Structural Change in Agriculture and Rural Livelihoods:

Policy Implications for the New Member States of the European Union

**Edited by
Judith Möllers, Gertrud Buchenrieder, and Csaba Csáki**

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Structural Change in Agriculture and Rural Livelihoods: Executive Summary of the SCARLED Project

Judith Möllers and Gertrud Buchenrieder

The findings presented in this edited book are derived from the activities of the SCARLED (Structural Change in Agriculture and Rural Livelihoods) project. This STReP[1] was co-financed by the European Commission (EC) within the 6th Framework Programme and lasted from January 2007 until September 2010.

SCARLED analysed the restructuring process of the farming sector and the socio-economic transformation of rural livelihoods in the New Member States (NMS) of the European Union (EU). Moreover, it provided results on the patterns behind rural 'success stories' in selected regions of the established Member States (EU15) during previous enlargements.

It is well known that the NMS of the EU have higher levels of populations concentrated in agriculture and rural areas. As a consequence, significant structural changes in the rural labour force, agriculture, and the other rural economic sectors have already taken place and are still to be expected. Thus, understanding the dynamics of structural change and insights from up-to-date survey data is fundamentally important and makes SCARLED particularly relevant. Subsequently, the project dealt with an area of research that in many respects cannot draw on reliable data bases and lacks sufficient experience from which lessons for a successful regional transformation can be drawn. It therefore addressed issues that are new and needed to be researched from scratch.

SCARLED had two major research objectives: (1) to analyse the agricultural sector restructuring process and the rural socio-economic transformation in the NMS, with a particular empirical focus on the five case study countries (Bulgaria, Hungary, Poland, Romania, and Slovenia); and (2) to analyse the patterns behind rural 'success stories' in selected EU15 case regions during previous enlargements. The chosen regions were Borders, Midlands and Western Region (BMW) (Ireland), Navarra (Spain), Tyrol (Austria), Skåne (Sweden) and Altmark (Germany). Lessons of best practice regarding the preservation of the rural social fabric, how to manage farm restructuring

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[1] Specific Targeted Research Project 'SCARLED' SSPE-CT-2006-044201.

appropriately, and/or changes in multifunctionality were to be identified and codified for policy makers.

The SCARLED work included the collection of substantial primary and secondary data. The core empirical database of SCARLED is based on a rural household survey conducted in 2007-2008 in the above mentioned NMS case study countries. The survey covered three regions in each of the five selected NMS. Altogether almost 1,350 farm households were surveyed (see Chapter 1, Section 1.3.1). The aim was to produce new policy-relevant information on farm households in the NMS. This rich and unique database of SCARLED allows insights that go far beyond the usual statistics. SCARLED research is further based on secondary data provided, for example, by EUROSTAT, the European FADN (Farm Accountancy Data Network) and the LFS (Labour Force Survey) database.

At this point, we want to thank all SCARLED partners[2] wholeheartedly for their continuous efforts in bringing this research project to a very successful end. The results presented are an excerpt from their scientific work and findings.

An overview of selected SCARLED results

One core feature of SCARLED was a **typology of rural areas** and the analysis of the past and future **evolution of farm structures** in the five selected NMS. The starting point for a database at the NUTS3[3] level for the NMS12[4] (including socio-economic, demographic, and agricultural data) was the outcome of the SERA (Study of Employment in Rural Areas) project, which was completed for DG Agriculture in 2006. This database was updated within SCARLED up to the most recent year for which figures were available. Cartographic and statistical analysis of the compiled data, and a typology of rural areas in the NMS12 were subsequently developed. The analyses show the diversity of rural areas with a clear rural-urban gradient. The declining rural

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[3] Nomenclature of Territorial Units for Statistics; see Footnote 28 of Chapter 1.

[4] The NMS12 are: Bulgaria, Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia.

population is identified as one key issue. A cluster analysis distinguished five types of rural regions: (1) backward agrarian regions; (2) dynamic agrarian regions; (3) intermediate regions; (4) advanced regions; and (5) best performing regions. Regional patterns show that Bulgaria in particular is hampered by backward agrarian regions, while the Czech Republic and Slovenia have the best performing rural regions. Detailed findings are not part of this edited book but can be consulted at the project webpage under *www.scarled.eu*.

Recently, structural change in terms of growing farm sizes in the NMS has slowed down or even reversed (Chapter 2). However, when basic structural indicators (such as farm size and labour input) are considered together with indicators of economic performance (the economic size of farms, labour productivity), one can clearly see that the agricultural sector is continuing to change its structure. For instance, small-scale, marginal producers have been leaving the sector, the larger production units have been growing. Structural adaptation can also be perceived in a qualitative sense with intensified modernisation, increased productivity, and the greater market orientation of agricultural producers. Contrary to what is often stated, EU accession has resulted in a greater number of larger, more efficient agricultural producers.

The recent pathways of restructuring in the five case study NMS remain mixed. In terms of agricultural labour productivity there are three main (but region-specific) trajectories of structural adjustment. It appears that the most stable conditions for sustained growth in agricultural productivity can be found in regions with relatively favourable structural conditions for agriculture. In addition to this, these regions are usually relatively affluent, located close to markets and/or transport corridors, and with above average availability of non-farm jobs. As a consequence, they have recorded a moderate growth in agricultural productivity, mainly because of increased economic output. Less favourable trends can be monitored in other regions. Some of these have seen a decline in agricultural labour productivity. This is not so much due to a decrease in agricultural output, but rather to increasing agricultural employment, mostly resulting from the absorption of persons laid off in the non-farm sector. Such areas might be locked into a 'poverty trap', a combination of unfavourable initial conditions and economic collapse (both in agriculture and in the non-farm sector). Often, (subsistence-oriented) smallholder plots prevail, characterised by low productivity, lack of capital (for inputs and investments) and a poorly developed market infrastructure. Another group of regions is faced with a drastic decrease in agricultural employment, occurring usually in combination with decreasing agricultural output. Thus the overall relative growth in agricultural productivity hides unfavourable economic and demographic trends, such as the ageing of the agricultural population, or permanent migration. In some regions with a clear dual agricultural structure and an efficient (corporate) agricultural

sector, redundant agricultural labour may have been absorbed by regional non-farm labour markets.

The impacts of the socio-economic features of Hungarian farm households on the direction, speed, and intensity of structural change were analysed by means of a forward looking simulation experiment (Chapter 8). The simulation results predict a steady continuation of structural change through the exiting of small farm households from the sector, mainly after the retirement of farmers. The number of farm exits is significantly slowed by the fact that labour opportunities decline with the age of the farmer. The pronounced over-ageing of operators, especially in the small farm size classes, makes the exiting process more discontinuous; indeed, the age distribution of farmers strongly affects the timing of the persistence or exiting of farms. The lack of farm successors has less impact than one would have supposed ex ante.

Patterns of rural development and transition in five 'successful' EU regions were analysed in order to discover what lessons could be learnt (Chapter 3). The chosen regions were Borders, Midlands and Western Region (BMW) (Ireland), Navarra (Spain), Tyrol (Austria), Skåne (Sweden) and Altmark (Germany). The patterns of rural development were analysed in the light of four competing models for rural development (agrarian, exogenous, endogenous and neo-endogenous).

Despite the countries joining the EU at different times and the variance in their social, economic and political conditions at the point of accession, their agricultural sectors have followed a similar pattern in terms of agriculture's declining share of gross value added and regional labour force activity. Successful rural regions in the EU possess substantial manufacturing and service industries, which typically have few direct connections with agriculture. In general, changes in population have had little connection with the fortunes of agriculture; demographic change is linked more closely with the growth (or, in the case of Altmark, contraction) of the far larger non-farm rural economy. In this context, agrarian-based models of rural development appear increasingly anachronistic.

Navarra, BMW and Altmark, post accession to the EU, have adhered broadly to a productivist model of agricultural development while Tyrol and, to a lesser extent, Skåne have followed a more multifunctional path. In Navarra, BMW and Altmark, the share of farms with other gainful activities remains modest. In these three regions, the farming sector has played no major role in the development of the non-agricultural rural economy. Even when the rest of the economy was growing, farmers' engagement in non-agricultural gainful activities remained modest. In Tyrol and Skåne agricultural diversification and other related activities such as food processing, direct sales or agri-tourism are much more important. Both countries have a long tradition of farming combined with other activities, which pre-dated EU membership.

In all selected regions, the importance of direct payments within the Common Agricultural Policy (CAP) Pillar 1 for farmers' livelihoods cannot be questioned. However, despite the importance of direct payments, farm incomes have not, in general, kept pace with increases elsewhere in the rural economy. Farmers, in general, have not shared in the growth of the non-agricultural rural economy and typically are not the primary agents for stimulating rural diversification.

While the agrarian model is increasingly anachronistic, the CAP still shows many similarities to such a model. Support for agricultural production and producers predominates and even under the CAP Pillar 2, which is aimed explicitly at rural economic development, many instruments are farm-centric in their focus. The shift from a sectoral to a territorial approach has been limited. This is despite the fact that farmers have not been the primary agents for stimulating the non-farm rural economy and, hence, wider rural development. Moreover, while the CAP seeks to support a 'European model of agriculture', it is the contrasts between the productivist logic that has underpinned developments in Navarra, Altmark and BMW and the more multifunctional character of Tyrol and Skåne which are most evident.

The lessons learnt were verified and refined as part of a Policy Delphi exercise**.** The regional case studies and Policy Delphi exercise identified several principles upon which rural development should be built. They are reflected in the key policy conclusions outlined below.

SCARLED had a strong focus on issues related to the wider rural economy. **Rural employment diversification** is one of the key issues for rural livelihoods in transition since, in the short and medium term, it is the only viable alternative for many small-scale farmers trying to deal with income shortages and the insecurity of their farming activities. Farm exits open the way for further structural change in the rural economy.

Farm exits and labour market adjustment are influenced by subsidies in the EU (Chapter 4). Findings indicate that a better targeting of agricultural subsidies is needed. Surprisingly, farmers living in regions with higher subsidies per worker are more likely to exit agriculture. This result is rather counter-intuitive since subsidies are supposed to lock labour into agriculture. However, there are several hypotheses put forward in the literature suggesting that this may not be the case. First, depending on the nature of the payment, subsidies are expected to be capitalised in farm input prices, such as land prices and fertiliser prices. For example, in the NMS where subsidies are linked to land use, they seem to drive up land prices. Second, with direct area payments, credit constraints on farms have been relaxed leading both to increased investment and profits and to additional pressure on input prices. They may also lead to enhanced household investments in training and improved skills. This set of factors may have

offsetting effects on farm employment, but may positively affect rural labour markets by removing financial constraints and stimulating productivity. However, this effect may also constrain restructuring, particularly if a specific group of farms benefit disproportionally. Third, in the NMS there is unequal access to subsidies. In countries where there is a strong bipolar farm structure, the smallest farms (and the poorest households) get only a marginal share of the subsidies. Unequal access to subsidies affects rural income inequality both directly and indirectly. Directly, poor farmers are not able to benefit from subsidies while large farms benefit from both direct payments and rural development subsidies. Indirectly, direct payments reduce the credit constraints for the farmers that receive them and allow these farmers to increase production and make investments (including taking over the assets of farmers who exit the sector). Hence, unless there is better targeting of the subsidies, or alternative policies, payments will lead to divergence rather than to convergence in the NMS owing to a combination of policy rent dissipation, induced reduction of credit constraints, and poor targeting.

The determinants that affect rural labour adjustment patterns and the steps from farm work into non-farm work are further discussed in Chapter 5 of this edited volume. Results highlight that current non-farm incomes are of high importance for farmers as well as others. Low income households are lifted out of poverty with the help of non-farm incomes. To analyse the socio-economic determinants and structural adjustment functions of farm household employment diversification, a fuzzy-based empirical model was developed and applied to the household data from the five NMS case study countries of SCARLED. The fuzzy logic results stress the importance of rural non-farm employment for farm households in the NMS. The model specifically looks at the diversification potential which, indeed, more than three-quarters of the survey households show. However, the actually observed diversification behaviour shows clear signs of 'distress-push' diversification for the majority of households, meaning that households are driven by economic needs into diversification. This means that farm exits are less probable because subsistence income constitutes an important safety net. It also hints at deficits in the rural labour market. Obviously, few employment opportunities are available that 'pull' human capital out of agriculture due to higher wages and attractive activities. Education is positively correlated with the level of income diversification and seems to be a door opener for rural non-farm employment.

Another core issue of rural sectors in several NMS is the prevalence of **subsistence and semi-subsistence farming**, and the barriers these farms face in integrating into the market (Chapter 6). Along with other research, SCARLED provides results on the contribution of subsistence food production to rural household welfare, and on the determinants of engagement in, and exit from, subsistence food production. Barriers to commercialisation and threats to small-

scale farms are discussed. In the literature, there is no agreement on the role and prospects of subsistence farming. One school of thought treats subsistence and semi-subsistence farms in Europe as an unwanted phenomenon and an impediment to rural growth. Often, subsistence has been related to the poverty trap. However, the other school of thought considers subsistence farming more as an important survival strategy and safety net for poor rural inhabitants.

The value of 'income-in-kind', estimated through the valuation of subsistence production at market prices, is crucial for the rural poor, particularly in the poorest of the studied NMS, Bulgaria and Romania, where subsistence production constitutes an important safety net. There is a risk that policies strongly in favour of commercialisation through incentives encouraging structural change might undermine the safety net provided by subsistence production (especially for households below the poverty line). Possible threats from such policies might be the pressure to sell off land to expanding farm businesses. This can result from the disappearance of the market outlets for the surplus production of semi-subsistence farmers in favour of larger supermarkets dealing with contract suppliers.

Four clusters based on: family and farm characteristics; location; importance of subsistence production; and aims in farming were identified. Each of these clusters has different policy needs (see the box below).

Cluster 1: *Large commercially oriented holdings*. They operate on average 30 ha. These farmers, in general, are fairly young, relatively asset rich with respect not only to land, but also agricultural machinery, and their objective is commercial profit. They are users of both advisory services and credit. They are committed to agriculture and a third of households state an ambition to commit further to farming in the future.

Cluster 2: *Part-time farmers*. They have the smallest land assets, but are in between subsistence and commercial farmers with respect to market integration. Results suggest a divide of part-time farmers: a smaller share are hobby farmers, while others rely on subsistence production as a form of safety-net to top up incomes and secure household food supply. Yet around one fifth of part-timers would like to increase their commitments to agriculture. Provided they are targeted by appropriate policies, they may move to a more commercial type of farming.

Cluster 3: *Small commercially oriented farmers*. They are located close to urban centres and have above average total household incomes. However, the farmers are relatively old – average 58 years. Therefore, it is not surprising that nearly one in ten are looking to transfer to the next generation within a five-year time frame. Some early retirement schemes and programmes to assist transfer to young farmers may be suitable measures for this farm group.

Cluster 4: *Small subsistence oriented farmers*. These farmers are characterised by the lowest incomes, remote locations, and a high reliance on subsistence food production. Although these farm holders spend almost all their working time on-farm, they manage small areas (around 7 ha), and are thus characterised by low productivity and often under-employment. They are also typified by older farmers. In general, this farm group needs social policies aiming to alleviate rural poverty.

One way for semi-subsistence farmers to overcome the transaction costs of access to market without reliance on policy transfers is through **cooperation** (Chapter 7). Cooperation is recognised as a means of strengthening the competitiveness of small farms and hence enabling their successful participation in both input and output markets. Data on social capital and cooperation from 245 Polish small-scale farm households indicate that this type of producer has rarely participated in formal cooperation. They have mainly cooperated informally and not with the objectives of decreasing their market disadvantages and increasing sales, but with the aim of offsetting their lack of capital and improving their access to machinery. Thus, informal cooperation at this stage of development is perceived to be a substitute for insufficient production factors (land and capital) and lack of investment capacity.

Key policy conclusions of the SCARLED project

The multifaceted and complex nature of SCARLED has led to important policy conclusions.

Rural-urban income gaps have widened and rural poverty has increased – new policy approaches are needed to enhance rural economic performance. Integration into the EU has had a visible positive impact on all aspects of rural life, but the strong focus on agricultural policies is not enough to further enhance convergence. The design and implementation of rural policy should therefore be based on an integrated territorial rather than sectoral approach. This will help ensure a better balance between farm and non-farm development programmes. The present system favours farmers at the expense of other sectors. However, farmers are rarely the main agents of rural economic development. Rural development policy should also be embedded within a clear regional strategy. Rural development programmes should not be developed in isolation but integrated into Cohesion and Regional Policy.

Diversified rural employment and the development of rural labour markets should be central in rural regional development policies. Agriculture is still an important employer in most of the rural regions in the enlarged EU, but it is not always the major source of income for rural families. To foster the development of the wider rural economy, devolved regional programming and implementation is needed. This generates a more flexible framework, stimulating creative input from local actors. Regional programming requires the involvement of both local stakeholders (bottom-up) and regional authorities (top-down) to develop and implement projects. Local entrepreneurs should be closely involved. Development plans should not rely purely on the public sector. An understanding of, and an ability to comply with, the rules on co-financing are critical for the successful implementation of policy measures.

The large number of subsistence and semi-subsistence farms is characteristic of the NMS and requires special attention and policies. These farms are hardly comparable to any sections of the EU15 farming sector and currently the CAP is not really meeting the needs of these farms. Many NMS have a significant potential for agricultural production, however, this potential is still underutilised. SCARLED indicates a number of impediments limiting the competitiveness of farms in the region. For example, the lack of effective farm consolidation (the persistence of subsistence and semi-subsistence farms), and the fragmented land ownership together with restrictions on land markets are serious impediments. With regard to the subsistence and semi-subsistence farms, it might therefore be recommended that farm exits be promoted. In this case, however, social policies should be offered to small-holders whose only security is often their subsistence income and their farm. Otherwise the safety net provided by the farm is undermined. Small farms are also important suppliers of environmental (and cultural) goods. This means that, for those who decide to stay in the business, policies should place more emphasis on their role in the provision of public goods, and provide them with equal access to measures of the CAP.

Regional rural development and successfully accessing EU funds and implementing worthwhile projects requires strong capacity building. This is true for farm related support and even more so for the territorial and bottom-up approaches such as the EU's LEADER[5] programme which is strong in supporting rural cooperation efforts. Capacity building involves knowledge, effective relations, the capability to mobilise resources and actors, and the ability to implement and monitor activities. Good intentions will flounder without these four factors. Capacity building is also a key for using the opportunities of the rural non-farm economy.

Rural policies depend on experienced, honest, motivated and open minded officials in the public administration. EU membership in some cases requires the creation of new administrative structures and institutions capable of attracting, managing and monitoring EU funds. While difficulties are not unique to the NMS, there are significant problems which have severely hampered access to EU funds. For a successful implementation of policies (not only EU policies), a well-functioning, motivated administration is essential; the creation of an 'institutional memory' is critical.

The SCARLED project demonstrated the potential values of advanced and integrative empirical research on ongoing changes in rural areas of the NMS. Further empirical studies in this sense are highly recommended. SCARLED was coordinated and managed by Prof. Dr. Gertrud Buchenrieder and Dr. Judith Möllers at the Leibniz Institute of Agricultural Development in Central and

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[5] LEADER = Liaison entre actions de développement de l'économie rurale.

Eastern Europe (IAMO), Department 'External Environment for Agriculture and Policy Analysis'. The project officer at the European Commission was Dr. Danièle Tissot. The project was assigned to Priority 8.1 'Sustainable management of Europe's natural resources', Area 8.1.B.1.1 'Modernisation and sustainability of agriculture and forestry', including their multifunctional role, in order to ensure the sustainable development and promotion of rural areas, and Task 16: 'Social factors and structural change in agriculture'.

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Abbreviations

AgriPoliS	Agricultural Policy Simulator
ANOVA	Analysis of Variance
AWU	Annual Working Unit
BG	Bulgaria
CAP	Common Agricultural Policy
CEE	Central and Eastern European
CEFTA	Central European Free Trade Agreement
CF	Corporate farms
CIS	Commonwealth of Independent States
CMEA	Council for Mutual Economic Assistance
CNDP	Complementary National Direct Payments
DFID	Department for International Development
DG AGRI	Directorate-General for Agriculture and Rural Development
EAA	Economic Accounts for Agriculture
EC	European Commission
EAFRD	European Fund for Agricultural and Rural Development
ERA	European Research Area
ESU	European Size Unit
EU	European Union
EU15	Established Member States
EU27	Current Member States
EULFS	European Labour Force Survey
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organisation
FP	Framework Programme
FSS	Farm Structure Survey
FSU	Former Soviet Union
GDP	Gross Domestic Product
GUS	Central Statistical Office, Poland
GVA	Gross Value Added
HDI	Herfindahl Diversification Index

HH	Household(s)
HU	Hungary
IAMO	Leibniz Institute of Agricultural Development in Central and Eastern Europe
IDS	Institute of Development Studies
IF	Individual farms
IFPRI	International Food Policy Research Institute
ILO	International Labour Organisation
INCRISAT	International Crops Research Institute for the Semi-Arid Tropics
IPA	Institute for Pre-Accession Assistance
IRT	Item Response Theory
IT	Information Technology
KMO	Kaiser-Meyer-Olkim
LEADER	Liaison entre actions de développement de l'économie rurale / Links between actions for the development of the rural economy
LR	Likelihood ratio
LU	Livestock unit
NMS	New Member States
NMS5	Bulgaria, Hungary, Poland, Romania, Slovenia
NMS10	CEE countries having acceded to the EU in 2004 and 2007: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia
NMS12	NMS10 plus Cyprus and Malta
NRDP	National Rural Development Programme
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
PL	Poland
PPP	Purchasing Power Parity
PSE	Producer Support Estimate
PHARE	Poland and Hungary: Assistance for Restructuring of the Economies
RDP	Rural Development Plan
RO	Romania
SAPARD	Special Accession Programme for Agriculture and Rural Development
SAPS	Single Area Payment Scheme
SCARLED	Structural Change in Agriculture and Rural Livelihoods

SERA	Study of Employment in Rural Areas
SGM	Standard Gross Margin
SI	Slovenia
SLF	Sustainable Livelihoods Framework
SOE	State-owned Enterprises
SPS	Single Payment Scheme
STReP	Specific Targeted Research Project
TLL	Federal Office for Agriculture of Thuringia (Thüringer Landesanstalt für Landwirtschaft)
UAA	Utilised Agricultural Area
UN-ECE	United Nations Economic Commission for Europe
UNRISD	United Nations Research Institute for Social Development
VIF	Variance Inflation Factor
WIDER	World Institute for Development Economics Research

€	Euro
ha	hectare
km	kilometre
km^2	square kilometre
n.a.	not available
No.	number
PLN	Polish zloty

As data in many tables have been rounded, minor discrepancies may appear between totals and their parts.

Chapter One

The Transformation of the Rural Economy in the New Member States of the European Union: Implications for Empirical Analyses of Rural Structural Change and Livelihoods

Gertrud Buchenrieder and Judith Möllers

Chapter 1 starts with a short review of the transformation of the rural economy, or rather the agricultural sector, and rural livelihoods in the NMS. The transformation process was to a large extent responsible for the emergence of the dual farm structure (many small-scale and fewer large farms) observed in many transition countries. The chapter also asks why the subsistence/semi-subsistence farming sector in the NMS is so persistent. Then it presents the conceptual and methodological framework, namely the sustainable livelihood framework, encompassing to a large extent the empirical work done within the policy orientated research project SCARLED (Structural Change in Agriculture and Rural Livelihoods), commissioned by the 6th Framework Programme of the European Union. Thereafter, major aspects of the empirical scope and design of SCARLED are introduced. Chapter 1 concludes by briefly referencing the major results of the SCARLED research presented in this edited volume.

In 1989, the transition process from planned towards market economies in the former Soviet Union (FSU) and Central and Eastern European (CEE) countries began. The challenges of transition were formidable. Public and private market-oriented institutions were absent and historical trading routes were interrupted. Many state-owned enterprises collapsed, the private sector was underdeveloped and neither the market organisations nor the producers and processors knew the rules of the 'market game'. These issues led to deep und lasting socio-economic distortions (BUCHENRIEDER, HANF and PIENIADZ, 2009). While this statement is true for the transition countries at large, it is particularly applicable to the rural economy. In the New Member States (NMS)[1] of the European Union (EU), for

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[1] Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia entered the EU on 1st May 2004. Bulgaria and Romania followed on the 1st January 2007. In the following, we will refer to the CEE NMS, excluding Cyprus and Malta, as the NMS10.

instance, 91% of the area is rural. It comes thus as no surprise that the majority
of the population, namely 83%, reside in rural areas. Furthermore, 53% of all
employment is rural. Although just 6% of the active population is employed in
farming, the privatisation of land use, the transformation of the rural economy
and the subsequent labour market adjustments had an enormous impact on farm
structure. Around 84% of all farms are smaller than two European Size Units
(ESU)[2], which corresponds by and large to five hectares of arable land and are
often termed semi-subsistence farm households. In fact 68.5% are so-called
subsistence farm households and are smaller than one ESU (EC, 2009).[3]
Consequently, the livelihood and income structure for a large proportion of the
population in the NMS has changed, renewing the academic and political
interest in issues relating to sustainable rural livelihoods.

   In this chapter, the transformation of the rural economy, or rather the
agricultural sector, and the whereabouts of the dominant subsistence/semi-
subsistence farming sector in the NMS is briefly reviewed (Section 1.1). In
Section 1.2 the conceptional framework for the analyses of the rural economy,
particularly the structural change of the agri-food sector, sectoral labour market
adjustments, and livelihoods of the subsistence/semi-subsistence farm
households in the NMS is presented. Thereafter, major aspects of the design and
scope of the policy orientated research project SCARLED[4] are introduced in
Section 1.3. Chapter 1 concludes by briefly referencing the major results of the
SCARLED research presented in this edited volume.

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[2]   In academic research and in policy discussions, the term subsistence farming is mostly
   associated with inefficient production and low levels of technology and commercialisation.
   Thus, it might be surprising that subsistence farming in CEE countries is not a short or
   medium-term phenomenon of the transition from a centrally-planned to a market economy.
   As the experiences of the last 15 years have shown, its importance has become even
   greater during transition. It seems that semi-subsistence and subsistence farm households
   have become a persistent and economically non-negligible phenomenon. According to
   POULIQUEN (2001), they contribute at least 50% to the total agricultural production.
   Nevertheless, the majority of them cannot provide sufficient income for an adequate level
   of livelihood for the farm household (EUROPEAN COMMISSION (EC), 2004).

[3]   The European Size Unit (ESU) is a measure of the economic size of a farm business. For
   each farm enterprise a standard gross margin is estimated, based on the area or heads of
   livestock and a regional coefficient. The sum of these standard gross margins in a farm is
   its economic size expressed in ESU. One ESU is equal to Euro 1,200.

[4]   SCARLED = Structural Change in Agriculture and Rural Livelihoods (SSPE-CT-2006-
   044201) research project within the 6th Framework Programme (FP) of the EU.

1.1 Transformation of the agricultural sector in the NMS[5]

From a 'western' economic perspective, the agri-food sector of the former Eastern Bloc seemed organised in a coherent way. In reality, the Eastern Bloc, particularly the CEE countries, had heterogeneous pre-reform characteristics. Countries differed in terms of the 'length of time that the communist system [had] existed and the extent to which it was applied, in the distortions of the trade system and the forced integration with other communist countries, and in the level of economic development' (Swinnen, 2007: 19). Another differentiating feature 'was the capital stock, the technology used in the farms, and the extent of the industrialisation of the agri-food chain' (ibid.). Thus, the initial conditions, including these systematic distortions, were quite heterogeneous.

Also with regard to the farming structure, tremendous differences existed. For instance, in the FSU and in Czechoslovakia, large farm structures (cooperatives or state-owned farms) dominated. Other countries such as Poland or Slovenia were traditionally dominated by individual and relatively small-scale farming. The differences in initial factor endowment and productivity, as well as the structure of the agri-food sector, in combination with political medium-term objectives, affected the choice of reforms. Even today, the region still presents itself in a very heterogeneous way with regard to the structure and performance of the agri-food sectors.

In the following, five important areas of reform in the agricultural sector and rural livelihoods, with particular reference to the NMS, will be briefly reviewed. These are: (i) macroeconomic and institutional reforms, particularly price liberalisation and subsidy cuts; (ii) the impact of EU policies on transition progress; (iii) land privatisation and reform of related organisations; (iv) the structure of agricultural production as an outcome of the transition process (particular reference is given to the subsistence/semi-subsistence farm households); and (v) the reform of the rural financial market.

1.1.1 Macroeconomic and institutional reforms

In addition to the political adjustments, the economic, legal and judicial adjustment processes, as well as ongoing globalisation, have greatly impacted on the agri-food sectors of the FSU and CEE countries. At the beginning of transition, fundamental reforms were already taking place. First and foremost, the culture of setting production targets was dropped. Usually, the macroeconomic reforms coincided with price liberalisation and cuts in both

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[5] This section draws on BUCHENRIEDER, HANF and PIENIADZ (2009). For details on changes in the agri-food value chain see original article (German Journal of Agricultural Economics, www.gjae-online.de, formerly 'Agrarwirtschaft').

producer and consumer subsidies (HARTELL and SWINNEN, 1998). In addition, reduced foreign demand after the collapse of the Council for Mutual Economic Assistance (CMEA)[6] trading system, falling consumer incomes and a breakdown of the supply chains and state-owned enterprises all caused major disruptions and thus a squeeze in investment and output (SWINNEN, 2007). Furthermore, the breakdown of the industrial and, to some degree, the agricultural state enterprises in rural regions resulted in previously unknown high rural unemployment rates (on average 21%) that in many countries lasted until the late 1990s and longer (WORLD BANK, 2000).

Even now the agricultural sector in the NMS is of much greater importance than in the established Member States (EU15). More than 80% of the population live in rural areas and many of them still depend on the sector for a living. Nevertheless, in line with overall positive economic development and general reform progress, the share of agriculture in gross domestic product (GDP), as well as those employed in agriculture, is decreasing.

