas. All countries show specific and general

problems with the governance of agri-environmental programmes. The lack of co-operation and co-ordination among agricultural and environmental ministries and the landscape protection authorities are cross-cutting sources of conflict; problems which have its roots in the traditionally strict division of ministry responsibilities (Ministry of Agriculture (MoA) and Ministry of Environment (MoE)) and their strict hierarchical design. Depending on the hierarchical structure of authority within and between these bodies, the traditions in decision-making and, depending on the location of most financial resources, the co-operation and participation among the different actors vary considerably. Administrative capacities need to be improved; e.g., farmers and non-governmental organisations (NGOs) should co-ordinate decision-making in order to bring about a less "top-down" and better functioning governance for the benefit of the people as well as the environment. The Czech case serves as an example of a local NGO that is very active in providing farmers with information about organic farming, EU programmes, and a wide range of other topics. Its success is based on the local recognition and trust towards its manager and the manager's leadership qualities.

The Czech case (see also Ratinger et al. in this volume) deals with the challenges of landscape conservation and management in the White Carpathian region of eastern Moravia, on the border to Slovakia. This is an area characterized by small, dispersed villages and pastoral agriculture including extensive cattle and sheep grazing. Until the mid-20th century, low input farming was common, contributing to the evolution of bio-diverse landscapes, a mosaic of forests, pastures, and some of the richest meadows in Europe. The area is characterised by a dual structure in farm size. The landscape consists of small, privately owned land and large, commercially managed land. A handful of large enterprises manage approximately 50% of the area, while holdings under 10 ha manage 33%. In the Czech case, the agri-environmental programmes are developed in preparation for EU accession. Farmers are eligible to receive LFA support but are unfamiliar with agri-environmental incentives. Different compensation payments are introduced by the MoA and the MoE, with the ones from the MoA being the highest. Subsidies are only available for farmers with more than 2 ha within and more than 5 ha outside of the protected area. Small farmers seek additional suckler cow premiums, pasture-based livestock premiums, and payments for ecological farming. There are co-ordination problems regarding the complementarity of the subsidies from the MoA and MoE. NGOs are very active in mediating between farmers and authorities and in providing additional information on biological farming practices.

The Slovenian case deals with the agri-environmental scheme in an area designated as a regional park. In Slovenia the total share of LFA accounts for 84.3% of the total surface area and 78.4% of Slovenia's agricultural land. The country is characterised by hilly and mountainous regions, which make up 70% of the total area. It also has a rather long tradition of policies for less favoured areas. The case study area is an upland natural forest with traditional pastoral farming, which has been proposed as a regional park. Small-scale family farms with private land ownership have been in continual existence. There has been a Less Favoured Area (LFA) support system in Slovenia since 1975. The Slovenian Agri-Environment Programme (SAEP) was already in place on a pilot scale in 2001. The local population, however, wants to be more involved in the designation process of the

park. Farmers receive LFA support (€ 49 per ha) and are eligible for agri-environmental payments as well as other subsidies.

The Hungarian case concerns an agri-environmental scheme in a protected landscape area dominated by small-scale farming. Traditional grazing practices in this hilly region have shaped diverse grassland habitats. The number of grazing animals decreased after 1990, threatening the landscape's maintenance and biodiversity. Agri-environmental programmes in Hungary are currently being developed in preparation for EU accession. In 1999, the government approved the National Agri-Environmental Programme (NAEP). Schemes developed under the NAEP are intended to provide support for environmentally friendly production methods (reduced use of fertilizers and pesticides, environmentally oriented farm plans) and nature sensitive land utilisation that also fosters quality food production (Zellei, 2001). Most protected areas are State-owned. The State leases land to farmers under conditions of rather strict environmental management prescriptions. Financial incentives and compensation payments for LFA have not been paid yet. The National Park Directorate indirectly supports the farmers by issuing preferential rents for the farmers living in the protected landscape area. The approach towards farmers is prescriptive and regulative. co-operation between farmers and authorities needs improvement and the strict environmental regulations cannot be implemented or enforced.

The analysis of case studies in the Czech Republic, Hungary, and Slovenia (Prazan et al., 2003) has demonstrated that three broader issues remain problematic with respect to agri-environmental policies: (1) Uncertainty surrounding the ownership and control of land. The duality of farm structures, power asymmetries, indeterminate ownership, absent landowners, and the illegal occupation of land are factors that do not support long-term decision-making and sustainable management. (2) Difficulties of integrating measures and policies for agricultural support and environmental protection. A comparison of current EU agri-environmental policies and those practised in the CEECs shows that measures need to be more target-oriented and adapted to local conditions. Individual contracts, for instance, need to be elaborated on in co-operation with farmers to achieve the envisioned conservation targets. Local conservation authorities and farmers need to have better access to information and learn about new legislation, but they also need to develop new paths of co-operation. What is still needed are accurate baseline data to calculate adequate payments and maps to show land ownership and ecological characteristics of the area. (3) Limited involvement of local people in determining how marginal areas should be managed and developed. Given the legacy of the Socialist era, when conservation issues were decided by designating national parks without consulting local communities, participatory types of governance are a tremendous task. Apart from requesting improved access to information and participation in decision-making, local rural actors have also reported a feeling of alienation. They perceive the destiny of marginal areas as dependent on distant power struggles and rivalries among conservation, agricultural, and environmental agencies.

Our findings in these countries show that the patterns of evolving agri-environmental governance are determined by the degree of homogeneity of the biophysical environment, the actors and the rural communities, and the farming structure. Factors hampering agri-environmental governance are: (1) the complexity of the initial problem situation and ties to the historical past, (2) rivalry among stakeholders, (3) fragmentation of the ownership

and farming structure after privatisation, and (4) uncertainty of property regulations with respect to public and common goods.

Factors promoting agri-environmental governance are: (1) the availability of potential non-State actors for sharing responsibility and co-operation, (2) administrative capacities and other resources for problem solving and conflict resolution, (3) sufficient number and diversity of actors participating in problem solving, and (4) access to information and equal opportunities to participate in decision-making.

Governance responses within these complex and heterogeneous drivers of institutional change have been diverse. In the case of Hungary, for example, governance solutions were sought that were hierarchically structured and regulative. The State was sole landowner, prescribing strict regulations for land management without compensating farmers. This approach may be a transaction cost minimising solution for the Hungarian case, as it reduces co-ordination costs among various authorities and among diverse actors. It remains questionable, however, if such protective and hierarchically structured governance leads to environmentally sound and socially acceptable results.

The Czech case reveals the difficulties of governing the environment, not only as a result of the complex physical problem setting, but also because of the lack of co-ordination and co-operation among the various actors involved. Although there is private ownership of land in protected areas, the powers are redistributed to the large enterprises renting land from a high number of landowners and paying very low rents. The co-ordination problem involves these large enterprises, different governmental authorities, small farmers, and NGOs. Despite these higher costs for co-ordination, people are more motivated and better integrated into the process of decision-making, receive incentive payments, and are willing to invest in their rural environment, even without direct benefits. Also in the other cases described other governance structure for agri-environmental co-ordination can be found.

24.4. CONCLUSIONS

Finding adequate institutions to implement agri-environmental policies presents a particular challenge for all new Member States; one that goes beyond the difficulties of transforming the political and economic systems. The aim here was to describe the challenges posed to the emerging policies, institutions, and governance structures for sustainable agri-environments. Although, the new EU Member States entered the EU as full members on May 1st 2004, our findings confirm that the environment received not a high priority in measuring achievement towards sustainable agriculture. The CEECs continue to be confronted by diverse challenges of institutionalising the multiple functions of agriculture.

With regards to the tension between accession and evolutionary dimensions of institutional change we recognise that certainty, trust and economic possibilities need to be present before sophisticated institutions and governance structures for CEE agriculture and environments can be designed. The picture obtained in all cases is a picture of increasing diversity in various fields. Diversity in agriculture and environment has increased in terms of:

- the different forces of institutional change (accession, evolution, transition)
- the implementation of new co-ordination mechanisms at different levels of decision-making
- the awareness and definition of agri-environmental resource problems
- the types of farming systems and organisations
- the interests of local actors, authorities and other groups, mainly driven by the goal of seeking economic benefits and power
- the interpretation of the boundaries between private and public property rights
- strategies for policy implementation
- strategies for power allocation
- strategies for resource appropriation.

There is far less evidence of collective action and co-operation on local, intermediate and national levels as well as between these levels. Also, investments in human and social capital which are needed to enhance the capabilities and skills of resource managers are lacking. In addition, little consensus exists between new members and the EU Commission beyond formal agreements and the formal transposition of the common EU legislation (*acquis communautaire*). The question, whether the breakdown of post-socialist agricultural production (especially in the livestock and agricultural input sector) has alleviated more the environmental pressure than the deliberate effort of designing institutions for sustainable agriculture, remains open.

Our findings further confirm that during the initial period of transition, accession-related forces of institutional change were clearly more important than evolutionary forces of change. In the dynamic process of institutional change towards sustainable agriculture, it is difficult to discern between hampering and promoting factors of change. Factors promoting institutional change at one point in time can hamper institutional change at a later point. Legislative harmonisation—for instance, over land ownership—is a necessary but insufficient condition for building sustainability. In other words, the difficulty of distinguishing between hampering and promoting institutional factors is a result of the "moving target" nature of sustainability. Although persistent by definition, institutions for sustainability constantly change in order to adapt to changing circumstances. It is, however, clear that in the initial phases of transition an ageing rural population, the fragmented ownership and farming structures, the uncertainty about environmental property rights and connected power asymmetries, the lack of training and advisory services as well as other public provisions to strengthen social and human capital building in rural communities, are all impediments to institutional sustainability. On the other hand, factors such as appropriate economic incentives, legal security, local co-operation, collective action, and intermediate agencies providing information and education promote the establishment of institutions for sustainability.

With respect to expertise and knowledge for solving resource management problems, there are still knowledge gaps, which could be filled by promoting learning and the exchange of knowledge and expertise among CEECs and among Western and Eastern European countries. The experiences of Eastern Germany or the Netherlands with water distribution and drainage could, for instance, help to solve problems in Bulgaria (with irrigation) or Latvia (with drainage).

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 25

Institutions and Policies for Sustainable Land Management in the Czech Republic

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Abstract

This contribution concentrates on changes in property rights and policies surrounding interaction between agriculture and environment in the Czech Republic. The institutional and organisational features and their development during and after transition are described and illustrated for the White Carpathian protected landscape area. The key point for conservation is to maintain grassland management on a large scale. While environmental policy lacks measures for maintaining grassland management, agricultural policy launched incentives without sufficient environmental concern. Three policy options for improving the situation are examined. The policy options proposed reflect the problems identified in the White Carpathian case study.

25.1. INTRODUCTION

This chapter refers to sustainable land management in marginal areas. These areas are often protected for their landscape and biodiversity values. Much of the land has poor soils and the areas tend to be underdeveloped. The low-intensity farming practices of the past maintained the richness of the wildlife and the diversity of the landscape. Collectivisation in the 1950s and the subsequent intensification of agriculture threatened the natural values in marginal areas. For this reason, protected landscape areas (PLAs) were designated in 1970s and 1980s.

The political change in 1989 and the following economic reforms have resulted in both a sharp economic decline and major structural adjustments in agriculture. Although these

have resulted in reduced pressures on the natural environment, they have also led to the extensive withdrawal of land management practices that are essential to the maintenance of landscape and biodiversity. The available nature protection policy measures and approaches, based on rather blunt controls over the intensity of production, were not appropriate to these new threats. The new agricultural legislation and policy introduced in 1997 recognises the need for compensation for restrictions on agricultural practices and have provided a basis for the gradual introduction of incentives to cultivate marginal land. However, this policy has not integrated the governance of environmental protection. The obstacles to the long-term sustainability of land management in the Czech republic are illustrated for the White Carpathian PLA. Two principal institutional imperfections in the land management of the White Carpathians identified are the division and uncertainty surrounding property rights to the land and the limited involvement of local people in determining how areas should be managed and developed.

The central question of this contribution rests in options to analyse possible institutional arrangements to get more environmental values on a sustainable basis. It proceeds as follows. First, the theoretical concepts are introduced. Then it is explained how the provision of environmental goods is organised in the case study area—the White Carpathians. Section 25.6 defines and examines policy options for institutional change enhancing the sustainability of the provision of landscape and biodiversity on farmland.

25.2. THEORETICAL CONCEPTS

Attention is paid to three assets—land, agricultural products (conventional or ecological), and landscape and biodiversity. Property rights on these assets changed during the last decade. Land reforms (Land Law, 229/91) returned titles to land to original (pre 1948) owners and their heirs in 1992–1993. Ratinger and Rabinowicz (1997) listed the problems with delineation of property rights to land: the most pertinent ones for landscape and biodiversity management are the uncertain subdivision of property due to inheritance and the prevalence of unidentified/inactive owners. The steady depopulation of the marginal regions over a long period of time has exacerbated these problems. The heirs of the original owners may now live far away, may be unaware of their property or may have such a small or uncertain situation to pursue their claims.

As an effect of market liberalisation and commercial reforms, farmers (as all other entrepreneurs) acquired economic property rights over their "food and fibre" output. Farmers' incomes are depended on the sales of their products, and not longer on the discretion of central planners.

Landscape and biodiversity are other outputs stemming from the land. Landscape and biodiversity outputs can be divided into four categories: landscape (as composition of meadows, pastures and arable land, its tillage, etc.), landscape amenities (hedges, trees, (traditional rural) buildings, etc.), biodiversity (diversity of species in a large area) and microhabitat protection (nature reserves). All these outputs are non-rival and (partly) non-excludable goods (Slangen, 2001) especially when considering their intrinsic values.

Lippert (2002) suggests to associate the bundle of capabilities (to provide food and fibre and to provide environmental qualities) with land and to distinguish between agricultural

and environmental attributes of land ownership. Bromley and Hodge (1990) use a broader term, countryside and community attributes (CCA), for a bundle of non-food and fibre attributes associated with land. Obviously, these attributes do not necessarily have to be controlled by the same person. The fact that different agents may optimise agricultural and environmental attributes (CEA) may lead to "divided ownership". While property rights to agricultural attributes are held by farmers, environmental attributes may be in the hands of a person or organisation different from farmers ("nature agents").

The question is which institutional arrangement (governance structure) ensures the optimal provision of environmental qualities. The arrangement will depend on transaction costs (here: costs of enforcing property rights) occurring in providing and transferring environmental attributes. Lippert (2002) distinguishes three kinds of transaction costs: costs of excluding, cost of measuring the benefit and costs of monitoring inputs. If costs of excluding are prohibitive high, while production costs are lower than the (social) value of the environmental attribute, a territorial authority may be necessary to promote the provision. The remuneration modality will depend on costs of measuring the output (Lippert, 2002):

- If these costs are low (justifiably high), then a result-related remuneration of the person or organisation improving the environment will be preferable.
- If costs of measuring are prohibitive high, then an action-related remuneration will be preferable. Since the output is not measurable (at acceptable costs), the measure must rely on the (farming) practices that are supposed to produce the desired environmental effect.

Falconer (2002) pays particular attention to transaction characteristics such as assets specificity, observability and inseparability to explain farmers' participation in voluntary schemes for provision of landscape and biodiversity. In Williamson's theory, assets specificity refers to the fixed costs related to a transaction or, better, to the low opportunity costs that assets have for an alternative use (Williamson, 1991; Vernimmen et al., 2000). These fixed costs may relate to the particularity of the site, the long-term investment, or to specific knowledge. Low separability (high inseparability) is often due to joint production of environmental goods by many agents. Joint production (of a number of agents) might be associated with low observability of individual contribution, and hence high cost of measuring it. Beyond this, there are often joint productions, for which inputs of individuals are complements rather than substitutes. Consider the production of landscape: if one land operator refuses to provide/maintain certain landscape features (attributes), extra landscape management activity of another land operator will not compensate this (Falconer, 2002). Following Williamson (1985), four types of contract-cooperation modalities can be distinguished: spot market, obligational market, primitive team, and relational team (Table 25.1).

Slangen (2002), following Lyons and Mentha (1997), is more precise and distinguishes between contracts (terms under which property rights are modified/exchanged) and arrangements (under which contracts are implemented). Three types of contracts are suggested: classical, neoclassical and relational contracts. In classical contracts, the identity of parties does not matter, price is the most important co-ordination mechanism,

Table 25.1: Governance structure in respect to separability and assets specificity.

	Low assets specificity	High assets specificity
Separability	*Spot market*: short-term contracts and highly individualised incentives (high observability)	*Obligational market*: contracts of longer duration likely, easy implementation
Inseparability	*Primitive team*: problems in identifying individual contribution to overall performance; contracts are more complex than the spot market, with more costly required monitoring; longer duration contracts (given the costs of re-negotiation), but still relatively short term as low specificity	*Relational team*: complex organisation; tendency to opportunism—cooperation and shared values needed; long term contracts to capitalise on the costs of building team capacities with a greater role of organisational incentives over monetary incentives

Source: Falconer (2002).

safeguard is of little importance, and term is short. On the other hand, there is the relational contract. The identity and personal characteristics of parties in the relational contract are crucial, price is of minor importance as a co-ordination mechanism, safeguards are very important, and the term is very long. In between, there are neoclassical contracts, in which the identity of parties matters, price is less important as a co-ordination mechanism, safeguards are important and the term of the contract is longer. Obviously, contracts and governance structures are closely related. Intuitively, classical contracts relate to spot markets (Table 25.1), relational contracts to relational teams (which may take the form of environmental co-operatives), and neoclassical contracts to primitive teams or obligational markets. Actually, transaction characteristics determine both the features of contracts and the features of governance structures (Table 25.2). As Menard (1997) pointed out, the best contract is a contract that can be set up and implemented under low costs, with simple enforcement procedure. Therefore, the choice (or evolution) of the governance structure will depend, besides the above-discussed transaction characteristics, on the completeness and complexity of contracts (Slangen, 2002). Incompleteness results from bounded rationality, particularly if the environment is uncertain, and from opportunistic behaviour of the partners. Complexity has to do with writing of and implementation of contracts mainly as a result of an unclear distribution of residual control rights between parties.

Table 25.2: Transaction characteristics and organisation.

Transaction characteristics	Features of contracts/organisation when transaction costs tend to be high
Excludability	Non-market governance structures
Assets specificity	Need for long-term contracts
Measurability (observability) of output	Action-related contracts
Monitoring	Commitment and trust needed, safeguards important
Inseparability (low separability)	Horizontal coordination important

Source: own classification.

Biodiversity and landscape are impure public goods or common goods because their attributes belong, according to Barzel (1997), to the public domain. This results in complex contracts. Because in practice, it will be difficult to take all future possibilities into account, contracts for landscape and biodiversity tend to be complex and incomplete. The resulting arrangement will depend mainly on the importance of horizontal co-ordination.

For those attributes/environmental qualities for which horizontal coordination is essential, relational contracts and relational teams (e.g., environmental cooperatives) are proper arrangements. For others, it can be hybrid forms based on neoclassical contracts. When result-related measures are justifiable and when specialisation and scale effects can be expected, introduction of a "nature agent" (e.g., Conservation, Recreation and Ammenity trusts, Hodge, 1991), who has to be the "residual claimant" to the outcome of his effort (Lippert, 2002) may be considered. The question arises how the transaction characteristics, contracts and governance structures discussed relate to the various environmental goods/services belonging to the family of landscape and biodiversity. An idea about this linkage between goods and transaction characteristics can be derived from Lippert (2002) and Falconer (2002) (Table 25.3).

This relationship allows to construct an image of "optimal" governance structures for landscape and biodiversity provision. It is obvious that, due to the high costs of exclusion, we have to deal with non-market arrangements. Because assets specificity tends to be high for the family of landscape and biodiversity goods, long-term contracts are claimed. Due to high inseparability, the "landscape" and "biodiversity" will require significant horizontal coordination. Results and individual contributions in protecting microhabitats or providing certain landscape amenities are observable and measurable, therefore, governance might be result oriented and relatively simple. Lippert (2002) suggests that landscape amenities and microhabitat protection might be provided by a (non-farming) "nature agent", also due to specialisation and scale effects.

Due to prohibitive high costs associated with environmental transactions (discussed above) the private rights based regime leads to sub-optimal production of environmental output (Grafton, 2000). Bromley and Hodge (1990) suggest departing from the traditional model and letting the management (and exclusion) rights reside with the community or

Table 25.3: Transaction characteristics of environmental services in the case of landscape and biodiversity.

	Cost of exclusion	**Assets specificity**	**Measurement cost (observability in the reciprocal way)**	**Inseparability (jointness in inputs)**
Landscape maintenance	High, prohibitive	Tends to be high	High	High
Maintenance of *landscape amenities* (hedges, trees, etc.)	High	Rather low	Low	Low
Biodiversity protection	High, prohibitive	High	High (attempts made)	High
Microhabitat protection	High	High	Rather low (definitely possible)	Low

Source: Lippert (2002) and Falconer (2002).

the State. For community rights to be successful in addressing common pool problems, the collective interest must be accounted for in the decision-making and behaviour of resource users (Grafton, 2000). According to Ostrom (1990) necessary conditions are: well-defined geographical boundaries, rules that are acceptable by the community and tailored to the resource, efficient monitoring and enforcement capacity, adequate resolution mechanism for disputes, good participation of resource users and recognition by the outside authorities of the collective rights. Obviously, a community rights based property regime is similar to the relational team described above, deploying community social capital (commitment and trust). A State rights based property regime is appropriate when large co-ordination is needed, and economies of size exist in terms of processing of information, monitoring and enforcement (Grafton, 2000). In both community and State-based property rights regimes, the legal ownership of land does not matter unless it generates significant costs, which do not occur when sole ownership takes place. One can consider at least to some extent current Protected Land Areas (PLAs) as a State rights based property regimes (keeping in mind that we have divided ownership due to the control split over agricultural and environmental attributes).

25.3. WHITE CARPATHIANS CASE STUDY

The White Carpathians are a mountainous area in the East of the Czech Republic on the border with Slovakia. The area was settled for agriculture in the 16th and 17th centuries when much of the forests were cut or burned down. The poor soil ensured a pastoral agriculture of extensive cattle and sheep grazing with small domestic plots cultivated for cereals and potatoes. Traditional unmechanised farming, relying on low inputs, remained characteristic until the middle of the 20th century.

From 1950 to 1980, collectivisation resulted in an increase in the concentration of cattle for both dairy and beef production. Gradually there was a switch to housing the animals. Artificial fertilisers were applied to the grassland, and the grass and hay were mechanically cut. The PLA designation, imposed in 1980, was intended to safeguard biodiversity from these changes.

The protected area extends over 71,500 ha. Half of it is agricultural land. The zones with strongest protection—including restrictions on fertiliser and pesticide use and prescriptions concerning certain aspects of land management—cover 28,300 ha, of which about a third is agricultural land.

Since 1989, the recession in dairy and beef markets has resulted in reduced concentrations of cattle. On the one hand, this has allowed a beneficial extensive production and animals have started to reappear on pastures. On the other hand, the less accessible meadows and those with restrictions on fertiliser have decreased in value for the farmers. The area of agricultural land not being used has grown, reaching 5% by the late 1990s.

The significance of the landscape and biodiversity of the White Carpathians are recognised nationally and internationally. The meadows are amongst the most species-rich plant areas in Europe and they include many protected species. The mosaic of meadow, pasture and forests and the varied topography produce a variety of habitats, including some plant life adapted to dry conditions and some to humid conditions.

This biodiversity can be diminished in a short period of time by such practices as fertilising or mulching, or by idling the land (Willems and Van Nieuwstadt, 1996). The land has to be mowed or grazed (in the proportion 2:1, as suggested by Local Administration for Protected Land Areas (LA PLA) of the White Carpathians). Stopping such management leads to shrubby growth, which reduces species diversity.

Decollectivisation and land restitution have left a dual farming structure. A few large farms of over 500 ha occupy almost half of the agricultural land, while 99% of farms are under 10 ha and together account for about a third of the agricultural area. The latter are household plots of less than 2 ha. The household plots and small holdings are mainly farmed for direct consumption and to supplement other household income. The small and medium-sized commercial farms are run by people, often pensioners, who are keen to re-establish their family farms. Survey evidence suggests that these two groups are deeply committed to the landscape. The large commercial farms, in contrast, are very profit oriented. They are also more sensitive to changes in market or policy incentives. They usually have land outside the protected zones. Typically, their activities are differentiated into intensive food and fibre production and extensive environmental quality management.

25.4. ANALYSIS OF THE CURRENT INSTITUTIONAL ARRANGEMENT IN THE WHITE CARPATHIANS

25.4.1. Governance structures stemming from the environmental policy

The environmental policy for designated PLAs recognises direct regulations (on the use of fertilisers and pesticides, on grazing, etc.) and contracting for improving landscape and biodiversity (Law 114/1992). A requirement of proper grassland management is not explicitly mentioned in the legislation; it is argued by the environmental administration that it follows from the Law on the Protection of Agricultural Land (334/1992, a revised version 231/1999). This is obviously a weak point because such a weak "legal" requirement is difficult to enforce. Originally, regulations in PLAs were taking away property rights without compensation. As pointed out by Slangen (2001) a large extent of uncompensated regulations on resources will result in their incomplete or inefficient use. Thus, the result of uncompensated regulations was not only the loss of income of farmers, but also the increase of idle land, and a reduction in the provision of landscape and biodiversity attributes in the White Carpathians.

Environmental legislation is implemented, monitored and enforced by the local administration of the PLA (LA PLA). Due to inadequate capacity the main LA PLA activity is restricted to monitoring the fulfilment of regulations (as fertiliser application, restrictions on grazing) and to negotiating and governing contracts for microhabitat protection and landscape amenities. Being very limited in contract possibilities, the overall landscape and biodiversity management relies mainly on information dissemination provided by LA PLA in association with agricultural landscape management programmes (before 2000) and Less Favoured Area (LFA) payments (after 2000).

LA PLA contracts for microhabitat protection and landscape amenities present very detailed management prescriptions with precisely calculated value of the service, which

helps to enforce the contract (Shleifer, 1998). The contracts assume separability and sufficiently low (acceptably high) measurement costs. These contracts are in principle available (accessible) for any land user operating in the area. However, it follows from interviews with LA PLA representatives that the identity of parties matters. The administration is concerned about the ability and reputation of the contractor to provide the service at a sufficient quality level and at a reasonably low cost. Farmers are interested in these contracts, particularly, when they wish to restore degraded land (often previously abandoned meadows). The contracts (the programme) are criticised mainly for their uncertainty: there is no guarantee that proposed management agreement receives money from the State budget in the end. In the light of our theoretical outline, the LA PLA contracts are incomplete if we take into account the period of contracting, but in general not complex.

Since the budget is very limited, contracting stemming from the environmental legislation is used for improving or maintaining the highest natural values or for expensive restoration of the habitats of valuable species. There are obvious budget constraints preventing the LA PLA to maintain biodiversity and landscape to a larger extent by these types of contracts.

While observability or separability of transactions covered by the LA PLA contracts is high, it is not the case of those maintaining/enhancing overall biodiversity and landscape, or those subjected to legal requirements for certain farm practices (no fertilisers, regular mowing). The monitoring capacity of the LA PLA is very limited; monitoring and enforcing related to biodiversity and landscape are in general, expensive and, in particular, accompanied by high organisational costs stemming from the "transitional" land tenure system. Therefore, rather than sanctioning improper practices, especially those which are subjected to the MoA (Ministry of Agriculture) support programmes, the LA PLA sees its role in permanent and patient education of agents acting in the White Carpathians.

The regional agricultural agencies (AA) of the MoA are responsible for administrating contracts stemming from agricultural policy. Large-scale protection of landscape and biodiversity has been encouraged by payments from the budget of the MoA. Initially (1997–2000) there was the support of landscape management; in 2001, it was replaced by cross compliance associated with compensations for less favoured conditions and environmental restrictions. The programme was launched at a time that farmers were stopping cultivating land. Therefore, the primary objective of the MoA programme was to stimulate cultivation (keeping farmers) through income incentive, while the environmental objective was supposed to be achieved through cross compliance. The original programme was not restricted to farmers. A result was the emergence of nature agents (mowing and hay harvesting companies), who in contrast to farmers, were primarily oriented on the production of environmental quality. However, it was understood and criticised by farmers as an outflow of income. In addition, the performance of nature agents was rather poor. Therefore, the eligibility was later restricted to only farmers by adding a condition of minimum livestock unit (0.15) per hectare, of which at least a half has to be cattle or sheep. By doing this, MoA has coupled environmental attributes to "food and fibre" production.

The minimum livestock unit condition of the MoA contracts has induced more commercial farming with relatively sophisticated marketing (beef market). To cover the

cost of conversion and make beef/sheep farming economically viable, farmers need supplementary assistance. At the moment, there are suckle cow and ewe premiums, a premium for cattle or sheep on pasture and payments for ecological production. Accepting the latter, farmers are driven into even more sophisticated marketing.

Until recently, the AA lacked capacity to monitor all plots to which payments were assigned; hence, there was a high risk of opportunistic behaviour by farmers. When the AA monitored the region by aerial screening it was revealed that farmers did not cultivate bands and strips of meadows along forests already invaded by shrubs and young trees. This falsely declared area accounted for up to 20% of the total declared area. The AA requested that subsidies were proportionally returned.

It was evident from interviews that land users (farmers) were becoming aware of this monitoring capacity of the AA. Now, it is in the interest of farmers to remove all shrubs and forest invasions. However, such removal has also costs. Farmers will not do it until the costs are outweighed by benefits. Benefits may be a drop in the fixed costs per hectare drop or an increase in the revenue (over a period) per hectare. The former can be due to expanded area; the latter due to beef premiums or higher beef prices and expanding beef production. If grasslands are out of the most vulnerable zone 1, biodiversity and landscape value of shrubs and bushes can even be higher than the one of meadows. In the end, MoA payments may thus contribute to a reduction of biodiversity and landscape value.

Despite the fact that the protection governance has been given legally to LA PLA, MoA contracts determine the provision of biodiversity and landscape. As shown above, these contracts are weak management agreements with action-related remuneration. They lack most of the contractual features relevant to the transaction characteristics of biodiversity and landscape (identity of parties, longer duration, safeguards, non-price coordination etc.). The MoA programme is therefore largely criticised by LA PLA for these imperfections.

25.4.2. Strength and weaknesses of the current system

Currently, the maintenance and improvement of biodiversity and landscape relies on commercial farming. In contrast, owners of land who have no livestock have been "effectively" excluded from the agricultural support and have been stimulated to rent their land to large commercial farm companies. Large operators inherited and gained the monopoly position on the local land (lease) market, i.e., there is often one large operator surrounding the village. Thus, the opportunity value of land has dropped significantly and rents have fallen to zero. In effect, they gained local monopoly and monopsony in providing environmental values. The position of large operators is even strengthened by the fact that large farms reduce the need and cost of horizontal co-ordination. Also, LA PLA prefers to deal with large farmers in provision of overall biodiversity and landscape. However, more horizontal co-ordination is still important in several respects: scale effects exist in conservation of some habitats and species, in information collection and distribution, and in organising marketing of ecological products. This need is significantly undervalued by both LA PLA and AA. The gap is filled by the NGO Information Centre for the development of Moravske Kopanice, a sub-region of the White Carpatians (ICMK). ICMK has initiated mutual communication among farmers, exchange of

experience and knowledge and transfer and spread of environmentally proper farming practices. It has also encouraged farmers to organise themselves in a marketing cooperative to coordinate production and distribution of ecological and locally specific (labelled) products. The activities performed indicate that ICMK also plays an important role in vertical coordination. Since the NGO has mediated the communication between farmers and authorities, it has contributed to improved coordination between LA PLA and AA.

Local people are concerned about the aesthetics of their environment as well as the biodiversity. Local authorities (mayors) claim therefore the right to be involved in organising the provision of these environmental qualities. The current support policy of MoA is criticised by the local municipalities of lacking a role for small local land users and owners who (mayors believe) might substantially contribute to the character of the area. LA PLA was criticised for not understanding that maintaining human settlement (farmers) in the region would require balancing economic and conservation interests. Also NGOs fail to address the involvement of local people in provision, co-ordination and finally positive consumption of environmental values like biodiversity and landscape.

25.5. POLICY OPTIONS

The case study identifies obstacles to the long-term sustainability of land management in marginal areas:

- the division and uncertainty surrounding property rights to the land;
- the limited involvement of local people (particularly those that are not commercial farmers) in determining how the area should be managed and developed;
- poor horizontal coordination, including the difficulties of integrating measures and policies for agricultural support and environmental protection;
- splitted vertical coordination (between the LA PLA and MoA);
- insufficient (MoA) contracts to govern transactions relating to biodiversity and landscape.

Here we present three policy options, addressing the above-identified obstacles.

(a) The State, represented by LA PLA, takes over the ownership and management of all the land that is most valuable from a conservation point of view.
(b) Improved horizontal and vertical coordination by integrating environmental and agricultural policies at all levels; it should also include improved contracts for biodiversity and landscape.
(c) Agri-environmental policies are delivered through local partnerships which ensure that they are responsive to local people.

The options concentrate first of all on provision of overall biodiversity and landscape. They are proposed to highlight some aspects of alternative property rights setting and institutional arrangements.

25.5.1. Policy Option (a): The LA PLA takes over the ownership and management

The officers of the LA PLA would like to see a simplification in the institutional arrangements surrounding the management and control of the land, i.e., unified ownership of all land attributes.

In this option, the LA PLA itself would become the provider of the public good, contracting out the maintenance tasks such as mowing the grass. In this way, many of the problems that have to do with inter-agency liaison and the inadequate delineation of property rights could be overcome. The LA PLA also sees this as a way to avoid the opportunistic behaviour of actors (farmers claiming meadow management payments for land that has been reverted to scrub).

This policy option has, however, not a widespread support. The municipal representatives fear that it would force people to leave the region, leading to a loss of rural amenities. Agricultural Agency officers argue that the landscape of the White Carpathians is the outcome of the interaction between farming and nature. The local farmers fear that they would lose their livelihoods.

The key element of this proposal rests in the extent of holding exclusion right, particularly toward those environmental attributes that are joined products of agriculture. It is obvious from the case study that LA PLA feels to be in the position of claimant, i.e., holding management, but not having the exclusion right over ecological attributes. LA PLA blames agricultural policy of protecting farmers against exclusion and of creating management rules that are difficult to implement.

The purchase of land by the State and the consequent management of an environmental administration (e.g., LA PLA) might be regarded as a very pragmatic approach in respect to lowering coordination costs. However, unified ownership will only partly improve coordination. As the separation of agricultural and ecological attributes is impossible, also leasing separately agricultural and ecological attributes is impossible. At the same time, LA PLA may lose control of landscape features, which are linked to farmers' dwelling in the countryside, and which are probably better achievable at the community level coordination or even individual property rights regime.

As pointed out by Falconer (2002), farmland biodiversity and cultural landscape maintenance require building up a stable (long term) cooperation of agents, which need will not change with the change of ownership.

25.5.2. Policy option (b): Improved horizontal and vertical co-operation by integrating agricultural and environmental policies

The second option responds to the loss of environmental benefit due to the split of coordination competencies between MoA and Ministry of Environment (MoE), and due to insufficiently designed contracts. This option proposes a unified agricultural and environmental policy framework that sets certain restrictions on land use (and compensates them) and provides incentives to farmers to produce environmental qualities. This option recognises that the land and natural environment in protected areas such as the White Carpathians are probably best managed and conserved through extensive farming.

The aspect that differentiates this scenario from the current policy and organisation, supposes that the co-ordination is fully in hands of the local administration of PLAs, while financial resources will remain flowing from the budget of MoA. In practice, the contracts will be made between farmers and the LA PLA. To enable the achievement of desired environmental effects, the agri-environmental policy has to be rich in measures, which will be set up in close co-operation between the MoA and the MoE at the national level. Grassland management will be ensured through neoclassical management contracts; the duration will be expanded (from 1 to 5 years) and the applicant will have to demonstrate that he/she has the capacity to provide the service in the expected extent and quality. Non-use values (e.g., scrubs along the forests) will be recognised and hence contracted with farmers. However, more relational contracts will be still needed for overall landscape and biodiversity protection. This necessity is created, for instance, by the highly fragmented land ownership that can hinder sustainable management of many high natural valuable localities, if no sufficient coordination-cooperation is achieved.

To realise this scenario the capacity of LA PLA to prepare, negotiate and co-ordinate new contracts in PLAs need to be strengthened. The proposed arrangement for PLAs will not be useful for organising the provision of landscape and biodiversity in marginal areas outside the PLAs. The organisation outside the PLAs will require to increase the capacity of AA although a local partner with environmental concerns will be desirable.

25.5.3. Policy option (c): Agri-environmental policies delivered through local partnerships

This policy option responds to imperfections in the horizontal and vertical coordination in the current arrangement, the insufficient MoA contracts, and the inadequate involvement of local people in the decision about how the area should be managed and developed. In this scenario, farmers are still the entitled users of land, but the local community has a right and a capacity to influence the level and quality of environmental services provided in the PLA; i.e., to set rules (management practices) and regulate access to the resource. The scenario reflects the argument that the local community is the most important consumer of environmental goods. Basically, this option would consist of increasing the significance of the local community in influencing decision-making. It would require a substantial revision of the policy framework on one hand, and local arrangement on the other hand. The main change would rest in the need for consensus among all local actors (representatives of the local people, the LA PLA, representatives of the farmers, the AA, and so on) about development and conservation priorities at the local/regional level. To get the consensus an organisation is needed. We suggest an environmental co-operative consisting at least of the above-mentioned actors, which will be obligatory in the PLAs and voluntary outside them. The role of the LA PLA would shift from that of master planner to that of representing national and global interests in the public discussion. The important output of the public discussion and the work of the cooperative will be a master (management) plan. In the protected areas, it will have defined minimum contents. The master plan sets the rules of using land in the most agricultural and environmental

attributes. It is evident that agricultural, environmental and rural development policies will merge at the local level. It will be preferable if the policies are co-ordinated at the national level as well. To ensure a serious involvement of municipalities and to underline their decision-making role, co-financing (rather small) is proposed. The introduction of a co-operative and the involvement of local authorities will increase horizontal coordination and represent a move to relational contracts. Of course, the national programme/budget framework should be settled for a long period to ensure that the costs associated with building a relational team are covered.

There are several difficulties associated with this policy option. First of all, it would represent a major shift from the current arrangements. It would require a new financial framework, which might be difficult to agree upon at the top level if the agricultural lobby is too strong. Another weakness of the scenario is that if the power of the local community is too high, and environmental awareness is too low, the production of environmental goods will likely be much lower than socially demanded. Further, local community/co-operatives may lack capacity to control agricultural firms, who are too large and strong due to specific agricultural policies. It might require that villages come together and create micro-regions (it can be the whole PLA), but it will definitely require that the power of community or micro-region based environmental co-operatives will be recognised by the government. And in the end, there might be little potential for collective action, which would lead to a failure of this policy option.

25.6. CONCLUSIONS

The options discussed were designed to highlight certain aspects of institutional arrangements for provision of landscape and biodiversity. We particularly look at characteristics such as who is the stakeholder that organises, sets rules and provides landscape and biodiversity, which kind of organisation form is available, what is the need for social capital, and how economies of size (the need for large scale co-ordination) are reflected. Table 25.4 summarises and compares options in respect to these characteristics. One can observe the gradual change of the role of the State through the options. While in the first option the State is entirely responsible for the landscape and biodiversity management, in the third option, the State sets minimum rules and authorises local, regionally based bodies—environmental co-operatives—to organise provision of biodiversity and landscape. The participation of farmers or nature agents in decision-making gradually increases. The need for social capital goes hand in hand with it.