In general, one can say that the effective implementation of legislation supporting private entrepreneurial activities as along with privatisation and decentralisation have caused a sharp increase in private business activities in all CEE countries. In addition, the prospect of EU accession created an environment more conducive to reform efforts, foreign investments, and the inflow of technology and know-how. Particularly in those countries on the cusp of EU accession, this prospect drove reforms. This trend could be observed in all economic sectors, not just the agri-food sector (e.g. CSÁKI et al., 2000; LERMAN, 1999).

Nevertheless, the privatisation experience in all transition countries suggests that a state's market-relevant institutions and organisations will tend to be unstable and corrupt so long as the competition for asset ownership remains unresolved among major interest groups. The theoretical and policy response, commonly referred to as the post-Washington Consensus,[7] argued that the state needed to institute firm bases of market regulation and the rule of law prior to privatising entire economies. This institutional critique of markets paved the way for creating path-dependent reform programmes tailored to specific countries. However, as the transition process did not allow for sufficient time to achieve this, transition seemed messier than normal politics and economics. Indeed, the sequencing and timing of reforms was often an issue of debate

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[6] CMEA countries comprised Bulgaria, Czechoslovakia, East Germany, Hungary, Poland and Romania.

[7] While recommendations for the reform of the Washington Consensus were firmly rooted in traditional economic thinking, the post-Washington Consensus accepted the reasoning of RODRIK (2006), namely that institutions matter, that it is important to identify country-specific constraints, as well as to emphasise market failure and the new role of the state (KOESTER, 2008).

(transition in the FSU is often associated with a big bang while CEE countries opted more often for a gradual reform strategy). Eventually, institutions and organisations consistent with conventional economic fundamentals evolved once privatisation battles over assets were resolved (SCHWARTZ, 2006).

1.1.2 Impact of EU policies on the transition process

The possibility of EU membership accelerated reforms in the EU's acceding and candidate countries, since EU membership required these countries to fulfil the Copenhagen criteria, which include the adoption of the *acquis communautaire* and its 2,683 legal rules and regulations (EC, 2006; CSÁKI, 2008). Two years after the accession of the ten states that joined the EU in 2004, they had already adopted 99% of the *acquis* – not always to the full satisfaction of the EU, but the possibility for changes and improvement was foreseen. The largest problems normally occurred in the legislation on competition (EC, 2006).

Recognising the specific needs of the NMS with regard to restructuring demands and the characteristic farm dualistic structure, the EU implemented financial support programmes to support sustainable rural development. Prior to EU accession, the SAPARD[8] programme in particular focused on the agricultural sector and rural infrastructure, and under this programme both the administrative agricultural service chain and its beneficiaries (farmers, processors) gained first-hand experience with measures similar to those provided under the Common Agricultural Policy (CAP). The majority of these funds were allocated to particular stages of the agri-food chain. For example, the support focused on investing in agricultural holdings and food processing (i.e. to facilitate the adoption of minimum [mandatory] quality standards), setting up producer groups (horizontal integration), or improving vocational training for actors in agri-business (knowledge transfer). However, it appears that it was mostly large units (farmers and processors) that benefited from these measures because of their enhanced access to information and their possibilities of pre-financing and/or co-financing investment projects (Court of Auditors, 2004; Luca, 2008). On the contrary, for most of the small and medium-sized units, a reduced capacity to co-finance investments (either through equity or debt-

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[8] The Special Accession Programme for Agriculture and Rural Development (SAPARD) was created in 1999 as a result of Agenda 2000 and was implemented from 2000-2006. SAPARD was intended to prepare the EU candidate countries for the CAP, i.e. to help candidate countries deal with the problems of structural adjustment in their agricultural sectors and rural areas, as well as in the implementation of the *acquis communautaire* in the CAP and related legislation. For the period 2007-2013, the respective instruments have been rationalised and renamed as the Instrument for Pre-Accession Assistance (IPA) Thus, IPA offers assistance to countries aspiring to join the EU on the basis of the lessons learnt from previous external assistance and pre-accession instruments. Also, the aim of the IPA is to enhance the efficiency and coherence of aid by means of a single framework.

financing) was one of the main limiting factors that delayed the absorption of the SAPARD funds, especially in the first period of the programme's implementation (Court of Auditors, 2004).

For CEE farmers, EU membership was both a challenge and an opportunity. On the one hand, farmers in countries which have already joined or intend to join the EU have been confronted with considerable changes in the economic and regulatory framework, as well as in market conditions. On the other hand, access to the single market and the various instruments of the CAP under Pillar 1 (direct payments and market support measures) and Pillar 2 (measures under the European Agricultural Fund for Rural Development (EAFRD))[9] have opened new opportunities for farmers. The complementarities of the two CAP pillars were further strengthened with the CAP reform[10] of 2003. Thus, one can state that the CAP reflects a policy shift that is called the New Rural Paradigm by the Organisation for Economic Cooperation and Development (OECD, 2006), and which places emphasis on regions rather than sectors, and investments rather than subsidies in rural development policy.

Each member country is formulating a National Rural Development Programme (NRDP). The NRDPs must be consistent with Community strategic guidelines, but they may indicate the nationally diversified priorities of action. For the NMS, additional transitional measures have been introduced in Pillar 2. These refer to the support of semi-subsistence agricultural holdings undergoing restructuring and the set-up of producer groups. The objective of these measures is to improve the competitiveness of the agricultural sector by bringing small and semi-subsistence farms into the market. In order to design a meaningful NRDP and to implement the policy measures effectively, decentralisation of responsibilities needs to be functioning, thus strengthening subsidiarity and partnership. For many CEE NMS this is still a challenging task.

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[9] At the Berlin Summit of 1999, the heads of state reached a political decision with regard to the so-called Agenda 2000. With Agenda 2000, the development policies for rural regions were upgraded and the so-called Pillar 2 of the CAP was born (Council Regulation (EC) no. 1257/1999). Besides agricultural restructuring, Pillar 2 addresses environmental concerns and the wider needs of rural areas.

[10] The Luxembourg Agreement on the Mid-Term Review in 2003 resulted in a further decoupling of direct payments from production, introduced new and stricter cross-compliance rules, which required farmers to respect other, primarily environmental regulations, and kicked off compulsory modulation, that is, reducing spending on Pillar 1 measures and transferring the funds to be spent on Pillar 2 measures of the CAP. Furthermore, in 2005 the European institutions established a single fund for the second pillar of the CAP, the European Agricultural Fund for Rural Development (EAFRD). The measures of Pillar 2 are divided into four thematic axes (1 = Improving the competitiveness of the agricultural and forestry sector; 2 = Improving the environment and countryside; 3 = Quality of life in rural areas and diversification of the rural economy; and 4 = LEADER, that is, Links between actions for the development of the rural economy) with more than 40 policy measures.

Clearly, the introduction and strengthening of Pillar 2 was a well-received reform of the CAP. However, the volume of the decoupled direct payments[11] under Pillar 1 (in the NMS10 mostly based on area) is not only giving farmers in the NMS a certain level of financial security but is also more substantial than the financial volume of measures under Pillar 2.[12] Furthermore, the NMS can apply the simplified Single Area Payments Scheme (SAPS) until 2013, or until 2016 in the case of Bulgaria and Romania. Nevertheless, the rather complicated bureaucratic procedures required to obtain the payments under the SAPS are preventing this measure from reaching many smaller farm holders, who are in principle eligible. Another interesting feature of the CAP is the so-called compulsory modulation (see footnote 10), that is, reducing spending on Pillar 1 measures and transferring the funds to Pillar 2 measures of the CAP. A certain percentage share of the direct payments to bigger farms (those receiving more than Euro 5,000 of direct payments) is shifted to Pillar 2. Yet, this does not seem to make a significant difference for larger farms. What larger farms lose in Pillar 1, they may gain under Axis 1 'Improving the competitiveness of the agricultural and forestry sector' of Pillar 2 (CSÁKI, 2009).

Given the rather severe incidence of rural poverty and the lagging structural change in the farm sector of many NMS10, the question may be raised whether the CAP is sufficient to stimulate sustainable economic growth in the agri-food sector, and in the rural economy at large. A consensus is emerging that agri-rural policies alone cannot do the job. Farm exit options must be opened up, either through increased rural non-farm employment or via socially secure retirement (FELLMANN and MÖLLERS, 2009). Adequate social safety networks have to be installed – bearing in mind that the state budgets of many transition countries are already stressed to their limits. This challenge calls for a more concerted effort in which the national and international political stakeholders of the agri-food sector, of the economy at large, and of the social sector work closely together.

1.1.3 Land privatisation and reform of related organisations

The transformation of the agricultural sector was always prominent because one of the major reform areas entailed the privatisation of land. The Commonwealth of Independent States (CIS) (and Albania) adopted the 'land to tiller' strategy. This strategy implied that the land was allocated to workers of cooperatives without any payment in an equitable manner. In Russia, Ukraine and Kazakhstan, individuals received paper shares that certified their entitlement

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[11] Direct payments under the Single Payment Scheme (SPS) in Pillar 1 can be based on farm units, which is predominantly the case in the established EU15. The simplified system, which is found in most NMS10, takes the area as the unit and is called the Single Area Payment Scheme (SAPS).

[12] Farm holdings larger than one hectare are generally eligible to apply for direct payments.

to a certain amount of land. Most CEE countries have chosen to restitute the land to former owners. All CEE countries, plus the small CIS countries (Armenia, Georgia, Moldova, and Azerbaijan) allocated physical plots to individuals (CSAKI et al., 2000; NORTON, 2004). Often, an upper limit for land restitution was installed, which in the case of Romania, for instance, was changed several times over the years.

The share system was intended to bring equitable land rights to the population, but it often brought about large-scale integrated farm structures and cooperatives (legal persons). Radical changes with regard to land tenure have been carried out in very few countries of the FSU. This is the case for Armenia, Georgia, and the Kyrgyz Republic, where independent private farming now dominates. In Uzbekistan and Tajikistan, private ownership of land is still prohibited by the constitution (CSÁKI, 2008).

Where land was privatised, it was not so much driven by economic concerns, although theoretical links of land and labour productivity may have been considered, but was prompted rather by a general sense of societal justice. It had unintended effects in terms of land use changes and farm structures (SIKOR, 2009). Politics was willing to pay the economic price: an often-lamented dominance of small farm structures, a varied mix of small and large farm holdings (usually termed dualistic farm structure), or even land abandonment.

Land consolidation is ongoing and is a critical issue for productivity gains. The legal settlement of land ownership relationships is also not yet complete, and the establishment of land registries and the emergence of a land market remain priority areas for further reform in CEE countries and especially in the FSU.

1.1.4 Structure of agricultural production

The agricultural sectors in most transition countries are still a mixture of small- and large-scale farming, with three land and animal tenure patterns standing out: (i) large-scale farming-dominated structures (e.g. the Czech Republic), in which large-scale farms cultivate most agricultural land and/or hold the majority of livestock units, (ii) mixed farming structures (e.g. Hungary), and (iii) predominantly small-scale farming, which is for instance the case in the Croatian, Polish or Romanian dairy sector. Not all reasons for the persistence of the subsistence/semi-subsistence farm households are understood yet, but it is generally agreed that such households were important for providing food and shelter during the economic disruptions of the transition period for both resident families and even for their urban-based relatives. Additionally, some studies on efficiency and flexibility carried out for Polish agriculture indicate that small farms enjoy advantages despite their small size (HOCKMANN et al., 2007, RENNER et al., 2009). Thus, small farms might benefit from their

flexibility, i.e. their ability to respond quickly to the dynamic environment (dynamic efficiency), whereas relatively large farms are likely to benefit from economies of scale in purchasing, producing and marketing operations, as well as from positive effects from innovations (static efficiency).

While subsistence/semi-subsistence farming is crucial in many rural areas of the NMS in order to ensure a minimum standard of living (PETROVICI and GORTON, 2005; POULIQUEN, 2001), not only the small farms have low incomes; this holds for the average farm owing to its low productivity (DAVIDOVA et al., 2003; MACOURS and SWINNEN, 2000). Consequently, rural poverty in the NMS has reached unprecedented levels.[13] Two components might play a crucial role in the level of rural poverty. The first is subsistence income, which can decrease poverty levels substantially. This kind of income amounts to 58.5% of household income in semi-subsistence farms (DAVIDOVA et al., 2010).[14] Subsistence income is more important for those households below the poverty line. The second component, which is very important is non-farm income sources. Non-farm income usually makes up a considerable share of total farm household income and thus also has a significant impact on poverty (e.g. MÖLLERS and BUCHENRIEDER, 2009; BUCHENRIEDER et al., 2010).[15] Moreover, small-scale farms are rarely organised in associations, thus lack social capital[16], which also contributes to their low market power and degree of political influence (WOLZ et al., 2006, MARKELOVA et al., 2009). Furthermore, land sale and rental market imperfections combined with land fragmentation, dualistic farm structures, and missing farm exit options (CIAIAN and SWINNEN, 2006; MÖLLERS et al., 2009) impede overall structural change.[17] Despite the slower than expected structural change in agriculture, a gradual increase in average farm size can be observed. This is particularly true for full-time farm enterprises in the NMS. Furthermore, although the number of the larger farms in terms of ESU is relatively small in the NMS, they significantly contribute to overall standard gross margin (SGM) (see Chapter 2).

Nevertheless, there is an ongoing debate about what could prompt subsistence/semi-subsistence farms to intensify farming, diversify income creating activities, or exit farming; these would foster structural change (with regard to farm size in hectares and ESU) in the agricultural sector and the rural

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[13] Between 1988 and 1998, absolute poverty in CEE und Central Asia increased from 2 to 21% (WORLD BANK, 2000).

[14] See Chapter 6 in this edited volume on market integration versus subsistence farming for a presentation of the importance of subsistence income for poverty alleviation.

[15] See Chapter 5 in this edited volume on diversified employment patterns and their influence on sustainability of rural livelihoods.

[16] See Chapter 7 in this edited volume. It looks at the role of social capital and informal cooperation in market integration among small-scale Polish farmers.

[17] See Chapter 2 in this edited volume, dealing with the patterns of structural change in the agricultural sector of the NMS.

economy at large. A general consensus seems to be emerging that agri-rural development policies alone may not suffice to prompt structural change.

1.1.5 Reform of the rural financial market

The successful reform of the financial systems in the FSU and CEE countries was of fundamental importance to the economic transition of these regions. The financial intermediaries that the transition countries inherited from the central planning era were not suited, however, to managing modern financial intermediation. In many transition countries, the development of the financial system continued to suffer – at least in the 1990s – from serious problems: (i) banks continued to finance loss-making, state-owned enterprises (SOE), most notably in agriculture; and (ii) they carried forward large bad loan portfolios and did not effectively control corporate governance and policy. Government mandated lending was the predominant agricultural finance mechanism at the beginning of transition. A variety of funds and credit delivery mechanisms were used to provide the agricultural sector with low-cost credit, where the principal and interest rates were both subsidised. A widespread – and probably correct – view maintains that the beneficiaries of these cheap funds were a special class of borrowers, notably state-owned farms, large-scale borrowers, and clients with strong lobbying powers and close ties to the banking system. Smaller-scale farms, particularly private family farms, were often rationed out. The newly-established credit market in transition countries had difficulties dealing with this new class of privately-owned smaller-scale enterprises because it lacked experience in assigning a value to assets, especially as the markets for traditional securities such as land and realty were not fully functioning (HEIDHUES et al., 1998; PETRICK, 2004). Credit channelled through the integrator system, where access is linked to output marketing through a marketing integrator, is difficult to quantify but certainly important as farmers still have problems in accessing the commercial banking sector. In quite a number of the transition countries, especially in CEE ones, credit cooperatives have survived the socialist era. Their savings mobilisation and credit extension capabilities, however, were and often still are limited by the extremely constraining cooperative and banking regulations. For instance, Bulgaria still has not resolved whether or not credit cooperatives should be allowed to collect savings from their members, nor how to integrate the credit cooperatives into the financial system with regard to supervision through the Bulgarian National Bank.

A lack of agri-rural financing continues to be one of the most serious constraints to growth in the agricultural sector, and to growth in the rural private economic sector in general. In CEE countries, the financing of agriculture has improved considerably since the second half of the 1990s. The creation of a rural banking network has been progressing. While commercial banks play a

second-order role as credit intermediaries (they are more important as collectors of savings) in this network, credit cooperatives and, more and more, micro-banking intermediaries are becoming active in rural credit provision (BUCHENRIEDER, 2002).

1.1.6 Section summary

There have been tremendous overall achievements made and many positive developments can be recognised in the rural livelihoods, particularly the agricultural sector, in most transition countries. Most progress has certainly been achieved in price and market liberalisation. However, because great differences existed between countries at their respective starting points, developments have been much more diversified than originally expected. But even if some countries (e.g. Poland or Hungary) seem to have the transition process successfully completed, some transition-specific problems persist.

The legal settlement of land ownership relations is not yet completed, and the establishment of land registries and the emergence of a market for land remain priority areas for further reform, especially in the FSU. Moreover, land consolidation is ongoing and a critical issue for productivity gains in the agricultural sector. Furthermore, secure land rights and functioning markets are closely related to effective rural financial intermediation. Overall, the financial system in CEE countries and, to a large degree, in the FSU has been successfully transformed. However, financial intermediation in the rural economy at large, and particularly for the agricultural sector, is still underdeveloped.

Often the question is raised whether the CAP is working for the NMS. This is especially the case with regard to the SAPS of Pillar 1, which seems not to work well for very small farm holdings. Pillar 2 measures are more flexible in the sense that the NRDPs facilitate their adaption to specific national reform paths. However, this calls for decentralisation of responsibilities and this political culture still requires time to develop in some of the NMS.

The majority of the countries in the FSU, as well as many eastern NMS, still suffer from glaring patterns of economic disparity. Often it seems as if the rural population is the loser of transition[18] – although there do exist rural regions with substantial economic growth. Low farm incomes are certainly associated with a generally low efficiency of agricultural production (low factor productivity and quality of raw materials) as well as with the relatively low competitiveness of the entire supply chains. The restricted access to and lack of effectiveness of the agricultural administrative service chain further slow the restructuring of the

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[18] Rural success stories in the EU15 show that this need not be the case. Chapter 3 in this edited volume analyses such rural success stories and translates them into good practices to the NMS.

agricultural sector. Especially for the NMS, which apply the CAP, the question arises thus whether the policy measures of the two pillars are sufficient to stimulate broad-based rural economic growth. The challenge of keeping income disparities at a societal acceptable level calls for a more concerted effort in which the national and international political stakeholders of all sectors work closely together.

To conclude, the transition countries have taken various developmental paths: this came as a surprise to many. Although some countries may be labelled as having completed their transition by now, many still have to cope with transition-specific problems. Many of these problems are associated with the agricultural sector. Thus the need for developing transition-specific theories and analysis instruments, in this case for the structural adjustment of the agri-food sector and the associated rural livelihoods, still exists.[19]

1.2 Empirical analyses of structural change in the agricultural sector and rural livelihoods

The conceptual framework for analysing structural change in agriculture and rural livelihoods in the NMS is based on the concept of farming systems analysis, particularly the farming systems analysis with a sustainable livelihood focus. The reasoning behind the choice for this conceptual analysis framework becomes clear when briefly reviewing the evolution of the farming systems approach since the 1960s.[20]

1.2.1 The farming systems approach: A brief historical review[21]

Farm management (1960s to early 1970s) – The farm management analysis of the 1960s was narrow and reductionist in perspective and focused on production economics. Emphasis was on normative and prescriptive issues through application of techniques such as budgeting, linear programming, and other tools for applied decision analysis (JOHNSON, 1982). Agricultural economists armed with these analytical tools and with a strictly neoclassical orientation dominated the farm management-type studies in the 1960s. These

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[19] In this context, it is particularly interesting that SCARLED explicitly looked at five rural success stories in the EU15 (see Chapter 3) to derive lessons for the ongoing and upcoming changes in the rural regions of the NMS. Chapter 4, which is concerned with adjustments in agricultural labour markets encompasses the EU15 as well as the NMS.

[20] Interestingly, the farm management approach of the early 1900s was in many ways analogous to what the farming systems approach became in the last part of the twentieth century – it was multidisciplinary and holistic as already indicated earlier in TSCHAJANOW (1923).

[21] The following three paragraphs rely particularly on NORMAN (2002).

studies produced a lot of quantitative information describing cropping systems and, to a lesser extent, farming systems and their associated socio-economic production constraints. They also described how farm households allocated their resources, and provided estimates of factor returns. These studies showed that, as NORMAN (2002) terms it, limited-resource farmers have an intimate understanding of their spatially variable and temporally risky production environments. This understanding resulted in complex (i.e. combining crop, livestock, and off-farm enterprises) but fundamentally sound and sustainable farming systems over time. Given these very positive findings about the rationality of limited-resource farmers and the farming systems they practiced, the research focus soon shifted to explaining why formally recommended technology packages to increase productivity (which were sometimes even compatible with the biophysical environment of the farms) were adopted so rarely (MATLON, 1987). Among other reasons, NORMAN et al. (1982) pointed out that farmers were often not able to adopt these innovations because of their incompatibility with the socio-economic environment within which they operated. Questions started arising as to whether the current process for developing and evaluating innovations was relevant for resource-poor farmers operating in less favourable and highly variable environments. It also became apparent that standard conventional economic criteria were not sufficient to identify a relevant technology (e.g. farmers and their households had goals other than profit maximisation, there were usually multiple market failures for capital, labour, land, and information, and risk and uncertainty were significant issues). Thus momentum developed for the evolution of a new approach based on changing from a 'top-down' mainly 'supply-driven' approach to farmers, to one characterised as being 'bottom-up' ('demand-driven') and from farmers.

Early farming systems approaches (late 1970s to early 1980s) – The newly emerging farming systems research in the late 1970s focused therefore on technology development activities. It was also based on the notion that one had to begin with understanding the problems of farmers from the perspectives of farmers; and that solutions had to be based on a proper understanding of their objectives (which may not be profit maximisation solely or at all) and their environments, including both biophysical, socio-economic, and institutional components. Although there was a commitment in principle to include a broader set of farmer-based criteria, at the beginning of farming systems research the focus was still on how yields of particular crops could be increased. Thus, this approach involved looking at one part of a farm enterprise or one specific farm enterprise and identifying improvements within that focus that were compatible with the whole farming system (see Figure 1.1, Phase 1). Nevertheless, the farming systems research quickly evolved towards a more holistic orientation, i.e. labelled as farming systems with a whole farm focus (Figure 1.1, Phase 2). The methodological trend went away from treating farms as 'objects' to seeing them as 'people'. Several positive results emerged from these early experiences

with the farming systems approach: (i) the complexity and variability of farmers' production environments was acknowledged; (ii) the approach allowed for the cooperation of technical and social scientists; and (iii) results demonstrated the importance of complementary public and private structures as well as institutions.

Figure 1.1   Progression in farming systems thinking
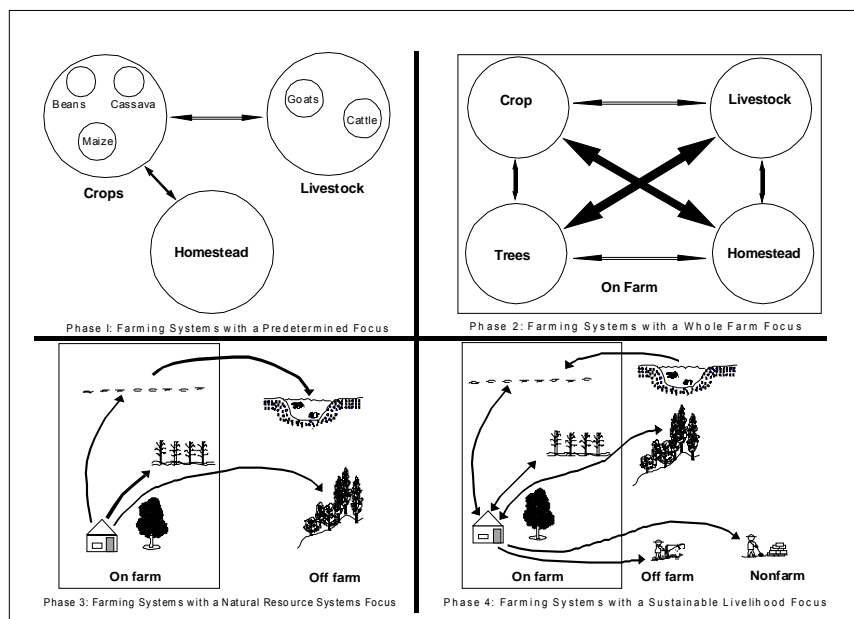
Source: Norman, 2002: 12

New directions in the farming systems approach (late 1980s and early 1990s) – During the mid to late 1980s, major improvements occurred in the application of farming systems research with a whole farm focus. The Food and Agricultural Organisation (FAO, 1989, 1992) and FRIEDRICH and HALL (1990) present a consistent description of modern farming systems research: the farming systems approach provides the philosophy, the concept and the strategy for developing and introducing solutions offered to families, communal and regional decision-making bodies in order to solve problems at farm, household, family, village and regional levels. The importance and usefulness of incorporating the farmer, the civil society and research in this approach was even more widely recognised. This resulted in integrating participatory research and extension instruments, looking more closely at the intra-household relations

of asset and resource allocation and use, and last but not least better evaluation of on-farm trials for innovation dissemination. However, a limitation that became increasingly apparent in the late 1980s related to concerns about ecological sustainability and environmental degradation. Farmers often appreciate that some of their agricultural practices may contribute to environmental degradation, but short-term survival considerations can lead them to pursue strategies that ensure short-run food supplies but degrade the environment and reduce longer run production potential (e.g. resource-poor households being forced to cultivate marginal soils to meet their subsistence needs or to intensify cropping systems without the means to purchase the inputs necessary for soil fertility maintenance). Although researchers often perceive or foresee ecological degradation to be a problem, farmers, for the reasons just given, may not mention such concerns, unless they threaten immediate survival (FUJISKA, 1989). As a response to this, farming systems research has increasingly addressed ecological sustainability – hence the term farming systems with a natural resource systems focus (see Figure 1, Phase 3).

Sustainable livelihoods framework (early 1990s until today) – Since the 1970s, the farming system research approach was continuously broadened to encompass a wider set of issues. The sustainable livelihoods framework (SLF) can be viewed as the end product (i.e. Phase 4 in Figure 1.1) Although many aspects of the SLF are similar to earlier farming systems approaches, there are distinct features. The livelihoods approach offers a rounded, bottom-up perspective and seeks to give a more holistic, people-centred approach. The approach recognises that household, especially farm household, livelihoods are often diverse. In the SLF, the various activities of various members with diverse assets, multiple priorities, strategies, and therefore outcomes are recognised. It also seeks to overcome the compartmentalisation of people's lives according to the arbitrary sectoral divisions of government departments, national or European policies: urban/rural, formal/informal, education/health/industry/agriculture. Through the concepts of 'vulnerability' (CHAMBERS, 1989), 'sensitivity', and 'resilience' (BAYLISS-SMITH, 1991), the SLF also seeks to capture the hazards, which (rural farm) households face and the shocks that these engender, and their capacities to respond to them. In aspiration at least, such approaches, rather than abstracting particulars from their context, seek to show how the system works in context: how the whole gives character to the parts through the inter-relationships of the social and economic, the human and environmental, people's actions and the policy and political context (WHITE and ELLISON, 2006).

By way of summary, one can say that NORMAN and MALTON (2000) and NORMAN (2002) distinguish four main phases in the development of the farming systems approach, with various, but partly overlapping, foci (see DARNHOFER et al., 2008):

1. Predetermined focus, for instance on improving cropping systems. Emphasis was on normative and prescriptive issues through application of techniques such as budgeting (soil fertility, labour, economics), optimisation with linear programming, and other tools for applied decision analysis.

2. Whole farm focus, with the contribution of farm management studies involving various field survey techniques and sets of disciplines, often supported by national and international research institutions.

3. Natural resource focus, due to conflicting interests between strategies designed to improve short-run productivity and long-run ecological sustainability. This can be supported by specific methods (indicator frameworks) and approaches (eco-regions, eco-agriculture).

4. Sustainable livelihoods focus, which includes a wider set of issues, not just production: interactions between household, farm, agricultural off-farm and non-farm activities, management of assets, risk and uncertainty, environmental degradation, social equity, expectations.

The SLF appears thus well suited for the analysis of subsistence/semi-subsistence farms or more general structural change in the agricultural sector and rural livelihoods of the NMS. First, it facilitates a comprehensive view, which includes the people, structures and institutions, as well as the resulting livelihood strategies. Second, a livelihoods perspective provides insights into capital asset structures, not just purely economic assets, and their management and potential substitution effects at the household level. Third, behavioural indicators such as attitudes or norms (e.g. following AJZEN, 2002) can explicitly be integrated in the SLF, adding important explanatory power to the framework. Fourth, the integration of distress-push and demand-pull motives (LEE, 1966) with regard to the basic three livelihood strategies – farm exit, intensification, and employment diversification – allows livelihood decisions that are not intuitively following the economic rationale to be better comprehended. Thus, the flexible design of the livelihoods approach and its openness to changes makes it adaptable to diverse local settings. Finally, a livelihoods approach influences the range of policy recommendations considered, as the areas of analysis are more comprehensive. Subsequently, policy recommendations may not be limited to the agricultural sector alone. Often, recommendations based on the analysis of the livelihoods framework enter the areas of education and vocational training (to improve employability); social security (to ensure a poverty free old age and allow structural change at the same time); and economic policies (to recognise the fact that smaller scale farms in particular follow a very diversified employment portfolio).

Clearly, the livelihoods approach can be adapted to many settings. Nevertheless, it does not represent a magic analytical tool nor is it a completely new idea. Yet, it takes account of farmers' need for on-going adaptation to an ever-changing environment. In the following the concept of sustainable livelihoods and the associated analytical framework are depicted in more detail.