In the scenario A, the presence of local inhabitants is not of concern, while in the other two scenarios, local people matter. The State will carry high costs of horizontal co-ordination if it is not able to deploy local social (and often also human) capital. Such an organisation will require a lot of trained staff and a well-designed decision-making procedure. The scenario C is preferable to scenarios A and B if there is little benefit from economies of size in terms of information and enforcement. Measurement cost is also an important determinant for the choice of options. Local partnership may significantly reduce these costs due to a large level of trust. State-based regimes may carry these costs and deploy relatively expensive technical equipment. Locally/regionally based

Table 25.4: Comparison of option characteristics.

Option	A	B	C
Who does organise?	State	State/participation of farmers essential	Local partnership
Who does set rules? (management right)	State	State	State + local partnership
Provider	State	Farmers	Farmers, nature agents
Organisation/contracts	Principal agent, classical contracts	Hybrid, neoclassical contracts	Environmental co-operatives/ relational contracts
Need for social capital	Little concern	Medium (to enable neoclassical contracts)	High (to enable collective action)
Reflection of economies of size, ability of large-scale coordination	High in principle, doubtful in practice	High	Low-medium (depends on the size of a co-op)

Source: own classification.

organisations will always tend to suffer from inability to envisage the implications of their decisions in the national or even global context.

If attributes (groups of attributes) are (weakly) separable then all three systems may co-exist. However, it seems that option A has very little potential to improve the provision of landscape and biodiversity. It may be used if there is actually very little interest on the side of local land users/owners to cultivate land in the way which ensures high natural values. The option B is very close to the current arrangement. The transition cost is rather low—it is more a political cost (loss of control) which will be paid. One can also see adopting option B as the first step towards improving organisation for providing landscape and biodiversity. Where relevant and if sufficient local capacity is build up, this option can merge with option C.

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PART VIII

Role of social capital and bottom-up approaches in rural development

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 26

A Social Capital Perspective on the Institutional Changes in Transitional Agriculture of CEE Countries

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Abstract

The objective is to determine the role of social capital for the institutional change in Central and Eastern European (CEE) agriculture. The importance of social capital for agrarian reform can be demonstrated from different theoretical perspectives: political economy, property rights theory and transaction cost economics. As shown, the effectiveness of different reform stages depends upon the extent to which the appropriate institutional changes are supported by the available stock of social capital.

26.1. INTRODUCTION

The institutional change in Central and Eastern European (CEE) agriculture, and in particular the process of privatisation and decollectivisation, has become a widely discussed issue, both in academic and practical circles. The reason is that these processes have often been accompanied by interest conflicts, erroneous decisions, misinterpretations and opportunism that necessarily shifted the reform outcomes from the theoretically forecasts or hoped-for conditions. In this contribution, an attempt is made to explain the distance between the hoped-for and actual outcomes of agrarian reforms by the correspondence of formal institutional change with the set of informally held values, norms, attitudes, and behaviours. These values are captured by the concept of social capital. Put differently, it is hypothesised that the reform success can be explained by the extent to which the necessity of appropriate levels of social capital were effectively taken into account when planning or implementing a policy decision occasioning a formal institutional change.

The fundamental point, as already raised in existing studies to understand the role of social capital in transition (Raiser, 1997; Raiser et al., 2001), is that positive outcomes of reform can be expected only when a formal institutional change is accompanied by a corresponding modification in the informal institutional foundations of the society. The required change in informal institutions must result in the formation of a vibrant civil society, trust in public institutions, and less reliance on informal networks which tend to exclude other individuals from valuable exchange relations. Although this general understanding can be considered to be quite appropriate, its usefulness for explaining the reform agenda depends on the extent to which it can be made operational and formulated in more specific terms. The contribution is based on theoretical analysis rather than empirical research, since the important problem in the current stage of studying the institutional change in CEECs is to expand the importance of the social capital concept to the phenomena related to privatisation and decollectivisation.

The structure is as follows. In Section 26.2, the definitional aspects of the social capital concept are outlined and a methodological approach for defining the concept is proposed. In Section 26.3, the role of social capital is analysed through a variety of theoretical approaches used to study the agrarian reform: political economy, property rights, and transaction cost economics. In Section 26.4, the causal mechanisms whereby social capital determines the reform effectiveness are highlighted and its enhanced role at the post-reform stage explained. In Section 26.5, the concepts of authority-based and social-capital-based economic organisations are introduced and their implications for the structural reform of agricultural enterprises analysed. Section 26.6 formulates some conclusions.

26.2. THE CONCEPT OF SOCIAL CAPITAL

The literature on social capital is at the same time far-reaching and self-critical. The increasing number of specific applications is accompanied by continual concerns of its relevance. Therefore, this section is explaining the relevance of the concept, classifying the existing theoretical approaches, and developing an integrative definition.

26.2.1. The logic of the concept

The problem of inter-personal relations can be regarded as universal and eternal. Only recently, however, it has been recognised and formulated in terms of the social capital concept. This raises questions about the emergence of social capital theory at this time rather than another (Schuller et al., 2000). A possible explanation can be that the inter-agent relations have increased in complexity, with the result that the alternative outcomes of social interaction are becoming increasingly diverse, even when the stock of resources underlying this interaction has remained essentially the same. Moreover, the progress of human society results in the growing power of conscious deliberate decision-making of societies for solving problems. The further societies develop, the more tools and mechanisms are available to them to organise the social action appropriately. In this perspective, *the emergence of interest in social capital is a self-explaining fact*: it

acknowledges that inter-agent relations have grown so complex that major resources of socio-economic development depend on them, rather than on technological or natural spheres.

26.2.2. The existing views of social capital: a classification

The existing views on social capital vary according to two dimensions: one related to the question of who is its porter and the other related to the specific content that is linked with the particular structural level of the porter. The attempts to develop structure-based definitions have been proposed, among others, by Serageldin and Grootaert (2000) and Halpern (2001). In what follows, the existing views of social capital are classified according to the general structural levels of inter-agent relations: individual, organisational, and community-level.

The concept of *individual-level* social capital is typified by Burt (1992: 9) as one's relationships with "friends, colleagues, and more general contacts". This view is characteristic for researchers who introduced the concept into the contemporary theoretical discourse, in particular, Bourdieu (1983).

The organisational level of social capital is probably the least represented in literature. On this level, social capital is considered to generate network externalities, which imply both cooperation and exclusion. In an organisation, members cooperate because their privileged status enables to enjoy the externality provided in comparison with non-members which are excluded. This viewpoint is expressed in Coleman's (1988: 98) definition: "Social capital is defined by its function. It is not a single entity, but a variety of different entities, with two elements in common: they all consist of some aspect of social structure, and they facilitate certain actions, whether of persons or corporate actors, within the structure".

The *community-level* social capital definition, introduced by Putnam (1993) seems to dominate the theoretical thinking of most contemporary studies of the concept. The pure cooperative meaning without implications of non-member excludability is obvious in the following definitions of social capital: "an instantiated informal norm that promotes cooperation between two or more individuals" (Fukuyama, 1999); "features of social organisation, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated action" (Putnam, 1993: 167), as well as in many others.

This sequence of structural levels can be regarded as the evolutionary path of both the thinking about social capital and the concept of social capital itself, reflecting the preferable direction of socio-economic development. Society benefits if the individual social capital is transformed into organisational, and the latter into community-level capital. Table 26.1 provides a comparison of the indicated structural levels of social capital in terms of costs and benefits.

26.2.3. The problem of definition

As the existing attempts to concisely capture the essence of social capital testify, an important obstacle to arrive at a more generally accepted definition lies in the differences

Table 26.1: The structural levels of social capital.

Level	Benefits	Costs
Individual	Privileged access to prestigious connections	Exclusion of most other individuals
Organisational	Network externalities	Exclusion of non-members; organisational lock-in; free-riding
Community	Cooperative spill-over effects	Free-riding

in methodological, rather than substantive, viewpoints. Therefore, in this contribution the identified costs of building social capital—exclusion, lock-in, and free-riding—are used for developing a definition of the concept, since it is the methods of overcoming these costs that enable the enjoyment of social capital benefits. It can be argued that there exist three possibilities for avoiding or decreasing these costs: trust, learning, and sharing a common culture. Although all of these are highly inter-dependent, it is possible to see their differential relevance to the identified costs. Free-riding is most directly overcome by developing trust, involving a high degree of collective self-consciousness. Creating a common culture, i.e., establishment of predictable and acceptable patterns of behaviour also lowers the probability of defection by some agents, while learning helps them to better understand the benefits of cooperation and can be considered to be the motivating factor for building social capital.

The analysis of existing definitions reveals that most of them refer to relationships, connections and networks as characteristic features of social capital. Grootaert and Bastelaer (2002: 5) distinguish methodologically two forms of social capital: structural and cognitive capital. In our opinion, *the network stands in the same relationship to social capital, as the business firm to physical capital, or the individual to human capital*. Therefore distinction must be made between the contents of social capital and the form in which the contents is inevitably embedded. The forms in question are clearly the relationships, connections, and networks within which the contents components, advanced learning, trust, and culture, are practised. Therefore following definition of social capital, trying to connect the methodological concepts of contents and form, is proposed: *social capital is the shared knowledge, trust, and culture, embodied in the structural forms of networks and other stable inter-agent relationships*.

26.3. SOCIAL CAPITAL AND THEORETICAL STUDIES OF AGRARIAN REFORM

The agrarian reform processes in CEE countries have attracted a lot of academic interest and have been studied from a variety of disciplinary and interdisciplinary approaches, of which political economy, property rights theory, and transaction cost economics have proved to be particularly insightful. The objective of this section is to theoretically demonstrate that within each of these approaches, social capital plays a decisive role for the outcomes of reform. Each approach is shown to reveal some specific dimensions of the

social capital concept, which, in turn, serve to enhance these approaches by expanding their theoretical scope and generating additional conclusions.

26.3.1. Social capital and political economy of agrarian reform

According to the political economy approach to agrarian reform, the policy makers and other stakeholders are seen as "rational and maximising agents who respond to incentives and constraints just like agents in the economy" (Swinnen, 1999: 51). The value of this approach lies in the pragmatic common sense necessary to analyse the abundant political rhetoric accompanying the respective institutional change (Rabinowicz and Swinnen, 1997: 15). In this framework, several causal mechanisms can be identified, highlighting the role that social capital can play for improving the outcomes of the reform process. First, the presence of community-level social capital results in the identity of national interests and private objectives of policy-makers and agents responsible for reform implementation. The national (systems) interests are recognised by the respective agents and naturally incorporated into their individual utility functions. Hereby it is assumed that these agents are not only morally prepared to forego certain private gains that are achievable by abusing their authorised competencies, but also adequately understand where the national interests are to be sought. Although it would not be possible to determine, in abstraction of specific examples, whether such social capital can exist, there are no grounds to reject these assumptions a priori in view of the presence of various disciplining mechanisms, ranging from individual ethic to political competition.

Second, the distribution effects of social capital-supported agrarian reform lose their importance and economic efficiency becomes the major determinant of policy decisions. The redistributive effects of such reform are considered to be by-products rather than the primary motivations of its initiators. In contrast to the implications of Becker's and Olson's models explaining the redistributive transfers by the power differentials of various interest groups, in the social capital-supported social environment these transfers would be: (1) accidental and unintended, and (2) compensated either by the government or non-governmental actors. As long as this compensation is possible, the redistributive effects need not be considered as a distorting factor of reform (Swinnen, 1999: 51). The distorting consequences, if any, can be traced back to a condition of low social capital.

26.3.2. Social capital and the property rights approach to agrarian reform

The establishment of private property rights over agricultural assets is the basic rationale behind agrarian reforms in CEECs. As indicated by Rabinowicz and Swinnen (1997: 2) "privatisation in the CEECs is more related with the transfer of property rights than with legal ownership rights", since the former includes a broad spectrum of competencies related to the rights of consuming, obtaining income from, and alienating the assets. Only to the extent that the whole spectrum of these partial rights can be effectively valorised by new owners, privatisation can be considered to be successful (although this viewpoint ignores the possibility that the allocation of property rights, initially designed by reformers, may not have been optimal). The basic message of the property rights approach

is that "property rights assignments influence the allocation of resources, the composition of output and the distribution of income" (Furobotn and Richter, 2001: 72) and that private property rights have beneficial effects on economic behaviour and performance.

However, it is a recognised problem of agrarian reform that the private property rights could not always be fully restored. The right to sell the land can, for e.g., be limited, as was the case in the Baltic countries, or significant transaction costs can be incurred in the assignment of an "equivalent" or "comparable" plot of land, as was the case in several CEECs (Rabinowicz and Swinnen, 1997: 2). In Ukraine and Russia, where the institution of co-ownership is widely used to obtain economies of scale and to preserve the existing infrastructure, economic behaviour of individual co-owners is constrained by motivations and decisions of other co-owners, in which case the respective private property rights cannot be fully valorised. The general observation is that the effectiveness of newly established property rights depends on the effectiveness of certain forms of collective action and consequently—on the quality of inter-personal relations. This is where the concept of social capital enters the property rights interpretation of agrarian reform: the availability of social capital affects the extent to which any given configuration of property rights can be valorised.

Thus the property rights approach can be conceptually expanded by recognising that social capital influences the ways in which assignment of property rights influence the allocation of resources and that any given assignment can result in different allocations depending upon how much social capital is available in the community. This conclusion directly follows from the analysis of co-ownership, but it also has a more general and more important significance, in that the social capital facilitates the creation of informal networks, which in turn lead to the establishment of effective, rather than only legal, markets. The presence of such informally supported markets is in fact the major factor in making private property rights full and complete. This is one of the specific applications of the general principle that formal institutional change should always be supplemented by a change in the respective informal institutions.

26.3.3. Social capital and the transaction cost economics view of agrarian reform

An obvious and important fact about agrarian reform in practically every CEE country is that this process could never be organised in strict accordance to what has been originally planned or designed. These deviations can always be traced back to the inherent characteristics of human nature—bounded rationality and opportunism—which are explicitly recognised as starting points of transaction cost reasoning. In combination with the extraordinary complexity of transitional institutional change, these human limitations result in the emergence of transaction costs of market transformation, which as a rule is originally not taken into account and adversely affect the reform outcomes. In general, transaction costs arise because of the restricted knowledge and the tendency to make errors of real-world decision-makers, who, therefore, always function inefficiently compared with the hypothetical decision-makers of the neo-classical theory (Furobotn and Richter, 2001: 39).

However, it can be noted that the substantive components of social capital, contained in the definition proposed above, are precisely directed at the attenuation and neutralisation of these human limitations. In this sense, *the general effect of social capital lies in reducing the size of transaction costs*, whatever is the specific area of their expression. In fact, it is the shortage of social capital that makes the behavioural assumptions of the neo-classical economic models unrealistic. While transaction costs are ubiquitous, in the case of agrarian reform, two specific forms analysed below can be considered as most important.

26.3.3.1. Transaction cost view of market transformation procedures

In a general sense, transaction costs of market transformation arise because the designed institutional basis of transformation is not adequately supported by the quality of inter-personal relations, comprising such parameters as ethics, ability to understand the essence of reform, and access to information. According to Rabinowicz and Swinnen (1997: 5–6), in a situation of positive transaction costs in land and assets markets, the privatisation process will be affected because higher transaction costs make it possible for the current management to reorganise the farm according to their own preferences. Therefore, transaction costs of market transformation are expressed: (1) in the dominance of distributional motivations of reform actors over efficiency-improving ones; (2) in the perfunctory attitudes toward reform implementation; (3) in the wrong decisions regarding privatisation and decollectivisation policies; and (4) in the lack of information about and understanding of the essence of reform. Beckmann and Hagedorn (1997: 150) draw attention to how transaction costs of transformation influence the choice of new organisational forms, whereby the formation of agricultural producer cooperatives (APCs) serves to economise on these costs, in spite of its acknowledged incentive deficiencies. The conclusion derived is the necessity of estimating the potential transaction costs of planned formal institutional change against the available stock of social capital by designing more coordinated implementation mechanisms (here conceptually analogous to "governance structures").

26.3.3.2. Transaction cost view of market-oriented organisation forms

The organisational and structural development of agriculture has always been a controversial issue in agricultural economics, particularly with respect to efficiency implications of farm sizes and legal forms. These conceptual debates gained a new impetus with market transformation in CEECs. One of the major aspects of these debates concerns the differential transaction cost parameters of various organisational forms, such as family farms and APCs. The studies in comparative institutional analysis highlight the high transaction costs of APCs because of collective decision-making and inappropriate incentive structures regarding work effort and management (Schmitt, 1993; Beckmann, 1993). Following inefficiencies of APCs were detected: (1) the co-determination rights of members result in inefficient decisions leading to lower managerial flexibility and controversies between members' interests as agents and as principals; (2) APCs are

characterised by agency problems in that the management is likely to pursue its own objectives at the expense of members' interests; and (3) monitoring of hired labour is also costly.

On the other hand, however, it can be argued that the transaction costs of collective decision-making and incentive structures of work effort and management depend upon the availability of social capital. Possession of non-trivial social capital can reduce these costs and optimise the incentive mechanisms (as would follow its proposed substantive components), with the result that transaction cost parameters of APCs may approach those of family farms. The existence of social capital can make agricultural cooperation cheaper in transaction cost terms. The conclusion is that the organisational development of agriculture will be determined not only by comparative transaction cost parameters of different enterprise forms, but also by the available stocks of social capital.

26.4. SOCIAL CAPITAL AND ORGANISATION OF AGRARIAN REFORM

The objective of this section is to apply the theoretical aspects of the social capital concept to the organisation of agrarian reform. The relevance and implications of the concept are analysed in the context of two questions: (1) the relative importance of top-down and bottom-up approaches to organisation of reform, and (2) the role played by social capital in determining the success of different reform stages.

26.4.1. The transformation of responsibility for reform success

The major challenges of the reform process can be classified into two broad categories: *top-down*, relating to the role of government and local official bodies having the responsibility for administering the reform procedures, and *bottom-up*, relating to the role played by independent grass-roots decisions, which seemed to be underestimated in the initial phases of transition. While the formal institutional change, although difficult and sometimes imperfect, is already largely completed in the CEE countries, the effectiveness of the newly established private property rights highly depends on the "bottom-up" situation, i.e., informal mechanisms of economic behaviour. Therefore, it can be argued that the successful completion of agrarian reform increasingly depend on agricultural producers and rural communities rather than on central and local governmental bodies. Put differently, it can be said that the existing social capital in rural communities and embodied in informal networks uniting agricultural stakeholders become the ultimate determinant for the reform success.

26.4.2. Stages of reform

The following analysis of the role played by social capital at different stages of reform has been inspired by the political economy study of Rabinowicz and Swinnen (1997) and aims to reveal the specific causal links uniting the availability of community-level social capital and the effectiveness of each stage. As will be shown, the effectiveness of each reform

stage is determined by the extent to which it can be supported by the quality of inter-personal relations in the community, or, in other words, by the available stock of social capital.

26.4.2.1. The choice of land reform policies

The land reform policies used in different CEECs can be classified according to the degree of their radical orientation. In ascending order, the following policies can be listed: voucher-based privatisation, restitution in comparable boundaries and restitution in historic boundaries. Regardless of the political background behind the policy choice, the disruption caused by radical policies increases the responsibility of rural communities for restoring the normal organisation of production. Consequently, radical policies can only reasonably be afforded in cases where sufficient social capital is available, while voucher-based or equivalent policies are more social capital-neutral. The disruption in production as a result of pursuing radical policies lies therefore *in the mismatch between the availability of social capital and the depth of radical orientation, and not only in the latter*. For example, in the former Soviet Union, the use of voucher-based, rather than restitution-oriented, privatisation policies, can be explained not only by the lack of references to individual private property rights, as suggested by Lerman (1997), but also by the related shortage of social capital.

26.4.2.2. Reform implementation

Reform implementation is a stage in which the responsibilities for a successful reform are, at least theoretically, equally shared between administrative officials and rural people. Even the excellent performance of administrative agents cannot be effective if it is not supported by equally responsible bottom-up behaviour. The growing role of social capital at this stage follows from Hayami's recommendations regarding administrative involvement: to use simple, transparent, and uniform rules and to limit the scope of government discretion (quoted in Rabinowicz and Swinnen, 1997: 9). Here, the best mode of implementation is the one that relies maximally on bottom-up responsibility and community-level social capital.

26.4.2.3. Resulting organisation of agriculture

While the agrarian reform has generally been directed at the establishment of market-oriented organisation structures based on private property rights, the organisational development of CEE agriculture has been influenced by a diverse set of technological and institutional factors, among which economies of scale, comparative transaction cost parameters, and alternative employment opportunities are the most determinative. However, since the choice of organisational forms is also a grassroots decision, it will also be influenced by the quality of inter-personal relations in rural communities or in other words be related to the quality of the inter-agent relations, required by different

Table 26.2: Social capital dependence of various organisational forms.

Organisation form	Aspects of inter-agent relation quality			Comparative dependence on social capital
	Achievement of internal consensus	Intensity of agency problems	Importance of trust among members	
Agricultural Producer Cooperative	Complicated due to democratic decision-making	Significant due to two-fold nature of agency problem (Schmitt, 1993: 154–155)	Trust is essential for creation and normal functioning of these organisations	Very high
Service cooperative	Complicated due to democratic decision-making	Standard agency relation between employees and members	Trust is essential for creation and normal functioning of these organisations	High
Limited partnership	Not a significant problem under hierarchical decision-making	Standard agency relation between employees and members	Trust is essential, although members may occupy a minor share in the quantity of stakeholders	Medium
Joint stock company	Not a significant problem under hierarchical decision-making	Standard agency relation between employees and members	Trust among members is not essential	Low
Family farm	Not a significant problem	No agency relations (in conditions of no hired labour)	Trust exists *a priori* due to family connections	Practically no dependence

organisational forms. The major aspects of the inter-agent relation quality are: (1) the ability to achieve internal consensus; (2) trust among members; and (3) the intensity of agency problems (here understood as related to trust between members and employees). The relative importance of these aspects for various organisation forms is directly proportional to their relative dependence on social capital. A simple comparative analysis of organisational forms, most common in CEE agriculture, is attempted in Table 26.2.

Dependency of the organisational form on social capital means that the enterprise cannot be effectively created and maintained unless it is supported by the required amount of social capital. From Table 26.2, it can be concluded that *the structural development of CEE agriculture will ultimately depend on the extent to which the technological and institutional needs of organisational forms are matched by the availability of social capital*.

26.5. SOCIAL CAPITAL AND ECONOMIC ORGANISATION

Given its focus on inter-agent relations, the implications of the social capital concept are even more important when looking at the organisation of the economic activities. As described in Section 26.3.3, the possession of social capital results in a behaviour of agents which differs from the behavioural assumptions and predictions of transaction cost economics. Thus the concept of social capital has certain organisational implications, which are also important in the context of transitional agriculture.

26.5.1. Economic organisation: Conventional and social capital-based

As was shown in Section 26.4.2.3, the different association of various organisation forms with social capital is reflected in the differences in incentive structures. Therefore, a more profound understanding of the significance of this concept can be analysed by identifying differences between high- and low social capital-dependent forms. For this purpose, it is necessary to differentiate between the contents and the structural forms of social capital: the contents, such as trust, culture, and knowledge, can be maintained only within certain social structures, such as networks, connections and so on. Just as conventional types of economic organisation, represented by markets and hierarchies, also social capital-based structures perform important resource coordination functions.

The fundamental difference between conventional and social capital-based structures is that while the organisational contents of markets and hierarchies lie respectively in price and authority relations, the contents of social capital structures depend on substantive components of social capital such as trust, culture, and knowledge. Therefore, we refer to these special type of economic organisation as *social capital-based*. Conventional economic organisation, represented by markets and hierarchies, can be fruitfully analysed using the theoretical tools of transaction cost economics, while social capital-based grassroots organisations organise a more positive individual behaviour (greater trust, deeper learning, stronger effect of sharing common culture). Therefore, transaction cost economics can be said to apply to zero-social capital organisations, while recognition of the possibility of non-zero social capital opens a new dimension along which economic organisation can vary.

The general rationale behind the existence of a social capital-based level of organisation is that there are certain useful functions that are not effectively delivered by conventional mechanisms of markets and hierarchies but which require other forms of private-collective action. The creation of such organisations will of course critically depend on the availability of social capital, which can in this way improve the welfare of respective communities. A generalisation of the features of the two types of organisation is proposed in Table 26.3.

Table 26.3: Comparative analysis of conventional and social capital-based organisation.

	Organisational mode		
	Conventional		**Social capital-based**
	Centralised	**Decentralised**	
Governance orientation	Top-down	Horizontal (mutual)	Bottom-up
	Salary/promotion	Profit	Mutual self-help
Importance of inter-personal relations	Non-critical	Non-critical	Critical
Resource allocation mechanism	Authority relation	Price	Learning, trust, and culture
Structural form	Hierarchy	Market	Cooperatives, networks, alliances, etc.

26.5.2. Social capital-based organisation in agriculture

The concept of social capital-based organisation is particularly important for agriculture due to its specific limitations such as: a more competitive market structure with respect to input–output industries; an inelastic demand for agricultural products and inputs; a dependence upon stochastic biological and climatic factors; a high asset specificity which impedes resource mobility out of agriculture; and the significant length of the production cycle. The general consequence of these sector-specific characteristics is the disparity problem, resulting in inequitable terms of trade and consequently in lower profitability of agriculture in comparison to input and output industries, as is particularly obvious in transitional economies.

Theoretically the reasons behind the disparity of the inter-industrial relations can be incorporated into the methodological framework used for analysing organisational effectiveness, by stating that farms are organisationally inferior to other firms. Economic organisation can indeed be thought of as a certain synthesis of structures and functions. In the case of agriculture, the deficiency observed is of a functional type: the performance of certain vital business functions, such as product marketing, access to credit and input supply, is limited for conventional authority-based organisations due to the sector-specific limitations. It follows from here that new organisations should be created delivering the lacking functions. Since authority-based structures are not effective, such structural levels should be established on a social capital basis and include producer cooperatives, centralised and federated farmer cooperatives and farmer associations. These types of social capital-based organisations in agriculture allow to harmonise the conflicting interests in the agri-food chain and to enforce the competitive position of agricultural producers.

In general, theoretical studies of future organisation of CEE agriculture are focused primarily on authority-based structures and do not take sufficiently into account the potential role that can be played by social capital-based organisations. Social capital-based organisations can improve the performance of existing structures and thus possibly help to economise on reorganisation costs. The general conclusion is that social capital-based structures can perform a welfare-improving function for rural communities and should be an integral part of the future organisational model of CEE agriculture.

26.6. CONCLUSIONS

Social capital can be defined as the shared knowledge, trust, and culture, embodied in the structural forms of networks and other stable inter-agent relationships. The role of social capital for the institutional change in CEE agriculture can be shown from a variety of theoretical approaches in the agrarian reforms. In the political economy perspective, social capital results in greater proximity between private objectives of policy-makers and national interests, as well as dominance of efficiency-improving considerations over distributional ones in political decision-making. In property rights theory, social capital can be seen as a determinant of the ways in which assignment of property rights influence the allocation of resources. In transaction cost economics, the general effect of social

capital lies in reducing transaction costs, which in particular is reflected in more adequate market transformation procedures and greater efficiency of organisation forms with apparently inefficient incentive structures (first of all, producer cooperatives).

While the practical organisation of agrarian reform is based on a combination of top-down and bottom-up approaches, the latter approach, based on community-level social capital, becomes increasingly important at the later stages of reform. The effectiveness of each reform stage was shown to depend upon the extent to which the appropriate procedures could be supported by the available stock of social capital. The organisational significance of the social capital concept lies in the possibility of social capital components—knowledge, trust, and culture—for substituting the authority relation. This allows to differentiate between social capital- and authority-based organisations. The development of social capital-based structures in CEE agriculture (cooperatives and grassroots associations) serves to harmonise the interests in the agri-food chain and to improve the welfare of rural communities, and therefore should be an integral part of the transitional institutional change.

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CHAPTER 27

The Role of Social Capital in Promoting Institutional Changes in Transitional Agriculture

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Abstract

Agricultural development in Central and Eastern Europe (CEE) has not been that successful as anticipated at the start of the transformation process. In particular, private farming did not prosper not only because of a lack of management skills, market information and capital, but also of supporting organisations. In the recent literature, the ability to co-operate with each other is analysed under the term "social capital". Some argue that social capital can be seen as a production factor substituting other more limited factors. The hypothesis is tested whether social capital has an influence on the farm income of private farmers in CEE.

27.1. INTRODUCTION

Economic development in the rural areas of the transition countries has not been that successful so far as expected in 1989/90. Rural areas in Central and Eastern Europe (CEE) are primarily influenced by the agricultural sector and are more affected than in Western Europe by declining incomes, emigration and ageing of the population. Therefore, the transformation of the agricultural sector is of utmost importance. Privatisation of former agricultural production co-operatives and State farms led to the restructuring of the organisation of agricultural production. Production entities compatible with the market-economic system emerged, although in many cases only the legal label has been changed. The number of registered and, particularly unregistered, private farms increased rapidly. Nevertheless, not that many had been established as originally anticipated and their share in agricultural production is in general much lower than in the EU-15.

The major reasons why (private) farming did not grow as expected has been analysed by various authors (Bezemer, 2002: 1303–1304). They can be summarised as follows: a weak human capital structure reflected in low management skills and limited market information, fragmented land ownership structure, restricted land markets, limited access to viable financial services, an increased price squeeze (falling output prices relative to input prices) during the early transition years and relatively large changes in agricultural policies of the various countries alternating between liberalism and protectionism. Hence, the risks of taking up private farming are seen as very high. In addition, it has been argued that people in most transition countries had a low level of business skills and lacked the willingness to change their lifestyle from occupational to entrepreneurial. Newly established landowners had an insufficient theoretical understanding and practical preparation to undertake independent farming activities. Due to a relatively well-functioning social security system the thread of unemployment was lacking, i.e., there were no incentives to undertake private entrepreneurial initiatives (Chloupkova, 2002: 17). However, as could be observed during the last decade, quite a number of private farmers have been very successful. Therefore, the reasons for these differences need to be analysed as most of the production circumstances were more or less equal.

The transformation of the agricultural sector refers also to all those organisations in support of the newly established agricultural producers. The previous agricultural organisations embedded in the former centrally managed socialistic mass organisations have become obsolete. New independent organisations, which are membership-oriented had to be established. Although some of the traditional ones could be transformed during the early years of transition, establishing new ones took quite a long time. One of the difficulties was that individuals who were identified with repression could be removed from office and most repressive organisations closed down, but that most of the personnel of the old regime remained in place (Rose et al., 1998: 153). Basically, these supporting organisations can be differentiated into those with a major lobbying function like farmers' unions, economically oriented ones like producer associations, supply and marketing co-operatives and credit unions and those specialised in information gathering and extension, like specialised agricultural associations. Such organisations have been set up in all CEECs, but they are still in an infant stage compared to EU-15 where an extensive network of supporting organisations is highly effective.

In this contribution, the role of formal organisations in promoting agricultural development in transition economies is analysed. We assume that successful private farmers have more eagerly joined the organisations in support of agricultural producers. Hence, our analysis is based on the central hypothesis that, besides the provision of physical, financial and human capital, social capital can be identified as a significant factor in explaining economic development at the national, regional and, finally, at the local level. Our analysis is guided by two objectives: (1) to contribute to the ongoing discussion about an "easy-to-handle" definition and, particularly, to more precise concepts of measuring social capital; and (2) to formulate recommendations about the role of governments in transition economies in fostering social capital among agricultural producers. How can they initiate appropriate organisations, including a proper institutional setting? While, in general, government programmes centre on overcoming

the deficiencies in financial and human capital, deficiencies in social capital are at least as alarming in these countries (Putnam, 1993b).

The structure is as follows: in Section 27.2 the concept of social capital, its definition, measurement and relevance for the transition economies are discussed. After that, some empirical results are presented. On the one side, a survey about the number and relevance of national formal agricultural organisations in support of agricultural producers in seven CEECs will be discussed. On the other side, based on surveys among agricultural producers in Hungary and Poland it will be analysed whether membership in agricultural organisations has an influence on their material welfare.

27.2. CONCEPT OF SOCIAL CAPITAL

While the term "social capital" has been applied for quite some time, the concept has become more popular during the 1980s, particularly by the studies of sociologists like Bourdieu (1983), Coleman (1999) and political scientists like Putnam (1993a). Intuitively, its basic idea says that one's family, friends, associates, business partners, fellow-members in organisations and networks and so on constitute an important asset for the individual; one that can be called upon in crisis, enjoyed for its own sake or leveraged for material gain. In economics, the concept gained prominence with the "social capital initiative" of the World Bank during the second half of the 1990s. When analysing economic performance the ambitious claim had been put forward that social capital might constitute an independent, and hitherto under appreciated, factor of production. The classical economists identified land, labour and physical capital (that is, tools and technology) as the three basic factors shaping economic growth. During the 1960s, the neoclassical economists introduced the notion of human capital, arguing that a society's endowment of educated, trained and healthy workers determines how productively the orthodox factors can be utilised. Now, advocates of the social capital concept argue that the most innovative ideas will amount to little unless a person also has access to others to inform, correct, assist with and disseminate his work. In essence, where human capital resides in individuals, social capital resides in relationships (Woolcock, 2002: 20–21).

During the last few years, the concept of social capital has gained much prominence. The growing theoretical and empirical literature has helped to fuel a resurgence of interest in the social dimension of development. A range of new research has shown that communities endowed with a rich stock of social networks and civic associations are in a stronger position to resolve disputes, share useful information, set up informal insurance mechanisms, implement successful development projects, and confront poverty and vulnerability (Isham et al., 2002: 6). However, there has been a lot of criticism about the vagueness of the concept. There are simply too many meanings associated with this concept and a consensus about a commonly acknowledged one is still missing. Therefore, some economists are very sceptical whether this concept should be applied at all in studying economic issues (Manski, 2000: 121–123). Others argue that these differences and disagreements are a good measure of the intellectual excitement of the current social capital literature and urge to go on with the debate (Durlauf, 2002: F418).

27.2.1. Definition

A first definition comes from Bourdieu (1983) who considers social capital as an attribute of an individual in a social context. One can acquire social capital through purposeful actions and can convert it into other types of capital, like for e.g., physical capital. But, he stresses that a high degree of transformation work is needed and long-term investments are necessary (Bourdieu, 1983: 155). Others, like Coleman (1999) and Putnam (1993a) have focused on the collective point of view, although their concepts and objectives differ to a large extent. In general, sociologists and political scientists relate in their studies to norms, networks and organisations through which people gain access to power and resources.

Economists, in general, concentrate on the contribution of social capital to economic growth. At the micro-economic level this is seen primarily through the way it improves the functioning of markets. At the macro-economic level there are institutions, legal frameworks, and the government's role in the organisation of production that are affecting macro-economic performance (Grootaert, 1998: 2). More specifically, the social capital question concerns the benefits and costs of co-operation. Mancur Olson's study (Olson, 1992) about the logic of collective action discusses the incentives, costs and expected profits that motivate people to act together. The basic hypothesis concerning social capital's impact assumes that the welfare within the group will be enhanced, in the sense that the collective gains net of costs to group members will be positive (Knack, 2002: 43).

At the beginning there has been an intensive debate among economists whether social capital really is a form of capital, at all. While it has to be admitted that social capital exhibits a number of characteristics that distinguish it from other forms of capital, it is not costless to produce, as it requires an investment, at least in time and effort, if not always in money. In general, it takes a long time to build up, but can be relatively easily destroyed. Thus, there is a distinct maintenance expense, usually in the form of time. In addition, social capital corresponds to a key attribute of capital, as it is an accumulated stock from which a stream of benefits flows (Grootaert and van Bastelaer, 2002a: 5). Although it cannot be used as flexibly as financial capital, it can be converted to other kinds of capital: the advantages conferred by one's position in a social network can be converted to economic or other advantages. Similarly, social connections can substitute for missing, or expensive, legal structures in facilitating investment and other financial transactions. Up to now, there is almost common agreement that social capital belongs to the heterogeneous group of resources called "capital" and more and more research studies show significant correlations between social capital variables and economic outcomes (Adler and Kwon, 1999: 3–4; Glaeser et al., 2002: 437).

The major reason for the large spread of different understandings of social capital can be seen in the fact that different authors focus on different dimensions that in real life are interdependent and overlapping. Basically, four key dimensions can be distinguished: scope (or unit of observation), form (or manifestations), channels and type of relationship through which it affects development. With respect to scope, the micro-, meso- and macro-level of analysis can be distinguished. At the micro-level, individuals and households are the focus of analysis, at the meso-level relations among groups rather than individuals are important while at the macro-level the most formalised institutional

relationships and structures, such as the political regime or the rule of law are analysed. With respect to its forms, two types of social capital can be distinguished: structural and cognitive. Structural social capital facilitates information sharing and collective action through established roles and social networks supplemented by rules, procedures and precedents. It is relatively objective and observable. Cognitive social capital refers to shared norms, values, trust, attitudes and beliefs within a "we-group". It is more subjective and intangible. With respect to the channels of social capital, or its stream of benefits, three major elements can be distinguished: information sharing, mutually beneficial collective action and decision-making (Grootaert and van Bastelaer, 2002a: 2–4). With respect to relationship, two major types can be separated: one type refers to intra-group relationships, i.e., relationships of "bonding" that strengthen links between people and facilitate forms of intra-group interaction and collective action. The other type refers to inter-group relationships, i.e., relationships of "bridging" that strengthen linkages between groups and organisations (Bebbington and Carroll, 2000: 6).

Since individual authors emphasise different aspects of the various dimensions, it is no surprise that the adopted definitions of social capital vary to a large extent. Some authors have tried to cover as many dimensions as possible, as for e.g., the following one: "social capital can be described as a resource of individuals, companies, organisations or even societies. Based on personal relationships, norms, trust and values which are predominant within the respective group of social interaction, it ensures a successful execution of economic transactions. Therefore, social capital can refer on the one side to all those factors, which build up trust within a group and reduce opportunistic behaviour. On the other side, it covers all those formal institutions of a society which produce security of expectation in mutual interaction and sanction mechanisms" (Herrmann-Pillath and Lies, 2001: 362, own translation).

While this definition is very broad-ranged, it is almost impossible to quantify or to measure it. Therefore, some called for a more tightly focused micro-definition of social capital and advocated a "lean and mean" conceptualisation focusing on the sources—that is, primarily social networks—rather than its consequences (which can be either positive or negative, depending on the circumstances), such as trust, tolerance and co-operation. The focus is on the micro-level and the structural elements. The upside of this approach is that it makes more or less clear what social capital is, and what it is not allowing cleaner measurement and more parsimonious theory building. The downside is that it tends to overlook the broader institutional environment in which communities are inherently embedded (Woolcock, 2002: 22).