1.2.2 Sustainable livelihood concept and definitions

The definition of 'livelihood' has been extensively discussed among academics and policy makers (see for instance CARNEY, 1998; CHAMBERS and CONWAY, 1992; ELLIS, 1998; FRANCIS, 2000; RADOKI, 2002). In its simplest sense, livelihood is about the ways and means of 'making a living'. The most widely accepted definition stems from CHAMBERS and CONWAY (1992: 7-8): 'a livelihood comprises the capabilities, assets and activities required for a means of living'. Capabilities in this definition refer to the set of alternative beings and doings that an individual can attain with her/his economic, social and personal characteristics (DRÈZE and SEN, 1989). ELLIS (2000) in his definition of livelihood places more emphasis on the access to assets and activities. According to ELLIS (2000), a livelihood comprises five capital assets (i.e. natural, physical, human, financial and social, also known as the 'asset pentagon'). These can be used in the livelihood activities. Thus, the access to them (mediated by institutions and social relations) determines the living gained by the individual or household (BARRETT, 1999). The capital assets also influence access to the socio-economic structures of society at large and their formal and informal institutions. REWALD (2002) introduces culture into the definition of livelihood. He states that livelihood refers to the adequate and sustainable access to income and resources to meet basic needs in a cultural context. According to CHAMBERS and CONWAY (1992: 7-8), a livelihood is 'sustainable when it can cope with and recover from stresses and shocks[22] and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base'. The anthropologist WALLMANN (1984) points out that livelihood is also a matter of the ownership and circulation of information, the management of social relationships, the affirmation of personal significance and group identity, and the interrelation of these aspects.

Thus, the SLF, which emerged from farming systems research can be used as a conceptual and methodological framework to identify and assess factors, both internal and external to the household, which affect its socio-economic survival.

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[22] Vulnerability is the product of risk but also the product of an individual's (household's) socio-economic status, surrounding environment, and the insufficient strategies to address risks (DERCON, 2002). Risk relates to the events (shocks) possibly occurring, which are beyond the direct control of individuals and households.

The SLF seeks to reflect the activities and choices of possibly vulnerable households.[23] Within the SLF, three broad clusters of livelihood strategies are identified (see Figure 1.2). These are agricultural (farm) intensification, farm exit, and livelihood diversification, whereby migration can be considered part of the diversification strategy (SCOONES, 1998).

Figure 1.2   Extended sustainable livelihood framework (SLF)
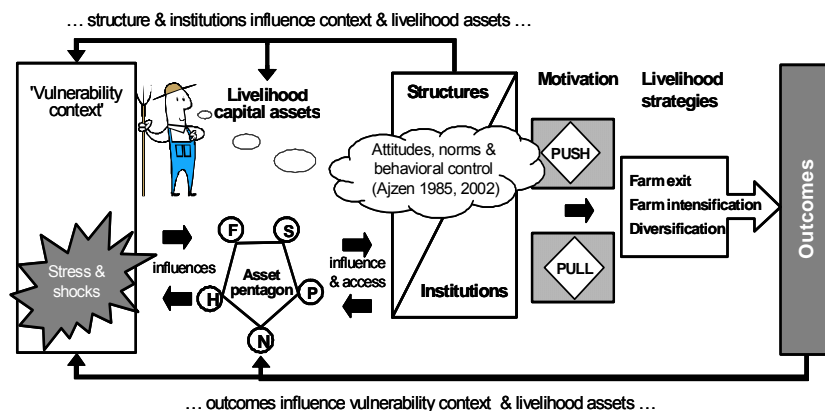
Source: extended from Buchenrieder, 2003: 629; Möllers, 2006: 78

The SLF depicts the 'capital asset pentagon' (Figure 1.3). Sometimes this specific configuration of capital assets is also called the 'livelihood platform' (ELLIS, 2000).[24] The livelihood platform is embedded in additional impacting factors, such as the 'vulnerability context', 'structures and institutions', 'intention and behaviour', and 'outcomes'. The 'vulnerability context' refers to abrupt changes in the natural resources stocks, population trends, technology, politics, and economics as well as shocks with regard to climate, conflict, and culture. The 'structures' comprise levels of the private and public sector, and 'institutions' refer to the rules of the game in politics, economics, and social life

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[23] Vulnerable households have often developed sophisticated (ex-ante) risk-management and (ex-post) risk-coping strategies. They may adopt production plans or employment strategies to reduce their exposure to the risk of adverse income shocks (ex-ante), *even if* this entails lower average income. In addition to such efforts to smooth income, they may try to smooth consumption (ex-post) by selling capital assets, reducing consumption, even sometimes selling daughters into prostitution.

[24] For instance, Chapter 7 looks closely at social capital, as one component of the livelihood platform and analyses its impact on the farm households livelihood. Informal institutions are explicitly considered too. Chapter 8 models demographic patterns (human capital) and its effect on structural change in different legal forms of farm enterprises.

(CARNEY, 1998).[25] 'Intentions and behaviour' refers to the behavioural model developed by AJZEN (2002). MÖLLERS (2006) was the first in introducing behavioural issues in a theoretical explicit way in the SLF. Structures and institutions are of central importance in the SLF as they operate at all levels and effectively determine access, terms of exchange between different types of capital assets, and returns to any given livelihood strategy (SHANKLAND, 2000; KEELEY, 2001).

Figure 1.3   Capital asset pentagon

Notes:	S	Social capital, i.e. relationships
	F	Financial capital
	N	Natural resources, i.e., land and water
	P	Physical capital, including technical innovations
	H	Human capital, i.e. labour, skills and education

The capital asset pentagon can be interpreted as a so-called 'web diagram'. The larger the area that the pentagon occupies, the stronger and more resilient the livelihood it represents (Carney, 1998). Thus, although static by nature, it can be used to show that the configuration of capital assets is locally specific, varies among regions and also among households.

Source: CHAMBERS and CONWAY, 1992; DFID, 2000

In Figure 1.2, *Structures* can be described as the 'hardware' (private and public organisations) that set and implement policy and legislation, deliver services, purchase, trade and perform all manner of other functions that affect livelihoods (DFID, 2000). *Institutions* constitute the 'software' determining the way in which structures and individuals operate and interact. The possible transformation of structures and institutions occupies a central position in the SLF. Changing them directly affects the vulnerability context. They influence and determine ecological or economic trends through political structures and policy measures, mitigate or enforce the effects of shocks through working market structures (notably insurance markets), or they can restrict people's choices of livelihood strategies (e.g. caste system). *Attitudes, norms and behavioural control* are the main determinants of individual intentions and behaviour (AJZEN, 1985). Integrated in the SLF they make up an innovative extension of the initial framework so that the underlying decisions of rural livelihood strategies can be better understood (MÖLLERS, 2006).

Another extension of the SLF is the explicit integration of the *distress-push/demand-pull concept* of LEE (1966), which originates from migration

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[25] One important political instrument in the agricultural sector is subsidies. Chapter 4 analyses the effect of subsidies (and other factors) on a farmer's decision to leave the agricultural sector.

research. It is important to better understand the two main streams of reasoning behind structural change in the sectoral labour market in rural areas. A distress-push motive to change a given livelihood setting is determined by an urgent economic need, i.e. distress-push factors. Demand-pull changes in the livelihood choices are motivated by attractive earning opportunities, i.e. demand-pull factors. For instance, households with a better endowed livelihood asset pentagon can more easily take up more lucrative demand-pull employment alternatives. They react to demand-pull factors and benefit from a 'positive selection' concerning certain individual capital assets. Whereas pull factors facilitate rural employment diversification processes but are not normally sufficient to initiate them, push factors could be seen as the essential driving force of diversification. Those who follow distress-push forces are typically subject to a 'negative selection' (LEBHART, 2002). Often household members who feel pushed by factors associated with constraints in farming become pluriactive (EFSTRATOGLOU-TODOULOU, 1990). Pluriactivity is, therefore, seen more as a negative phenomenon characterised by poverty induced, 'residual' activities (e.g. SAITH, 1992). Distress-push employment diversification may nevertheless have a positive effect on the livelihood of families by increasing total aggregate income, by reducing vulnerability, and by improving risk management (START, 2001; MÖLLERS and BUCHENRIEDER, 2005).

Livelihood outcomes result from livelihood strategies. Desirable outcomes are more income or a smoother cash flow, increased well-being (e.g. in the form of non material goods, health status, access to services), reduced vulnerability (e.g. better resilience through an increase in asset status), improved food security (e.g. an increase in financial capital in order to buy food) and a more sustainable use of natural resources (e.g. appropriate property rights). The consideration of outcomes within the SLF helps understand what motivates stakeholders to act as they do and what their priorities are, and to give an idea of how people are likely to respond to new opportunities or constraints. Changing livelihood outcomes directly influences the status of the capital assets and subsequently their interaction with the rest of the SLF.

By setting the asset pentagon within the broader SLF, the additional factors that impact on livelihoods and the flows of influence between them are made transparent (SANDERSON, 1999). At the same time, it relieves the asset pentagon of much work since it becomes clear that the variability of the asset pentagon derives also from these other factors. The disadvantage, of course, is that this introduces a further set of variables which again need more investigation (WHITE and ELLISON, 2006). Nevertheless, it corresponds to the recommendation of BARRETT et al. (2001) that studies focusing on livelihoods should use a diversity of indicators to assess sources of income and livelihood strategies.

Thus, livelihood is an umbrella concept, which suggests that economic, social and cultural life is layered and that these layers overlap. One common aspect in all definitions is that they eloquently underline the generally accepted idea that livelihoods deal with people, their assets and the subsequent strategies for reaching certain outcomes. The concept has moved away from analysis with a narrow view of production, employment and income to a much more holistic view, which embraces political, socio-cultural, and economic dimensions. This concept also stresses the importance of reducing vulnerability, enhancing environmental sustainability, and building on local strengths and priorities. It recognises that rural people are active agents of change and pursue a range of livelihood strategies (PARROTT et al., 2006). Nevertheless, when considering livelihood strategies, it is important to recognise that people compete (for jobs, natural resources, etc.), which makes it difficult for everyone to achieve simultaneous improvements in their livelihoods. The subsistence/semi-subsistence farmers (or the poor in general) are themselves a very heterogeneous group, placing different priorities in a finite and therefore disputed environment. An application of the SLF offers the advantage of being sensitive to such issues in a differentiated manner. For the working definition of livelihood strategies see Box 1.1.

Box 1.1   Working definition of livelihood strategy

A livelihood strategy can be defined as a portfolio of activities and choices that people make to achieve their livelihood outcomes, including productive activities, investment strategies, reproductive choices, etc. These activities and choices are reflected in the way that people use their capital assets and as such are an important part of (farm/semi-subsistence) household behaviour. The decision making process underlying livelihood strategies is sometimes regular and seasonal, and sometimes occasional and unexpected. It can be reactive (when coping with periods of crises ex-post) or structuralist and adaptive (when adapting to the changing environment in an ex-ante way).

Source: JANSEN et al., 2006; reflecting also DFID, 2000;
        CHAMBERS and CONWAY, 1992; and SOUSSAN et al., 2000

1.3   Brief overview of research design and scope of SCARLED[26]

Given the structural issues in the rural economy of the NMS described above (see Section 1.1), the identification of past and future key socio-economic and agricultural restructuring processes for a living countryside in the NMS was acknowledged as being essential for facilitating science-based policy advice. Within the 6th Framework Programme (FP) of the EU, policy-orientated research, namely 'Policy support and anticipating scientific and technological needs' (FP6-2005-SSP-5A) (OJ C 25/29, 22.12.2005) was supported. The rural

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[26] See Footnote 4.

economy, particularly the agricultural sector, was specifically addressed in Task 16 'Social factors and structural change in agriculture' under Topic 1.1, 'Modernisation and sustainability of agriculture and forestry, including their multifunctional role in order to ensure the sustainable development and promotion of rural areas'.

SCARLED is one of the policy orientated research projects funded under the 6th FP of the EU and brought together ten leading research institutions from across the ERA, thus strengthened the European Research Area (ERA).[27] SCARLED addressed structural change in the agricultural sector and the changing socio-economic livelihoods of rural households, including pluriactivity in the NMS. It is based on a unique multi-country and cross-sectional survey in five NMS, namely Bulgaria, Hungary, Poland, Romania, and Slovenia. The case study countries were already proposed in the application to SCARLED. After commissioning of SCARLED, they built the empirical country basis for the work in the NMS.

1.3.1 Survey regions in the case study NMS

For the SCARLED survey, regions and villages were selected through a two-stage clustered sampling process. As a first step, three regions in each case study country were selected according to their degree of economic development: (i) lagging behind, (ii) average and (iii) prosperous, corresponding to a GDP per capita below, average and higher than the national average. EUROSTAT data at the NUTS3[28] level was used as a first approximation for this selection. Map 1.1 provides an overview of the selected regions and villages in each of the five survey countries.

In the second stage, three villages per NUTS3 region were drawn (again with a view to cover the variations within NUTS3 regions, namely a prosperous, average, and lagging behind village in comparison to the regional average). As pointed out by DEATON (1997), this sampling design of first selecting clusters and then farms/households has many advantages. First, it is very cost-effective since survey teams will only have to visit a few locations instead of visiting

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[27] Banat's University of Agricultural Sciences and Veterinary Medicine Timisoara; Catholic University Leuven; Corvinus University of Budapest; Leibniz Institute of Agricultural Development in Central and Eastern Europe (coordinator of the international SCARLED research consortium); Research Institute for Agricultural Economics; The University of Kent, Kent Business School; University of Ljubljana; University of National and World Economy; University of Newcastle upon Tyne, Centre for Rural Economy; and Warsaw University, Department of Economic Sciences.

[28] 'The Nomenclature of Territorial Units for Statistics' (NUTS) was established by EUROSTAT more than 30 years ago in order to provide a single uniform breakdown of territorial units for the production of regional statistics for the EU. It has six levels, NUTS0-5; NUTS3 is the smallest regional level.

households dispersed all over a country. Second, clustered samples facilitate repeated visits. Third, clustered sampling serves investigations of pre-defined target groups, as in this case 'farm households' very well.

Figure 1.4   SCARLED – NUTS3 survey regions

Source: SCARLED

A farm household's participation in or exclusion from the survey, was determined by an entry question so that only households with agricultural production in either one or both reference points (2003 and 2006) were included in the sample. The complete sample consists of 1,364 rural households. Due to data cleaning, a number of observations had to be deleted and, based on the respective research question, sub-samples were drawn.

1.3.2 Survey instrument in the NMS

The survey instrument of SCARLED consists of two different questionnaires: one main farm household questionnaire and one complementary questionnaire at the village level. The questionnaires were designed according to the data requirements resulting from applying the SLF.

The farm household questionnaire consists of a core set of modules that are the same in all selected NMS. The core questionnaire brings together both quantitative and qualitative information. Information about the following broad issues is collected through the core questionnaire (the list is not exhaustive):

- Household member characteristics, along capital asset pentagon.

- Income, employment and time allocation of household members.

- Agricultural land and non-land resources, production and sales.

- The household's perceptions of the present and future farming objectives; perceptions of drivers for and impediments to commercial agricultural activity; and perceptions for diversification to non-farm employment.

The design of the core questionnaire implies that not all questionnaire modules are relevant for all farm households. A key objective is to capture switching cases, e.g. households who exited agricultural activities to undertake wage employment or establish their own non-farm businesses or who have moved from subsistence/semi-subsistence to commercial farming. Also, successful cases of integration within the marketing food chain are of particular interest. The questionnaire is designed in a way to capture the characteristics of such households. A household's inclusion in, or exclusion from, a questionnaire module, will therefore be determined by switch questions. For example, households that had ceased to be involved in agricultural production since 2003, were directed to a specific module which sought to collect information on what factors had been influential in making the decision to give up agricultural production.

1.3.3 Empirical approach to rural success stories in established MS

In addition to the empirical work done in the five NMS, SCARLED studied success stories of rural development in selected regions of five of the EU15, Austria, Ireland, new German *Bundesländer*, Spain, and Sweden.[29] It can be argued that even in the established EU15, the situation in rural areas is still highly variable with better or worse performing areas. At the same time, the NMS have to cope with the changes inflicted on the agricultural sector and associated livelihoods due to the adoption of the CAP. Thus, lessons from past enlargements can still be learnt and experience from various successful EU15 may help the NMS to succeed more rapidly in the increasingly competitive environment of the EU.

Subsequently, the findings of the rural success stories in EU15 draw on two phases of work. In the first phase, topical literature was reviewed by country experts and semi-structured interviews were undertaken. In the second phase, the lessons drawn were verified and refined using a policy Delphi exercise.

1.3.4 Scope of SCARLED research results

This edited volume presents the most important SCARLED results in a concise and easy to read manner. The book is divided into two topical parts. The first part deals with 'Structural change in agriculture and rural labour shifts' (Chapters 2-4). In the second part (Chapters 5-8) 'Adaptations of rural livelihoods' are discussed based on 'Multi-country comparisons and country case studies'. The book closes in its third part with general policy conclusions in Chapter 9.

Part 1: Structural change in agriculture and rural labour shifts

Chapter 2 (Luka Juvančič and Tina Jaklič) presents recent trends and analyse the drivers and impacts of structural change in agriculture in the eastern NMS. On the basis of data from EUROSTAT, the chapter provides insights into the main characteristics and recent trends of agricultural structures in the SCARLED case study countries. Some context-specific patterns of structural change are discussed in greater depth, followed by policy implications.

Chapter 3 (Carmen Hubbard and Matthew Gorton) gives examples of good practice from selected regions in the EU15. It provides a deeper understanding of barriers and lessons for managing rural development based on previous rural transformation experiences. The results highlight the importance of creating appropriate national and regional structures to attract and implement EU-funded projects, capacity building, decentralisation, social capital and networking, and the role of 'institutional memory'.

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[29] See Chapter 3 in this edited volume for the results.

Chapter 4 (Johan Swinnen and Kristine van Herck) takes a broader view in that it analyses changes in the agricultural labour market in both the NMS and the EU15. The analysis is based on data from the European Labour Force Survey, the EU New Cronos Database and the Farm Accountancy Data Network. By combining macro and micro evidence on agricultural labour adjustments the authors analyse the impact of subsidies and other factors that affect the decison to leave the agricultural sector. Key policy relevant results are that there is a scope for: (i) better targeting of agricultural subsidies; (ii) improvement in human capital; (iii) investment in infrastructure.

Part 2: Adaptations of rural livelihoods: Multi-country comparisons and country case studies

Chapter 5 (Judith Möllers, Gertrud Buchenrieder, Diana Traikova, Thomas Dufhues, Jana Fritzsch, and Cosmin Salasan) is the first chapter of the second part and deals with the primary data of the five SCARLED case study countries. It looks at the movement of farm households into non-farm employment diversification. Diversifying rural employment or farm exits are considered the core of structural change in the agricultural sector. Key policy relevant results are that: (i) there is a great potential for and actual spread of diversification; (ii) non-farm income sources indeed shift a considerable share of households above the poverty line; (iii) distress-push motivation or, in other words, low and/or fluctuating farming income is the key to understanding diversification behaviour, but education is a door opener for rural non-farm employment.

Chapter 6 (Sophia Davidova, Lena Fredriksson and Alastair Bailey) deals with rural livelihoods in transition, particularly subsistence farm households, and the impediments to commercialisation in the five case study countries of SCARLED. Valued at market prices, the results show, for instance, that production for own consumption acts as an important safety net for the rural poor, notably in the poorest NMS, Bulgaria and Romania. The analysis concludes that favouring technological progress and investing in infrastructure are areas where policy can positively influence market participation, while the effect of expensive land consolidation processes is questioned. However, it is important that any policy aimed at increasing market participation does not undermine the important safety net that subsistence production constitutes for the rural poor.

Chapter 7 (Dominika Milczarek-Andrzejewska, Tomasz Wołek, and Beata Łopaciuk-Gonczaryk) looks at the role of social capital and informal cooperation in market integration. The research is based on the SCARLED survey conducted in Poland. The authors show that social capital facilitates informal cooperation among small-scale farmers and that informal cooperation positively influences the level of commercialisation. The chapter concludes that the traditional forms of cooperation that are characteristic of small-scale farmers

can help them to survive, but only advanced forms of cooperation can constitute a development strategy.

Chapter 8 (Hauke Schnicke) forecasts the impact of demographic changes in Hungarian farm households with regard to structural change in a dualistic farm structure. Methodologically it applies the simulation model AgriPoliS. This model treats agricultural farm structures as complex adaptive systems with farm holders as the main (farm) agents who perceive their environment and act and interact in response to changes in that environment (assumptions in line with the SLF). Empirically, the chapter is based on SCARLED data from Hungary. The model scenarios reflect different assumptions about demographic age patterns and farm succession processes. The simulation results predict a steady continuation of structural change through the exiting of small farm households, mainly after farmers retiring. Since many exiting farms stem from the group of small farms, the land use share within these small size classes will shrink while it will increase in the classes of larger farms. The group of corporate farms seems to be well established since the model does not predict that they are leaving due to illiquidity or uncovered opportunity costs.

Part 3: Summary of findings and policy conclusions

Chapter 9 (Csaba Csáki and Attila Jámbor) concludes this edited volume and gives policy recommendations derived from SCARLED research. First, the chapter suggests policy recommendations for addressing the 'hidden bias' against small-scale farms in the NMS. As these farms, often also called subsistence or semi-subsistence farms, serve a social security purpose with regard to the rural poor, it appears reasonable that they require special attention. Obviously, attractive rural labour markets are crucial for rural regional development. For this reason, the second recommendation section of Chapter 9 is on actions required to diversify rural employment. Third, the chapter draws attention to the urgent need to enhance the competitiveness of the farming sector in the NMS, pointing out possible solutions. Fourth, possible ways of managing rural development programmes in the future CAP are discussed. In this context, the chapter calls for a comprehensive treatment of rural livelihoods, which should be reflected in the management of topical funds. The increased rural poverty in the region is also highlighted and some recommendations for alleviating the unacceptable high levels of rural poverty are given. Finally, policy highlights based on the overall project results are provided.

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Part One

Structural Change in Agriculture and Rural Labour Shifts
Issues in the New Member States and Lessons
from Established Member States

Chapter Two

Recent Trends, Drivers and Impacts of Structural Change in Agriculture

Luka Juvančič and Tina Jaklič

This chapter describes the recent structural developments in agricultural sectors of five NMS: Bulgaria, Hungary, Poland, Romania and Slovenia, and discusses the context-specific factors affecting farm structural change.

As basic farm structure and performance indicators suggest, the pace of agricultural structural change in the observed countries has been slowing down since 2000, whereas overall economic performance of the sector has been gradually improving. However, it has to be noted that, notwithstanding the generally favourable trends of agricultural structures in the observed countries, and despite the fact that farms now operate within a single economic and policy environment, some regions and some farm types have experienced less desirable pathways of restructuring.

In this chapter, we attempt to discuss the determinants that explain the latest structural developments and provide some implications for the near future. We derive a typology of farm structural change determinants, which distinguishes between factors external to the agricultural household, and factors intrinsic to each individual agricultural household and farm holding. This typology is then applied and we describe the impacts of a limited number of context-specific drivers of structural change: general economic performance, integration to the EU and adoption of the CAP, competitive pressures, and structural changes along the food chain.

The transition from central planning to market-oriented economies in Central and Eastern European (CEE) countries and the Commonwealth of Independent States (CIS) brought profound changes in agriculture and rural economies. The depth, scale and pace of structural changes are greater than has been experienced before (DEININGER, 2002).

In view of the magnitude of the changes and of the heterogeneity of initial conditions, it is hardly surprising that today, more than two decades after the formal end of the socialist economic experiment, rural economies in countries which have undergone economic transition differ greatly, probably more than

they did before transition started. Different modalities of transition, together with factors such as different policies for land property rights, degrees of control of land rental and sale markets, and procedures for restructuring former collective or state farms, contributed to today's diversity of farm structures.

Today there is no universal model of post-transition rural economies. In place of this, in the CEE countries which are regarded as relatively advanced in terms of economic transformation, one can already discern radical differences: from relatively large and efficient agricultural enterprises in the Czech Republic to small-scale subsistence-oriented agricultural households in North-East Bulgaria; from highly specialised large-scale family farms in former Eastern Germany to diversified small-scale family farms in Slovenia.

Also today, notwithstanding the general positive economic impacts of European Union (EU) accession, rural regions in the CEE countries often fail to gain from general economic growth and remain trapped in rural poverty. The main characteristics of these areas are a high unemployment rate, lower income compared to the country average, a more pronounced negative trend in population growth than the average for the country, unfavourable age structure of the population, and undeveloped infrastructure (MISHEV et al., 2010). Rural areas have been additionally hit by an exodus of the labour force looking for better job opportunities and income prospects in those established Member States (EU15) that opened their labour markets.

The Food and Agricultural Organisation (FAO, 2010) reports on the polarisation of poverty in the rural areas, particularly among smallholder farmers in Eastern Europe. Rural poverty, and its relationship to the farming community, represents an important aspect of poverty in the New Member States (NMS), considering that rural areas account for a large part of their territory. Despite this, the awareness of European public opinion as well as the commitment of public institutions to the problems of rural poverty remains weak.

This situation gives rise to many questions. What were the main causes that triggered such diverse paths of transition? Can we point out which models of transition proved to be more successful in forming efficient agricultural sectors and vibrant rural communities? In addition to this, it would be beneficial to understand what the immediate outcomes and future implications for agricultural structures are with regard to the recent EU accession, and adoption of the Common Agricultural Policy (CAP). Did the EU accession affect trajectories of structural adaptation? What can we expect – a unique pattern of structural adjustment in agriculture, or rather a plethora of different pathways?

This chapter unveils the recent structural developments in agricultural sectors of five EU Member States from Central and Eastern Europe: Bulgaria, Hungary, Poland, Romania and Slovenia (NMS5). Integration of the sector into the

common market and policy framework of the EU was the key point of the observed period (2000-2007). On the one hand, the analysed countries entered into the EU integration process with diverse agricultural structures and rural economies in general. On the other hand, integration into the common EU market, (pre)accession support mechanisms and adoption of the CAP, might have led towards greater convergence of farm structures in the region.

The chapter is organised as follows. First a conceptual background of drivers and dimensions of farm structural change is set out. Then an insight into the main characteristics and recent trends of agricultural structures in the NMS5 is given. Some context specific patterns of structural change are discussed in greater depth. The chapter concludes with a discussion of the policy implications of the results.

2.1   A typology of drivers of structural change in agriculture

In the relatively abundant conceptual and empirical studies on structural change in agriculture, there is no uniform classification of determinants affecting these processes. In order to base relevant hypotheses of farm structure evolution on a surveyable and conceptually sound basis, we have attempted to develop a typology of farm structural change determinants. The typology has been broadened and adapted from studies analysing the farm household decision-making processes, particularly those dealing with labour allocation (QUARANTA and MAROTTA, 1998; HUFFMAN, 1991; HUFFMAN, 2000; ANDERMANN et al., 2000; HANUSHEK and KIMKO, 2000). As we are focusing on the livelihood strategies of rural households engaged in agriculture, the typology (presented in Figure 2.1) is focusing on the decision-making process of family farms. It attempts to provide additional insights into the factors that affect farm household strategies, discussed under the SLF framework (Chapter 1). The typology is also used as a mindset for a systematic presentation of factors that are likely to impact farm structures in the five analysed NMS (Section 2.3).

Having said that, it is important to note that in the countries with dualistic agricultural structures (e.g. Hungary, Bulgaria, Romania), this typology explains and describes structural change only for the class of small-scale (usually subsistence oriented) farms, whereas determinants and pathways of structural change in the corporate agricultural sector are different and fall outside the scope of this study.

In the broadest sense, we can distinguish between factors external to the agricultural household, and factors intrinsic to each individual unit of observation. Each of these two groups is divided further as suggested in Figure 2.1 and further described below.

Figure 2.1   Determinants affecting structural change in agriculture
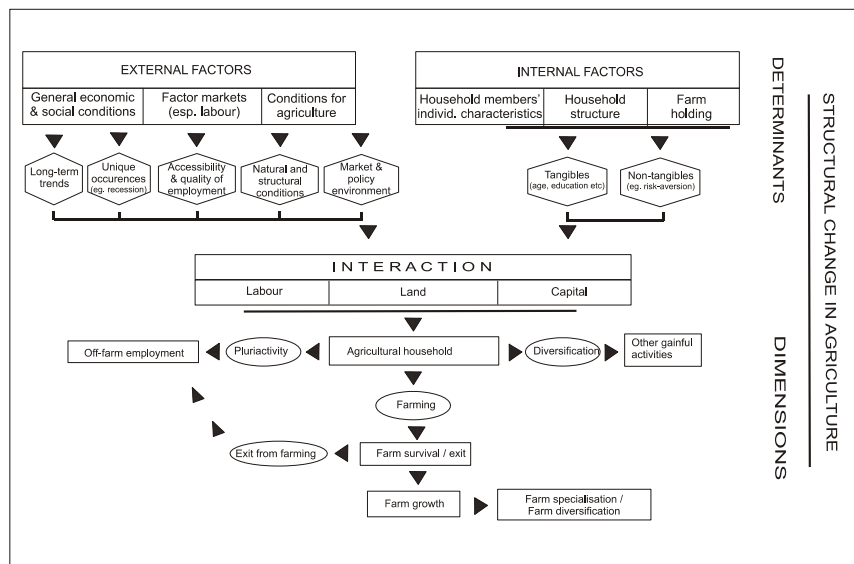
Source: Chapter authors

2.1.1 General economic and social conditions

Apart from the direct impact on gross value added, the development trajectory of the economy can also be reflected in a changing structure of economic activities, or in a changing spatial pattern of economic growth. A decreased relative importance of agriculture and agricultural labour outflow can be considered to be the general long term trend (VON MEYER, 1997). Although several factors are contributing to this trend, two of them deserve particular mention. One is rapid technological progress in agriculture and a corresponding sharp decrease in the demand for labour. Another set of determinants has to do with the comparatively low returns to labour in agriculture.

Outflow of labour from agriculture is an obvious labour allocation strategy of agricultural households in their aspirations towards the achievement of income parity.

Structural change in agri-food systems can be accelerated and irreversibly affected by specific, one-off occurrences. Radical structural change in agriculture as a consequence of the transition to a market economy is an obvious example.

The transformation of the market and institutional environment in the NMS after accession to the EU is another occurrence that can strongly affect their agricultural structures. In the immediate future, the consequences of the global economic downturn can be expected – not only in trade patterns, but also in the allocation of the factors of production in all sectors, including agriculture.

2.1.2 Markets for factors of production (especially labour)

As pointed out by LERMAN et al. (2002), the emergence of functioning markets for factors of production (especially for land ownership and transferability), the emergence of credit institutions, new capital investment patterns, and conditions in the non-agricultural labour markets led to a massive restructuring of agriculture in transition economies. Profound structural changes in agriculture can also be expected in the case of less obvious changes in the markets for factors of production. As set out in greater detail in Chapter 1, the decision of an individual member of an agricultural household to combine agricultural work with off-farm employment can be a consequence of favourable conditions in off-farm labour markets ('demand pull'), or can result from the necessity of combining meagre farm incomes with additional off-farm work ('distress-push'). The physical or perceived accessibility of factor markets can play an important role. An example of this is the development of the road infrastructure and public transport systems (allowing for the increased mobility of labour and goods), or the development of the Information Technology (IT) infrastructure, which diminishes the 'digital divide' between rural and urban areas and thus improves the comparative position of the rural areas in the off-farm labour markets[1].

2.1.3 Agricultural outputs, markets, and policy

Obviously, agricultural output is highly dependent on natural conditions for agricultural production. These conditions differ regionally and sometimes even locally and they can be regarded as very important in individual decision-making. However, the impact of natural conditions for agricultural production on the decision-making process of agricultural households cannot be unequivocally determined. The impacts of natural conditions often come in conjunction with other relevant factors affecting agricultural structures (such as, for instance, remoteness, development of market infrastructure) or with the situation in the markets for production factors (especially labour). Changes in these accompanying factors can lead to profound changes in the structure and volume of agricultural output.

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[1] Implications for rural labour markets are dealt with in greater detail in Chapter 4.

The decision-making process in agricultural households can be significantly affected by changing market conditions, or by public interventions in the spheres of agricultural and rural development policies (WEISS, 1997; KIMHI, 1994). Changes in market conditions, trade regimes or policy environment can have profound and long term structural impacts.

2.1.4 Individual characteristics of agricultural household members

The decision-making process of agricultural households is a result of interactions at various levels: (i) the abilities and personal choices of individual household members; (ii) reconciliation of interests among household members; and (iii) the labour demand and capital-related requirements of the agricultural holding. These interactions are in line with the SLF presented in Chapter 1.

Individual characteristics (for example, age, education, gender, individual's status in the household) and cues (such as lifestyle, personal preferences) play the most important role in the labour allocation decisions in agricultural households (HUFFMAN, 2000). As the dimensions of structural change are inter-related, individual characteristics can in turn affect other dimensions of structural change, such as farm survival and growth, specialisation of agricultural production, diversification.

2.1.5 Household structure

Analysing the decision-making process at the level of the agricultural household needs also to take into account the relationships and interactions between household members (ELLIS, 1988). This is especially the case in labour allocation – related decisions, where the individual's status is not freely determined but rather conditional on value judgements and social norms (ALTONJI and DUNN, 2000). This can be reflected in, for example, the gender related allocation of work responsibilities.

Quantitative research on the interactions within households usually explores in greater detail the relationship between the head of the household and the spouse (WEISS, 1997; CORSI and FINDEIS, 2000; JUVANČIČ and ERJAVEC, 2005). Other household characteristics are usually discussed only at the level of aggregated indicators, such as, for instance, the number of household members, the dependency ratio, the annual working units (AWU).

2.1.6 Characteristics of agricultural holdings

Virtually all empirical analyses dealing with the decision-making process of agricultural holdings put a special emphasis on the characteristics of the farm, especially those carrying economic implications. Outcomes are usually

significantly related to the economic characteristics (e.g. size, income) of the farm. Theoretically, the most appealing approach would be to introduce farm income related data into empirical research. However, the farm income related data can usually only be estimated indirectly (at least in the case of a farm structure with mainly family farms). The higher the dependence on various assumptions, the lower the data reliability. Researchers therefore usually use statistical proxies for the economic potential of the farms: (i) farm revenues (LASS and GEMPESAW, 1992; OLUWOLE and FINDEIS, 2001); (ii) the physical size of the agricultural holding (WEISS, 1997, 1999; RIZOV et al., 2000); or (iii) farm production type (BENJAMIN, 1996; CORSI and FINDEIS, 2000).

2.2   Main characteristics and recent trends in agricultural structures in the NMS5 – some general findings

Among the five analysed countries there are vast differences in initial conditions, for instance, in general economic standard, land ownership structure and land markets, significance of individual farms, market relationships between key actors along the food chain, and in the prevailing types of organisation of agricultural production. Thus it is no surprise that the restructuring of the farm sector in the last two decades has followed different patterns. Although land restitution and the individualisation of farming was the norm throughout the region, the corporate farm sector remained relatively strong (with the notable exceptions of Slovenia and Poland), albeit affected by significant downsizing. At the same time, individual holdings (household plots and family farms) gained in importance, either through their role as a social buffer (subsistence farming), or in terms of increased tradeable output.

Some recent developments in NMS5, reflected through the basic structural indicators structural are presented in the figure below.

**Figure 2.2   Development of selected Farm Structure Survey indicators
Basic agricultural structural data for the NMS5 in the period
2003-2005.**
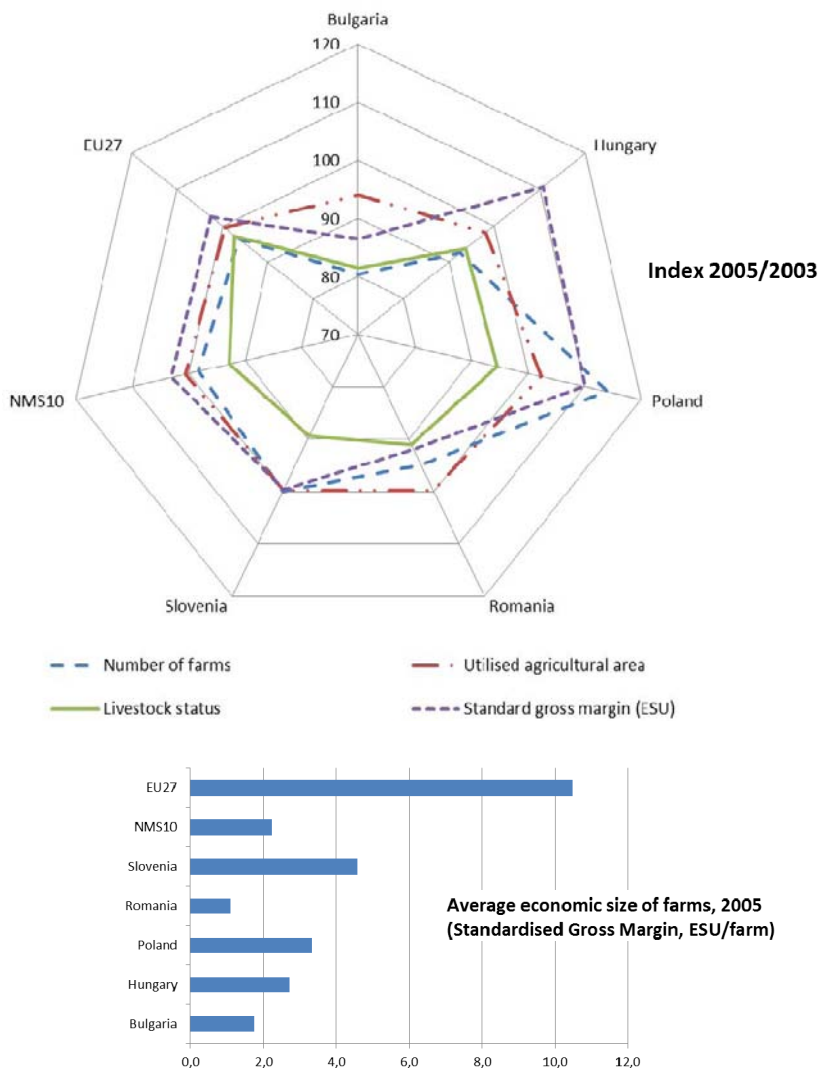
Notes: ESU – European Size Units, derived from imputed standardised gross margin (SGM); NMS10:
         Central and Eastern European countries, having acceded to the EU in 2004 and 2007; EU27 –
         current EU Member States.
Source: Eurostat, 2010

The latest structural changes are illustrated by comparison of the Farm Structure Survey (FSS) results for 2003 and 2005. These are the only two periods for which FFS data are available for all five analysed countries. In terms of farm size, there are surprisingly no major differences between NMS5. They all lag behind the EU27 average; none of them reaches 50% of the EU27 average size. However, there are sharp differences in the size structure of agricultural holdings. In countries where private land ownership was the norm during the socialist era (Poland and Slovenia), the relatively fragmented farm structure remained unchanged throughout the 1980s and 1990s. This affected the size distribution of farms, which is now getting closer to a normal size distribution. In the last decade, structural change has slowed down. In Slovenia, the number of farms has been stagnating since 2003, whereas the number of farms in Poland has even increased.

The other three analysed countries, which had a more pronounced experience of land collectivisation and/or an egalitarian approach towards land redistribution (Hungary, Romania and Bulgaria) are today characterised by a sharply dualistic size structure of farms: small-scale (usually subsistence oriented) farms on the one hand, and large farms (agricultural enterprises) on the other. To a large extent, the initial conditions determine the latest structural developments. In the case of Bulgaria, there has been a strong decline in the total number of farms. The decline happened mainly because marginal, small-scale, subsistence producers left the sector. A less dramatic decrease in the number of farms has been recorded in Hungary and Romania. In Hungary, this coincided with an increase in the value of agricultural output, implying that (as in Bulgaria) the marginal, small-scale, subsistence producers left the sector[2].

Figure 2.3 reveals the concentration of agricultural output, (measured in European Size Units (ESU),). derived from imputed standardised gross margin (SGM)). As can clearly be seen, all the analysed countries are characterised by a skewed farm distribution in which the share of small-scale holdings is disproportionately high and their contribution to total agricultural output (measured in ESU) is low. This is less explicit in Romania and Slovenia, although also in these two countries about 70% of farm holdings account for only 25% of total output.

In addition, the NMS5 vary considerably in terms of the productivity of agricultural land and labour. Returns on production factors are particularly low in Bulgaria and Romania, countries characterised by the sharply dualistic agricultural structure with a strong small-scale, subsistence oriented production. In these two countries, agriculture is both an economic and a social category.

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[2] The structural change of Hungarian farm households is explored in greater detail in Chapter 8.

Figure 2.3   Concentration of agricultural output in EU27 and five selected NMS
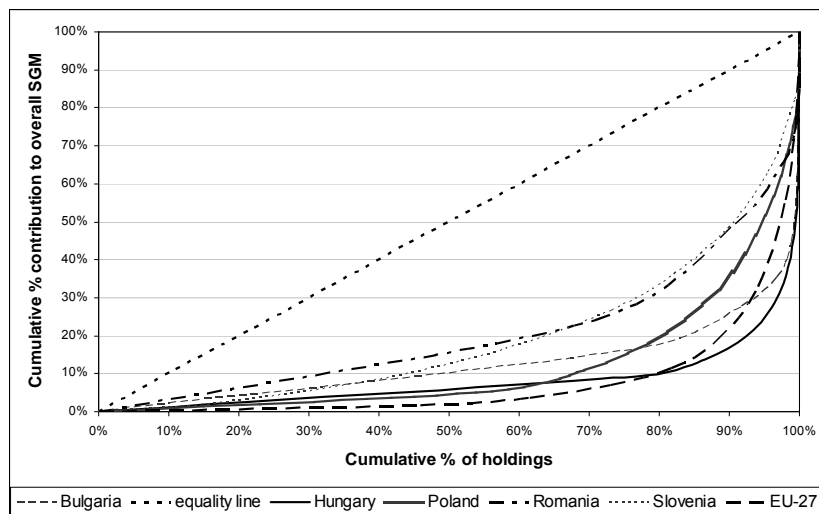
With regard to the labour input engaged in agriculture in the analysed countries, the labour market conditions prior to EU accession were characterised by an unfavourable age structure and the decline of the agricultural workforce. Hungary experienced the sharpest decline in agricultural employment. Romania was an exception to this trend: agricultural employment actually increased as the sector absorbed a considerable amount of labour made redundant in other sectors (BUCHENRIEDER et al., 2007).

Recent years brought a decline in the total labour input in all NMS5. The Eurostat FSS data suggest that the sharpest decline in agricultural labour input was recorded in Bulgaria and Hungary. In Hungary, the labour input decline coincided with an 11% increase in the economic size of farms, which suggests improvements in labour productivity. However, Bulgaria and Romania recorded a decrease in the economic size of farms (by 13% and 8%, respectively). Taking into account the fact that Romania experienced only a marginal drop in labour input, this implies that agricultural labour productivity actually worsened. Similarly to Romania, a minor drop in labour input has recently taken place in both Poland and Slovenia. With some notable exceptions (for instance, Hungary in dairy production), yields are considerably lower than the average of the EU15. This can be attributed to lower input use, fragmented farm structure and insufficient technical equipment. In addition to these factors, lower yields could be due to managerial problems related to the low level of farmers' education,

their insufficient skills for handling modern technologies and participating in markets, or structural problems such as the large share of self-subsistence (in Romania and Bulgaria) and part-time farms (in Slovenia and Poland).

In terms of gross agricultural output (Figure 2.4), the analysed countries share similar adjustment patterns.

After a decline in the first years of transition caused by an increase in input prices, stagnating output prices and falling demand, agricultural output stabilised somewhat below pre-transition figures in the late 1990s. The livestock sector was more severely affected than the crop sector. In the crop sector, which initially adapted by cutting inputs, the stabilisation of input-output price ratios led to a certain recovery in input use and higher output levels. As reflected in recent statistical data on agricultural output (Figure 2.4), the most noticeable increase in the pre-accession and early post-accession years was in Poland and Romania.

Using the Economic Accounts for Agriculture (EAA) suggests that the economic performance of the farm sector in the NMS5 has been generally improving. This can be attributed to a favourable market and policy environment. Price gaps with the rest of the EU have started to diminish. Public expenditure on agriculture has been steadily increasing, most notably through the use of CAP direct payments and expenditure on rural development. Improved economic performance has also been helped by technological progress and other improvements.

Figure 2.4   Selected economic accounts for agricultural indicators in the NMS5 for the period 2000-2007 (Indexes, 2000=100)

Output

Factor income

Net Value added
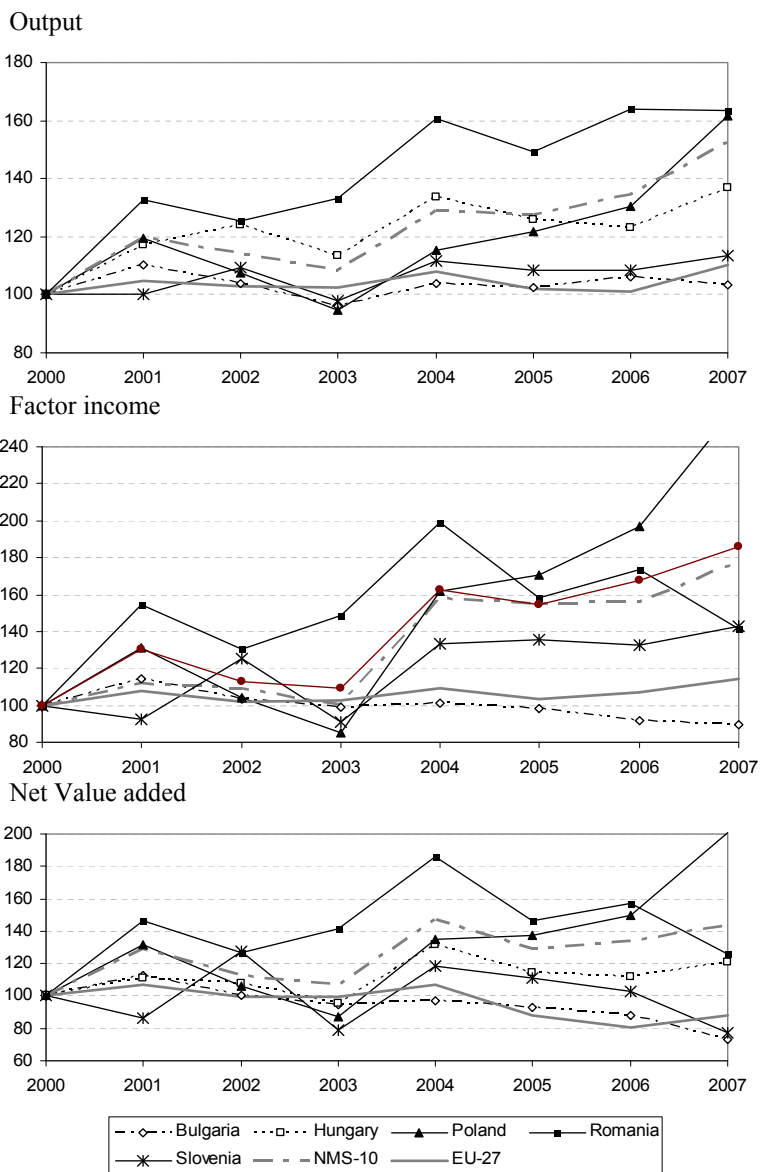
Source: Eurostat, 2010

2.3 Context-specific drivers of structural change in the NMS5

In this section, we attempt to provide a systematic overview of the drivers that have probably affected the recent trends in agricultural structures in the analysed NMS5. This overview applies the general typology of determinants affecting farm structural change described in Section 2.1. As we are tackling primarily the factors that are specific to the context of the recent EU accession of these countries, the overview focuses on the factors that are external to agricultural households. As suggested in Section 2.1, changes in market conditions, trade regimes or policy environment can have profound and long term structural impacts. For this reason accession to the EU, which resulted in the transformation of the market and institutional environment, had a major impact on the agricultural sector in the NMS.

2.3.1 General economic performance, recent macroeconomic trends

Economic transition brought radical changes to the structure and performance of the national economies. In the early 1990s, the ratio of difference in general economic performance (measured in gross domestic product (GDP)/capita) between the best and the poorest performing countries varied by a ratio of 4:1. The first ten years of transition increased this gap. Highly divergent paths of growth among the transition economies have characterised the first decade of transition. By 1999, the central European transition economies had either regained (for instance, Poland and Slovenia) or were close to their pre-transition GDP levels (Hungary), or were still struggling with the transformational recession (UN-ECE, 2000). After the year 2000, the paths of growth were more uniform. It can be inferred that in all the observed countries, except Poland, total GDP was increasing constantly. In all the NMS5, except Slovenia, the growth of GDP has, most of the time, been noticeably greater than in the EU15. As in the pre-transition period, the 2007 GDP per capita figures presented still reflect some major discrepancies, although convergence within the countries and towards the EU15 can be noted. The EU enlargement additionally accelerated economic growth and contributed significantly to the catching up of the NMS with the EU15's level of development (RAPACKI and PROCHNIAK, 2009).

Nevertheless, the latest global financial crisis has affected the region through the scarcity and the rise in costs of external financing, and by the weakening of foreign demand for NMS exports. This has resulted in painful lessons for the region, resulting in a downturn in economic growth, in some cases followed by a near collapse of public finances (for instance in Hungary, Latvia and Romania). The crisis therefore revealed the need for further structural reforms in virtually all the NMS, making them less vulnerable to external economic shocks.

As a strategy for surviving the tightening competitive pressures and macroeconomic shocks, the social buffer role of small-scale subsistence-oriented farms[3] remains particularly strong in regions with poor economic performance and a high percentage of households below the poverty line. As will be discussed in greater detail in the following sections, the CAP rural development measures are somewhat ineffective in addressing this problem.

2.3.2 Impacts of EU membership

As suggested in the typology section of this chapter, changes in market conditions, trade regimes or policy environment can have profound and long term structural impacts. For this reason accession to the EU, which resulted in the transformation of the market and institutional environment, had a major impact on the agricultural sector in the NMS.

2.3.3 Agricultural policies, gradual integration to the CAP

Briefly summing up policy developments in the first decade from formal transition to a market economy, the evolution of policy is characterised as follows. Land restitution and privatisation radically changed the topography of agricultural structures. This is especially true in those countries where the agricultural sector had been collectivised, and much less so for the countries where individual farming was the norm throughout the socialist period (Poland, Slovenia). As a rule, agricultural policy regimes were liberalised and subsidies abolished. Consumer prices increased, while real incomes often declined, and domestic demand fell. Foreign market access deteriorated as the traditional agricultural export markets dwindled because the EU remained closed to the CEE countries' agricultural exports. Farm input prices greatly increased relative to producer prices, causing a decline in the agricultural terms of trade, which renewed demands for government support. This phase was followed by policy interventions in the agricultural sector to protect consumers and producers against the negative real income effects of agricultural and macroeconomic reforms. IAMO (2004) states that, owing to a lack of experience, governments and their administrations in the emerging market economies reacted to unanticipated policy effects by sudden and frequent policy changes, thereby adding to the uncertainty induced by general economic reforms. Only after these liberalisation and adaptation shocks, did governments start to formulate comprehensive long term-oriented agricultural policies. 'CAP-style' agricultural policy instruments were put into place. These included the systems of guaranteed prices, production quotas, export subsidies, and (variable) import

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[3] Recent trends and developments in the subsistence farming sector are discussed in greater detail in Chapter 5.

levies. However, the introduction of these CAP-style policies took place more or less on an ad hoc basis. In some cases governments also intervened in markets where the EU provides only limited support to EU farmers (e.g. pork markets in Poland).

IAMO (2004) reports that since then agricultural policies have undergone various degrees of modification, both in order to comply with international trade agreements (both bi- and multilateral) and to bring the level and kind of intervention more in line with that of the EU. Most of the NMS have changed their policy mix to include more direct payments and other subsidies with somewhat less reliance on market price support. Bulgaria, which until recently discriminated against its agricultural sector, significantly modified and liberalised its agricultural policy regime. Again, this adaptation of CAP-style policies was not done systematically. In some cases, governments neglected the fact that their budget and markets did not have sufficient depth to maintain these intervention policies. Since 1997, producer support to agricultural producers exceeded the EU levels only in Slovenia. Farmers in the other NMS5 experienced considerably lower policy support in relation to their EU counterparts. However, as the accession year approached, the level of support slowly converged towards the EU15 level. In many cases, suppliers of agri-food products were facing markets with limited export possibilities and limited regional integration. In this situation, farmers experienced rapidly changing policies in highly volatile markets bearing high market and policy risks. As a consequence, this unstable political environment affected many elements of farm behaviour such as investment, for example. As a long term effect, the pre-accession period resulted in only a slow movement towards competitive farm structures.

Since the late 1990s, public transfers to agriculture have started to increase gradually. This trend has coincided with agricultural trade liberalisation, beginning with the inclusion of agricultural goods in the Central European Free Trade Agreement (CEFTA) trade agreements, and continuing with the gradual liberalisation of agricultural trade with the EU. Tariff-based policy mechanisms have been slowly replaced by other types of agricultural support: from different types of price aids (such as premia and production support) and social payments (in Poland), to CAP comparable mechanisms such as payments based on area planted or animal numbers (in Slovenia).

Finally, accession to the EU has been reflected in increased total (EU and national) public expenditure on agriculture. It has caused the accelerated convergence of agricultural prices to the EU level, and together with the adoption of the CAP (Pillar 1 direct payments) has affected the dynamics of net value added of agricultural production and factor income of agriculture. Countries that acceded to the EU in 2004 have experienced an upward trend in both indicators. Moreover the last few years have also brought an increase in

rural development expenditure, triggered (or at least stimulated) by matching EU public expenditure: first by the pre-accession financial mechanisms (PHARE, SAPARD[4]), and after accession by the CAP Pillar 2 (rural development) expenditure.

2.3.4 Increased awareness of (and new dimensions given to) sustainability

Together with the rest of the EU, the NMS share the commitment towards sustainable growth. However, looking at the relationships among the key aspects of sustainability (environmental, social and economic), the emphasis may differ between some of the NMS and the EU15. Although empirical evidence on this issue is virtually non-existent, policy practice leads us to hypothesise that, especially in low income rural regions, the most strongly pronounced aspects of sustainability relate to social impacts (such as poverty reduction) rather than to environmental sustainability.

This can be illustrated by the structure of Rural Development Policy (RDP) expenditure patterns (COPUS, 2009), which reflects both public preferences towards different aspects of rural development and, to some extent, the relative significance of different aspects of sustainability. The EU15 devote, on average, 51.9% of their rural development budgets to measures addressing agri-environmental issues, while the NMS devote only 34.8% on average to such issues. Exceptions to this are the Czech Republic, Slovakia and Slovenia with figures close to the EU15 average. It can be further substantiated by the low interest of farmers for RDP Axis 2 measures. For example, KOPEVA et al. (2010) report that during the first phase of the implementation of the Rural Development Plan in Bulgaria (2007-2009) farmers' interest in participating in the Axis 2 measures was very low.

2.3.5 Increased competitive pressure

On the whole, transition to a market economy and the later accession to the EU have brought net economic benefits to both agricultural consumers and agricultural producers (CSÁKI, 2008). Trade in agricultural commodities, food and beverages with the rest of the EU has been intensifying constantly. With the exception of Hungary and Poland, the net trade balance in the agri-food sector

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[4] The programmes PHARE and SAPARD have been the pre-accession instruments financed by the European Union to assist the applicant countries of Central and Eastern Europe in their preparations for joining the European Union. While the PHARE (Poland and Hungary: Assistance for Restructuring their Economies) programme had a general support character, SAPARD (Special Accession Programme for Agriculture and Rural. Development) was focusing on restructuring of agricultural and rural sectors.

has been negative and deteriorating. Although the tendency as regards the level of processing (and thus value added) is not entirely clear-cut among the commodities in the NMS (DRABIK and BARTOVA, 2007), the share of raw materials and semi-processed commodities in exports is persistently high (CSÁKI, 2008). The increased share of imported highly processed food products from the EU15 adds to the competitive pressures on the agri-food sector in the NMS.

As pointed out by some authors (e.g. CHANTREUIL et al., 2010), the competitive position of producers deteriorated. This particularly affected those NMS which in the pre-accession period focused on price and income support and less on the competitiveness of the agri-food sector which would have allowed it to grasp the advantages of the access to the enlarged internal market. Further improvement is therefore needed in terms of better market access and access to capital; either through public support (e.g. an improvement in physical and market infrastructure, investment support, support for producer groups), or indirectly through private initiatives (e.g. by stimulating micro-credit schemes).

2.3.6   Changes in agricultural markets, implications for farmers' income and changes along the food chain

EU accession brought stabilisation of the market and policy environment. The general pattern is that price gaps with the rest of the EU have started to diminish and are expected to come close or equal to the EU15 average in the next few years. IAMO (2004) expects that the upward trend of farm incomes is going to continue as a direct result of CAP implementation (Figure 2.4).

In general, the integration into the single EU market brought positive price developments to the NMS. Apart from the favourable market outlook for virtually all agricultural commodities, EU accession also brought a sharp rise in the subsidies granted to agricultural producers in the NMS. Owing to this, the medium term projections (EUROPEAN COMMISSION, 2007) anticipated a steady growth in agricultural incomes (a 24.9% growth over the period 2006-2014 for the CEE Member States and even a 71.8% growth for Bulgaria and Romania, which is well above the EU15 level (projected 9.9% income growth).

A short period of increasing agricultural prices in 2007-2008 was followed by a sharp drop caused by the outbreak of the global economic crisis, changing demand patterns and tightening price-cost ratios. To illustrate this, EUROSTAT (2010) reports a 40.3% increase in the price of fertilisers in 2008. As a consequence, input use fell sharply, particularly in the NMS. Favourable income prospects therefore failed to materialise, even though for the 2005-2010 period, the NMS recorded a 9.9% growth in agricultural factor income compared to a 4.6% fall in this in the EU15). It has to be noted, however, that relatively

favourable figures for the NMS are, of course, also a consequence of their low starting positions.

Even though the agricultural sector is generally more resilient to economic crises than other sectors, the current macroeconomic situation is expected to impact greatly on the short term perspectives of most agricultural sectors (EUROPEAN COMMISSION, 2009). Taking into account the uncertainties underlying agricultural production in future years (such as economic, market and policy developments, the path of technological change, future climatic conditions), and the changing patterns of agricultural trade (reflecting also the decreasing stocks of agricultural commodities), the volatility of agricultural prices is likely to increase. Because of these factors, mid-term agricultural income projections are difficult to predict.

In addition to the rising competitive pressures discussed above, the agricultural sector is facing additional pressures due to the major changes to the food supply chain and correspondingly to food consumption patterns in the NMS. The so-called retail revolution with its prevalence of vertically integrated product chains is taking place throughout the region. Some of the farms, especially the small ones, are having major difficulties with the new situation (CSÁKI, 2008). As a response to competitive pressures from the changing retail structure and consumption patterns, innovative approaches towards the marketing of agri-food products (for instance, vertical integration, local supply chains) and adding value to agricultural products (such as quality labels, gastronomy) can be seen as promising strategies, even though more at the level of the niche market.

Similarly to the case of primary production, the food processing sector in the analysed countries experienced a sharp drop of output during the early years of transition (IAMO, 2004). However, EU accession implies new challenges of a similar dimension for the food processing sector. The NMS have to face stricter standards and increasingly rigorous quality control. Being aware of the problems related to the access to finance for reinvestment and the difficulties in meeting EU food quality and hygiene standards has resulted in an intensive consolidation of the sector. Foreign companies have played a leading role in this process (CSÁKI, 2008).

2.4   Concluding remarks and policy implications

After almost two decades of intensive restructuring of the agricultural sector, basic structural indicators (such as farm size, labour input) suggest that the pace of agricultural structural change in CEE countries that recently acceded to the EU has been slowing down. With integration into the EU markets, the pattern of structural adjustment of these countries has become systematic and predictable. Small-scale, marginal producers have been leaving the sector on account of the

growing larger production units. This is understandable since the benefits of favourable market and policy conditions (such as converging prices, direct payments, and access to investment support) increase with farm scale.