In our analysis, we will follow this more pragmatic approach. In line with other authors (Sobel, 2002: 139; Winters et al., 2002: 146) we use quite a narrow definition of social capital. We follow Rose (2000: 1) who defines social capital as follows: "social capital consists of informal social networks and formal organisations used by individuals and households to produce goods and services for their own consumption, exchange or sale". In general, informal social networks comprise face-to-face relationships between a limited number of individuals who know each other and are bound together by kinship, friendship, or propinquity. Informal networks are "institutions" in the sociological sense of having patterned and recurring interaction. However, they lack legal recognition, employed staff, written rules and own funds. Formal organisations are legally registered and, hence, have

a legal personality. They are rule-bound and have to follow formal procedures in their management. In general, they have a secured annual budget that might be made up by its members, the market and/or the State. A formal organisation can have as its members both, individuals and/or other organisations (Rose, 1999b: 149). In our analysis we will concentrate on the formal organisations in support of the agricultural producers in the CEECs. We will test the hypothesis whether membership in formal organisations has an influence on the level of farm income and hence on material welfare of agricultural producers.

27.2.2. Indicators for measuring social capital

Closely linked to the discussion about the definition of social capital is the question of how to quantify and measure it. Like human capital, social capital is difficult, if not impossible, to measure directly; for empirical purposes the use of proxy indicators is necessary. Years of education and years of work experience have a long tradition as proxies for human capital and have proven their value in numerous empirical studies. Depending on the definition adopted, the number and focus of indicators varies which make any comparison of social capital studies quite difficult. Indicators differ both geographically and sectorally (Grootaert and van Bastelaer, 2002a: 6–7). Bebbington and Carroll (2000: 20–21) have developed up to 124 indicators which were grouped into 44 variables. Needless to say that such approach requires a lot of time and resources. In line with the call for a more tightly focused micro, or more pragmatic, definition of social capital the number of relevant indicators is supposed to be reduced.

In connection with the pragmatic definition discussed above, this school of researchers focuses on one type of proxy indicators dealing with membership in associations. Other promising avenues to measurement are indicators of trust and adherence to norms and an indicator of collective action (Grootaert and van Bastelaer, 2002b: 346). They are, however, not discussed within the scope of this chapter. The easiest way to measure social capital is to record the number of organisations and informal networks of which one is a member. Under the label "Putnam's Instrument" the density of voluntary organisations at national, regional and local levels are assessed. The number of organisations a person belongs to is a way to measure an aspect of people's ability to work together (Hjollund et al., 2001: 3).

Social capital can also be measured by the additional utility actors can derive from joining a specific formal organisation and/or informal network. A straightforward indicator for this additional utility can be seen in additional income that is generated given a specific organisation of exchange when compared to a situation without that organisation, e.g., when all farmers sell their products individually instead of selling jointly through a marketing co-operative. At a first glance, this additional income can be attributed to the effects of social capital. However, as discussed above, there are costs involved in building up social capital. Hence, when analysing the relevance of these organisations and networks they have to be weighted by the frequency/intensity of the contacts, the time and resources spent (including opportunity costs) in making these organisations and networks work (Weinberger and Jütting, 1999: 8; Paldam, 2000: 20).

In addition, it has to be taken into account that organisations and networks, in general, remain stable over a period of time. "Therefore, the additional income has to be capitalised over the relevant period of time. The capitalised income stream generated for an individual actor by exchange relations induced by a specific social organisation, is a measurement of the social capital of this social organisation translated for an individual actor. At a macro-level, social capital can be accordingly defined as the sum of individual capitalised income streams" (Henning, 2002: 22).

At this stage a word of caution has to be stressed. While this relatively pragmatic approach provides a relatively easy starting-point of measuring social capital and facilitates a comparison of studies between different regions and over time, we have to keep in mind that organisations and networks tend to be situational. Insofar as networks vary between situations, it is still problematic to reduce social capital to a single unit of account that can be aggregated into a summary statistic characterising a whole group or even the whole of society (Rose, 1999a: 2). Similarly, a comparison of the findings of various studies might not be that rewarding. Nevertheless, while we are still at an early stage in identifying and testing indicators to measure social capital, membership in organisations and networks seems to be one of the most promising ones, up to now (Grootaert and van Bastelaer, 2002b: 346).

27.2.3. Relevance in transition countries

With the collapse of the socialist regime not only agricultural production, but also the supporting network of agricultural producers had to be re-organised. Why this transformation has not been that successful as originally anticipated has been explained above. As argued, one of the reasons could be a low level of social capital. Putnam (1993a) stresses the detrimental effect of dictatorship on trust and co-operation. During the socialist time, political and other organisations had to follow the line prescribed by the socialist party. Individuals only had the option to join State-controlled organisations, but not to set up organisations that would pursuit their own individual interests. The scope for social interaction, allowing extended trust to emerge and to be reproduced, was limited. People tended to retreat from the public sphere into privacy or into innocuous groups promoting non-controversial cultural and leisure activities. Public institutions were perceived as alien, and—in Central Europe particularly—as imposed by a foreign power. Distrust in public institutions is thus one of the most pernicious legacies of the socialist period. "In short, communism seems to have left as legacy the perception that while each individual might profit from informal social capital, private returns to civic participation and other forms of 'formal social capital' would be low" (Raiser et al., 2001: 4). So it can be concluded that this situation led to a great loss of social capital.

Analysts differ greatly in assessing the impact of this legacy on the transition process. On the one side, it has been argued that the imperfections of central planning led to the formation of a second economy, in which the basis for market behaviour was laid and social networks formed that could efficiently adapt during the transition. This second economy is seen to provide a fertile ground for the emergence of a private sector. On the other side, others still stress that the legacy of distrust continues to hamper the emergence

of a market economy. While most organisations of the central planning system collapsed, informal business networks based on ties (or processed-based trust), already quite essential during the time of central planning, became even more important during the transition period. These informal networks are based on personal connections between specific contact persons of various enterprises, banks, local and national governments. However, these informal networks are closely tight, remain in general closed to outsiders and hence prevent the emergence of effective competition (Raiser, 1999: 7).

Therefore, it has been concluded that, in general, "normal" social capital has been destroyed while some "bad" social capital was allowed to exist. Even after a decade of transition, the social capital of post-communist countries is therefore weak, and these low levels may also explain why their national incomes are low relative to the levels of physical and human capital. Large parts of the populations tend to rely passively on the State, a feature to be found in the agricultural sector of many CEECs. It is argued that, in all transition countries, (private) farmers have to regain initiative and relearn how to co-operate (Chloupkova and Bjornskov, 2002: 245). The importance of connections and networks for managers of transformed co-operatives and privatised State-farms for doing businesses is underlined by Bezemer (2002) in his study about the access to financial services, including subsidies in the Czech Republic. For all types of farmers it is vital to build up longer-term relationships with market partners, including bank staff, in order to reduce transaction costs. Corporate farm managers have been by far more successful in doing so than individual farm operators. The main reason seems to be that most of these relationships have been transferred from the socialist period and *de novo* private farmers have no option of joining. As these networks pre-date the economic reforms, then relatively new businesses such as individual farms have more limited access to resources allocated within the networks, such as, e.g., credit (Bezemer, 2002: 1312–1314).

However, in general, the weight attached to social capital in explaining the weak economic performance, stands in strong contrast with the availability of empirical evidence that would support such conclusions (Raiser et al., 2001: 1). Empirical analysis about this issue, particularly with respect to the agricultural sector, has just started. The subsequent sections contribute to this by analysing in how far producers are organised and by assessing whether membership of organisations improve material welfare.

27.3. DATA ANALYSIS

While the number of studies dealing with social capital has increased rapidly during the last decade, not that many authors have adopted this approach when analysing agricultural development in transition economies. The studies of Rose et al. (1998), Rose (1999a,b), and O'Brien (2000) focus on the actual existence of social capital among the rural population and not on agricultural development itself. Chloupkova and Bjornskov (2002) did a preliminary analysis of social capital among private farmers in the Czech Republic, but in general empirical studies regarding the economic effects of social capital on agricultural development in transition economies are lacking. In our study, we want to focus on the organisational aspects of social capital among agricultural producers in the CEEC. First, the number and relevance of formal agricultural organisations is analysed.

Next, the main hypothesis is tested whether membership in agricultural organisations, i.e., social capital, has an influence on the level of farm income and hence on material welfare of agricultural producers.

27.3.1. National level

The number and relevance of organisations is assessed on the basis of data from a survey, executed during the first half of 2002 with the help of national partner institutes in seven transition economies (Wolz et al., 2003: 67–69). On the basis of the data it is examined whether the newly established agricultural producers were able to set up organisations at the national level and how these organisations are characterised. Organisations could be classified according to their origin and their relevance to their members. More specifically they can be differentiated between national associations of agricultural producers (lobbying), co-operative associations, chambers of agriculture as well as specialised agricultural associations. Based on the results, the following conclusions can be drawn:

(1) Structures of organisations promoting the interests and the welfare of the agricultural producers in transition economies have been clearly identified. In other words, agricultural producers are endowed with social capital and the potential to organise themselves. This feature, however, seems to be less developed amongst the owners of private farms than amongst managers of transformed agricultural producer co-operatives and agricultural holdings as shown in Figure 27.1.
(2) The extent to which private farmers are organised seems to be influenced by the process of collectivisation as well as de-collectivisation (Figure 27.1). The highest degree of organisation of private farmers in all surveyed countries can be found in Poland, where farmers are predominantly members of the National Farmers' Union and some smaller associations, as well as in Slovenia where on average two members per farm family have joined the national chamber of agriculture which is also playing

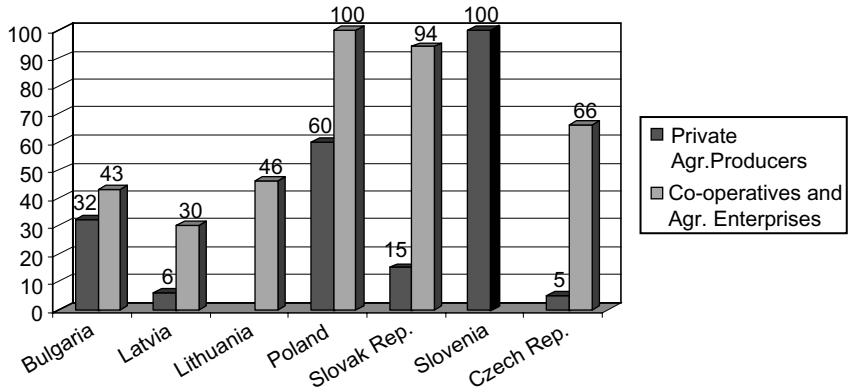

Figure 27.1: Degree of organisation among private agricultural producers as well as co-operatives and enterprises in selected CEEC (2002).
Source: IAMO-Survey (2002) (Wolz et al., 2003: 74).

a lobbying function. This might be explained by the modest collectivisation during the socialist period. In those countries where a large number of private farmers only emerged after the collapse of the socialist regime, like e.g., in Latvia or Czech Republic they are organised to a much lesser extent.

(3) Regarding the foundation of most important associations, i.e., the national farmers' unions and associations of co-operatives, often a direct link can be found with a predecessor organisation from the pre-socialist period.

The above analysis indicates that agricultural producers in the CEECs are endowed with social capital and have the potential to organise themselves. Whether social capital and membership in agricultural organisations will lead to an improvement of their material welfare is assessed below.

27.3.2. Farm level

In this section, some results based on a secondary analysis of available data are presented. In general, few farm level analyses exist. An interesting case is a research carried out by a Hungarian research team in the year 2000. In this study, 131, respectively, 66 families were interviewed in two neighbouring villages. The authors of this study write: "[…] in the past ten years they have run significantly different paths concerning economic development, particularly the structural transformation of agriculture" (Varga and Bíró, 2001: 58). Despite a comparable development during socialist times and a very similar starting position after the privatisation of agricultural land, the way of organising agricultural production is entirely different in the two villages. While agriculture is dominated by small-scale, part-time farming in village A, a co-operative and a joint stock company cultivate most of the agricultural land in village B. In village A "[t]he strategy of the farmers can definitely be described by survival, waiting out without clear vision" (Varga and Bíró, 2001: 62–63), whereas the population in village B "[…] is basically satisfied with the evolved situation of land ownership and land usage" (Varga and Bíró, 2001: 62). Most of the land is not leased but "[…] cultivated in the framework of a cultivation contract system" (Varga and Bíró, 2001: 59), which is a new, officially not approved system of land tenure in Hungary and has advantages for both sides. Village B is distinct from village A in respect to its cultural tradition. The inhabitants of B are of Swabian origin. Throughout their history in Hungary they maintained their cultural heritage which is the fundamental of a strong we-group consciousness structuring social and economic life till today. Within this context bonding social capital enables the people to act on the base of common sense and trust and to answer efficiently to new challenges like the privatisation and de-collectivisation.

Although this study indicates that organisations may have an important influence, it does not allow to say something about the link between social capital and material welfare. Therefore, we analysed data coming from an IAMO survey among Polish farmers about their access to viable financial services. Although the objective of this survey was not the analysis of social capital, it contains a section about membership in organisations, which allow us to use this survey for a first test about our central hypothesis that social

capital is increasing welfare. This survey consists of a random sample of 464 farms representing different legal forms in the former voivodships of Szczecin, Tarnów, and Rzeszów. Data refer to the budget year of 1999. The respondents were farm managers and household heads (see for a more detailed description of the survey: Petrick, 2001). For the analysis of our hypothesis we are concentrating on private farmers only. Hence, the total number of valid cases comes up to 410.

One question dealt with their membership in various types of organisations. Respondents have been asked, whether they were member of a co-operative bank, a credit union, any other type of co-operative, a farmers' union, and/or a political party. The answers were combined into a simple unweighted index of Social Capital I, amounting from 0 for somebody who is member of no organisation to 1 for those who are member of all five types of organisations. In addition, respondents have been asked whether they were an elected member of the supervisory board of a co-operative bank, a delegate to the Chamber of Agriculture and/or an elected member of regional authoritative bodies. Those who have been elected can be seen as leaders of the farming population. The answers were combined with those of membership to a second unweighted index of Social Capital II, amounting again from 0 for those farmers being member of no organisations and not being an elected representative to 1 for those being member in all five organisations and elected representatives in all three options. Both indicators represent a very "lean and mean" concept of social capital.

Other variables available were major human capital indicators. The variable "education" has been defined as an index with value 0 for farmers not completed primary school, 0.25 for completed primary school, 0.5 for completed vocational school, 0.75 for completed secondary or technical school and 1 for completed university. As a second index "job experience" has been calculated based on the difference between the actual age of the respondents and 14, the age at which normally primary school is completed. Those at the age of 65 got the index 1, i.e., their job experience comes up to 51 years (i.e., 65–14). Those with lower years of job experience got allocated a lower figure because for each year the index is reduced by 0.02. As a third indicator for human capital, the variable "manager experience" measures the actual number of years of managing a private farm as household head (excluding the years as helping family member). The highest figure comes up to 40 years while the lowest stands at zero, i.e., the respective respondent had just taken over the farm. The average number of years managing a farm amounts to 16.4 years.

How these social and human capital indicators had an influence on the level of agricultural income has been calculated in a correlation analysis using Kendall's tau (τ) as correlation coefficient. Due to a high degree of inconsistency with respect to the recorded variables of agricultural production, it has not been possible to come up with reliable cost figures and, hence, of the net farm income. Therefore, this analysis remains restricted to the gross agricultural farm revenue, only. Two rounds of correlation analyses have been executed. In a first step, the impact of social and human capital on the total gross agricultural farm revenue has been analysed. Since it can be argued that the farm size does have an effect on farm revenue, i.e., the bigger the farm size the higher the gross agricultural farm revenue, the second step analyses whether social and human capital

Table 27.1: Correlation of human and social capital with gross agricultural farm revenue.

Indicator	Gross agricultural farm revenue	
	Total	Per hectare
Social Capital I	0.193**	0.014
Social Capital II	0.187**	0.016
Education	0.055	−0.050
Job experience	−0.132**	0.091**
Manager experience	−0.099**	0.042

$N = 410$.
*Correlation is significant at 0.05 level (two-tailed).
**Correlation is significant at 0.01 level (two-tailed).
Source: own calculation with data from IAMO Poland farm survey 2000 (Petrick, 2001).

indicators have an effect on farm efficiency, i.e., the gross agricultural farm revenue per hectare. The results are shown in Table 27.1 below.

When looking at the impact of social capital on the total gross agricultural farm revenue, the findings reveal that it is highly significant. However, these correlations are far from showing a conclusive evidence. The coefficients are relatively small. When looking at the effects of social capital on the gross agricultural farm revenue per hectare no significant impact could be measured. Therefore, it can be concluded that there is a significant influence of social capital on gross agricultural farm revenue but the correlation is not as strong as anticipated.

A number of reasons for these rather weak correlation can be given. First, not all organisations representing social capital have been represented by the survey, i.e., our variables "Social Capital I" as well as "Social Capital II" do not fully represent social capital. The results also indicate that not only membership of formal organisations has to be assessed when measuring social capital, but also all types of costs in joining and remaining member of the respective organisations. We should also give more in-depth thought to the fact whether there is a direct and relatively simple relationship between membership in organisations and material welfare. Probably the relation is much more complicated and indirect.

When taking the human capital variables into account, there is also no clear-cut evidence. The effects of the variable "education" are not significant, the coefficients are small and when analysed in relation to gross revenue per hectare even negative. This might be explained that up to now successor takes over the farm in line with inheritance rules without any regard to the educational level. The other two variables, i.e., "job experience" and "manager experience", clarify the picture a bit. Both variables are negative and highly significant, i.e., those farmers with a longer job and management experience record lower farm revenues. At the first sight, this result is surprising but can be explained as follows: older farmers cultivate smaller farms which might be due to the fact that they are not that energetic anymore or that there is no successor for the farm available. Younger farmers cultivate larger areas which reflects their intention to earn an adequate farm income. However, they are more specialised in crop production, while the older farmers rely more on animal husbandry as a source of income. This might explain

why the coefficient of the variable "job experience" is positive and highly significant when testing its influence on the farm revenue on a per hectare basis. In this respect, it can be concluded that the human capital variables influence the chosen production structure (or farming system) and, hence, the overall farm revenue to some extent. Further analysis and collection of data are necessary to test these hypotheses further.

27.4. CONCLUSIONS

The literature review and our own findings confirm the hypothesis that social capital may be an important factor contributing to the material welfare of agricultural producers in the CEEC. But the findings are not fully conclusive. As the presented data were not purposely collected to study the influence of social capital, more detailed studies explicitly focusing on the impact of social capital on the well being of agricultural producers are urgently needed.

Assuming that there is a positive link, an important question arises as to how social capital among agricultural producers might be built up or strengthened, e.g., by the national or regional governments. There is almost common agreement that social capital is hard to construct through external intervention (Ostrom, 1999: 184). But there is evidence that structural social capital can be induced and reinforced by purposeful intervention. Support can be provided indirectly by creating a legal and economic environment conducive to building social capital from the bottom. Such efforts amount, for example, to creating a proper legal framework in which small groups are accepted as legal entities, thus enabling them to execute business activities. In general, governments should assure that the barriers to informal co-operation and the formation of voluntary (formal) organisations are minimised. In case business networks are already operational, governments might strengthen them through facilitating the exchange of information and/or providing limited financial support in making them more competitive, like e.g., the establishment of agricultural producer associations in the EU in the past (Raiser, 1999: 16; Chloupkova and Bjornskov, 2002: 248).

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 28

Making Sense of Bottom-Up in Rural Development

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Abstract

This contribution looks into the institutional requirements that are needed to make sense of "bottom-up" approaches in fostering sustainable rural development. First, experiences in both developing countries and Europe with participatory rural appraisal, a method of open citizen participation, are reviewed. Four critical fields of success are identified to structure the empirical analysis. The second part addresses some of the theoretical concerns from the perspective of a contractual approach that understands participation as *cooperation*. In this critical analysis, legitimacy dilemmas of participatory approaches are central.