It has to be noted, however, that some recent results suggest that, despite the fact that agriculture has started to operate in a single economic and policy environment, the pathways of restructuring are becoming mixed. For example, considering the labour productivity of agriculture CAMPOS et al. (2010) identified three main trajectories of structural adjustment, which are region-specific, and of which only one can be considered to be positive. First, a moderate growth of agricultural productivity, mainly on account of increased economic output, has been recorded in regions with relatively favourable structural conditions for agriculture. In addition to this, these regions are usually relatively affluent, located close to markets and/or transport corridors, with above-average availability of non-farm jobs. Second, a group of regions has undergone a downturn in agricultural labour productivity, mainly on account of the absorption of urban unemployment by agriculture. Third, a group of regions has been facing a drastic decrease in agricultural employment, occurring usually in combination with depopulation and decreasing agricultural output. The relative growth of agricultural productivity in these regions is thus only superficial and hides unfavourable economic and demographic trends, such as the ageing of the agricultural population, or permanent migration. The second group of regions described above often occurs in areas with increasing numbers of the farming population and appears to be locked in a 'poverty trap' – a combination of unfavourable initial conditions and economic collapse (both in agriculture and in the non-farm sector). Often, smallholder (subsistence-oriented) plots prevail, characterised by low productivity, lack of capital (inputs, investments) and a poorly developed market infrastructure. Since the CAP contains a hidden bias against small farms (GORTON et al., 2009)[5], these farms are not able to capitalise on the favourable market opportunities and policy conditions.[6]

Furthermore, the rural development policies and funding available after accession to the EU accelerated the possibilities of generating non-farm incomes. However, these policies did not immediately reduce unemployment or provide opportunities for generating additional farm income, since the effects of structural measures, unlike those of direct payments, will be felt more gradually

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[5] The issue of hidden bias of CAP against small farms is discussed further in Chapter 9.

[6] Even the CAP measure designed especially for these producers (the so-called 'support for semi-subsistence farms') merely mitigates the social hardships of marginal producers and it is not realistic to expect that payments amounting to Euro 1,500 per year (for a period of up to five years) would result in farm restructuring to the extent that would allow them to develop long term viable market production.

and thus more in the medium term than in the short term (BUCHENRIEDER et al., 2010).

Intensified international trade and improved market infrastructure inevitably affect the agri-food chain, especially in urban areas. The so-called 'retail revolution' brings both opportunities and threats to domestic producers along the food chain. Evidence from the NMS suggests that the economic performance of the agri-food sector dropped most dramatically when food processing firms (or manufacturing in general) were previously enjoying high rates of (direct or indirect) market support (KUHAR and ERJAVEC, 2007). As the performance of the food processing and retail sector directly affects its downstream linkages, agricultural producers and rural economies in general are particularly vulnerable in the process of international market integration. Short term gains of market protectionism for agri-food sectors in the pre-accession period can therefore bring significant long term losses.

Last but not least, the intensity of structural change in agriculture has been, and will be, determined by external macroeconomic environment. With the persisting economic downturn (characterised by dwindling aggregate demand, the credit crunch and the tightened balance of public finances), the pressures on agricultural producers will deepen and the problem of increasing rural poverty will further accelerate.

Insights into the latest structural trends in the analysed five countries allow us to underline some policy implications relating mainly to the EU Rural Development policy framework. The policy implications derive from a standard premise that economic policies should not interfere with market trends, but rather mitigate the short term negative market effects and create conditions for effective structural adaptation.

The evolution of farm structures in the observed NMS5 suggests that the opening of trade and the withdrawal of policy barriers leads to the structural adaptation of the farm sector into a competitive market environment. The side effects of such an adaptation are reflected in social hardships and the persisting rural poverty of marginal producers. These problems should be addressed by special schemes, separate from agricultural policy, for vulnerable social groups. Examples of these are schemes providing social safety nets for rural poor and elderly.

When it comes to measures addressing farm structures (e.g. CAP Pillar 2, Axis 1), schemes should be developed targeted at the social groups, such as young farmers, young job seekers in rural areas, who are of long term importance for rural development. Measures should not discriminate either positively or negatively between domestic producers and their EU counterparts, nor should they favour any particular group of producers, such as large or small farmers.

The competitive position of producers should be further improved by better market access and access to capital; either through public support (e.g. the improvement of physical and market infrastructure, investment support, support for producer groups), or indirectly through private initiatives (such as stimulating micro-credit schemes).

As a response to competitive pressures from the changing retail structure and consumption patterns, innovative approaches towards the marketing of agri-food products, such as vertical integration or the setting up of local supply chains, and adding value to agricultural products (e.g. quality labels, gastronomy) should be stimulated.

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Chapter Three

Lessons from Established Member States: Translating Good Practices to the New Member States

Carmen Hubbard and Matthew Gorton

Chapter 3 presents examples of good practice from selected regions in the EU15. It aims at a deeper understanding of previous transitions, learning lessons for managing rural development. Findings are verified using a policy Delphi approach. The chapter also evaluates the barriers to implementing these lessons in the NMS. The results highlight the importance of creating appropriate national and regional structures to implement EU funded projects, capacity building, decentralisation, social capital and networking, and the role of 'institutional memory'. Making the most of EU membership requires an understanding of funding systems and the creation of appropriate national and regional structures and institutions capable of attracting, administering and monitoring EU funds. There are significant barriers to implementing these lessons of best practice in the NMS, leading to some NMS, such as Romania, to forego considerable funding streams.

The 2004 and 2007 enlargements differed significantly from previous expansions of the European Union (EU), both in terms of the scale and the nature of the political and institutional processes. In the context of enlargement, agricultural and rural development policies play a critical role. Currently, 93% of EU territory is classified as rural (CEC, 2006). This, combined with an increase in public concern over food safety, food quality, animal welfare, and the preservation of nature and countryside, gives rural development greater salience. There is little doubt that EU integration, particularly the adoption of the Common Agricultural Policy (CAP), has an impact on people's livelihoods, particularly those who live in rural areas. The rural areas of the current Member States (the EU27) are very diverse in terms of territory, population, economic and social structures, and labour markets (CEC, 2006). However, in general, research on socio-economic and farm structure issues in the New Member States (NMS) does not draw on the experiences of the established Member States (EU15). Previous accessions to the EU affected the development of EU polices, particularly agricultural and rural development measures. These in turn had an

impact on the socio-economic, agricultural and rural development conditions of the Member States. Thus, lessons from past enlargements can be drawn to aid new entrants to succeed more rapidly in a competitive environment such as the EU.

This chapter highlights lessons of best practice for managing agricultural and rural development. It draws on two stages of work. The first phase centred on case studies of five regions in the EU15 that have undergone, at least in some respects, successful rural development post-accession. The case study regions are: The Borders, Midlands and Western Region (BMW) (Ireland) (HUBBARD and WARD, 2007), Navarra (Spain) (IRAIZOZ, 2007), Tyrol (Austria) (HUBBARD and KAUFMANN, 2008), Skåne (Sweden) (COPUS and KNOBBLOCK, 2007) and Altmark (Germany) (WOLZ and REINSBERG, 2007). Although there are significant differences between the 2004/2007 and previous enlargements of the EU, in terms of the scale and the nature of political processes, there is much that the NMS can learn from previous accessions. This is particularly true in agricultural and rural policy given its strategic and budgetary importance.

The period covered for the case studies is from the time of accession of each Member State (i.e. Ireland 1973, Spain 1986, the new German Bundesländer 1990, Austria and Sweden 1995) up to 2006. The case studies involved desk-research and (face-to-face and telephone) interviews with 39 experts across the five countries. Lessons of best practice in implementing rural development were drawn from interviews and supporting documentation. The importance of creating appropriate national and regional structures to implement EU funded projects, capacity building, decentralisation, social capital and networking, human capital and the role of 'institutional memory' were identified as important themes.

In the second phase of the analysis, the lessons drawn were verified and refined using a policy Delphi exercise.[1] The policy Delphi method involves the systematic collation and analysis of expert judgments on a particular topic (TUROFF, 1970). In this case, it involved experts interviewed in the first phase plus others from the NMS. The involvement of experts from the latter countries allows for an assessment of whether lessons drawn from the EU15 can be transferred easily to the NMS.

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3.1 Regional case studies

The case study regions were selected in terms of their ability to offer 'successful' experiences of rural transition following accession to the EU. It is, however, important to note that 'success' is a relative term. The success or otherwise of a particular rural area may be measured against the norms for urban areas in its region, or against the regional average. The success of a region might also be measured against the national average or against the average for the EU as a whole. A series of socio-economic and demographic indicators, such as the contribution of the region to the economy as a whole, regional gross domestic product (GDP) per capita, employment and unemployment rates, rate of birth and life expectancy, were considered to assess the success of regions. Attention was also paid to the success of a region in securing and effectively utilising EU funds. With one exception (Skåne) all the regions are classified, using Organisation for Economic Cooperation and Development (OECD) (1996) and national definitions, as predominately or intermediate rural. Despite the diminishing role of agriculture, both in terms of contribution to the regional Gross Value Added (GVA) and labour force, the sector still plays a part in selected regions (Table 3.1).

Table 3.1   The share of agriculture and services within regional economies

	BMW		Navarra		Skåne		Tyrol		Altmark
	1995	2004	1984	2004	1999	2005	1995	2005	2005
Agriculture									
% of GVA	13.4	4.7	7.5	4.9	1.6	1.3	1.8	1.2	…
% of Labour	17.0*	12.4	14.0	5.3	2.4	2.0	…	1.2	5.2
Services									
% of GVA	50.4	63.0	55.0	56.0	60.9	80.8	69.2	70.1	
% of Labour	35.0*	59.2**	47.9	55.7	…	82.0	…	70.0	69.0***

Note: *authors' estimation; ** 2003 data; *** an average figure for rural areas.

Source: compiled from HUBBARD and KAUFMANN, 2008; HUBBARD and WARD, 2007; IRAIZOZ, 2007; COPUS and KNOBBLOCK, 2007; and WOLZ and REINSBERG, 2007

BMW (Ireland) and Tyrol (Austria) were chosen as examples of successful non-agriculturally based rural economic development. BMW is one of the two NUTS2 level regions in the Republic of Ireland.[2] It covers 13 counties and comprises three Regional Authority NUTS3 areas: Border, Midlands and West. The region was formed in the late 1990s as part of the Irish Government's strategy for securing future Structural Funds. Until 2006, the BMW region was

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[2]   Nomenclature of Territorial Units for Statistics (NUTS). NUTS2 corresponds to regions with a population of between 800,000 and 3 million.

eligible for EU Objective 1 funds. In BMW, GDP per capita (Euro/inhabitant) increased from 60% of the EU15 average in 1995 to 106% in 2005 (Table 3.2).

Table 3.2   GDP and GDP per person in selected regions, 1995 and 2005

	Tyrol		BMW		Navarra		Skåne		Saxony-Anhalt*	
	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005
GDP (million €)	15,491	21,383	10,243	31,346	7,772	15,354	22,509	33,630	38,103	40,300
as % of country	8.5	8.7	20.3	19.4	1.7	1.7	11.6	11.4	2.1	2.2
as % of EU15	0.23	0.21	0.15	0.23	0.12	0.15	0.33	0.32	0.60	0.47
as % of EU27	0.22	0.19	0.15	0.28	0.11	0.14	0.32	0.31	0.58	0.44
€/inhabitant	23,772	30,794	11,016	28,253	14,597	26,271	20,271	28,861	14,662	19,458
as % of country	103.1	103.3	76.2	72.6	125.9	125.5	92.3	88.4	62.1	71.5
as % of EU15	131.7	115.5	60.1	106.0	80.8	98.6	112.3	108.3	81.2	73.0
as % of EU27	162.5	137.5	74.2	126.1	99.8	117.3	138.6	128.8	100.2	86.9

Note: *data presented for Saxony-Anhalt region as no data are available for the Altmark Region.
Source: http://epp.eurostat.ec.europa.eu/, accessed August 2010

Although the economic growth in the BMW has been lower than that for Southern and Eastern (Ireland's other NUTS2 region) and lower therefore than the Irish national average, economic growth in BMW has been significantly higher than the norm for the EU as a whole. This is despite the region suffering from substantial out-migration and high unemployment rates during the 1980s. BMW's growth in the late 1990s/early 2000s was driven by light manufacturing and the service sector, rather than 'traditionally rural' economic activities. Recently, employment rates were comparable with national averages and unemployment was amongst the lowest within the regions of the EU15. Regarding agriculture, although most of the BMW area is classified as severely and less severe handicapped, almost half of the total Irish farmed area and more than half of the total farms are located in this region. The region accounts for 40% of total Irish agricultural output.

Tyrol, Austria's most mountainous federal province, is a relatively wealthy region which accounts for 9% of the country's GDP. It is located in western Austria, bordering Italy to the south, Germany to the north, and other Austrian provinces in the west (Vorarlberg) and east (Salzburg and Carinthia). The region

is split into nine political districts and has five NUTS3 subregions. Its economy performed well prior to the country's accession to the EU. Regional GDP per capita is above the national and EU15 averages (Table 3.2). The region also has the highest life expectancy amongst the nine federal provinces. Its gross income is mainly generated from services, with tourism and the associated retail market extremely important. Tyrol's agriculture contributes very little to the regional economy directly, but contributes indirectly by preserving the natural and cultural landscape and is integral to agri-tourism. While at the outset of accession, many feared that Tyrol, and Austria more generally, would suffer from greater (lower cost) competition as part of the European Single Market, its economy and income levels have held up remarkably well (BREUSS, 2000).

The county of Skåne (Sweden) and the Altmark Region of the new German Bundesländer were chosen as regions possessing successful agricultural sectors. Skåne is the most southerly of the Swedish counties, facing the Copenhagen region of Denmark to the west, across the (recently bridged) Öresund channel. Skåne is the most internationally competitive agricultural region in Sweden. It has both physical advantages (in terms of climate, topography, soils) and location advantages (close to a major urban market, export gateways, and a very dynamic labour market, offering many opportunities for off-farm employment). Additionally, infrastructure improvements provide improved opportunities to compete in a wider market since EU accession. Farm structures are also more commercially orientated in comparison with other Swedish regions. It should therefore be viewed as a region that benefited from the wider market access provided by EU membership, rather than from just (national and EU) policy funding that addresses structural or regional handicaps.

The Altmark region consists of the Districts of Salzwedel and Stendal, located in the Federal State of Saxony-Anhalt. It has its own particularities as it is the only region amongst the five selected case studies that belongs to a former socialist country. Altmark possesses a strong agricultural and forestry sector. It was selected as a post-socialist region that successfully transformed its agricultural base, under EU accession, to be competitive on the European market (WOLZ and REINSBERG, 2007). However, its robust primary base has not shielded the region from high unemployment which affected East Germany after unification. Indeed, rural areas within the region suffered a sharp decline of (particularly young) people, who left in search of better employment opportunities.

The Autonomous Community of Navarra (Spain) is located in the north of the country, bordering France to the north, Aragon to the east, the Basque Country to the west, and La Rioja to the south. It combines experience of both successful non-agricultural based rural development and a strong agri-food sector. Although its economy is relatively small (less than 2% of the national economy), Navarra's economic performance is remarkable. The standard of

living (expressed in GDP per capita) exceeds significantly the national average (126%) and EU27 average (117%). With a regional GDP per capita above 75% of the EU15 average consistently since EU accession, Navarra was never classified as an EU Objective 1 region. A higher rate of labour activity than the national average and lower rates of unemployment than the Spanish average also characterise Navarra. Particularly remarkable has been the process of convergence in economic indicators for Navarra and the EU15 average, which accelerated after the mid-1990s. The largest proportion of the region's GDP is accounted for by services. Compared to the national average, Navarra's agriculture is more mechanised and less fragmented. Agricultural labour productivity in the region is significantly higher than the national average. Additionally, the region benefits from a high degree of integration between agriculture and the food industry. The agri-food industry contributes significantly to the regional economy. Moreover, some 8% of the country's agricultural and food exports are provided by Navarra. Rural tourism is also an important economic activity. A particularity of this region is its 'regimen foral', which grants a large degree of legislative and fiscal autonomy.

3.2   Lessons of best practice

The case studies revealed that the economic performance of the regions has been closely tied, but not exclusively hostage, to that of their respective country. Thus, successful rural development should be understood in the particular context of the national economic performance of each Member State. Moreover, there is no single exclusive model or factor behind the development of the selected rural regions, but multiple development trajectories resulting from various combinations of local, regional, national and global forces in specific circumstances. This is in line with other findings in the literature (e.g. FLYNN and MARSDEN, 1995; OECD, 1996; TERLUIN, 2003). The nature of the effects of EU membership on rural transition is shaped by the interplay between the accession experience and the particular socio-economic conditions of each country. Drawing principally on the 39 interviews conducted in the five case studies, key lessons of best practice in managing rural development are summarised as follows.

3.2.1   Ireland and BMW

The creation of appropriate EU structures and institutions which act in accordance with the interests of the country and are able to attract EU funds was seen as essential by Irish experts. Additionally, the design and delivery of the National Development Plans should not be ignored, projects must deliver what was promised to funders. To accomplish this requires strong, sustainable and responsible capacity building. The need for a clear regional strategy, particularly

for balanced development at the regional level, to which the government is committed, is also considered to be very important. The lack of an earlier regional policy in Ireland was perceived by most experts as a missed opportunity for regional development which led to a '*weak urban hierarchy*' and a '*very weak planning system*'. Moreover, decentralisation of responsibilities and a broader involvement of local communities at the regional and local levels should be fostered.

3.2.2 Spain and Navarra

The design and implementation of rural development measures, according to Spanish experts, should be based on a '*territorial and integrated*' approach. The allocation of funds should be made on an assessment of individual needs identified by each rural area and focused on those areas which are '*most in need*'. Better territorial targeting will address specific problems and reduce the gap between lagging and leading rural areas. This seems to be very important as most rural development policy measures are oriented towards agriculture, with rural diversification largely restricted to the promotion of rural tourism and marketing of agricultural products. The wider involvement of regional and local authorities and other local actors in the design and implementation of Rural Development Programmes is preferable. Spanish experts believe that the lack of involvement of local people in the decision-making process impedes rural development. This is linked with the need to invest in social capital (networking) and human capital (at the local level) through education and training.

3.2.3 Sweden and Skåne

In line with the Irish and Spanish interviewees, Swedish experts believed that a more '*devolved*', '*regionalised*' but '*flexible*' Rural Development framework allows for more creative inputs from local actors. This relates to the need to build into the implementation arrangements the facility to respond to regional variations in rural fortunes, preferably through a 'bottom-up' involvement of local representative organisations (e.g. LEADER-like approach).[3] This may not be easy where social capacity is less well developed, which leads to the importance of investing in social capital. An 'inflexible', 'horizontal', 'sectoral' approach (as opposed to a territorial approach) is unlikely to be effective in the medium and long term. The integration of rural development issues in the broader national policy context was perceived as critical for ensuring a long term strategy.

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[3] *Liaison Entre Actions de Développement de l'Économie Rurale* (Links between actions for the development of the rural economy).

3.2.4 Austria and Tyrol

The implementation of an integrated territorial approach is the first lesson which can be drawn from Tyrol, whereby pluriactivity and the preservation of traditions and environment are considered the core for rural-agricultural development. An integrated approach has the potential to create synergies between different policy domains and facilitate interactions between sectors. The implementation of an integrated, territorial approach requires a facilitating governance structure, which should begin with professional collaboration between the national ministries and regional authorities to elaborate integrated, focused, and pragmatic national and regional development plans. In the delivery of programmes and measures, it often paid off to combine administration with responsibility for content and to avoid parallel structures at the local level wherever possible. The creation of an 'institutional memory' through the retention of key persons in administration is beneficial. The latter facilitates informed, open and professional interactions between relevant stakeholders in the sub-regions and localities. Moreover, at the regional level, the involvement of both local stakeholders (bottom–up) and regional authorities (top-down) to develop and implement projects (within initiatives like LEADER) and deliver programmes laid down in national and regional development plans is important.

3.2.5 New German Bundesländer and Altmark

Although the Altmark region has its own particularities, since it is the only region within the five selected case studies that belongs to a former ex-communist regime, there are still some lessons to be learnt since the country's reunification. Indeed, rural areas within the region and East Germany as a whole did not benefit immediately from reunification as harsh economic conditions led to significant out-migration (particularly of young adults who left rural areas in search of better employment opportunities). However, the region tried to build on its strengths. Amongst these, social capital, that is, the partnership between authorities (government and social partners) of different administrative levels, was seen as an important asset and a beneficial tool in the development of rural policy. Although networks developed informally immediately after reunification, they strengthened after 1994 when two districts of the region agreed to collaborate in drafting a joint regional development concept. The concept sought to build on indigenous resources and create regional development priorities, and promote Altmark as a regional brand. Since then, regional activities are based on collaborative discussion, planning and agreement and overall it is believed that this approach should be fruitful in the long-term. There is also a strong '*regional identity*'. However, in order to achieve success in the region it is important to learn how to attract public funds and comply with the administrative requirements of funders.

Overall it can be concluded that the design and implementation of rural development policy measures should be based on a devolved, territorial but integrated approach, with funds allocated according to regional needs. Moreover, in order to reduce the gap between lagging and leading areas, national governments should be committed to designing a balanced regional strategy which ensures a fair distribution of financial resources. This requires policies to enhance local institutional capacity and actors' participation, to mobilise internal resources and cope with the external forces, in a way which allows them to best meet local needs. The dynamic and meaningful participation of local actors in intra-regional and external networking is important and this was captured by one of the Irish interviewees:

'*The representation of rural regions and rural people and its mechanism within the parliament ... is a centripetal force for the development of rural areas. Listen to the voice of people in these areas and their needs. In Ireland, politicians are very rooted in their constituencies and rural areas are represented in the parliament*'. (Irish Expert 1, Academic)

Making the most of EU membership requires an understanding of funding systems and retention of such knowledge – an 'institutional memory'. Linked to this is the creation of appropriate EU structures and (administrative and financial) institutions which act in accordance with the interests of the region and are capable of attracting EU funds.

3.3   Verification of lessons

This section concentrates on the second stage of work, mainly the verification and refining of lessons of best practice using a policy Delphi exercise. TUROFF (1970: 149) defines the Delphi method as a technique for the 'systematic solicitation and collation of informed judgments on a particular topic'. There are four key features of the Delphi approach: respondents are experts in a particular field; responses are anonymous; data collection proceeds as a series of rounds (iterative process); and feedback on the views of others is provided to participants. Sampling is purposeful, selecting those informed about, and specialised in, the particular field in question.

The policy Delphi approach explores a matter of political interest or consequence to identify significant policy relevant variables and contextual parameters, and evaluates the impact, consequences and acceptability of particular options (NOVAKOWSKI and WELLAR, 2008). It may be particularly useful where model-based statistical methods are impractical due to an absence of appropriate historical/socio-economic data (FINK et al., 1991), and thus 'where some form of human judgmental input is necessary' (ROWE and WRIGHT, 1999: 354). Given the interest in understanding success factors for managing rural development, the policy Delphi approach was considered to be

appropriate. This technique has been applied widely in the social sciences but, notwithstanding some notable exceptions (ILBERY et al*.,* 2004; CUNHA and SWINBANK, 2009), rarely used in the fields of rural development and agricultural policy.

Based on the lessons drawn from the case studies, a Delphi questionnaire was devised and pre-tested extensively with 33 experts during the IAMO Forum 2009, at Halle in Germany. The final version of the questionnaire consists of four sections, evaluating: (a) the importance of possible factors stimulating rural economic development in the respondent's region since EU accession; (b) lessons of best practice for implementing rural development policy; (c) preferences for the allocation of funds under CAP Pillar 2; and (d) attractiveness of possible future reforms of the CAP. Each section consisted of closed and open ended questions, whereby respondents could add comments and observations. This chapter considers the last three sections of the questionnaire (b, c and d). The 39 interviewees from the initial case studies were asked to complete the Delphi questionnaire. Experts were drawn from academia, rural development consultancies, farmers' unions, farmers' advisers, Local Action Group members (LEADER), and national and regional government departments. Thirty-five responses were received. To evaluate whether experts in the NMS possess similar attitudes to managing rural development and draw comparable lessons of best practice, a matched sample of respondents was sought. Forty-five experts from five NMS (Bulgaria, Hungary, Poland, Romania and Slovenia) participated. In a second round of the Delphi, respondents received a summary of findings from the first wave and had the opportunity to alter their responses based on the collective feedback. Data collection (first and second rounds) occurred in 2009-2010.

Policy Delphi Findings

Lessons of best practice for implementing rural development policy

Experts were asked to record the extent to which they agree or disagree with a set of propositions on managing rural development. Answers were given on a five point scale (1= strongly disagree, 5 = strongly agree). Table 3.3 reports the mean scores for the total sample and the respective figures for EU15 and NMS experts. If scores of 4 or over are taken to indicate agreement, experts in the EU15 agree on seven of the statements. They verify that responsibilities for planning and implementation should be decentralised to the regional level, the design and implementation of rural policy should be based on a territorial approach, there should be a better balanced distribution of funds between agricultural and non-agricultural measures, and rural development policy should be embedded within a clear regional strategy. A considerable share of rural funds should be invested in human capital through education and training in

rural areas, and local stakeholders and regional authorities should be involved in the development and implementation of projects (e.g. LEADER). Participation of local entrepreneurs in the rural development process should be encouraged.

Table 3.3   Agreement with statements regarding rural development policy

	EU15	NMS	Sample mean	F-test
Responsibilities for planning and implementation should be decentralised to the regional level	4.14	3.91	4.01	
Design and implementation of rural policy should be based on a territorial approach	4.46	4.07	4.24	**
Rural development policy should ensure a more balanced distribution of funds between agricultural and non-agricultural measures	4.26	3.56	3.87	***
New national structures and institutions capable of attracting, administering and monitoring EU funds should be created.	2.26	2.73	2.53	*
New regional structures and institutions capable of attracting, administering and monitoring EU funds should be created.	2.97	3.14	3.06	
Rural development policy should be embedded within a clear regional strategy	4.66	4.22	4.41	**
Capacity building is weak in my region and should be enhanced at all levels	3.34	3.64	3.51	
A lack of social interaction /networking constrains rural development in my region; social capital should thus be improved at all levels	3.26	3.89	3.61	***
A considerable share of rural funds should be invested in human capital through education and training in rural areas	4.03	3.91	3.96	
Local stakeholders and regional authorities should be involved to develop and implement projects, such as with LEADER	4.51	4.02	4.24	**
Participation of local entrepreneurs in the rural development process should be encouraged	4.74	4.18	4.43	***

Note: *significant at 10% level, ** significant at 5% level, *** significant at 1% level
Source: Chapter authors based on SCARLED database

With the exception of four statements, there are statistically significant differences in the ratings of experts from the NMS and EU15. The exceptions are: the decentralisation of responsibilities for planning and implementation at the regional level; the creation of regional structures and institutions capable of attracting, administering and monitoring EU funds; enhancement of capacity building; and investment in human capital through education and training in rural areas. For these statements it can be concluded that there are no significant differences in the pattern of responses. These results may be unsurprising given that during the interviews with experts from the EU15 these statements came out clearly as being important. Moreover, even in countries such as Ireland there appears to be room for improvement, as one Irish expert commented '*Ireland*

does not have a well-developed regional administrative structure; existing structures have limited powers/roles and need to be restructured/reformed' (Irish Expert 7, Regional Policy Officer).

Amongst the statements for which there are statistically significant differences between the two groups of experts, the scores for 'rural development policy should ensure a more balanced distribution of funds between agricultural and non-agricultural measures' and 'a lack of social interaction/networking constrains rural development in my region; social capital should thus be improved at all levels' are noteworthy. For the first statement, NMS experts scored much lower (3.56) than those from EU15 (4.26). For the second statement, it is the other way around, 3.89 for NMS and 3.26 for EU15. Regarding the first statement, one expert from Poland commented:

'Distribution of funds (between agricultural and non-agricultural measures) should be adjusted to the needs of people and thus in accordance with regional strategy. Once we agree that the decisions should be made at regional level there is no clear answer whether it should be more or less balanced. It should simply be the outcome of local conditions' (Polish expert 10, Academic/Researcher).

'Participation of local entrepreneurs in the rural development process should be encouraged' scored highly for both groups, particularly for the EU15 (4.74 – the highest mean).

'I perceive local entrepreneurs as equally important local stakeholders as any other rural inhabitants…. Moreover, participation in rural development process of local entrepreneurs should be a natural course of events if we really talk about rural development…. Finally, irrespective of anyone's participation in the rural development process (whatever we mean by this), it should be voluntary. Otherwise it will not bring any good' (Polish Expert 10, Academic).

NMS experts strongly endorse the notion that 'rural development policy should be embedded within a clear regional strategy'. The scoring for these statements highlights the importance of both local participation and a clear regional strategy, and the findings are in line with the lessons that emerged from the interviews.

Interestingly, the lowest scores allocated by both NMS and EU15 experts were for the creation of 'new *national* structures and institutions capable of attracting, administering and monitoring EU funds' and the creation of 'new *regional* structures and institutions capable of attracting, administering and monitoring EU funds'. This is rather surprising given that during the interviews, particularly with experts from Ireland, Austria and Germany, this emerged as an important lesson. Overall, it can be concluded that with the exception of these two lessons, mean scores were well above three. This implies that although there may be differences in emphasis between the NMS and EU15 experts, overall

they 'agree' or 'strongly agree' with the lessons identified in the first stage of the research.

Division of Second Pillar Funds

Experts were asked to imagine that they could control the allocation of funds under CAP Pillar 2 for their particular region. Table 3.4 details the average percentage of the total amount of funds allocated to each axis, along with the respective figures for EU15 and NMS experts only.

Table 3.4 highlights that the percentage of resources allocated to Axis 1 (improving the competitiveness of agricultural and forestry sector) and Axis 4 (LEADER) by the two groups of experts differ significantly. Experts from the NMS allocated the largest share (42.9%) to Axis 1 and the lowest (10.1%) to Axis 4 (LEADER). In contrast, experts from EU15 allocated 26.6% to Axis 1 and 21.9% to Axis 4. The results show a clear preference of experts from the NMS for more 'farm-centric' measures as opposed to those promoted under LEADER, an initiative which is very novel in these countries. It could be the lack of experience with LEADER-style programmes and 'fear of the unknown' that influenced NMS experts to allocate, on average, only 10% of total Pillar 2 funds to Axis 4. However, LEADER is a cross-cutting measure and thus the share of available funds for Axis 4 could be higher than that expressed here. The shares allocated by the EU15 experts across the four axes reveal a more even distribution of funds with 27% for Axis 3 (quality of life in rural areas and diversification of rural economy), the highest share, and 21.9% for LEADER, as the lowest share. Indeed, the interviews in the selected case studies stressed the importance of LEADER and encouraged strongly the involvement of local people in the rural development process. Previous research on the five EU15 case studies also noted the popularity of LEADER as an instrument for stimulating rural development.

Table 3.4   Mean % of total Pillar 2 funds allocated to Axes by experts

Percentage of total funds that should be allocated to a particular axis	EU15	NMS	Sample Mean	F-test
Axis 1 (improving the competitiveness of agricultural and forestry sector)	26.6	42.9	35.6	***
Axis 2 (improving the environment and countryside)	25.0	23.0	23.9	
Axis 3 (quality of life in rural areas and diversification of rural economy)	27.1	23.6	25.1	
Axis 4 (LEADER)	21.9	10.1	15.1	***

Note: *** Significant at 1% level
Source: Chapter authors based on SCARLED data

Attractiveness of CAP reform options

Experts were asked to assess the attractiveness of different CAP reform options. Each option was assessed on a 5 point scale (1= not attractive at all, 5 = very attractive). They were also given the opportunity to propose new options for reforming the CAP. Table 3.5 lists the mean scores, with options ordered from, on average, most attractive option to least attractive option.

Table 3.5   Mean scores for attractiveness of different CAP reform options

	EU15	NMS	Sample mean	F-test
A reduction of expenditure on CAP Pillar 1 by 20%, money from which is transferred to Pillar 2	3.54	3.11	3.30	
A replacement of current Pillar 1 instruments with payments for environmental services and food security measures	3.34	2.59	2.92	***
A substantial reduction of expenditure on CAP Pillar 1 (e.g. 80%), the money from which is transferred to Pillar 2	2.91	2.33	2.59	*
No change of current CAP structure and funds devoted to it	1.76	2.69	2.29	***
National co-financing of CAP Pillar 1 (similar to Pillar 2)	2.41	2.07	2.22	
A reduction of expenditure on CAP Pillar 1 by 20%, with no transfer of saved funds to Pillar 2	1.97	1.67	1.80	
A complete removal of both Pillar 1 and 2 (full liberalisation)	1.57	1.73	1.66	
A substantial reduction of expenditure on CAP Pillar 1 (e.g. 80%), with no transfer of saved funds to Pillar 2	1.71	1.49	1.59	

Note: *Significant at 10% level, *** Significant at 1% level
Source: Chapter authors based on SCARLED data

Overall, 'a reduction of expenditure on CAP Pillar 1 by 20%, money from which is transferred to Pillar 2' was perceived as the most attractive option. With three exceptions, there are no statistically significant differences between the assessments of the NMS and EU15 experts. The exceptions are: 'a replacement of current Pillar 1 instruments with payments for environmental services and food security measures', 'no change of current CAP structure and funds devoted to it' and 'a substantial reduction of expenditure on CAP Pillar 1 (e.g. 80%), the money from which is transferred to Pillar 2'. The first statement appears more attractive to experts from EU15 (3.34) as opposed to those in the NMS (2.59) who are rather indifferent. These figures reflect differing conceptualisations of the CAP, with experts from the EU15 placing greater importance on environment and food security issues than those from the NMS. The mean score for this statement was the second highest for the EU15. The reform option of 'no change of current structure and funds devoted to it' is unattractive for experts from EU15 (1.76) but is significantly more attractive to NMS experts (2.69).

None of the listed policy options was collectively 'attractive' or 'very attractive' with only one option 'a reduction of expenditure on CAP Pillar 1 by 20%, money from which is transferred to Pillar 2' scoring above 3 for the entire sample. Of particular note is the unattractiveness of the last three statements in Table 3.5 (which focus on reduction of CAP Pillar 1 expenditure by 20% and 80% respectively without transfer of funds to Pillar 2 and a full liberalisation of the CAP), and for which the sample means ranged between 1.59 and 1.80. Experts from the NMS considered 'a substantial reduction of expenditure on CAP Pillar 1 (e.g. 80%), with no transfer of saved funds to Pillar 2' as the least attractive option (1.49) whereas a full liberalisation of the CAP was the least preferred for EU15 experts (1.57). These figures indicate the lack of a clear preferred option for CAP reform. Overall both groups of experts appear reluctant to endorse major changes in the CAP. However, some experts from the EU15 seek a more flexible and more marketed oriented policy that goes beyond the division of funds between agricultural and rural measures:

'*I wouldn't be so fixed on rural areas. I'd rather go for micro-regions at any scale, from very rural to very urban/periurban. This would mean that there would be no pillar, but a sustainable local and regional development instrument….There is no reason to keep the separation between farm business and all the others upright. There is also no DG for shoemakers, isn't it?*' (Austrian Expert 4, Private consultant).

'*Structural funds and agricultural funds need to be aligned with each other*' (Austrian Expert 3, Academic).

'*It is extremely difficult to estimate the demand for non traded agricultural outputs, including public goods. Emphasis should be on letting agricultural returns reach their market level and use the saved funds to stimulate the economy wherever the return is best, rural or otherwise. Economic growth is the best stimulant of rural development*' (Irish Expert 3, Academic).

'*It may be very attractive if … the actual funds of the CAP could be applied with more freedom by regional governments, maintaining the level of available funds*' (Spanish Expert 3, Regional Policy Officer).

3.4   Conclusions

The CAP continues to account for more than 45% of EU expenditure and is an example of deep integration at the European level. It is both a regulatory and redistributive policy, which has undergone a series of reforms, adjusting it from a purely sectorial focus to embracing partially a wider, territorial rural development approach. As a result, the CAP currently includes a very wide variety of measures, ranging from direct payments to farmers to grants for community development and the LEADER approach.

   This chapter examined lessons of best practice for managing rural development drawing on five selected EU15 case studies. The lessons were verified and refined using a policy Delphi survey with 80 experts from both the EU15 and the NMS. The key lessons of best practice identified and verified were as follows. The design and implementation of rural development policy measures should be based on a devolved, territorial but integrated approach, with funds allocated according to regional needs. This requires policies to enhance social interaction and networking (social capital) at all levels, but also to encourage investment in human capital through education and training, particularly in rural areas. A dynamic and meaningful participation of actors in intra-regional and external networking is critical. Thus institutional capacity and local actors' participation (from both private and public sectors) should be nurtured to mobilise internal resources and cope with external forces in a way which best meets local needs. This will involve programmes such as LEADER. Making the most of EU membership requires an understanding of funding systems and the creation of appropriate national and regional structures and institutions capable of attracting, administering and monitoring EU funds. Although there are differences between experts' opinion, with two exceptions, all lessons were rated highly by both EU15 and NMS experts, meaning that in general they agreed or strongly agreed with the identified best practice lessons.

   While difficulties are not unique to such states, there are significant barriers to implementing these lessons of best practice in the NMS. For instance, many NMS have struggled to set up appropriate EU structures and administrative and financial institutions capable of attracting EU funds. It is estimated that Romania between 2007 and 2009 absorbed just over 10% of the Euro 600 million available to it.[4] Thus, capacity to absorb the available funds at national, regional and local governments must be improved, otherwise there is the risk that poor Member States (such as Romania) will actually be long-term net EU contributors (SIMIONESCU et al., 2009). There is a need to improve the ability of both central and local authorities to prepare, select and implement projects, particularly encouraging the development of public-private partnerships since most EU projects require co-financing. In many NMS, local institutional capacity and actors' participation remains weak, particularly in rural areas. One problem in the NMS has tended to be excessive turnover of administrative staff linked to the politicisation of the civil service. This has impeded the development of a supportive 'institutional memory'.

   The most severe implementation problems in the NMS arise with novel instruments such as LEADER. Interestingly, when experts from NMS were asked to distribute the rural development funds for their particular region across

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[4] http://www.euractiv.ro/uniunea-europeana/articles%7CdisplayArticle/articleID_19080/ Fondurile-UE-atrase-in-2007-2009-circa-600-milioane-euro-putin-peste-10-din-suma-disponibila.html, accessed August 2010.

the four axes, they allocated the largest share (43%) to Axis 1 and the lowest share (10%) to Axis 4 (LEADER). This is in contrast to experts from the EU15, who preferred a more even allocation of financial resources across the four axes. Although experts from the NMS support the involvement of stakeholders and regional authorities in the development and implementation of projects such as LEADER, when it came to the allocation of funds they were less convinced of its merits. This may reflect the lack of experience in dealing with such programmes or a fear that partnerships will be dominated by local elites. For example, FURMANKIEWICZ et al. (2010: 60) consider local authorities in Poland to be populated by local elites who dominate partnerships and fail to engage with other local community partners, representing a 'high-risk … with regards to their abilities to make decisions on public spending'.

Overall, both EU15 and NMS experts appear reluctant to endorse major changes to the CAP. Although the sample is small and not statistically representative for each country, the research suggests that no consensus on the appropriate direction for future reform of the CAP exists. This is not a simple EU15 – NMS divide but rather within both groups there is no clear, preferred option for reform. While NMS experts are significantly happier with the current CAP and less likely to endorse a switch to payments for environmental services and food security measures, no single option for reform is strongly endorsed by either group.

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Part Two

Adaptation of Rural Livelihoods
Multi-country Comparisons and Country Case Studies
in Five New Member States

Chapter Four

A Comparative Analysis of Rural Labour Markets

Johan F.M. Swinnen and Kristine Van Herck

Chapter 4 analyses changes in the agricultural labour market in both the NMS and the EU15. With EU accession and the high economic growth rates in past years, structural change in the NMS farming sector accelerated, and in recent years the decline in the agricultural workforce has been stronger in the NMS than in the EU15. What makes this spectacular decline in agricultural employment even more striking is that this evolution is happening despite massive EU subsidies, which aim to support farmers' income. By combining macro and micro evidence on agricultural labour adjustments in the EU15 and the NMS we analyse the impact of subsidies and other factors that affect the decision to leave the agricultural sector. Key policy relevant results are that there is a scope for (i) better targeting of agricultural subsidies; (ii) improvement in human capital; (iii) investment in infrastructure.

With European Union (EU) accession and the high economic growth rates in past years, structural change in the farming sector of the New Member States (NMS) accelerated, and in recent years the decline in the agricultural workforce has been stronger in the NMS than in the established Member States (EU15). However, despite the declining share of agricultural employment in the NMS, the agricultural sector remains important and it accounted for 4% of gross domestic product (GDP) and 15% of total employment in 2008. This is very different from the EU15 where the share of agriculture in GDP is only 1.7% and its share in employment is 3%.

These aggregate employment data hide important differences among countries and regions (Figure 4.1). In general, we can distinguish three groups: the first group includes the Czech Republic, Slovakia and Estonia where the share of agriculture in total employment is less than 5%, which is approximately the same level as in the EU15. The second group includes Latvia, Lithuania, Hungary, Slovenia and Poland where agricultural employment ranges between 5% and 15% of the total employment. This is in the range of the poorer, southern countries of the EU15, such as Greece and Portugal. Finally, the third group includes Bulgaria and Romania, where agricultural employment is

approximately 20% of total employment in Bulgaria and almost 30% of total employment in Romania.

Figure 4.1   Agricultural employment in the NMS and selected EU15, 2008
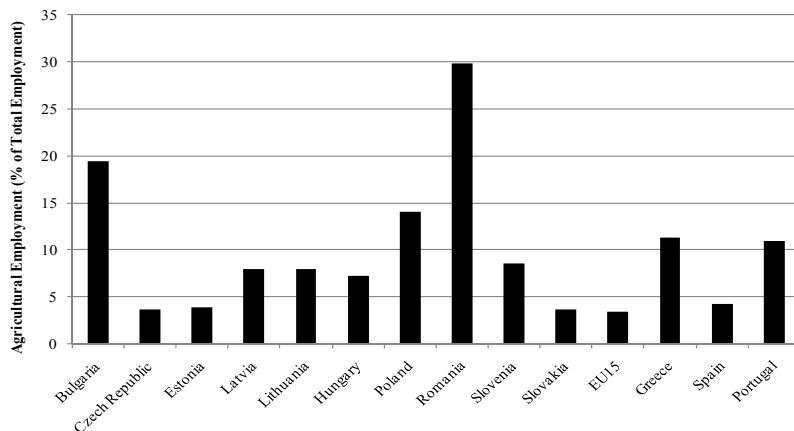
Source: Eurostat, 2010

Besides differences in the absolute levels of agricultural employment, there are also large differences in the evolution of agricultural employment since transition. In countries such as Hungary and the Czech Republic, agricultural employment had already declined strongly in the early to mid 1990s and has since declined further (Figure 4.2).[1] In other countries, such as Slovenia, Latvia, Lithuania and Poland – countries with many small farms – there was much less outflow of labour in the first half of the 1990s. In fact, in several of these countries agriculture acted as a 'buffer' and absorbed labour during early transition.[2] In these countries, agricultural employment gradually started declining in the second half of the 1990s as institutional reforms reduced labour constraints, and alternative employment developed. In Romania, on the other hand, agricultural employment continued to increase until 2001. In fact, as Figure 4.2 illustrates, Romania is the only country where employment increased in the 1996-2001 period. The increase in the latter part of this period was caused mainly by the strong general economic decline in the 1996-1999 period, when the decline in industrial employment caused people to fall back on farming as a

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[1] Chapter 8 models the structural labour adjustments for individual farms in Hungary.

[2] For an explanation of the various 'patterns' of labour adjustments in the Central and Eastern European (CEE) countries and how these relate to the restructuring of the farms, see SWINNEN et al. (2005).

survival strategy. However, since 2001 agricultural employment has started declining in Romania.

Moreover, since 2001, agricultural employment is declining in all the NMS, a trend that we expect to continue for the coming decades and which is similar to what happened in the past decades in all EU15. For example, in Spain, where at the beginning of the 1960s approximately 50% of the population was employed in the agricultural sector, currently only 4% of the population is employed in agriculture (Figure 4.3). However, what makes this spectacular decline in agricultural employment even more striking is that this evolution is happening despite massive EU subsidies, which aim to support farmers' income. This finding is similar to the simulation results of Chapter 8 for individual farms in Hungary which found a considerable number of farm exits due to demographic patterns in combination with non-farm labour opportunities.

In Section 4.1 of this chapter, we study the relationship between EU subsidies and agricultural employment in more detail. In the next section, we estimate econometrically the impact of subsidies and other determinants on labour adjustment in EU agriculture. Finally, in the last section of the chapter we use these insights to formulate policy priorities.

Figure 4.2   Change in agricultural employment in the NMS since the start of the reforms
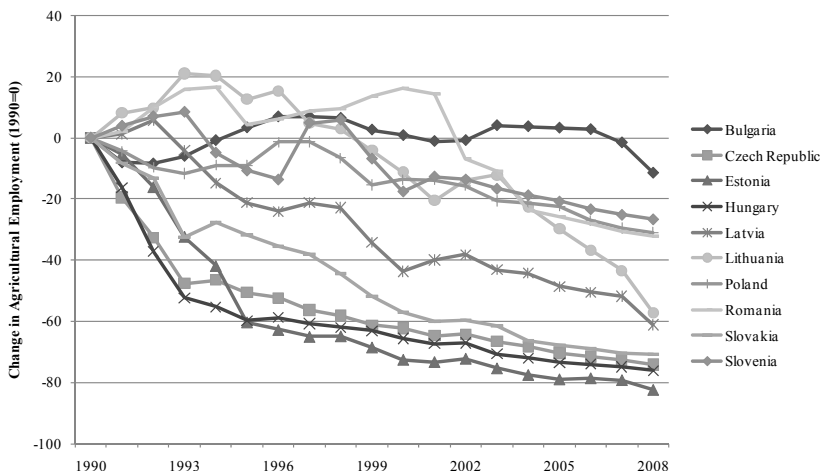
Source: ILO, 2010: EUROSTAT, 2010: national statistics

Figure 4.3   Change in agricultural employment in selected EU15
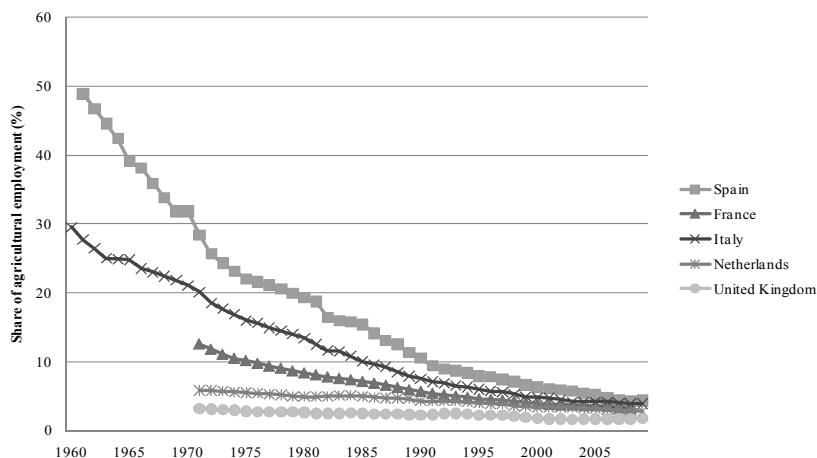
Source: EUROSTAT, 2010; national statistics

4.1   Agricultural subsidies and employment

In the period 2005-2009, the EU spent roughly Euro 50 billion per year in supporting farmers from the budget – and much more if one takes into account support through market regulations as well, up to a total of around Euro 87 billion in 2009, which corresponds to more than Euro 238 million per day (OECD, 2010). However, despite these huge subsidies, agricultural employment in all European countries continued to decline. Under the assumption of revealed preference, this is an indicator that the Common Agricultural Policy (CAP) payments have not been effective in achieving their objectives of ensuring a 'fair standard of living' (SWINNEN and VAN HERCK, 2010).

In fact, somewhat paradoxically, global empirical evidence suggests that the outflow of labour from agriculture (hence the decline in the farm population) has been strongest in those countries that have most heavily supported agriculture. Data from the Organisation for Economic Cooperation and Development (OECD) show that over the past two decades (the period 1987-2007) there is a negative correlation between the change in agricultural support (captured by the PSE indicator[3]) and the change in agricultural employment (see Figure 4.4). This is inconsistent with the notion that agricultural support has a significant impact on agricultural employment in the long run.

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[3]   The % PSE (producer support estimate) measures the share (in percentage terms) of the gross value of agricultural output which is due to government support.

Figure 4.4   Change in agricultural employment and change in percentage PSE
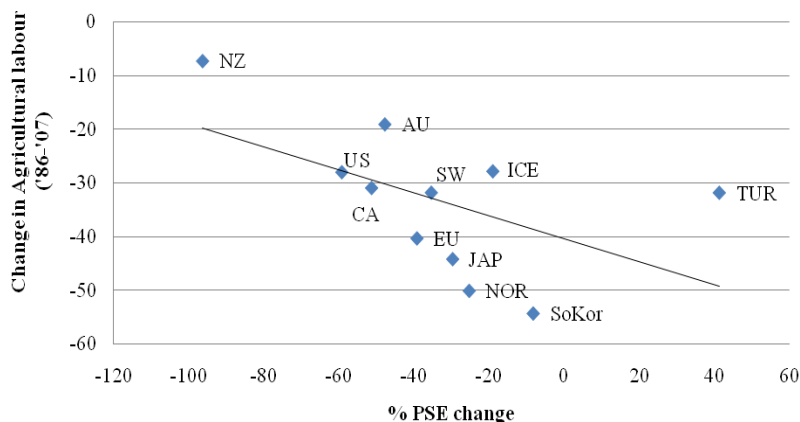
Note: Figures for the EU are based on the EU15. Other countries included in the graph are Australia (AU),   Canada (CA), Iceland (ICE), Japan, (JAP), New Zealand (NZ), Norway (NOR), South Korea (SoKor), Switzerland (SW), Turkey (TUR) and the United States (US).
Source: SWINNEN and VAN HERCK, 2010

   Moreover, evidence from inside the EU suggests similar conclusions at the sector level: (sub)sectors within agriculture which have received most support from the government have been characterised by the strongest outflow of labour, and vice versa: those sectors which have done relatively well in keeping employment up have received the least amount of subsidies. To illustrate this, Figure 4.5 presents the share that different subsectors have in the total producer support estimate in the EU in the period 1990-2007. These figures show that the most heavily subsidised sectors are the production of cereals, dairy and ruminants (cattle, goats and sheep). However, despite these large subsidies, employment in these sectors rapidly decreased. For example, Figure 4.6 illustrates how in Belgium, the decrease in employment in the most heavily subsidised farm sectors was 31% in the period 1990-2007, whereas in subsectors which received much less support, such as fruit production and horticulture, the decrease was only 8% in the same period.

Figure 4.5   Average Producer Estimate Support (PSE) in different subsectors (1990-2007)
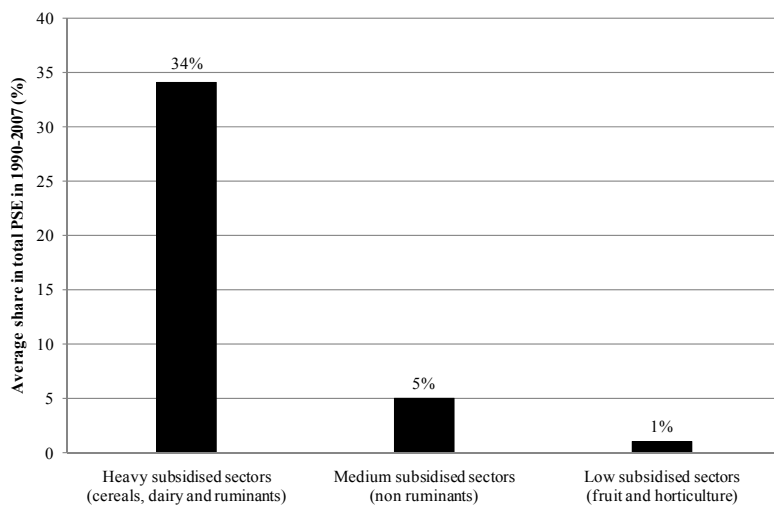
Source: OECD, 2010

Figure 4.6   Change in agricultural employment in Belgium in different subsectors (1990-2007)
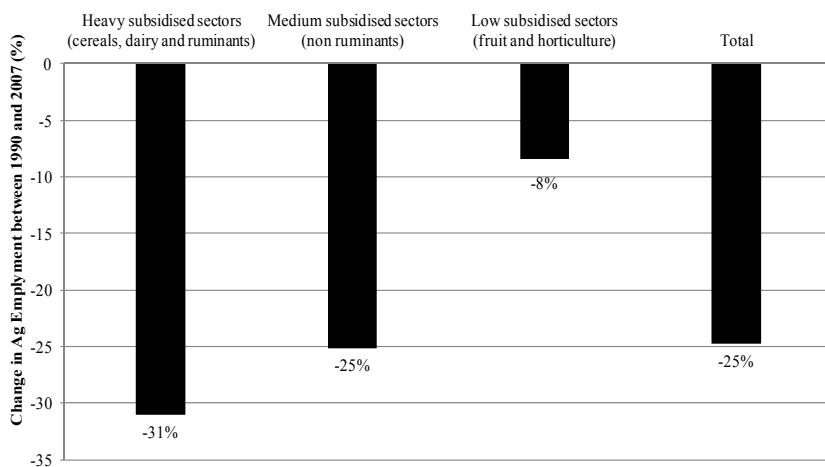
Source: EUROSTAT, 2010

4.2 Determinants of labour adjustments in rural labour markets[4]

In this section, we analyse econometrically the impact of agricultural subsidies and other determinants, including human capital and employment alternatives, on labour adjustments in the agricultural sector by combining individual and regional data of the European Labour Force Survey (EULFS), the EU New Cronos Database and the Farm Accountancy Data Network (FADN). [5]

4.2.1 Theory: a simple exit model

In the early migration literature inter-sectoral labour flows, which are the driving force behind structural change in the agricultural sector, are studied using the two sector model of TODARO (1969) and HARRIS and TODARO (1970). In this model, individuals choose to migrate from one sector to another based on an expected income maximisation objective function. However, households make decisions not merely based on income maximisation but more generally on the maximisation of utility derived from income and non-income benefits.

In the model, we assume that there are two sectors in the economy: the agricultural sector and the non-agricultural sector (which includes for example, retirement).[6] The agricultural sector is represented by subscript *A* and non-agricultural sector by subscript *NA*.

According to TODARO (1969) and HARRIS and TODARO (1970), the discounted utility of an individual working in agriculture/non-agriculture can be defined in Equation 4.1:

$$U_A = \int U\big(Y_{A,t}, h_{A,t}, Z_{A,t}\big)\, e^{-rt} dt$$

$$U_{NA} = \int U\big(Y_{NA,t}, h_{NA,t}, Z_{NA,t}\big)\, e^{-rt} dt$$

Equation 4.1   Utility of an individual working in the agricultural/non-agricultural sector

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[4]   This section is based on VAN HERCK (2009).

[5]   There are already several studies that have analysed the determinants of labour adjustments in agriculture in the EU15 (e.g. WEISS, 1999; PIETOLA et al., 2003; GLAUBEN et al., 2006; BREUSTEDT and GLAUBEN, 2007) and in the NMS (e.g. SWINNEN et al., 2005). However, little attention has been given to the driving forces behind the inter-sectoral labour flows (BOJNEC and DRIES, 2005 for Slovenia; INGHAM and INGHAM, 2005 for Poland, MÖLLERS and FRITZSCH 2010 for Croatia). Chapter 5 in this edited volume also addresses structural labour change in the rural economy (agricultural and non-agricultural sectors) for the five SCARLED case countries.

[6]   See Chapter 8 for a detailed case study of the impact of demographic characterstics, such as the ageing of the farm population, on structural change in Hungary.

where $Y_{A,t}$ /$Y_{NA,t}$ is the income[7] of employment in the agricultural sector/non-agricultural sector in the time period t, $h_{A,t}$ /$h_{NA,t}$ is the number of hours worked in the agricultural/non-agricultural sector in the time period t, $Z_{A,t}$ /$Z_{NA,t}$ is the vector of exogenous utility shifters, in time period t, and r denotes the discount rate.

Individuals will make their migration decision by observing inter-sectoral income differences. Higher incomes in other sectors will stimulate people to move to other sectors. The income that is relevant is not necessarily current income but rather the total of current and discounted future income streams over the period of employment. Note that the expected income differences are influenced by the probability of finding employment in the sector. In this sense, one can argue that high inter-sectoral wage differences are irrelevant if it is unlikely that one can obtain employment in the high-income sector. The probability of generating an income in the other sector depends on economic conditions (external factors), such as local employment demand, but also on non-economic conditions (internal factors), such as human capital variables, including age, gender and education level (RIZOV and SWINNEN, 2004; HUFFMAN, 1980; MÖLLERS and BUCHENRIEDER 2005).[8]

Besides income differences, individuals also take into account other benefits associated with employment in a specific sector. For instance, some people may prefer working in agriculture because of non-pecuniary benefits, e.g. for cultural reasons or because they prefer 'being their own boss' rather than working in a company, etc.[9] Alternatively, better social conditions and less income risk in other jobs may be attractive features of employment outside farming.

Hence, individuals will base their labour supply decision on the utility differential. However, the individual will also take into account the cost associated with switching from the agricultural sector to the non-agricultural sector, the inter-sectoral relocation costs, $CT_{A,NA}$. These costs can include the

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[7]   Income (Y) depends on earnings in the agricultural/non-agricultural sector, which depends on the wage rate, $W_{A,t}$ /$W_{NA,t}$ and the hours worked, $h_{A,t}$ /$h_{NA,t}$, in the agricultural/non-agricultural sector, accounting for the probability, $\Phi_{A,t}$ /$\Phi_{NA,t}$, of finding employment in the agricultural/non-agricultural sector in time period t:

$$Y_{A,t} = \Phi_{A,t} W_{A,t} h_{A,t}$$
$$Y_{NA,t} = \Phi_{NA,t} W_{NA,t} h_{NA,t}$$

[8]   Chapter 2 of this edited volume provides a detailed overview of the internal and external factors affecting structural change (see Section 2.1 and Figure 2.1) and in Chapter 1 the reader can find a detailed discussion of the sustainable livelihood framework (SLF), which is a conceptual framework that identifies both external and internal factors that affect farm survival.

[9]   The econometric model in Chapter 5 in this volume explicitly incorporates, for instance, non-pecuniary preferences in the decision process of shifting labour sectors.

physical reallocation costs, but also the cost of searching for other employment (e.g. for your new job you will need a car to travel to the closest town). Human capital variables will affect this cost since, for example, better educated individuals or those with specific social capital, i.e. contacts, can have a strong advantage over others because of better access to information and lower transaction costs (BOJNEC and DRIES, 2005). An additional factor is the attitude of individuals towards risk because risk-averse individuals are more susceptible to uncertainty about the outcome of the search activity. In addition, the inter-sectoral relocation costs are also affected by farm characteristics, such as the size of the farm or the existence of owned land (GLAUBEN et al., 2006; BREUSTEDT and GLAUBEN, 2007; GOETZ and DEBERTIN, 2001).

Taking into account the inter-sectoral relocation costs ($CT_{A,NA}$), an individual will base his/her labour supply decision on the net utility, represented by $V_{A,NA}$:

$$V_{A,NA} = \max \left\{ U_{NA} - U_A - \int CT_{A,NA} e^{-rt} dt \right\}$$

Equation 4.2   Individual decision on whether to leave the agricultural sector or to stay in agriculture

If $V_{A,NA} > 0$, the worker will decide to leave the agricultural sector for the non-agricultural sector. If $V_{A,NA} < 0$, the worker will stay in the agricultural sector.

In summary, labour adjustments are affected by a combination of different factors.

First, individuals will make the choice to shift between sectors based on the characteristics of the rural labour market, such as the sectoral wage and the level of unemployment in the region, which affects their employment alternatives (external factors in Figure 2.1). From this perspective, it will also be important to analyse the role of the CAP subsidies, which might have a large impact on the income in the agricultural sector and hence on employment.

Second, when deciding on their individual labour supply, individuals will take into account their farm, personal and household characteristics as these will affect both the probability of finding alternative employment and the transaction costs associated with switching between jobs (internal factors in Figure 2.1).