28.1. INTRODUCTION

In the scope of the second pillar of the common agricultural policy (CAP), a new paradigm of multi-dimensional rural development has emerged. Rural development is no longer the "monopoly of the farmers", but involves many actors. Participation and self-organization are becoming keywords in this broader conception of rural development that shall contribute to incorporate more stakeholders (Hagedorn et al., 2001). The Rural Development Regulation indicates this line of thinking on rural development in the EU in the statement that "…rural development policy should follow the principle of subsidiarity; whereas it should therefore, be as decentralized as possible and emphasis must be on participation and a 'bottom-up' approach." (European Commission (1999). Council Regulation (EC) No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF)).

This paper looks into the institutional requirements that are needed to make sense of such bottom-up approaches in fostering sustainable rural development. In the debate on the usefulness of participatory approaches in rural development, there are two arguments in favour of bottom-up as contrasted to top down approaches: (1) the *efficiency* argument stresses that local knowledge is indispensable for finding contextually adequate solutions to local or regional problems (Chambers, 1994; Hagedorn et al., 2001; Gatzweiler and Hagedorn, 2002). In this view, technocratic expert knowledge needs to be complemented by local "wisdom": development planners in such an understanding would rather be facilitators than "doers". (2) The second argument points to the higher *legitimacy* of decisions taken with the active involvement of the concerned stakeholders. This legitimacy argument holds particularly strong in societies without a functioning democratic institutional environment and has thus been popular in development cooperation with democratically weak States. In the context of CAP, stakeholder participation is often understood as a means to put subsidiarity into practice and to incorporate rural citizens' needs, concerns and aspirations into bureaucratic procedures of regional development.

This paper will critically review the legitimacy requirements of participatory approaches in rural development and will hence focus on the *second* argument. First, the *practical* experiences with one particular method of open citizen participation, namely participatory rural appraisal (PRA), are reviewed. PRA has been a popular method in development cooperation over the last 15 years and has, more recently, been tested in Germany and some other European countries as a method of citizen participation in rural development. Much of the new thinking in the EU mirrors rural development approaches that have been applied in development cooperation in less developed countries (LDCs). It makes, therefore, sense to take into account the experiences gained in LDCs when developing new approaches of bottom-up development in the EU. In the second part, participation is interpreted as institution making. This raises the question of what factors shape the outcome of such institution making and how decisions derived from such informal institutions can gain legitimacy.

28.2. OPEN FORUM PARTICIPATION: THE PRA LEGACY

Participation and cooperative decision-making in rural development can take place at different levels of intensity. One can distinguish consultation, participation and networks. Networks are an exclusive group of actors that jointly organize collective action. Networks often represent only certain social groups and certain social interests. This network corporatism is to be strictly distinguished from citizen participation, where citizens of a communal entity are encouraged to participate in community development. This form of participation is more difficult to institutionalise and the bureaucracy often finds it challenging and tiresome to cooperate with "unorganized" citizen groups without formal institutional structures and hierarchies. Citizen participation is thus more challenging for the planning bureaucracy compared to the consultation of organized networks. Dahl (1994) has called this the democratic dilemma between system effectiveness and citizen participation. When discussing prospects and dilemmas of

local participation and the institutionalisation of bottom-up initiatives, it is essential to clarify what kind of participation is aimed for.

This paper investigates the theoretical assumptions and practical implications of one specific form of participation: open forums for citizen participation in rural development. One method that has been extensively used for rural community development in LDCs and that is now tested in Europe is PRA. Popularised by Chambers (1994), PRA is a methodology that searches to reverse rural development in the LDCs by "putting farmers first" and "handing over the stick" to local communities. This new approach reflected the failure of traditional rural development programs in the 1970s and 1980s that were unable to substantially improve the livelihoods of the rural populace in large parts of the south. The new paradigm sought to incorporate local communities in analysing, planning and implementing their own development programs. Nowadays, PRA has become a standard tool for many development agencies that promote participatory development.

PRA is used in a pro-active manner by combining action research with planning practice. PRA is not a strict method, but a "family of approaches, methods and behaviours enabling people to express and to analyse the realities of their lives and conditions, to plan what action to take, and to monitor and evaluate the results" (IDS, 1996: 1). PRA employs methods that enable people to express and share information, that stimulate discussion and analysis, and that enhance, in particular through visualization, creativity, transparency and exchange of ideas. Normally, PRA is applied in an open manner, i.e., there is no clear focus on one particular problem; rather, the identification and analysis of perceived local problems are centre-stage. Subsequently, the participants develop ideas on how these problems may be solved. PRA is often conducted in workshops where large parts of a rural community meet in public forums or in smaller groups to discuss and exchange under the facilitation of external moderators. Information is shared between insiders (the villagers) and outsiders (the planners).

In development cooperation, the mainstream agencies first regarded PRA with suspicion, since it undermined the traditional approach to rural development based on large-scale programs that were often instituted on the poor by "experts" coming from the outside rather than jointly developed with the local population. The PRA protagonists, on the other hand, often tended to enthusiastically promote the method without considering its appropriate adaptation to local contexts. Consequently, PRA faces a number of practical challenges, the more it became incorporated into mainstream development practice. The broader its application the more difficult it is to inculcate the philosophy of PRA, hence the new roles for planners and experts (Rauch, 1996). PRA is often mechanically applied to satisfy funding agencies without real engagement in empathizing with the local citizens, especially the poor (Alff et al., 1998). Local elites are often quite successful in capturing the benefits derived from PRA (Nelson and Wright, 1995; Cooke and Kothari, 2001). Institutionalising PRA into mainstream government planning remains a difficult task, in particular since the logic of planning bureaucracies (of governments as much as of donors) often does not fit the flexibility that is needed in participatory planning processes (Nelson and Wright, 1995; Rauch, 1996; Alff et al., 1999).

Even though the experience with PRA in LDCs has been at the least ambivalent, it has recently been promoted in selected Swiss and German villages for rural development and action research (Koch, 1996; Currle and Delius, 1998; Michaelis, 1998;

Korf, 2001, 2002b). Proponents of PRA in industrialised countries often argue that it can be an innovative instrument to overcome rural agonies and to inculcate a new spirit of "community" in rural areas that experience a relative social and economic decline. More specifically, participatory approaches to community development aim at:

- strengthening communication links within rural communities and to encourage more people to engage in their own public affairs;
- increasing the client orientedness of public administration;
- creating local ownership for local projects.

The ambivalence of using PRA in industrialised countries can be illustrated from a recent test case that was conducted in a village in Niedersachsen (Lower Saxony) in the north of Germany (Pölking, 2000; Korf, 2001, 2002a,b). This area called "Vechta-Cloppenburg" is famous for its large livestock farms, which provide economic prosperity, but create agro-environmental problems. The PRA was initiated by a larger research project to investigate local perspectives on agri-environmental problems. The PRA workshop was therefore not really an "indigenous" bottom-up initiative, but rather an externally "induced" one: outsiders largely drove "participation" without proper embedding it in the formal institutions of local government (urban council, mayor). In particular, the PRA workshop lacked an adequate process of preparation and follow-up and thus deteriorated into a one-shot event without initiating local collective action. There was also an implicit disagreement between the initiators and the implementers of the PRA workshop. While the initiators (and funding agency) of the PRA were predominantly interested in finding solutions to agri-environmental problems, the facilitators applied PRA in a much more open-ended manner. This indicates that objectives, roles and responsibilities were not adequately clarified. Furthermore, it proved to be difficult to encourage marginal social groups, such as immigrants, "new citizens" to participate in the activities of the PRA process. In the end, PRA did not seem to be an adequate instrument to forge any constructive solution to one of the most urgent problems of the locality, since: (1) these were rooted in structural reasons that have their origin at a higher level than the community (e.g., unemployment, agricultural pollution) or (2) PRA did not prove to be an adequate forum for the solution of the problem (social exclusion of certain groups).

28.3. FOUR CRITICAL FACTORS OF SUCCESS

The example above shows that participatory methods, such as PRA, need not be the most appropriate approach per se, for a given context. What is required is a set of critical factors that determine the success and failure of participatory development approaches in LDCs and in rural Europe. Table 28.1 provides a more detailed overview of the experiences thus far with PRA both in the north and in the south. Four critical factors of success are identified: (1) participatory approaches initiated by outside agencies, such as the EU Commission or donor agencies in LDCs, are to be embedded in wider institutional networks of local governance in order to be sustainable; (2) one has to understand the transaction cost structures of participation, in particular cost–benefit ratios that drive or

Table 28.1: Critical success factors for open forum participation and lessons learnt.

Critical success factor	**PRA in the south**[a]	**PRA in the north**[b]
Institutional embeddedness shapes the legitimacy of decisions and determines how sustainable a process of participation and implementation can be	PRA is often initiated by outsiders: development agencies or NGOs that have decided to work in a particular place The logic of participatory processes clashes with the requirements of bureaucratic processes of government and development agencies It is often difficult to sustain the process of participation beyond some initial phase of enthusiasm	PRA is often initiated and/or funded by external agencies, since it is still in its test phase and not widely known as instrument for communal planning It is often unclear how decisions taken during open forums of PRA are legitimized vis-à-vis existing formal institutions of the democratic State (in how far do decisions bind local councils?) Who takes the responsibility for the follow-up implementation of projects identified during PRA workshops?
Transaction costs of participation determine who is able and/or willing to participate and who is not	The costs of participation do often not correspond to the benefits an individual or household can derive from participating in PRA Poor people are often unable to participate in PRA forums, since the opportunity costs of time are too high	Public forums are often middle-class dominated, since the cost–benefit ratio is less favourable for the poor and the rich: the poor do not have the time to participate (working shifts, mothers), the rich do not bother about the marginal benefits.
Negotiation process influences whose bargaining power shapes the outcomes of cooperative decisions	Public forums often legitimise and re-inforce the relative power of the local elites: their interests are "approved" by participatory procedures, because marginal groups do not dare to voice their interests publicly PRA methods are often applied in a paternalistic manner and the "experts" dominate the process, thus shaping the outcome of PRA according to their ideas	Social fabric in rural communities tends to create a group of insiders and "those others" who are not inside these social networks "These others" (outsiders, foreigners, new citizens) without access to the social networks are often reluctant to participate or to speak in public Time rich intellectuals (e.g., teachers, lawyers) and reputed local citizens tend to dominate the public discourse
Impact radius delineates the scope of what can be achieved through participatory approaches	PRA workshops require a high logistical and financial input, which reduces the feasibility to apply it on a wide coverage	Most of the crucial problems that challenge rural areas in Europe are of a structural manner and cannot be resolved by PRA or other participatory approaches alone (e.g., unemployment, socio-economic structural change)

(*continued*)

Table 28.1: (Continued)

Critical success factor	PRA in the south[a]	PRA in the north[b]
	Often, development agencies are unable to respond to the voiced needs, because they lack the mandate or expertise to address the identified needs	Conflictive issues need a more careful and longer term approach People might not be a aware about certain problems or their severity (e.g., environmental degradation) and thus do not perceive these as problems

Comment: "south' stands for LDCs in Africa, Asia and Latin America; "north' stands for industrialized countries in Europe.

[a]Based on Refs. Chambers (1994), .Nelson and Wright (1995), Alff et al. (1998), Leeuwis (2000), Weinberger (2000), Cooke and Kothari (2001) and Freyhold (2002)

[b]Based on Refs. Koch (1996), Michaelis (1998), Pölking (2000), Korf (2001, 2002a,b).

impede participation of specific social groups and influence the organizational drive of local collective action; (3) participation as a negotiation process will produce winners and losers when distributional issues are at stake. Finally, it is important to consider that (4) the impact radius of local rural development initiatives remains limited, unless structural causes of economic and social backwardness are alleviated at the macro-policy level.

It is worth mentioning that the evaluation of PRA experiences in the south is based on vast numbers of applications, project evaluations and academic research, while much less work in this field has been done thus far with PRA in the north. Nevertheless, the available evidence from PRA applications in the north suggests that there are many constraints to PRA that are similar in both, south and north, even though there may be differences in the settings within which PRA is applied (Korf, 2002a). Without going into much detail of the different points elaborated in Table 28.1, the next section analyses the major concerns in each of the four success factors.

The first empirical success factor, *institutional embeddedness*, emphasizes the fact that participation needs to be: (1) rooted in indigenous initiatives for change and (2) that it requires an appropriate embedding in existing administrative and legal procedures in order to ensure that apart from discussion rounds, something concrete will materialize. Sadly, both, in the north and south, such an embeddedness was often missing: many PRA workshops in development cooperation are rather donor-driven than bottom-up. This may result in a "top down initiated bottom-up" process where PRA still tends to be initiated by outsiders who also dominate the agenda (Leeuwis, 2000; Cooke and Kothari, 2001). In addition, the logic of bureaucratic procedures often clashed with the logic of a participatory process. While bureaucrats have to follow strict guidelines of timing, fund disbursement and so on, participatory processes may be ambiguous, circular and demand high flexibility, which is difficult to handle in fixed procedures (Alff et al., 1998; Bauer and Hoffmann, 1998).

The institutional embeddedness factor advances some crucial point that is important in the subsequent theoretical analysis, the question of legitimacy. When PRA is initiated, often also dominated in its process by outsiders, how can decisions taken at such forums

claim legitimacy? These legitimacy concerns may differ in the south and in the north: in many countries of the south, local government institutions may be weak, corrupted or non-existent. Then, PRA may be understood as a means to re-introduce some form of governing local decision-making processes in a kind of democratic way. However, the problem remains to be known what gives outsiders the legitimacy to decide upon the appropriate method to negotiate the rules of the game of local government. In the north, for example in Germany, local government institutions are in place, legitimised by local elections. In all federal States in Germany, there are democratically elected village parliaments ("Gemeinderat"), while in some, even the head of the local administration, the mayor, is directly elected by the citizens (e.g., Bavaria; Baden-Wuerttemberg; Hessen; Brandenburg). Here, the question is how decisions taken at open forums are legitimised in view of possibly contrasting decisions from these democratically legitimised institutions.

The *transaction costs* parameter furthermore raises important issues in this regard: if it is easier for some people than for others to participate in PRA workshops or other types of open forums, especially, because cost–benefit ratios may differ, whose interests are then best represented in the decisions taken at PRA workshops? There is a growing literature on PRA applications in the south warning that participatory approaches may exclude the very poor and vulnerable groups (Cooke and Kothari, 2001). Similarly, in our PRA case study from Lower Saxony (Pölking, 2000; Korf, 2001), we could observe a "middle-class" effect (Weinberger, 2000): some people, often from lower social class background, were unable or reluctant to participate in PRA activities: for example, some Germans from the former Soviet Union had to work in night shifts and could thus not participate in public forums normally scheduled in the evenings.

It may be useful to consider PRA and open forum participation as a *negotiation process* (third critical factor). Whenever collective choice decisions are to be taken over scarce resources, there will be bargaining involved. Since most public decisions are over the allocation of scarce resources, it is essential to understand who has the power to influence the decisions of others. In PRA applications in the south, an increasingly critical strand of literature has pointed out that it is often the local elite that became re-empowered by PRA processes, although the claimed objective of PRA being to empower the poor and disadvantaged (Nelson and Wright, 1995; Leeuwis, 2000; Cooke and Kothari, 2001). In South Asia, for example, caste and gender still seem to play a dominant role in shaping local decision-making (Mosse, 1994). In addition, some authors emphasize the dominance of experts in the facilitation processes of open forums and their power to steer processes in certain directions (Cooke and Kothari, 2001). In open forums in the north, "time rich" intellectuals often dominate public discourse, e.g., teachers. At the same time, foreigners or people from a lower social background may be reluctant to speak in public (Korf, 2002a).

Finally, the *impact radius* of PRA delineates the space within which PRA can successfully operate. Since PRA workshops require a high logistical and financial input, it is reasonable to ask what impact or difference they make compared to traditional approaches of decision-making. In LDCs, agencies or local governments are often not able to respond to the voiced and identified needs of the population, either, because they may lack the mandate, expertise or finance to do so. This has often created a gap between very intensive periods of assessment and poorly coordinated follow-up activities

(Alff et al., 1998). Hence, in some locations that are easily accessible by vehicles, villagers often feel "over-assessed" by agencies, without noting much change in their lives (Rauch, 1996). In industrialised countries, the main challenge may be that most of the pressing problems in rural areas are of a structural manner and cannot be solved through bottom-up processes. This is, for example, the case with the widespread unemployment in eastern Germany or processes of socio-economic change. It also appears that conflicts over resources, such as land use, need a more long-term, low-profile mediation approach rather than public forums for their resolution.

28.4. PARTICIPATION AS COOPERATION: THE LEGITIMACY DILEMMA

The empirical analysis of PRA applications in both, south and north, has underlined the ambivalence of open forum approaches in bottom-up development. It seems that these ambivalences, in particular with regard to legitimacy, may even be larger in industrialised countries where a democratic local government system exists. The question is whether PRA makes sense in democratic societies (Korf, 2002b). Answering this question requires an analysis of the implicit and explicit theoretical and conceptual assumptions used to justify bottom-up approaches in rural development. Hereby, participation is defined as cooperation of individual agents. This definition rejects the notion of a civil society that defines itself *against* the State. Rather, democracy is assumed to live from the constant and productive tension of civil society and the institutions of the State, based on shared norms of cooperation (Nida-Rümelin, 2000). Hence, the legitimacy of collective choices in open forums has to be compared with decision-making in formal institutions of the democratic State.

28.4.1. Insincere deliberation

There seems to be an implicit assumption in the literature on PRA that such open forums, if facilitated by genuine outside facilitators are creating a space, which could be subsumed to fall under the concept of Habermasian "ideal speech" situation or deliberation. In such an ideal speech situation, a community analyses shared problems and needs and derives appropriate solutions through arguments and critical debate. Leeuwis (2000) has criticized this theoretical assumption of PRA and of related participatory approaches used within the paradigm of sustainable development. He argues that it is not so much lack of knowledge that impedes rural development, but the lack of will (because those in power are wary of any substantial changes that could endanger their position). He outlines the ambivalence of understanding social change as the result of social learning. In particular, he rejects the implicit or explicit assumption that communication in open forums would operate in an ideal speech setting. He claims that, philosophically, many scholars confuse the normative notions of Habermasian discourse ethics (Habermas, 1981), in particular his distinction between communicative action as contrasted to instrumental and strategic action. The notion of social learning advocated in PRA approaches appears to be closely, implicitly or explicitly, affiliated to Habermasian communicative action where from an open process of argumentation (the ideal speech situation), any claims (including normative ones) are

subject to critical debate. In Habermasian critical theory, an ideal speech situation refers to a situation of absolutely unforced and unlimited discussion between completely free and equal human agents (Habermas, 1981).

In reality, however, there is no pure deliberation and ideal speech situation. Political discourse is influenced by factors such as emotions, passion, commitment, solidarity, competition, rivalry and is often pushed by competing interests (Walzer, 1999). Kuran (1998) emphasizes that sincerity may easily crumble in the face of social pressure and that the motivation to retain social approval can easily overwhelm the courage to stand alone. Hence, there may be situations of "insincere" deliberation (Kuran, 1998). Although institutions that promote and facilitate deliberation (as PRA is assumed to be doing) are essential ingredients of democracy, Kuran (1998: 542) argues that their usefulness may be limited "insofar as individuals feel compelled to censor themselves". In practice, it seems that public discourse tends to be dominated by what Habermas (1981) has termed instrumental and strategic communication. Instrumental action involves technical prescriptions based on nomological knowledge, which is used to achieve previously defined goals. Strategic action is oriented towards the realisation of specific goals, but the agents recognize other agents as strategic opponents. In political processes of collective choice making, strategic action will be central, while instrumental argumentation may be used to underscore strategic arguments with "scientific" validity, hence "objectifying" specific arguments of strategic interest.