4.2.2 Model specification

Following the theoretical specification of the model, we estimate two model specifications. First, we use a logit model that estimates the probability of leaving the agricultural sector. However, it is possible that the effect of some of

the variables depends on the destination of the individual leaving the sector, e.g. the effect of age can be expected to be different between individuals that leave agriculture for the industry/services sector and individuals that leave employment. Therefore, in order to increase the identification, we estimate a multinomial logit model that estimates the probability of labour flowing from agriculture into the industrial or services sector, into unemployment and out of labour force.

We assume that Y_{ijk} is the discrete choice of an individual i living in a region j from $K+1$ alternatives (remain in the same occupation (0) or move to one of the K alternatives) and U_{ijk} is the utility of an individual i living in region j of the choice of the alternative K. We will consider U_{ijk} as an independent random variable with a systematic component u_{ijk} and a random component e_{ijk}, such that

$$U_{ijk} = u_{ijk} + e_{ijk}$$

Equation 4.3   Utility of the alternative k for an individual i, living in a region j

In the multinomial logit model, the expected utilities u_{ijk} are modelled in terms of the characteristics of the individuals (x_{ij}), [10] so that

$$u_{ijk} = \beta'_k x_{ij}$$

Equation 4.4   Expected utilities in the multinomial logit model

The multinomial logit model allows us to estimate a β_k corresponding to each outcome category:

$$P(Y_{ij} = k) = \frac{e^{\beta'_k x_{ij}}}{\sum_{m=0}^{K} e^{\beta'_m x_{ij}}}$$

Equation 4.5   Multinomial logit model

The estimated equations provide a set of probabilities for the $K+1$ choices. The model, however, is unidentified in the sense that there is more than one solution for the β_k, that leads to the same probabilities for $Y = k$. A convenient normalisation that solves the problem is to assume that $\beta_0 = 0$. The remaining coefficients β_k measure the change relative to the $Y = 0$ group. This means that we compare each outcome with the base group, which are conveniently the

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[10] Note that x_{ij} can contain a variety of factors. Obviously it can contain variables that are determined at the individual level variables, but also variables that are determined at the regional level.

individuals that did not exit the agricultural sector. The probabilities are now given by:

$$P(Y_{ij} = k) = \frac{e^{\beta'_k x_{ij}}}{1 + \sum_{m=0}^{K} e^{\beta'_m x_{ij}}} \quad for \ k = 1,...K$$

$$P(Y_{ij} = 0) = \frac{1}{1 + \sum_{m=0}^{K} e^{\beta'_m x_{ij}}}$$

Equation 4.6   Normalisation of the multinomial logit model

4.2.3 Description of the variables

The independent variables used in the econometrical analysis are derived from a sub-sample of the EULFS, whereas the dependent variables are derived from the EULFS, the EU New Cronos database and the FADN. Table 4.1 gives an overview of the explanatory variables used in the econometrical analysis.

The independent variables in the logit and multinomial logit model capture labour adjustments in the period 2005-2006. All 87,105 individuals in the sub-sample of the EULFS that we use in the econometric analysis were working in the agricultural sector in 2005. The data for 2006 allows us to identify whether an individual was still working in agriculture and if not, in which sector s/he was working in 2006. In the logit model, the dependent variable is a dummy variable, EXIT, which takes a value of 1 if the individual left the agricultural sector in 2006 and 0 otherwise. In the multinomial logit model, the dependent variable, DESTIN, is a categorical variable that takes the value of 0 if the individual stayed working in agriculture in 2006, a value of 1 if the individual left the agricultural sector for the industrial or service sector in 2006, a value of 2 if the individual left agriculture and became unemployed in 2006 and a value of 3 if the individual left the workforce permanently in 2006, because s/he retired or became permanently disabled.

The independent variables are both individual and regional variables. Based on the EULFS, we are able to identify the NUTS2[11] regions in which the individual was living. This allows us to use regional variables from the EU New Cronos database and FADN in addition to the individual characteristics provided by the EULFS.[12]

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[11] Nomenclature of Territorial Units for Statistics.

[12] Preferably we would base our analysis on individual (household) level data instead of a combination of individual and regional data. However, at the time of our research, representative individual data combining information on intersectoral labour flows and farm subsidies were not availiable at the EU-level. Nevertheless, we think that our analysis

A first set of explanatory variables measure the impact of regional income variables on inter-sectoral labour flows. These include variables that measure the average level of agricultural subsidies in a region and a variable that measures the average return to labour in the agricultural sector compared to other industries in the region. These variables are based on income in 2005. The average subsidy per worker is measured by the variable, SUBS, which is extracted from the FADN regional database and controlled for differences in purchasing power parity (PPP) across countries. SUBS is specified as the natural logarithm of the regional average amount of subsidies per agricultural worker. To measure the returns to labour in the agricultural sector, we use a variable similar to the one used by BARKLEY (1990). INCDIFF is the ratio of the weighted average wage in the region and the agricultural income in the region. The average nominal wage comes from the EUROSTAT AMECO database and is weighted by the NUTS2 regional GDP from the EU New CRONOS Database. The agricultural income comes from the FADN regional database and is the net income that the agricultural worker receives from agricultural activities minus agricultural subsidies.

A second set of explanatory variables represent variables that relate to regional farm characteristics. SMALL, OWNED, LIVESTOCK and CEREALS are regional variables that come from the EU New CRONOS database for the year 2005. The effect of the farm structure on the labour adjustments is measured by the variables SMALL and OWNED. SMALL is the percentage of all farms in the region that have a farm size smaller than 2 hectares (ha), whereas OWNED is the percentage of owned land in the region. To account for differences in production patterns, we include the variables LIVESTOCK and CEREALS, which measure respectively the percentage of livestock farms in a region and the percentage of farmers with cereal production in the region. These shares might reflect different production conditions as well as different commodity-specific market conditions.

A third set of explanatory variables are the individual variables that relate to personal characteristics, such as age, education, gender and marital status. These data are extracted from the EULFS. The effect of age is measured by the variable AGE, which is the age of the individual expressed in years. In other

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can provide useful insights on the impact of subsidies on agricultural employment for two reasons. First, under some circumstances it is not only the individual subsidy that the farmer receives which affects the labour allocation of the farmer, but also the subsidies that other farmers in the region receive. For example, in the case that subsidies are capitalised in land prices, it is not the individual subsidy of the farmer that drives up the price of land, but rather the regional average subsidy that is capitalised in land rents. Second, the few studies that have analysed the impact of subsidies on agricultural employment in the EU15 (BREUSTEDT AND GLAUBEN, 2007; GLAUBEN et al., 2006) have used regional data, but by combining regional data with individual data we increased the explanatory power of our model.

specifications of the model, the authors also included the squared value of the age of the individual. However, this variable turned out to be insignificant and did not change the results for the other variables. The effect of education is measured by three variables, HIGHEDU, MEDEDU and AGEDU. HIGHEDU is a dummy variable that takes a value of 1 if the individual received a high level of education (higher than secondary education) and a value of 0 otherwise. MEDEDU is a dummy variable that takes a value of 1 if the highest education level of the individual is secondary education and a value of 0 otherwise. AGEDU is a dummy variable that takes a value of 1 if the individual received any agricultural education and a value of 0 otherwise. The effect of gender is measured by a dummy variable, GENDER, that takes a value of 1 if the individual is male and 0 otherwise. Finally, MARRIED is a dummy variable that takes a value of 1 if the individual is married and 0 otherwise.

A fourth set of explanatory variables is related to the job characteristics that could give non-pecuniary benefits of working in agriculture. These data are also extracted from the EULFS. SELFEMPL is a dummy that takes a value of 1 if the individual was self employed in 2005 and a value of 0 otherwise. FAMILYWORK is a dummy that takes a value of 1 if the individual was working as family worker in 2005 and 0 otherwise.

Finally, the last set of explanatory variables are variables related to the population density of the region in which the individual is living. This is a measure for other employment alternatives in the region. The variables, DENSE and INTERDENSE, are subtracted from the EULFS. DENSE is a dummy variable that takes a value of 1 if the individual is living in a densely populated area. This means that the individual is living in a contiguous set of local areas, each with a population density of more than 500 inhabitants/km² and the total population of the set is at least 50,000 inhabitants. INTERDENSE is a dummy variable that takes a value of 1 if the individual is living in an intermediate densely populated area. This means that the individual is living in a contiguous set of local areas, not belonging to a densely populated area and in each of the local areas the population density is at least 100 inhabitants/km². The set should have a total population of at least 50,000 inhabitants or be adjacent to a densely-populated area. In addition to these variables we also add a dummy variable NMS that takes a value of 1 if the country became a member of the EU in 2004 and 0 otherwise.

Table 4.1   Description of the data set

Description		Mean (Std. Dev)
Income characteristics (regional)		
SUBS	Natural logarithm of subsidies per worker in PPP € in 2005	7.60 (1.12)
INCDIFF	Ratio of the average wage and the agricultural income per worker in 2005	1.81 (0.78)
Farm characteristics (regional)		
SMALL	Percentage of small farms (<2 ha) in the region in 2005	66.01 (20.89)
OWNED	Percentage of owned land in the region in 2005	64.57 (22.08)
LIVESTOCK	Percentage of livestock farmers in the region in 2005	58.55 (21.11)
CEREALS	Percentage of cereals farmers in the region in 2005	45.08 (21.80)
Personal characteristics (individual)		
AGE	Age of the individual in years	47.34 (13.14)
HIGHEDU	Dummy that takes a value of 1 if the individual received tertiary education and 0 otherwise	0.05 (0.21)
MEDEDU	Dummy that takes a value of 1 if the individual received secondary education and 0 otherwise	0.39 (0.49)
AGEDU	Dummy that takes a value of 1 if the individual received agricultural education and 0 otherwise	0.14 (0.35)
MARRIED	Dummy that takes a value of 1 if the individual is married and 0 otherwise	0.74 (0.44)
GENDER	Dummy that takes a value of 1 if the individual is male and 0 otherwise	0.62 (0.49)
Job characteristics (individual)		
SELFEMPL	Dummy that takes a value of 1 if the individual was self employed and 0 otherwise in 2005	0.57 (0.49)
FAMILYWORK	Dummy that takes a value of 1 if the individual was a family worker and 0 otherwise in 2005	0.13 (0.33)
Population density/NMS characteristics (regional)		
DENSE	Dummy that takes a value of 1 if the individual is living in a densely populated area and 0 otherwise	0.07 (0.25)
INTERDENSE	Dummy that takes a value of 1 if the individual is living in an intermediate densely populated area and 0 otherwise	0.23 (0.42)
NMS	Dummy that takes a value of 1 if the individual is in an NMS and 0 otherwise	0.27 (0.45)

Source: Van Herck, 2009

4.2.4 Regression results

Table 4.2. shows the estimation results of the logit model, while Table 4.3. shows the estimation results of the multinomial logit model. In all model specifications, estimations are based on Huber corrected standard errors.[13]

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[13] Observations within one region are likely to have characteristics that are more similar than observations drawn from different clusters. This difference between intra-cluster and inter-cluster correlations will most likely result in heteroscedasticity. In order to have consistent estimates for these models we need to correct the standard errors by allowing correlation within the observations in one region.

According to the likelihood ratio (LR) chi square statistic, the two models are significant at the 1% level.

Farmers that live in regions with higher subsidies per worker are more likely to exit agriculture. An increase of 1% in the average subsidy per worker increases the probability of leaving the agricultural sector by 15% (or 1 percentage point). In addition, subsidies are found to increase the probability of exit of the two most important groups of individuals that leave the agricultural sector, namely the ones that leave agricultural for industry or services and individuals that leave employment permanently. Looking at the marginal effects evaluated at the mean, we find that a 1% increase in subsidies increases the probability of moving into the industrial or service industry by 8% (or 0.2 percentage point). Similar, an increase of 1% in subsidies increases the likelihood of moving out of employment by 20% (or 0.7 percentage point).

Figure 4.7   Evolution of land rents in selected NMS
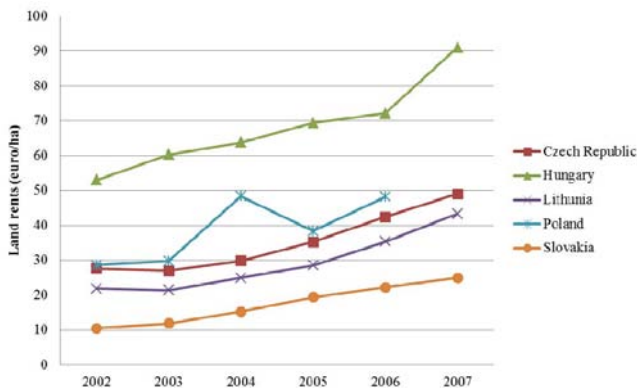
Source: VRANKEN and SWINNEN, 2009

This result is rather counter-intuitive since subsidies are supposed to have a positive impact on agricultural labour. However, there are several hypotheses put forward in the literature postulating that this may not be the case. First, depending on the nature of the payment, subsidies are expected to be capitalised in farm input prices, such as land prices and fertiliser prices (FLOYD, 1965; CIAIAN and SWINNEN, 2006, 2009; VRANKEN and SWINNEN, 2009). For example, in the NMS where subsidies are linked to land use, they seem to drive up land prices (Figure 4.7). If subsidies are unequally divided over the farm population and the capitalisation in farm input prices is high, it is possible that the net income of a farmer who receives less than the average subsidy even decreases compared to a situation where there are no subsidies. Second,

subsidies make it easier for the farmers who stay in agriculture to buy out those farmers that are seeking to exit the sector, accelerating the rate of exits (GOETZ and DEBERTIN, 2001). Third, subsidies are also found to accelerate the substitution of labour by capital (GOETZ and DEBERTIN, 1996). Finally, in the long run perspective, subsidies relax farmers' credit constraints and they may use the subsidies to invest in education for their children. Since highly educated children are less likely to work in agriculture, subsidies may reduce the agricultural labour supply in the next generation (BERLINSCHI et al., 2010).

The other variable that is related to income, INCDIFF, is not found to have an impact on the decision to leave the agricultural sector. However, it is possible that INCDIFF affects the different groups that leave the agricultural sector in a different way. The income generated in the agricultural sector is considerably lower than in other economic sectors, which will stimulate farmers willing to work in another sector to do so. However, the lower income in the agricultural sector might also motivate a farmer who wants to stay in the agricultural sector to work longer before retiring. First, during his/her lifetime the farmer receives a lower income and s/he needs to compensate for the lower income by working longer. Second, in general pension payments for farmers are lower. We find that INCDIFF has a negative and significant impact on the probability of moving to industry or services. This implies that, when the difference between the regional average wage and the agricultural income is larger, farmers are more likely to leave the agricultural sector for a job in the better paid sector. We find no significant impact of INCDIFF on the probability of leaving the workforce permanently.

Differences in the agricultural production structures and the degree of specialisation are found to affect labour adjustments. In regions with a higher percentage of livestock farms, the probability of leaving the agricultural sector is lower, whereas in regions with a higher share of cereal farmers the probability is higher. These results are consistent with the findings by BREUSTEDT and GLAUBEN (2007) who find that farmers living in regions with more livestock farming are less likely to leave the agricultural sector while the opposite is true for farmers living in regions with more cereal production. This could indicate that farmers who have more livestock production face higher sunk costs when leaving the agricultural sector compared to farmers with cereal production.

With regard to the socio-economic characteristics of the individual, we find similar results to BOJNEC and DRIES (2005) or MÖLLERS and FRITZSCH (2010). Age is found to have a significant impact on the decision to leave the agricultural sector. Older farmers are more likely to leave the agricultural sector. However, when considering the effect of AGE on the different groups that left the agricultural sector, we find a different effect in the different groups. Young farmers are more likely to leave for industry or services or become unemployed: being older reduces the probability of finding alternative employment, and

younger individuals can benefit from the gains of switching sectors, such as a better income or better working conditions, over a longer period in time.

The level of education is not found to have a significant impact on the decision to leave the agricultural sector. However, when considering the impact of education in the multinomial logit model, we find a positive and significant coefficient of HIGHEDU and MEDEDU for labour flows out of agricultural employment into industry or services, meaning that individuals with secondary or tertiary education are more likely to leave agriculture for a job in industry or services. In addition to the highest level of education obtained, the type of education (AGEDU) influences the probability of leaving the agricultural sector. If farmers received agricultural education, they are less likely to leave the agricultural sector since leaving the agricultural sector would mean a loss of the skills that they have accumulated during their education.

Different studies have analysed the effect of gender on the decision to leave agriculture, but found different results. On the one hand, men are traditionally expected to be more likely to move to a different employment status than women because men are often observed to play a more active role in labour market participation (BOJNEC and DRIES, 2005). However, some studies indicate the role of the spouse in earning an additional non-farm income (HUFFMAN and LANGE, 1989; BENJAMIN and KIMHI, 2006). In our analysis, we find that men are less likely to leave agriculture. Also, being married is expected to reduce the likelihood that an individual leaves the agricultural sector. Married individuals are expected to be less likely to change between employment options as they are expected to have more responsibilities, such as child care, which makes them less mobile (BOJNEC and DRIES, 2005). Not unsurprisingly, we find that being self-employed or being a family worker substantially reduces the probability of leaving the agricultural sector compared to agricultural workers.

Finally, we find a positive relation between population density (DENSE and INTERDENSE) and the probability of leaving the agricultural sector. Also the other variable that relates to the region, being an inhabitant of an NMS, has a positive and significant effect on the probability of leaving the agricultural sector.

Table 4.2   Logit regression results

	Exit from agriculture (prob= 7.3%)		
	Coefficient	**z-value**	**Marginal effect**
Income characteristics			
SUBS	0.197	3.97****	0.0106
INCDIFF	0.056	0.94	0.0030
Farm characteristics			
SMALL	-0.001	-1.02	-0.0001
OWNED	-0.002	-1.21	-0.0001
LIVESTOCK	-0.010	-5.54***	-0.0005
CEREALS	0.005	2.76***	0.0003
Personal characteristics			
AGE	0.015	3.59***	0.0008
HIGHEDU	0.071	0.56	0.0039
MEDEDU	0.010	0.16	0.0005
AGEDU	-0.456	-6.51***	-0.0214
GENDER	-0.344	-7.08***	-0.0193
MARIED	-0.399	-8.72***	-0.0236
Job characteristics			
SELFEMPL	-1.459	-21.62***	-0.0914
FAMILYWORK	-1.281	-12.19***	-0.0473
Population density/NMS characteristics			
DENSE	0.458	5.69***	0.0296
INTERDENSE	0.110	2.22**	0.0061
NMS	0.554	3.88***	0.0337
Intercept	-3.156	-5.76***	
Number of observations	87105		
Likelihood ratio	1245.36***		
Pseudo R²	0.08		

Note. The standard errors are robust clustered standard error. Levels of significance: ***1%; **5%; *10%

Source: VAN HERCK, 2009

Table 4.3   Multinomial logit regression results

	Industry & services (prob.= 2.7 %)			Unemployment (prob. = 1.0%)			Out of employment (prob. = 3.6%)		
	Coeff	z	Marg	Coeff	z	Marg	Coeff	z	Marginal
Income characteristics									
SUBS	0.147	1.67*	0.0022	0.074	0.67	0.0002	0.321	3.22***	0.0073
INCDIFF	0.177	1.95*	0.0028	0.014	0.14	-0.0000	-0.034	-0.40	-0.0009
Farm characteristics									
SMALL	-0.000	-0.08	-0.0000	-0.003	-0.09	-0.0000	-0.003	-1.18	-0.0001
OWNED	-0.001	-0.22	-0.0000	-0.002	-0.70	-0.0000	-0.004	-1.69*	-0.0001
LIVESTOCK	-0.010	-3.09***	-0.0002	-0.001	-0.37	-0.0000	-0.014	-4.41***	-0.0003
CEREALS	0.007	2.10**	0.0001	0.006	1.26	0.0000	0.002	0.72	0.0000
Personal characteristics									
AGE	-0.035	-8.48***	-0.0006	-0.020	-4.80***	-0.0001	0.062	11.11***	0.0014
HIGHEDU	0.986	6.82***	0.0255	-0.345	-1.38	-0.0011	-0.780	-3.77***	-0.0135
MEDEDU	0.575	6.07***	0.0100	-0.254	-2.00**	-0.0015	-0.329	-3.98***	-0.0075
AGEDU	-0.957	-8.86***	-0.0113	-0.505	-3.32***	-0.0015	0.067	0.66	0.0019
GENDER	0.074	0.89	0.0015	-0.355	-3.43***	-0.0013	-0.703	-11.02***	-0.0177
MARRIED	-0.208	-3.30***	-0.0034	-0.456	-3.96***	-0.0018	-0.195	-3.11	-0.0045
Job characteristics									
SELFEMPL	-1.373	-	-0.0243	-2.952	-	-0.0172	-1.1322	-15.61***	-0.0335
FAMILYWORK	-1.063	-7.74***	-0.0118	-2.836	-9.41***	-0.0048	-1.391	-8.19***	-0.0206
Population density/NMS characteristics									
DENSE	0.707	5.03***	0.0152	0.381	2.33**	0.0015	0.247	2.06**	0.0058
INTERDENSE	0.256	3.60***	0.0044	-0.037	-0.25	-0.0001	0.024	0.32	0.0005
NMS	0.312	1.21	0.0047	0.256	0.93*	0.0008	1.013	3.51***	0.0296
Intercept	-2.864	-3.28***		-2.582	-2.15		-6.455	-7.51***	
Number of observations	87105								
Likelihood ratio	4262.02***								
Pseudo R²	0.12								

Note: The standard errors are robust clustered standard error. Levels of significance: ***1%; **5%; *10%
Source: VAN HERCK, 2009

4.3   Policy priorities

Over past years, the agricultural sector in the NMS has undergone substantial changes and more are expected to come when the effects of EU accession become clearer.

By combining macro and micro evidence we analysed the impact of subsidies and other factors that affect the decision to leave the agricultural sector. The results of this analysis show that, among other factors, subsidies, human capital and employment alternatives will have an important impact on future labour adjustment in the agricultural sector in the NMS.

4.3.1   Better targeting of agricultural subsidies

Farm support under the CAP has a series of effects on rural labour markets. One might expect that subsidies have a positive impact on agricultural employment. However, this effect is less straightforward and, in fact, in our empirical analysis we even find a negative impact of subsidies on agricultural employment which can be explained by a combination of policy rent dissipation, induced reduction of credit constraints and poor targeting.

First, rent dissipation will reduce the impact of subsidies on farmers' income. OECD studies show that the net income effects for farmers of commodity price supports (the old CAP) were around 20%, meaning that 80% of the payments ended up with non-farm groups, including input supplying companies and landowners (OECD, 2001). This rent dissipation is expected to be less in the NMS where more direct forms of payments were introduced, but these payments are still linked to land use and are driving up land prices (CIAIAN and SWINNEN, 2006; VRANKEN and SWINNEN, 2009).

 Second, with direct area payments, credit constraints on farms have been relaxed leading both to increased investment and profits and to additional pressure on input prices. They may also lead to enhanced household investments in training and improved skills. This set of factors may have offsetting effects on farm employment, but may positively affect rural labour markets by removing financial constraints and stimulating productivity. However, this effect may also constrain restructuring, in particular if it disproportionally benefits a specific group of farms (see next point).

Third, in the NMS there is unequal access to subsidies. In countries where there is a strong bipolar farm structure, such as Poland, Hungary, Bulgaria and Romania, the smallest farms (and poorest) get only a marginal share of the subsidies. Small household farms (less than 1 ha) are not eligible to receive Single Area Payments Scheme (SAPS) payments under Pillar 1 and these households usually do not know how to apply for the rural development

subsidies of Pillar 2.[14] For example, in Romania CIONGA et al. (2008) estimate that only 1.2 million out of approximately 4.1 million farms in Romania get direct payments. Almost all of the 2.9 million farms that do not get direct payments are small, whereas all large farms receive the direct payments. Unequal access to subsidies will affect rural income inequality both directly and indirectly. Directly, poor farmers will not be able to benefit from subsidies, while large farms will benefit from both direct payments and rural development subsidies. Indirectly, direct payments will reduce the credit constraints on farmers that receive them and will allow these farmers to increase production and make investments. However, direct payments and reductions in credit constraints will lead to higher input prices, including higher prices for land. Hence, unless there is better targeting of the subsidies (Pillars 1 and 2), or alternative policies, subsidies will lead to divergence rather than to convergence.

In summary, the combination of policy rent dissipation, reduction of credit constraints and poor targeting means that the overall effect of subsidies on rural labour markets is complex and certainly more nuanced than simple models predict. This is consistent with empirical evidence.[15] The fact that CAP subsidies do not necessarily constrain restructuring (and may even enhance it) is also consistent with the increase of labour outflow in the NMS since EU accession, rather than its reduction. This is, in a way, consistent with earlier experiences in the EU15 (see also SWINNEN and VAN HERCK, 2010). This does not mean that direct payments cannot play some role in reducing income variation and household risk in the future, but they would have to be fundamentally reformed in order to become a real safety net. Moreover, their effectiveness in terms of risk reduction and providing insurance have to be compared with private instruments; and their effectiveness in terms of a social safety net has to be compared with that of an economy-wide social policy system, which provides a safety net across sectors. In both cases, policy and private sector instruments focused not on agriculture but on the entire economy are likely to be more efficient.

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[14] The 'second pillar' of the CAP aims to improve the economic, social and environmental development in the countryside. The pillar is composed of three axes. The first axis concerns measures to improve the competitiveness of the sector through support for restructuring, development and innovation; the second axis concerns measures to improve the environment; and the third axis concerns measures to improve the quality of life in rural areas and to encourage diversification of economic activity.

[15] See studies by BARKLEY, 1990; GOETZ and DEBERTIN, 1996, 2001; GLAUBEN et al., 2006; BREUSTEDT and GLAUBEN, 2007; BENJAMIN, 1994; MISHRA and GOODWIN, 1997; DEWBRE and MISHRA, 2002; EL-OSTA et al., 2004; AHEARN et al., 2006; HENNESSY and REHMAN, 2008; VAN HERCK, 2009.

4.3.2 Improving human capital

Inadequate education is a very important constraint, not only for agricultural labour restructuring, but more generally for business development and economic activities in rural areas. The lack of education can be an important barrier to farmers wanting to leave the agricultural sector for another sector, which is confirmed by our regression results and earlier findings by, among others, HUFFMAN (1980); BOJNEC and DRIES (2005); VAN HERCK (2009). In fact, studies find a non-linear relationship between human capital and farming activities. For example, the impact of education on the development of new farming enterprises is non-linear because beyond a certain level of education individuals tend to leave agriculture and choose non-agricultural employment (RIZOV and SWINNEN, 2004).

Investment in education would contribute to several objectives consistent with the overall objective of rural development, such as the improvement of productivity of existing enterprises, the growth of new enterprises, reduction of unemployment, and a shift of underemployed farm labour to other activities, thereby increasing the labour productivity of the remaining farms. Investment to improve rural education could also reduce the incentives for young people to leave the rural areas.

4.3.3 Investment in rural infrastructure

Besides subsidies and human capital variables, employment alternatives are found to have a large impact on the decision to leave the agricultural sector. This is confirmed by our empirical results, which show that farmers living in more densely popoulated areas, where there are, in general, more employment alternatives are more likely to leave the sector. These findings indicate the importance of creating alternative employment in remote areas. A key constraint for the development of employment alternatives in rural areas in the NMS is the rural infrastructure, which is still lagging behind that of the EU15 (EUROPEAN COMMISSION, 2009; BLANFORD et al., 2008). Investment in rural infrastructure has several important effects on rural labour markets. First, it improves the access of rural households to urban areas and other sectors. Second, it stimulates investment in rural areas in non-farm activities and thus creates more off-farm employment in rural areas. However, besides the impact on employment alternatives, the development of rural infrastructure also has an important impact on the agricultural sector since roads connect farmers to markets and improve farm profits by reducing transport costs. This could also help to integrate farmers in modern supply chains and directly or indirectly upgrade the quantity and quality of their production.

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Chapter Five

Rural Livelihoods in Transition:
Structural Change beyond Agriculture

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Chapter 5 looks at the steps of farm households into non-farm diversification. It is based on the SCARLED survey in selected NMS. Rural employment diversification is one of the key issues for rural livelihoods in transition as it is the only viable alternative for many small-scale farmers in the short and medium term to deal with income shortages and insecurity of their farming activities. It is thus at the core of structural change in the NMS. In this chapter, the relative importance of agriculture, waged jobs and self-employment is decomposed in terms of the income contribution of farm households. We show how non-farm incomes can lift farm households above the poverty line. A diversification index makes the comparison of diversification levels across countries more intuitive. This index is also the basis for the econometric analysis, which identifies drivers of identification. Key policy relevant results are that: (i) there is great potential for and actual spread of diversification; (ii) non-farm income sources indeed shift a considerable share of households above the poverty line; (iii) Distress-push motivation or, in other words, low and/or fluctuating farming income, is the key for understanding diversification behaviour, but education is a door opener for rural non-farm employment. Barriers that poor households face in opening up alternative employment, especially if caused by market failures, should be at the heart of policy intervention.

It is clearly acknowledged that farming alone can no longer be regarded as the main driver of structural change in Europe's rural regions. Rural livelihoods encompass all ways and means of making a living, whereby the importance of non-farm income sources is substantial (see Chapter 1). Employment diversification is a major livelihood strategy in rural areas and is thus a focal point in the ongoing rural development debate. The Organisation for Economic Cooperation and Development (OECD, 2006) in its publication 'The New Rural Paradigm' advocates replacing traditional agricultural sector policies by more territorially oriented rural policies. Thus, new approaches are needed that address the development of the rural non-farm economy and non-agricultural

labour markets. However, not much is known about the employment diversification process or, in other words, the mechanisms according to which farm oriented rural households include non-farm income sources and, probably at a later stage, drop their farming activities. This chapter looks at the potential to diversify and actual steps into diversification of farm households based on empirical data from selected New Member States (NMS). The actual relative importance of agriculture, waged jobs and self-employment is decomposed in terms of income contribution. We show how non-farm incomes can lift farm households above the poverty line and present analytical results on drivers of employment diversification. We suggest using a diversification index that makes the comparison across countries more intuitive. This index is also the basis for the econometric analysis.