It seems therefore more appropriate to understand participation as a bargaining process where different interests are voiced, discussed and finally sorted out. Distributional issues may be important in such bargaining processes and outcomes are shaped by the relative bargaining power of the actors involved (Knight, 1992). The theory of bargaining and distribution considers social institutional change "as a by-product of strategic conflict over substantive social outcomes" (Knight, 1992: 107). This theory focuses on social interaction between actors that intentionally seek distributional advantages. If rules emerge as the result of distributional conflicts, the effects of institutions must consequently reflect the difference between the actors in terms of their distributional expectations and in terms of whatever kind of resources these actors have to put into play. Institutions thus mirror the power and bargaining resource asymmetries of actors, the credibility of their commitment, individual risk aversion, time preferences, information, sanction power and so on. Thus, the main argument is that individuals are differently endowed with the ability and power to influence institution making. If this is accepted, then we have to consider how participation and the related negotiation processes shape the formal and informal institutions that emerge as a result of it.

28.4.2. Participation and motivations for cooperation

If participatory processes are not arenas of pure deliberation, but arenas where bargaining of differently endowed agents takes place, it may be central to look into the question of what motivates specific agents to participate in collective choice making and collective action. The fundamental argument of PRA is that communities shall make collective choices and then decide upon how to go ahead and initiate collective *action*. This requires

the initiation and coordination of cooperation and collective action. Similarly, and even more importantly, collective action is essential in other, more network or corporative forms of participation. The traditional theory of collective action (Olson, 1965) has mainly argued within the logic of the self-interest model that an individual actor who seeks to maximize its utility will choose not to participate in collective action when she/he can free-ride and reap the benefits without taking part in the activity. An individual will, according to this model, only participate if the benefits outweigh the costs of participation (e.g., time). Individuals will thus only cooperate if non-cooperation is inefficient. The benefits derived from participating in collective action need not be understood in monetary terms alone; people can also participate because this strengthens their embeddedness in social networks or because they may gain prestige from it (Kirsch, 1997).

This argument, however, constructs a very thin concept of motivation. Elster (1989) has, therefore, deepened and expanded the argument and has identified different motives for cooperative behaviour that might differ from pure self-interest as defined in the theory of collective action. In Elster's model, the decision of an individual whether or not to take part in collective action is influenced by his/her knowledge and subjective judgment of two factors, namely the number of cooperating actors and the expected average utility derived from collective action. Elster identifies different "types" of individuals and their motivation for cooperating or non-cooperating. These types of individuals are influenced by different norms of cooperation. Elster (1989: 203) distinguishes five main motivational types:

- *Selfish*, outcome-oriented rational individuals care exclusively about the output of collective action. Their dominant strategy is non-cooperation.
- *Everyday Kantians* cooperate on non-conditional terms if universally speaking, cooperation produces more benefits than non-cooperation. Kantians do not bother about the number of actors cooperating and their costs. They are key actors in initiating collective action. Their dominant strategy—with a small number of exceptions—is cooperation.
- *Fairness-minded actors* participate if a relevant number of persons cooperate that is conditional for their cooperation. People may have different such thresholds.
- *Utilitarians* cooperate if their contribution increases the aggregate utility of cooperation.
- *Elite participationists* prefer that few others cooperate. Their desire is to be present at the initial creation of a public good. *Mass participationists* prefer to participate the larger the movement grows and require a minimum number of cooperating individuals to join.

In Elster's model, each of these motivational types of individuals plays a crucial role at different stages of a participatory process. Everyday Kantians, for example, are crucial in initiating collective action and elite participationists will come in at an early stage. Only when the aggregate utility starts to be significant, utilitarians will join the movement. After a sufficient number of individuals participate, mass participationists will also join. At this point, elite participationists may leave the movement, while for fairness-minded people, the motivation to cooperate increases. At a point where the aggregate utility of

collective action declines, utilitarians may discontinue their cooperation, and, if this reduces the number and ratio of participants significantly, fairness-minded people may do so as well.

Elster's model shows the strategic role of different motivational types in collective action. This means that small groups of individuals, especially those that cooperate at crucial stages, such as the everyday Kantians or the elite participationists, may conquer a disproportional influence on the shape of the rules of the game, and, consequently, on the outcomes of decision-making processes. One crucial element in this regard is the opportunity costs that agents attribute to time. It appears to be a common phenomenon in open processes of citizen participation that time rich people from the intellectual scene are most engaged: individuals such as lawyers and teachers who have more free time comparatively speaking, may dominate roundtables and public forums,. Another group of influential actors may be delegates and representatives from administrative bodies or from organized interest groups.

One weakness in Elster's model is that he does not take into account that selfish individuals may cooperate in order to achieve certain outcomes that favour them personally. In research on Germany, Brömme and Strasser (2001) have observed that new forms of civic engagement (self-help, citizen initiatives) tend to be dominated by the social and intellectual elite, who openly combine own interests with broader public goods. These elite participationists thus combine, in a sense, self-interest with altruism. They may use cooperative behaviour to inculcate their bargaining power in order to distort decisions in their favour. On the other hand, actors may also participate in order to *prevent* outcomes that may affect them negatively.

28.4.3. Participation as institution-making

In political philosophy, the *contractual* approach interprets all collective choice and action through the lens of *voluntary* cooperation and contract. Normatively speaking, collective choices and action are only legitimised if, and only if, all agents involved agree. The contractual approach is thus a theory of consensus and attributes veto power to each individual involved. This normative demand, however, could easily bring processes of collective action to a standstill. Buchanan (1975) has argued that the normative notion of consensus cannot become the organisational principle of democracy; otherwise, democracy would be doomed to block itself. Rather, a fundamental consensus in society is required that legitimises decision-making procedures that allow some kind of majority rule. However, as Homann (1990) has pointed out, almost all collective decisions involve distributional problems of scarce, limited resources that have to be shared. Non-consensus based procedures (unilateral decisions) therefore get trapped in a legitimacy problem. Homann (1990) thus argues for a double legitimisation of cooperative decisions: both, external criteria for just *outcomes*, and criteria for just decision-making *processes*, since, in a liberal democracy, justice cannot be detached from the citizens' will. In this line of argument, collective decisions or choices are just, if and only if, the process of decision-making is just and the outcome of this process suffices externally derived criteria of justice.

In this contractual understanding, participation can be conceptualised as negotiated institution-making: new (informal) rules of the game emerge that *complement* the formal institutions of the democratic State. Forums of open participation, such as PRA, can be interpreted as *intentional* forms of institution-making: new rules of the game are suggested, negotiated and enforced in rural communities. If participation is defined as institution-making, it is essential to determine the driving forces that shape the evolution of these institutions. Since such negotiated institutions evolve from cooperation between individual agents, the incentives for the emergence of collective action and the processes that determine collective choice need to be discussed. If few, elitist participants may dominate participatory processes, we cannot simply *assume* that civil society initiatives and open forums of citizen participation will yield "just" or legitimate decisions derived from an open debate of deliberation.

Procedures of citizen participation that are introduced to complement the formal, democratic institutions of the State, thus face an inherent legitimacy dilemma. Any form of open citizen participation involves cooperative decision-making. While the formal institutions of the State derive legitimacy from the fundamental constitutional agreement that underlies the procedures of democracy, this is not the case for the open forms of participation. Such forms of citizen participation, therefore, have to comply with both justice criteria (process and outcome) for legitimising their decisions as binding. Another possibility is that decisions derived from open forms of participation are only recommendations without binding character for the formal institutions of the democratic State. However, this would downplay their influence in shaping local development, and as a consequence would reduce the incentive for individuals to participate (if people feel that their participation does not really matter because final decisions are taken elsewhere). The dilemma for open citizen participation is thus that either the binding character of such procedures is weakened (which makes them less attractive) or there is a serious problem of legitimising the decision process involved, since it is difficult to accept a consensus of a large group where few influential actors may dominate the decisions without being legitimised or delegated to speak for others.

28.5. CONCLUSION

PRA has yielded so far ambivalent experiences. Some of this ambivalence can be traced to a poor understanding among its practitioners of the underlying philosophy of handing over the stick, i.e., instituting a new role for planners and experts as facilitators. At the same time, some critiques have argued that PRA starts from idealistic assumptions and thus cannot be successful in initiating civic engagement, in particular in empowering more disadvantaged groups to gain a more active voice in their community. Understanding of participatory development as a negotiation process rather than a process of deliberation may keep expectations as to what PRA can achieve in fostering local empowerment and civic engagement more realistic. This holds not only for the PRA approach but also probably for most of other conceptions of citizen participation. Critical success factors such as those derived in the empirical part of this paper are essential to keep expectations about what participatory approaches can achieve realistically.

From a theoretical point of view, the question of legitimacy becomes central if open forms of citizen participation such as PRA claim some form of binding decision-making power in rural development. A key question is then whether citizen participation is *complementing* or *replacing* the formal, democratically elected institutions of local government. This will depend on how decisions taken at these forums relate to the formal decision-making and implementation procedures of local government. In Germany, local councils derive their legitimacy from free elections. Open forums can hence only complement these councils and provide "advisory" input to the local political institutions of the democratic State. However, whether this is a sufficient incentive for people to take part in these forums, still needs to be seen. One-shot games (workshops, forums) may have little impact on the day-to-day workings of local government, while instituting longer term civic engagements may be in constant tension with it.

New initiatives in Europe that demand a bottom-up approach and participation need to be aware of the ambivalent features of rural civil society. The latter is not a homogeneous entity. In addition, the social, economic and political outcomes that can be achieved through cooperative forms of decision-making are extremely limited, since the local is linked with structures determined at State and global level. Harris (2001: 6) warns in this regard that:

> Romantic visions in which individual communities can somehow resolve problems of livelihood and sustainability on their own are politically misguided and a political disservice.

Part of the discourse in participatory development, both in the north and south, tends to be dominated by what is normatively wanted instead of what may be practically useful. It is therefore essential to deconstruct participation in a way to uncover the underlying interests and bargaining strategies that drive individual behaviour in political negotiations and to reflect upon who benefits from bottom-up approaches and who does not.

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Role of Institutions in Rural Policies and Agricultural Markets
G. Van Huylenbroeck, W. Verbeke and L. Lauwers (Editors).

CHAPTER 29

New Institutions in European Rural Development Programmes: Between the Top-Down and Bottom-Up Approach. The Case of Andalusia (Southern Spain)

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Abstract

For decades, rural development programmes have been characterised by the implementation of non-coordinated sector and top-down policies and strategies. The failure of these policies as well as the present decentralising movements, initiated local development initiatives based on bottom-up planning and on public–private partnerships. However, these processes coexist in the territory with other rural development organisations, creating a leadership conflict between initiatives. This paper aims to identify some limitations faced by the local action groups of Andalusia. These limitations arise from the difficulty of harmonising the top-down and bottom-up processes. The relief of these limitations is essential in order to consolidate the role of new institutions and of a rural development model based on a territorial approach.

29.1. TOWARDS A NEW INSTITUTIONALISM FOR RURAL DEVELOPMENT

The development of rural areas continues to be an international priority. This can be explained by the need to fight against poverty (which is mainly concentrated in rural areas) in developing countries, and the demand for increasing economic and social cohesion in developed countries.

The way of understanding the planning and management of rural development has changed considerably since the first initiatives set up after the Second World War. However, the advances have not been as significant as was hoped for and many challenges still remain unsolved.

Analysis of the first public policies to develop rural areas in the fifties showed already that the main reasons for their lack of effectiveness were their clear sector nature, the insufficient coordination of the initiatives between different administrative levels, the non-participation of the local population, and the lack of regional specificity in their approaches (OECD, 1990; World Bank, 1998). This poses a number of challenges.

A first problem is that a large number of agents and institutions operating in the rural environment develop their strategies with little or no coordination. The lack of integrated rural policies or of institutions with the capacity (whether formal or not) to coordinate development operations facilitates and encourages this dispersal of energy.

The second challenge consists of incorporating the real participation of the population in the design and follow-up of rural development strategies. As a result of the failure and the limitations of top-down strategies, in the eighties, decentralised alternatives have been proposed acknowledging the greater importance of local initiatives (Smith, 1993; Reilly, 1995), the inclusion of civil society in the planning of development (Clarke, 2002), and the establishment of partnerships between the public and private sector (Rondinelli, 2002). However, and despite some very positive results, the social involvement desired has not yet been achieved.

Thirdly, the decentralisation process should allow the transfer of power and resources from central administrations to local administrations. However, this process has not achieved the results that were hoped for (Johnson, 2001). As Gordillo (2003) points out, a clear understanding of the institutional adjustments that make up the basis of effective decentralisation does not exist. The challenge consists of inventing new institutional forms that neither replace private initiatives nor induce the appearance of control mechanisms or the interventionism in bottom-up processes.

In practice, local participation is achieving positive results in those areas that already have a minimum stock of social capital and that are advancing both in terms of efficiency and equity. However, in the most disadvantaged areas, in which this necessary threshold of social capital is not present, pure bottom-up approaches fail not only in efficiency but also in the equity and sustainability of the process. Because of this, the role of public administrations must be treated with caution, since their substitution by new "local partnerships" could be a source of significant deficiencies and inequalities between territories concerning the supply of services and basic equipment (Ramos and Delgado, 2002).

The nature of these problems makes it necessary to combine different approaches. As Ostrom (1998) states, the new institutional approach aims, among other things, to link bottom-up and top-down logics, so that endogenous dynamics cooperate with those originating in the public sector, and vice versa. This requires a reform of institutions and a redefinition of their roles. But institutional reform is not only the responsibility of national governments. Political forces and social pressures may speed up or delay the appearance of new institutions that assume new roles and shared power relationships (World Bank, 2001). Individuals and communities, local entrepreneurs, multinational

companies, and multilateral bodies may induce the establishment of new institutions, often in mutual association. However, the interaction between both rationalities is not immediate and creates a number of problems.

The fourth weakness of traditional rural development processes is their sector and horizontal nature. Presently, a new development approach is proposed in which the territory is not only considered as a geographical delimitation, but as a management space for setting up rural development initiatives (LEADER II Observatory, 1999). This territorial approach implies a multisectoral vision on defining public policies, as well as the identification of an operational scale allowing the recognition of both the diversity and specificity of each area (Rodríguez et al., 2003). The local level allows the valorisation of resources based on an integrated vision by taking into account existing interrelationships on a local and global scale. To make this approach to be effective in a territory, it is necessary that this level is recognised as such by inhabitants and other social, economic, and political agents represented as well as by those administrations who directly influence the welfare of the population.

To tackle these challenges, current rural development planning is inspired by the territorial approach, the decentralisation processes, the participation of all stakeholders involved and the need for coordinating the actions implemented by the various agents and administrations.

Figure 29.1 shows how different institutions intervening in rural development can be classified by applying two variables: their approach (top-down or bottom-up), and the nature of their administration (public or private). Even if the four displayed categories tend to be hermetic, present changes are challenging this positioning. Current movements towards decentralisation and the transfer of competencies to the local level are increasing the interactions between top-down and bottom-up approaches, and leading to the

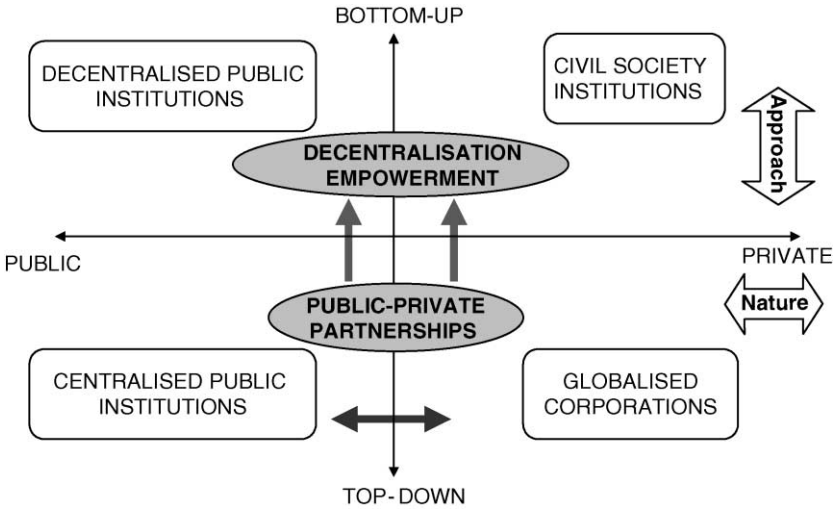

Figure 29.1: Classification of Rural Development institutions.
Source: Own elaboration.

empowerment of local society. On the other hand, the need to constitute partnerships including all different local stakeholders is addressing the breaking down of closed compartment among public and private sectors.

The new rural development dynamics in the EU favours the inclusion of local societies in the administration of their own problems. The European LEADER Community Initiative (CI LEADER) transfers on the basis of pilot experiences, administrative and financial capacity to organisations in which the various public and private agents present in a territory are represented and working following a territorial, integrated, top-down, and participatory approach. The need for creating partnerships and other new institutional forms, can be interpreted as institution making, since it is forcing collaboration between various territorial groups, breaking long-established inertia, creating networks, and stressing the need of a "critical mass" in order to tackle specific projects. These considerations are particularly important for many rural villages with few inhabitants and resources, and which therefore do not have the minimum capacity to initiate such processes in isolation.

After a decade of operation, and despite their limitations, the positive effect of bottom-up processes for the development of rural areas in the EU is increasingly recognised. These programmes contribute through the encouragement and creation of new networks, new activities, new mechanisms for dialogue, and new institutional relations, to the reconstruction of rural life and to the strengthening of social integration and territorial identity.

However, the field of action of the local action groups (LAGs) is limited. One limitation is that issues such as education, health, or infrastructures are excluded. Second, their budget is very small and they are not recognised as suitable interlocutors by many public administrations. These limitations explain why, despite achieving important qualitative results within the territories, the quantitative results are still limited as well as their capacity to coordinate and influence the actions of other administrations.

29.2. NEW INSTITUTIONS AND RURAL DEVELOPMENT IN ANDALUSIA

Andalusia is a Spanish region (NUTS II) included in Objective 1 with an income per capita of only 66.5% of the EU average. It has a surface area of 87,268 km^2 (17.3% of Spain and 3% of Europe) and just over 7 million inhabitants (2% of the European population). An important indicator of the importance of agriculture is the employment rate of 12.4% which is more than the double of the EU average.

Numerous administrations and institutions are involved in the rural planning process of Andalusia. The lack of one single Andalusian functional administrative division prevents the collaboration of political initiatives in the region. Each public authority has developed its own administrative divisions for intervening in the territory. The result of this is that each organisation has its own "district" map (a "district" is a Spanish territorial division between a region and a province), and that these "functional perimeters" hardly coincide. The district maps defined by national and regional governments are different of those of other bodies such as the LAGs and the County Council Municipalities (CCMs). A CCM is a group of townships adjacent to each other that decide to join forces in order to carry out operations or to provide better services to its citizens. These institutions were initially

created in order to resolve specific problems. However, in recent years they are covering wider objectives related to the development of their territories (housing, transport, education, culture, social services, sports, etc.), independently of whether these powers still remain with the regional administration.

In the complex current situation, differentiated territorial divisions coexist based on: (a) different functional objectives and (b) different methodologies (bottom-up or top-down). The number of LAGs originating from the CI LEADER increased from 9 in the first stage of the programme (LEADER I) to 22 in LEADER II. Almost all rural areas requested a local action programme. Similar interest was also shown in the rest of Spain, explaining why the central government proposed an operative programme similar to LEADER, for Objective 1 regions within the 1994–1999 Structural Funds Common Support Framework. This programme is known as the Programme for Economic Development and Diversification of Rural Areas (Programa de Desarrollo y Diversificación Económica de Zonas Rurales, PRODER). In 1996, 27 Andalusian areas were included in this programme. It means that looking at both programmes, 49 LAGs (22 from LEADER and 27 from PRODER) worked on the rural development of the region in that period, covering 88.9% of its surface and 44.3% of its population.

In the current programming period (2000–2006), LEADER + and the renovation of the PRODER programme (proposed by the regional government within this period) have allowed the 49 groups (plus one new one) to continue. Now, they cover 92.3% of the surface of Andalusia. This high coverage degree shows the importance of LEADER and PRODER for regional development. The continuity of the LAGs is consolidating a re-organisation of Andalusia around these institutions; in many cases they are becoming intermediate actors between local protagonists and the public administrations.

Although the practices of the LAGs incorporate the new tendencies such as the territorial approach and the integration of the top-down and bottom-up logic, the role of these new intermediate institutions has not yet been fully acknowledged in the region. Their scope of action remains up to now limited, only affecting a small portion of the rural development processes (essentially the valorisation of endogenous resources associated with tourism, local products, and the environment) and they continue to coexist with public administrations responsible for education, health, the environment, employment, or justice.

29.3. OBJECTIVE AND METHODOLOGY

In order to make progress in the coordination of actions by the different development institutions, it is necessary to analyse the role of each one and the relations between them. Therefore, the capacity of the LAGs to integrate initiatives of different planning actors is analysed. Reasons to believe in their capacity to do so are: (1) their bottom-up nature; (2) they cover almost the whole of the region; (3) they are the result of an agreement between the townships, the regional government, and the EU; (4) they have a territorial perspective; (5) their partnership is, or at least should be, representative of the groups of the territory; (6) there is a balanced representation of public and private sectors and (7) they

have a strategic development plan, both integrated and specific, drawn up by a technical team with the participation and consensus of the population and other local agents.

To analyse this capacity, the first step was to identify the different levels of planning coexisting in Andalusia. Table 29.1 shows the current territorial divisions. In the top-down planning configurations established by the public administrations, a distinction has been made between those corresponding to the State government and those of the local government. Bottom-up organisations considered are the previous mentioned LAGs and CCMs.

The identified organisations have been classified following the pattern established in Figure 29.1, as shown in Figure 29.2. This qualitative classification, is based upon the opinions of qualified informants from the various rural districts of the region.

However, a deeper analysis reveals an institutional malfunctioning. In most of these organisations, a role mutation took place and as a consequence there is a bias between their theoretical and their real role. In Figure 29.2, both positions have been located on a non-metric scale. In those cases in which it is necessary to modify the current role, the type of challenge faced by each institution has been indicated. The most striking case is at the moment that of the natural parks. The functions of these protected areas, presently characterised by a top-down approach and by being publicly administrated, are currently redefined. Sustainable development plans are developed for these areas to make the activities of conservation and development compatible. In the design and subsequent implementation of these plans, the participation and involvement of the local population is considered to be essential by the regional environmental authorities.

In order to analyse the role that may be played by the LAGs as coordinating regional planning institutions, in a second step of the methodology, the degree of coincidence

Table 29.1: Territorial planning perimeters coexisting in Andalusia.

Top-Down planning	
Central government	*Divisions or perimeters*
Justice	Administrative areas
Agriculture, fisheries, and food	Agricultural districts
Local government	*Divisions or perimeters*
Agriculture and fisheries	Agricultural districts, LAGs, hunting districts
Education and science	Areas of compulsory secondary education and areas of compulsory post-secondary education
Employment and technological development	Territorial units of employment and technological development
Health	Basic health areas and sanitary districts
Tourism and sports	Tourism and sports planning districts
Public works and transport	Territorial arrangement plans and system of towns
Environment	Network of protected natural spaces
Social affairs	Areas of social work
Bottom-Up planning	
Local authority	CCMs
Local partnerships (public + private)	LAGs

Source: Own material based on official data and primary sources.

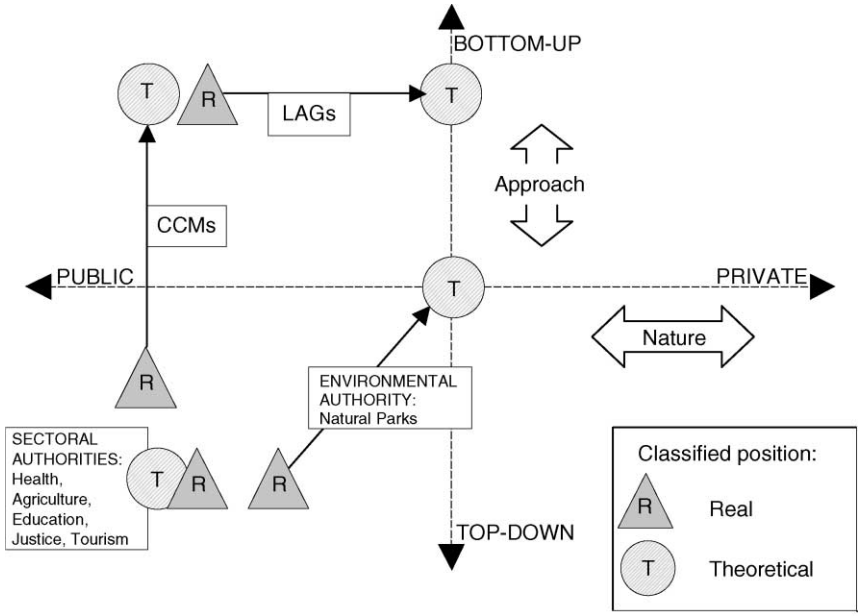

Figure 29.2: Classification of the Andalusian territorial planning institutions.
Source: Own elaboration.

existing between the territorial scope of the LAGs and that of the other planning institutions is analysed. When the territorial demarcations coincide or are similar, the role and the social recognition of the LAGs will be strengthened.

To carry out this analysis, the common spaces that the LAGs share with other functional demarcations have been identified and analysed. Only functional classifications with a high impact in development have been considered, at least in those cases in which spatial comparisons are permitted. Therefore, to represent other bottom-up processes the CCMs have been selected while for those representing the top-down planning configuration, those with a sphere of action comparable to that of the LAGs have been considered. Table 29.2 shows the number of perimeters used by each institution in Andalusia. Based on this table, the agricultural districts proposed by the local government, the sanitary districts, and the administrative areas were selected for comparison.

Next, using geographical information system (GIS) software, and with the village as basic unit, the different layers of organisation have been superimposed on the layer of the LAGs for the 1994–1999 programming period. Although during the three programming periods that have existed since the reform of the structural funds in 1988, the territory of the LAGs has not been stable, the changes, especially between the last two periods, have been of little significance.

Two types of analysis have been carried out: (1) *Bottom-up*, the degree of coincidence of the perimeter of the LAGs with that of the CCMs and (2) *Top-down*, a comparison of the perimeters of the LAGs with those of the three public sector administrations selected.

Table 29.2: Number of functional perimeters analysed.

Name of the functional perimeter in Andalusia	Number
Administrative areas	85
Agricultural districts (Central Government)	56
Agricultural districts (Local Government)	59
Areas of compulsory post-secondary education	235
Territorial units of employment and local and technological development	113
Sanitary districts	69
Tourism and sports planning districts	62
CCMs for development	46
Consortiums for development	14
LAGs	50

Source: Own material based on official data and primary sources.

As a result of the second analysis, a typology of LAGs has been proposed according to the degree and type of stability provided by the fact that their field of operation coincides with the functional demarcations used by public administration to implement their policies. In order to present the information and to establish a typology, the starting point has been the hypothesis that a greater coincidence with the agricultural, sanitary, environmental, and/or legal demarcations contributes towards strengthening and/or consolidating the field of operation of the LAGs. The reason is that a higher territorial identity will result in an increase of the embeddedness of the process and in a decrease of the transaction costs associated with the development processes.

The classification criteria for the typology are as follows:

Type 1: LAGs in which top-down territorial demarcations contribute towards consolidating the field of operation of the group. These are groups in which over 70% of their field of operation belong to the same Agricultural District, the same Sanitary District and the same Administrative Area.

Type 2: LAGs in which top-down territorial demarcations contribute only partially towards strengthening the field of operation of the group. Over 70% of the townships of the field of operation of the development group belongs to two of the three functional demarcations considered.

Type 3: LAGs in which top-down territorial demarcations contribute little towards strengthening the field of operation of the group. Over 70% of the field of operation only belongs to the same Agricultural District, the same Administrative Area, or the same Sanitary District.

Type 4: LAGs in which top-down territorial demarcations do not contribute towards strengthening the field of operation of the group. Various Agricultural Districts, Sanitary Districts, and Administrative Areas exist within the territory and none of them include over 70% of the townships of the group.

The first analysis (bottom-up) allows to identify those nuclei with greater coincidence of operative fields. They can be interpreted as a favourable pre-condition for coordination

between institutions and for greater efficiency in the cooperation between top-down and bottom-up approaches, and consequently for lower transaction costs. In the second analysis (the coincidence with top-down configurations), a greater stability of fields reflects a greater vocation of that territory to serve as a reference, with the same development perimeter and using different operations.

Finally, the results of both analyses have been considered jointly, in order to derive conclusions on the relations between bottom-up and top-down fields of planning.

29.4. MAIN RESULTS

With regard to bottom-up analysis (LAGs and CCMs), it can be observed that in 35 of the 49 LAGs, CCMs also exist. Given that these two institutions have a similar origin and that both include among their objectives the social and economic development of their territory, this coexistence can only lead to a situation of collaboration or competition. In the 14 remaining groups, the Town Councils do not belong to any bottom-up planning institution other than the LAG.

For 14 LAGs the perimeter coincides exactly with that of a CCM. This may be assumed to contribute to the stability of the perimeters and the cohesion of the villages within it. There are also 21 LAGs with fields that do not coincide exactly with those of villages belonging to the CCMs. This implies that the villages of these groups do not always use the same co-operation perimeter for the different development operations.

In the 14 remaining LAGs no other form of co-operation between the villages involved has been identified. Therefore, there is no institutional will in these villages to co-operate in projects going beyond municipal borders, other than those defined for by development programmes. All these results are summarised in Figure 29.3.

Comparing the date of establishment of the CCMs with those of the LAGS allows to analyse whether this is before or after the establishment date of the LAGs. In the first case

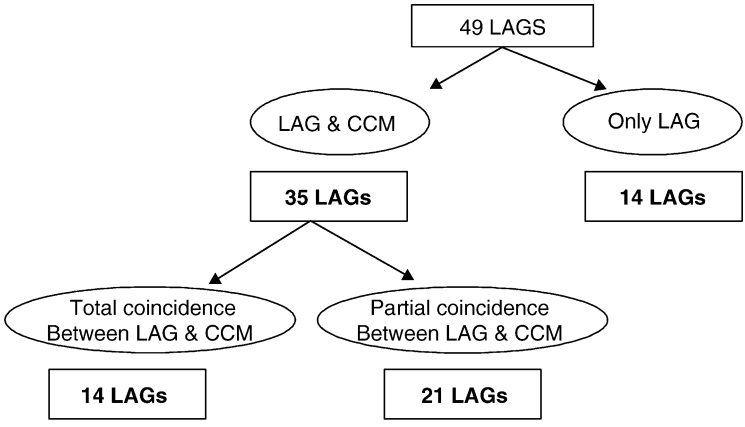

Figure 29.3: Territorial coincidence between LAGs and CCMs.
Source: Cañizares (2003).

(CCM older than LAG), the field of operation of the LAG would refer to a territorial delimitation previously defined by the Town Councils to address common problems. Therefore, the LAG has been established based on a pre-existing planning schedule. In the second case (LAG older than CCM), this may be interpreted as villages that have derived from the experience with the LAG the need to work together. In this case, it can be said that the undertaking of different projects in the same territory strengthens the hypothesis that this environment is suitable for establishing bottom-up development actions and for serving as an example for co-ordination between institutions.

In other cases, the creation of a CCM took place parallel to the launching of the LAGs. This may be interpreted as a strategic response to the requirements for having access to bottom-up programmes. Indeed, the need to present projects involving different Town Councils has made it necessary to break down political barriers and overcome localism, putting faith in a collective strategy. In these cases, the challenge has been to strengthen this collective strategy and create LAGs and CCMs for development simultaneously.

As far as top-down analysis is concerned (LAGs and public administrations perimeters), the most relevant result is that there is not existing one case for which the perimeter of a LAG coincides exactly with that of all the "functional" demarcations that have been analysed. In 17 LAGs, the perimeters of operation coincide, to a great extent, with the planning environments that have been defined by the Regional and Central Administrations (Figure 29.4). Thus, following our hypothesis in 34% of the LAGs, these demarcations contribute towards strengthening the field of operation of the group. These LAGs make up Type 1 of the proposed classification.

In nine other LAGs, territorial stability can be appreciated regarding two of the three functional demarcations considered (Type 2). In no case do the perimeters totally coincide. A third of the townships of each group belong to another Agricultural District, another Sanitary District, or another Administrative Area different from the perimeter of their LAG.

Fourteen LAGs are included in Type 3. For this category, it can be assumed that the top-down planning environment contributes little towards the strengthening of the perimeter of operation of the LAGS, based on the fact that the villages included only share one of the three bottom-up functional fields considered.

Type 4 consists of nine groups for which no significant territorial coincidences can be found between the field of operation and the district, sanitary, and legal planning

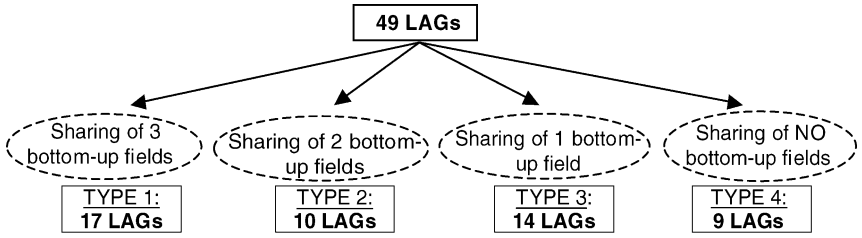

Figure 29.4: Typology of the LAGs according to the overlapping of perimeters.
Source: Cañizares (2003).

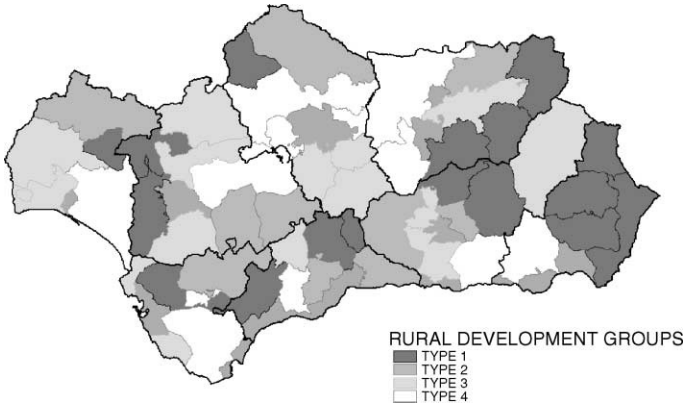

Figure 29.5: Typology of Rural Development Groups.
Source: Cañizares (2003).

environments. Figure 29.4 shows these results in synthetic form. Figure 29.5 represents the spatial distribution of the typology mentioned.

If the area and population of the LAGs classified under each type are analysed, a fairly balanced situation can be observed. Type 1, for which the perimeter of the LAGs is close to the top-down functional demarcations considered, represents a quarter of the area of Andalusia and almost 11% of its population. In Type 2 are classified 9 groups that cover 20% of the surface area of Andalusia and 10.2% of its inhabitants. In Types 3 and 4 the field of operation of the LAGs coincides little with the top-down functional demarcations. This situation affects 47.2% of the surface area of Andalusia and 26% of its population. Different levels of territorial construction can therefore be observed, which affect a similar percentage of territory and population.

On comparing the two types of analysis carried out, the following results have been obtained. As has been mentioned, within the field of operation of 35 groups (70% of the LAGs), the villages also form part of the CCMs. The 15 remaining groups are distributed in the typology in the following way: 9 of them belong to Type 1 in which the coincidence with the agricultural, sanitary, and legal demarcations regarding the field of operation of the LAG is greater; 4 belong to Type 2, and only 1 to Types 3 and 4.

This assumes that Types 3 and 4, in which there is hardly any coincidence between the administrative demarcations and the LAGs, consist mainly of groups whose villages are part of other bodies of which the sphere of influence extends beyond the village itself. To be exact, in 13 of the 14 groups included in Type 3 a CCM exists, which is of the same size or larger than the LAGs. This implies that when the influence of the agricultural, sanitary, and legal demarcations is lower in the field of operation of the group, the villages tend to group together.

It can be concluded that, in particular, those territories with little top-down administrative stability have searched for other co-operation formulae between villages. The situation to be expected is the opposite, i.e., the fact that certain services are

"centralised" compared with the field of operation of the LAGs (Type 1), may encourage villages to cooperate in CCMs which have a similar scope as the LAG.

29.5. CONCLUSIONS

Current approaches to rural development propose an integrated and participatory administration of the territory and co-ordination of the different operations needed. The progressive decentralisation of the public function is strengthening the role of the regions in the organisation of the State and within a European context. At the same time, the application of the subsidiarity principle is permitting the Local Administrations, as institutions closer to the citizens, to assume greater responsibilities, although in practice still significant financing problems exist.

An analysis of the role played by different organisations implied in the development of Andalusian rural areas indicates that top-down and bottom-up organisations co-exist in the territory and that their actions are not or very little co-ordinated. In addition, there exists in most cases a gap between their real and theoretical modus operandi, leading to a malfunctioning of institutions.

European rural development policy puts some faith in a territorial intervention model for the development of rural areas. The impulse provided by the CI LEADER has in Spain encouraged the setting up of a national rural development initiative programme (PRODER). The priority objective of both programmes is to encourage the development of rural areas through support for local business initiatives that allow the diversification of the economic activity of these areas. In order to do this, a new institutionalisation of development is gradually created, based on an agreement between local agents through public–private partnerships who are responsible for the administration and execution of both programmes.

This form of intervention resulted in an innovative organisation of Andalusia into "development" territories. A special characteristic is that these new perimeters have been defined by Local Administrations and by civil society and are recognised by Regional, Central and European Administrations. This situation, together with the absence of one single functional division ("districtisation") of Andalusia, agreed and recognised by all Public Sector authorities, has given rise to a new map of Andalusian rural areas.

Besides this way of dividing the territory, other functional demarcations exist in Andalusia with a high or low degree of coincidence between them or between their field of operation and that of the LAGs. The analysis carried out reflects that each public institution defines its own territorial divisions, independent of other existing ones. This situation leads to the organisation of the same territory into different functional districts, according to the objective pursued in each case.

Despite this, for more than 50% of the surface of Andalusia (34% Type 1 LAGs and 18% Type 2 LAGs) there are great similarities between zones created for top-down and bottom-up planning. This implies that the criteria of endogenous and exogenous grouping have been similar. It also strengthens the validity of the territory as appropriate field for the implementation of both bottom-up policies and top-down initiatives. Those LAGs where both demarcations coincide may play an important role as co-ordinators of

development policies in the region, since this coincidence may increase the embeddedness of the project. It may also decrease the transaction costs associated with co-ordination of the different rural development initiatives.

The confluence of implementation fields together with the nature of the LAGs (structures with a certain level of decentralisation, with the autonomy to administer public funds and in which the various economic and social agents of the territory should be represented) may make them the appropriate vehicle for the division of Andalusia into districts in which, besides the administration of rural development programmes, other types of services to the population can be planned.

Nevertheless, these LAGs cannot make progress in the co-ordination of territorial operations without a decision from the Public Administration to define their perimeter of operation as the most appropriate for planning and administering development. If there exists a real institutional will to strengthen and/or to consolidate a model of territorial intervention, this will only be possible if the institutional frameworks and instruments for co-operation and co-ordination between administrations and other agents with sector or territorial power in rural areas are established.

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Subject Index

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