5.1   Structural change and the rural non-farm economy

Well-functioning rural labour markets are essential for the livelihood of rural people; those employed both in agriculture and outside it (see Chapter 2). Empirical research on rural non-farm employment in Central and Eastern Europe (CEE) is rare, but it is clear that farm households are diversified and depend substantially on non-farm income. DAVIS et al. (2010) find that most rural households have diversified income sources; the global share of non-farm income in total rural household income is estimated to be around 60% (DAVIS et al., 2009). This figure is confirmed for those CEE countries with predominately small-scale farm structures by various cross-sectional empirical case studies (Table 5.1). Often rural regions with a flourishing rural non-farm economy are better off. For this reason, the development of non-farm employment is proposed as a cure, or at least an important contribution, for addressing rural underdevelopment and regional income disparities (LANJOUW and LANJOUW, 2001; BUCHENRIEDER et al., 2009a).

Changes in the rural labour market, especially the increase of rural non-farm employment, are recognised as one dimension of structural change (see Chapter 2). Thus, besides farm size distribution, tenure systems and changing farm types, developments in terms of diversification and pluriactivity, i.e. labour allocation changes, are attributed to the phenomenon of structural change. The effective direction is not always unambiguous: labour markets determine structural change and vice versa. Labour allocation decisions are driven by economic incentives such as wage differentials, but non-economic motives may also play a decisive role (see Chapter 4). The main stakeholders of structural change in agriculture are embedded within, and interact with, value chains, consumers, the wider rural society and economy, institutions and policies (BALMANN et al., 2006; SWINNEN, 2005).

Table 5.1   Diversification among small-scale farms

	Share of small-scale farms with non-farm income (%)	Share of non-farm income in total rural household income (%)
Albania	31-38	22
Bulgaria	35-42	40-67
Czech Republic	n.a.	15
Hungary	53-56	17
Macedonia	74	50
Poland	56	60-63
Romania	29-41	60-74
Slovakia	n.a.	20
Slovenia	69	43-45

Note: The figures are mostly derived from smaller sectoral surveys. n.a. = not available
Source: adapted from BUCHENRIEDER et al., 2007: 44, based on multiple sources

The rural economy in most of Europe's transition economies showed a higher initial share of agriculture in total employment than in the more developed European Union (EU) economies (LERMAN et al., 2002, see also Chapter 2). However, differences among the countries were striking. Romania and Poland, on the one hand, entered transition with a share of agricultural employment of over 25%. Slovenia, on the other hand, had a share of less than 10% (JAKLIČ et al., 2009). It is widely acknowledged that the process of economic development is associated with a declining share of farming in total employment. For many years, agricultural employment has been going down in the EU. Therefore, it comes as no surprise that in the past few years the decline of the agricultural workforce was stronger in the CEE accession countries than in the established member States (EU15). BUCHENRIEDER et al. (2007) report that, according to official employment data, during the first five years of transition there was an average reduction of agricultural labour of 35% in the CEE countries. The strongest reductions occurred in Hungary (57%) and the Czech Republic (46%). A similar decline was recorded for Estonia, an early and radically reforming country, where agricultural labour intensity went down by 58% within the first five years of reform. In contrast, in the first ten years of transition, agricultural employment increased in Romania and Slovenia, while only a modest decline was recorded for Bulgaria (MACOURS and SWINNEN, 2000; ROZELLE and SWINNEN, 2004).

With a view to future developments, the European Commission (EC) estimates that the agricultural workforce in the EU15 will decrease by around one-third in the coming two decades (BUCHENRIEDER et al., 2007).[1] Regardless of the overall declining importance of agricultural employment, farming remains

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[1]   EUROSTAT defines farm holdings as a technico-economic unit under a single management and producing agricultural products. However, the smallest units are also often registered as farms which implies that there is a certain stock of farms that are fairly resistant to structural change.

and will remain a crucial source of income, particularly in the poorest and least developed CEE regions (BUCHENRIEDER et al., 2009a). At the same time, non-farm income sources will become more and more integrated into farm households' income portfolios. Eventually, many households will either exit farming or remain as hobby farmers (MÖLLERS, 2006; MÖLLERS and FRITZSCH, 2010). However, this tends to be a very time consuming process as the resistance of subsistence farms in many CEE countries to either give up or grow vividly shows. Often land market failures contribute to a further slowing down of the process. One of the main drivers of employment diversification during transition is still one that originated from the transition shock itself, which led to the so-called distress-push dynamic (for details see below). In rural areas, development is typically hampered by labour displacement, central structures, concentration of certain economic branches in some areas, missing infrastructure and social institutions, an overaged population, and a lack of mobility of labour (KOESTER, 1997).

Although there are clear signs of recovery and economic development, the unemployment rates in predominantly rural areas remain high; the latest figure is 8.5% (EU and DGAGRI, 2009). Furthermore, there is still a lack of rural infrastructure, capital for investments and a highly skilled labour force (SWINNEN et al., 2001; BUCHENRIEDER et al., 2009b).

Despite the importance of the non-farm sector for rural welfare, there is no single theory that explains employment diversification decisions and their impact on the rural economy. We therefore refer in this chapter to an approach introduced by MÖLLERS and BUCHENRIEDER (2005) and MÖLLERS (2006), which explains farm household labour allocation under the umbrella of the sustainable livelihoods framework. It specifically integrates two main streams of re-allocation motivations: the distress-push and demand-pull non-farm diversification. Elements from the behavioural sciences are used to allow a better understanding of the decision-making process itself. An overview of this theoretical background is given in BUCHENRIEDER et al. (2010); the (extended) livelihoods concept is introduced and depicted in Figure 1.1 of Chapter 1. Employment diversification is one of the strategies (action alternatives) that a farm household can follow to improve its livelihood. MÖLLERS (2006) describes employment diversification as a dynamic socio-economic process in which rural households widen the range of income sources in their portfolio. Such diversified incomes are usually based on a mix of farm and non-farm incomes. Diversification is thus understood to be an increase in the number of income sources (by opening up non-farm income sources) and in their overall share in the household income (see Box 5.1). Different indices are used to capture these aspects of diversification. One-dimensional measures such as whether or not rural households are involved in non-farm activities or the share of non-farm income in total household income are widely used; for instance, examples of

such studies can be found in BARRETT et al. (2001). To cover both aspects, that is, (i) the abundance of activities and income sources and (ii) the balance between them, approaches that explain the concentration or diversification, such as the Herfindahl index, the Simpson index and the Shannon entropy index, are applied. Examples for the Herfindahl measure are found in BARRETT and REARDON (2000) and ERSADO (2006). Entropy-based methods such as the Shannon entropy have been used by SCHWARZE and ZELLER (2005) and MÖLLERS (2006).

Box 5.1   Working definition for 'employment diversification' and 'pluriactivity'

Employment diversification is a dynamic socio-economic process in which rural households widen the range of income sources in their income portfolio. Such diversified incomes are usually based on a mix of farm and non-farm incomes. Employment diversification leads to an increase in the number and mix of income sources. Thus, employment diversification rises with the number of income sources, the equity of their distribution, and their dissimilarity. In other words, a household with three income generating activities is more diversified that a household with two income generating activities; and a household with two activities which each use 50% of the labour input is more diversified than a household in which the labour input allocation is 90%:10%. Moreover, the diversification level increases if the income sources are not of the same type.

The term **pluriactivity** is used to describe a situation in which an individual pursues more than one income-generating activity or, in other words, the number of income generating activities in a household exceeds the number of active household members.

Source: ELLIS, 2000; MINOT, 2003; MÖLLERS, 2006

What makes diversification so difficult to capture is that most of the time two processes overlap. These processes are described in the demand-pull and distress-push concept, which was first introduced by EVERETT LEE in 1966 to explain migration dynamics (see Chapter 1). In the context of diversification it is used to explain labour shifts from the agricultural sector to the rural non-farm sector. A set of factors determines whether an individual is capable of gaining access to demand-pull employment or whether s/he is forced to take up poorly paid non-farm employment due to distress-push dynamics. The term demand-pull is used to describe a situation in which those employed in agriculture seize more lucrative employment opportunities in the rural non-farm economy. It describes a situation in which inadequate agricultural incomes and other negative factors push people into poorly paid non-farm jobs. Obviously, households with a better endowed livelihood asset pentagon can more easily take up more lucrative demand-pull non-farm opportunities than can others. They benefit from a 'positive selection' concerning age, education, skills and motivation. Whereas pull factors facilitate diversification processes, but are not

normally sufficient to initiate them, push factors could be seen as the essential driving force for diversification. Yet those who follow distress-push forces are typically subject to a 'negative selection' (LEBHART, 2002). Distress-push diversification was a common answer to the transition shock. Addressing the demand-pull and distress-push concept in an empirical study is a challenge. An attempt was made by MÖLLERS (2006). Here we look at both processes simultaneously, but include certain variables that reflect characteristics of typical distress-push and demand-pull diversifiers.

5.2 Diversification patterns in the NMS

In our empirical analysis, based on the SCARLED survey in five NMS (Bulgaria, Hungary, Poland, Romania and Slovenia (NMS5) – see Chapter 1), we start by looking at the potential that farm households have to tap into the rural non-farm sector. We then ask how the actual situation reflects this potential. Finally, we analyse econometrically the factors determining the diversification level.

Diversification is the norm in the surveyed farm households. Before we go deeper into empirical outcomes, we show results of a fuzzy index for assessing farm households' potential (in the sense of fulfilling certain pre-conditions for accessing a non-farm job) for non-farm income diversification. It was developed by FRITZSCH et al. (2010) and applied to the SCARLED sample of farm households in Bulgaria, Hungary, Poland, Romania, and Slovenia.

By using fuzzy logic, FRITZSCH et al. (2010) address one critical issue in empirical studies, namely that survey data are often imperfect. The reasons are manifold. For instance, respondents may lack knowledge, they may be unwilling to give exact figures, or the qualitative nature of the questions results in rough estimates. Nevertheless, for lack of better alternatives such information is commonly processed as precise data in standard econometric models. Yet, fuzzy logic is a methodology that allows explicitly for imperfect information in the calculation process. Thus, it acknowledges the imperfect nature of data and makes the deductive nature of the recommendations transparent. Fuzzy sets allow information to be partially true and partially false thus picturing imperfect information. The fuzzy sets are subject to precise mathematical operations that result in a non-fuzzy output value.

The fuzzy procedure applied to the SCARLED country sample results in an diversification potential index ranging from 0 to 1, where 0 = no diversification potential and 1 = full diversification potential; households are defined as having a diversification potential if the index is greater than 0.5. The index combines four key factors which are derived from the extended Sustainable Livelihoods Framework (SLF) (see Figure 1.1 in Chapter 1): (i) the economic need for diversification; (ii) household internal conditions; (iii) household external

conditions; and (iv) individual attitudes towards different employment alternatives. The four factors are captured by ten variables. It is hypothesised that a high dependency ratio and small farm size trigger the need for (distress-push) diversification. Age, educational level, and a household's labour capacity define how favourable or not a household's internal conditions for non-farm diversification are. Remoteness, labour market conditions, and regional purchasing power are indicators of the external conditions in which a household operates. Attitudes towards waged and self-employment flow into the factor attitudes. All applied variables have been discussed in the literature and are accepted determinants of non-farm rural employment diversification (CHAPLIN et al., 2004, 2007; CSÁKI and LERMAN, 2002; ELLIS, 1998; MÖLLERS, 2006; REARDON et al., 2007). The index was calculated using ZADEH'S (1965) fuzzy set theory. For details of the model design and architecture see FRITZSCH et al. (2010).

Results in Table 5.2 show that a high share, more than three quarters of all farm households, do indeed have a diversification potential. However, not all households with such a potential actually use it (Figure 5.1): 33% of households with diversification potential are in fact not diversified. The table furthermore reveals country specific differences. The diversification potential is above average in Poland, Romania, and Slovenia but below average in Bulgaria and Hungary.

Table 5.2   Number and percentage of households with a non-farm diversification potential (fuzzy index >0.5)

Country	Number of households	Households with a non-farm diversification *potential*		Households actually diversified [*]	
		N	%	N	%
Bulgaria	223	146	65.5	140	62.8
Hungary	218	135	61.9	144	66.1
Poland	199	163	81.9	125	62.8
Romania	224	190	84.8	149	66.5
Slovenia	213	187	87.8	165	77.5
Total	1,077	821	76.2	723	67.1

Note: [*]All households with at least one non-farm employment are defined here as actually diversified.
Source: Fritzsch et al., 2010, based on SCARLED database

For one quarter of households, the calculated potential of non-farm diversification is not concordant with their actual behaviour. This can, however, be convincingly explained by: (i) delayed reactions to changed environments (these households have, for example, taken up waged employment at an earlier point of time and keep their status although some critical variables have changed); and (ii) the strong and exclusive focus of some households on

farming, meaning that these farm families have particularly positive attitudes towards farming and do not consider taking up other employment.

Figure 5.1   Diversification potential and actual diversification behaviour

821 households with diversification potential

723 households actually diversified
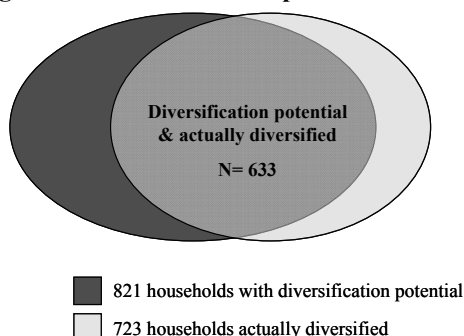
Source: Chapter authors based on SCARLED database

In the following we concentrate on a reduced sample from the same country survey database. First of all, households composed solely of pensioners are excluded. This group of households is very unlikely to react to any labour market policy measures owing mainly to age and health related constraints. Our sub-sample *A* (827 households), which is used for descriptive purposes, also includes rural households that were farming in 2003 but had exited farming by 2006. As we are interested in the determinants of non-farm employment diversification of farm households, these households are not included in the econometric analysis. This, plus the omission of some households due to missing data, leaves us with a sub-sample *B* of 754 farm households in the NMS5.

Table 5.3 gives an overview of the income situation in the surveyed farms (sub-sample *A*). Not surprisingly, Slovenia leads the group, while Romanian farms have the lowest annual incomes. For better comparison, the purchasing power parity (PPP) income is presented. As expected the five countries move closer together, with Romania in particular catching up. The share of income from non-farm employment (including non-farm waged income and self-employment) amounts on average to 32% of total income (Figure 5.2). Polish farms depend the most on farm incomes (54%), closely followed by Bulgaria and Romania. Non-farm income contributes between 27% and 42% to total household income. The highest share of non-farm incomes is found in Slovenia (42%), the lowest (27%) in Poland. In all five countries between 14 and 21% of income is derived from unearned income sources (mainly pensions and other social payments).

Table 5.3   Distribution of household and per capita income for NMS5, 2006

	Household income					
	Euro		PPP-€	Origin of income (%)		
	Mean	StD		Farm operations	Non-farm employment	Unearned income
Bulgaria (N=237)	10,198.80	29,727.09	26,857.32	53%	31%	16%
Hungary (N=146)	15,570.90	38,177.65	26,170.64	44%	34%	21%
Poland (N=140)	14,368.00	8,474.27	24,897.02	54%	27%	18%
Romania (N=210)	8,482.90	9,581.01	16,975.98	51%	32%	17%
Slovenia (N=94)	31,603.30	24,700.32	42,395.19	44%	42%	14%

Note: Sub-sample *A* = 827 farm households. PPP = purchasing power parity.
Source: Chapter authors based on SCARLED database

Figure 5.2   Income sources of farm households in NMS5, 2006

17.27%
32.37%
50.36%

■ farm ▨ non-farm ▢ unearned
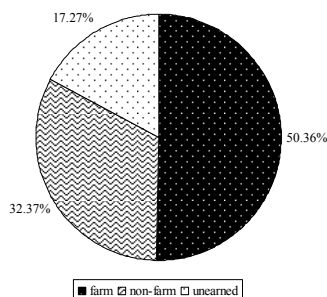
Note: Sub-sample *A* = 827 farm households.
Source: Chapter authors based on SCARLED database

    Table 5.4 summarises results by income quintiles calculated based on per capita incomes in PPP. The income quintiles are calculated for each country, implying that about 20% of all households per country fall into one quintile. The table displays the equivalised per capita income in the five income groups. Bulgaria and Hungary in particular show extreme differences between the poorest and richest income group. In all countries income differences within the first four quintiles are moderate, only the richest quintile stands out: the increase here is on average 2.7 times the income of the fourth quintile – and is more than four times in the case of Bulgaria.

Table 5.4   Income levels of farm households for NMS5, 2006

Per capita equivalised income in PPP-€	Income quintiles				
	First	**Second**	**Third**	**Fourth**	**Fifth**
	Per capita income (equivalised, PPP-€)				
Bulgaria	13,013.48	2,037.31	4,388.10	6,822.82	10,319.86	41,762.75
Hungary	14,782.00	3,810.66	6,316.30	8,390.56	12,099.03	43,513.83
Poland	10,782.01	4,723.68	6,935.54	9,223.32	11,987.58	21,039.91
Romania	8,720.20	3,561.83	5,228.17	6,448.19	8,347.15	20,015.68
Slovenia	17,605.65	6,916.49	11,026.59	13,981.28	19,953.58	35,959.54

Note: Sub-sample A = 827 farm households. PPP = purchasing power parity.
         Per capita incomes are equivalised according to the household composition to correct for economies of scale. A modified OECD scale was used; this gives a weight of 1.0 to the first adult, 0.5 to other persons aged 16 or over who are living in the household, and 0.3 to each child aged less than 16 years.
Source: Chapter authors based on SCARLED database

As can clearly be seen from Table 5.3, farm income is indeed not the only important income source of farm households in the NMS. This has, of course, implications for their well-being. Many households ensure their livelihood based on this diversified mix of income sources, in other words they rely to a high degree on income sources beyond farming. Table 5.5 provides a general picture of the contribution of unearned income (i.e. mainly social transfers) and non-farm income with regard to lifting a household above the national poverty line. Thus, we ask if non-farm diversification is a way out of poverty for the individual household. For the case of non-marketed farm production, in Chapter 6 (Table 6.6) analogous figures are presented, also based on the SCARLED survey, for the effect of subsistence based farm income. On the one hand, subsistence income is substantial, especially for poor households. On the other hand, it shifts a significant number of households above the poverty line. In Bulgaria in particular, subsistence income shifts a large share of the farming population from poor to non poor (17%). In the other four countries between 3% and 8% of households are lifted above the poverty line. But what is the effect of unearned and earned non-farm income on poverty? Is it even bigger?

The effect of so-called unearned income (mainly social transfers) and earned non-farm income on poverty alleviation is very similar to the effect of subsistence income. Based on the national poverty line, on average 7.4% of the rural households are poor (Table 5.5).

As can be seen from Table 5.5, both unearned and especially non-farm income contribute notably to household incomes. The table reveals that unearned non-farm income lifts 8.8% of the rural households above the poverty line. Non-farm income pulls 22.5% out of poverty. Yet, results differ for the countries: in Slovenia and Hungary the percentage shifts due to non-farm income are very high at 42% and 32% respectively. In Romania and Poland non-farm income lifts only 11% or 16% respectively of the rural households above

the national poverty line. However, in Romania the national poverty line is set extremely low, Euro 828 in equivalised income for 2006, which leads to a very low share of poor households. This seems unrealistic and the Romanian results would look different if a higher poverty line were chosen. Clearly, both unearned and non-farm employment diversification contribute tremendously in the NMS5 to lowering income risk and thus to poverty reduction.

Table 5.5   The contribution of unearned and non-farm income to household income and poverty alleviation, 2006

	National poverty line equivalised Euro (2006)	SCARLED cross-country survey		
		Per capita income in Euro (equivalised)	Share of households below poverty line	Share of households shifted above poverty line due to **unearned** income (social transfers)	Share of households shifted above poverty line due to **non-farm** income
Bulgaria	1,022	4,941.74	14.77	7.17	22.36
Hungary	2,308	8,794.94	7.53	18.49	32.19
Poland	1,867	6,222.27	1.43	9.29	16.43
Romania	828	4,357.49	0.48	3.33	11.43
Slovenia	5,589	13,124.05	12.77	9.57	41.49
All countries	--	6,620.44	7.39	8.83	22.49

Note: Sub-sample *A* = 827 farm households.
The poverty lines correspond to 60% of the national median equivalised income in 2006, the recall year of the SCARLED survey.
Unearned non-farm income refers to pensions and other transfer payments. Non-farm income refers to casual and regular waged employment as well as self-employment. It also includes income derived from remittances.
Source: Chapter authors based on SCARLED database

5.3   Drivers of employment diversification: a multinomial econometric approach

Employment diversification is a concept which is not easy to operationalise (see Box 5.1). We use the Herfindahl diversification index (HDI). It should be noted here that unearned income (social transfer payments) are not considered as an income source that drives up diversification since this type of income is usually not actively chosen by the farm household. In contrast to BABATUNDE and QAIM (2009), remittances are included as part of the HDI, because migration is a livelihood strategy taken on the basis of social interaction in the family. We regress the diversification index on a set of household and contextual characteristics. The diversification index is censored between zero and one. A considerable number of non-diversifiers resulted in many zero or close to zero HDI values. With a very large proportion of zero observation of the dependent variable least squares regression would be inappropriate (GREENE, 2002). Thus,

we chose a Tobit model. The HDI is a measure of relative concentration. It is defined in this context as

$$HDI = 1 - \sum_{j=1}^{n} s_j^2$$

where s_j is the income share of one income source j in the total household income, and n is the number of income sources. In a household with two income sources, for instance farm income and non-farm wage income, where each contribute 50% to household income, the HDI index equals $1-(0.50^2 + 0.50^2)= 1-0.5$. Thus, the HDI takes into account both the number of income sources and the magnitude of non-farm income in total household income. The HDI is the weighted sum of income shares. Income sources with a lower share have a lower impact on the index. Households with the most diversified employment structure have the largest HDI. The income sources considered in the HDI are waged farm and non-farm employment, family farm employment, non-farm self-employment, and remittances from household members.

The descriptive statistics of explanatory variables of the diversification level are presented in Tables A5.1 and A5.2 in Appendix 5. The selection is adapted from BUCHENRIEDER et al. (2002) and MÖLLERS (2006). Tables 5.6 and 5.7 summarise the mean estimates of the HDI for income groups and for countries. They also display the results for the share of non-farm income – a simpler, but easy to grasp, diversification measure. It is the middle quintiles that display the highest share of earned non-farm income. Similarly, (not shown in Table 5.6) the second to fourth quintile show higher numbers of income sources (between 1.79 and 1.87) compared to the first quintile (1.54) and the fifth quintile (1.78). The maximum number of income sources is five and 64% of all households engage in at least one non-farm activity. This high involvement in the non-farm economy shows that alternative income sources are widely used to increase overall income and reduce risks.

The HDI confirms these findings. It is the lowest and highest quintiles that show the lowest HDI. This implies that the poorest households have the least diversified employment structure, followed closely by the highest quintile. For the lowest income quintile this result could be interpreted as meaning that they are not in a position to open up non-farm income sources easily. The highest income quintile may specialise with more success on either farming or non-farm employment and derive a major part of income from either of these sources. Indeed it seems that farming makes the difference here (Table 5.7): in the fifth quintile especially full-time farms (with at least 90% of income from farming) are doing well. With an additional 25%, they earn significantly more than other farms. Forty-five percent of all full-time farms are found in the highest income quintile; their equivalised per capita income is on average PPP-€ 19,388. The fact that full-time farms are doing particularly well is true for all countries except Hungary and Slovenia, where there is no big difference between full-time

and diversified farms (Table 5.8). In Bulgaria, the differences are most extreme with wealthy full-time farms, but poor other farms. Full-time farms might be used as an example that specialisation paves the road for economic success. Nonetheless, as we could show, diversification offers a way out of poverty.

Table 5.6   Mean estimates of diversification indicators, 2006

	Sub-sample	Income quintiles				
		1st	2nd	3rd	4th	5th
Share of non-farm income in total income	A	27.25	36.25	40.30	34.78	23.20
	B	24.61	33.72	37.40	33.43	22.82
Herfindahl diversification index (HDI)	A	0.23	0.29	0.29	0.32	0.24
	B	0.22	0.29	0.29	0.32	0.23

Note: Sub-sample *A* with N=827; sub-sample *B* with N= 754.
Source: Chapter authors based on SCARLED database

Table 5.7   Income level of specialised full-time farms, per capita equivalised incomes in income quintiles, 2006

	All HH (N=827)	Income quintiles				
		1st	2nd	3rd	4th	5th
Full-time farms	5,915	1,671	3,348	5,200	6,190	19,388
Other	10,737	2,214	3,435	4,438	6,342	15,447

Note: Sub-sample A with N=827; full-time farms are defined as having a share of farm incomes in total incomes of 90% or more. HH = households.
Source: Chapter authors based on SCARLED database

Table 5.8   Income level of specialised full-time farms, per capita equivalised incomes in NMS5, 2006

	All HH (N=827)	Country				
		BG	HU	PL	RO	SI
Full-time farms	5,915	13,979	8,441	8,047	8,892	13,361
Other	10,737	2,995	8,861	5,845	3,800	13,099

Note: Sub-sample *A* with N=827; full-time farms are defined as having a share of farm incomes in total incomes of 90% or more.
        BG = Bulgaria, HU = Hungary, PL = Poland, RO = Romania, SI = Slovenia, HH = households.
Source: Chapter authors based on SCARLED database

Table 5.9 presents the results of Tobit regressions on the determinants of employment diversification. The overall fit of the Tobit models is satisfactory and the correlation tables and the variance inflation factor showed no problems with regard to multicollinearity.

Education plays a key role in the diversification process (DAVIS, 2003). The highest educational attainment in a household is positively related to the HDI.

When interpreting the results of the HDI model, it must be kept in mind that one more remunerative non-farm occupation in comparison to one menial non-farm occupation (given the same household income) drives the HDI up. Education is a door opener for non-farm employment, probably especially for the better paid jobs. It is obvious that better education and professional formation result in a wider range of employment opportunities. This finding is confirmed here. Households with older household heads are generally less active in the non-farm labour market. These results are in line with earlier empirical evidence from various studies (e.g. BABATUNDE and QAIM, 2009; MÖLLERS, 2006). Yet a high number of dependent household members (children and the elderly) increase the need for additional income and thus may push up the number of income sources. However, this variable is not significant.

Table 5.9   Tobit analysis: determinates of the level of income diversification (HDI)

	β	p-value
Age of household head (in years)	-0.002	0.015
Highest level of education (scale 1-5, 5=university degree)	0.059	0.000
Dependency ratio	-0.019	0.705
Farm land cultivated (in hectares)	-0.000	0.020
Subsistence farming (dummy, 1=subsistence share in total income >10%)	0.003	0.912
Share of unearned income in total income (in %)	-0.000	0.114
Agricultural training (dummy, 1=yes)	0.004	0.879
Credit access (dummy, 1=yes)	-0.029	0.265
Attitudes towards non-farm self-employment (scale 1-5; 5 = positive)	-0.009	0.307
Attitudes towards non-farm waged employment (scale 1-5, 5 =positive)	0.052	0.000
Future of the farm (dummy, 1=intends to continue)	0.059	0.221
Income perception (scale 1-4; 4=enough for comfortable life)	-0.023	0.065
Perceived chances to find a non-farm job (scale 1-5, 5=very good)	0.044	0.000
Risk taking (scale 1-3, 3=take substantial risk)	-0.027	0.073
Economic development of region (dummy, 1=prosperous region)	0.016	0.467
Hungary (dummy, 1= Hungary)	-0.028	0.489
Poland (dummy, 1= Poland)	-0.105	0.002
Romania (dummy, 1= Romania)	0.016	0.543
Slovenia (dummy, 1= Slovenia)	0.047	0.218
Constant	-0.103	0.323
Sigma (coef.)	0.26	
F-value (19/736), F-value (19/735)	7.55	
Prob > F	0.00	
Pseudo R^2	0.22	
Log pseudo likelihood	-235.83	
N	754	

Note: Robust standard errors have been applied.
            Regression was left-censored at ≤ 0.209 censored observations.
Source: Chapter authors based on SCARLED database

The effect of the 'share of unearned income in total income' on income diversification misses the significance level. Households with a high share of unearned income tend to be more diversified, as the positive model coefficients indicate. A high share of unearned income often indicates the presence of pensioners in the households and thus entry barriers to the rural non-farm economy. However, when the 'perceived chances to find a non-farm job' are good, then the share of non-farm income and the HDI also increases. The coefficient is positive and effects are significant. The attitude towards waged employment is also positively and significantly influencing diversification. A negative effect on the diversification level arises if the household perceives its income sufficient for a comfortable life.

Risk taking behaviour also plays a role; the coefficient for the willingness to take risks is negative. A household with a higher willingness to take risks will not diversify but will either specialise in farming or take up only very limited non-farm activities. This finding confirms the theory, which suggests that risk reduction is of major concern in employment diversification. Those households in particular which are not willing to take risks are diversifying more strongly, especially into waged employment. Farm size also influences engagement in the non-farm labour market. Larger farms tend to diversify less – a result that is plausible. Nonetheless, the variable has to be interpreted with caution since: first, the coefficient is very low and thus the effect is not very high; and second, physical farm size alone is not a sufficient indicator for the viability of the farm. The inclusion of a variable representing the regional economic development revealed no significant results. Poland has a significantly lower level of diversification than the other countries in the sample.

5.4   Conclusions

There is no doubt that the scope for increasing the income of farmers in the NMS and ensuring improvement in their well-being solely through farming operations is limited. In fact, there should be concern that deep rooted poverty could be the outcome of small scale farm households depending on a single income from farm activities. Based on recent survey data, we have been able to show that farm households in the NMS not only have a great potential to open up non-farm sources, but they actually do so to a high degree. More than three-quarters of the NMS5 sample possess a general potential for diversification. This means that: (i) their internal conditions such as age and education allow for diversification and the external environment does not prevent it; and (ii) that their motivation is driven by economic needs and/or a positive attitude towards non-farm diversification. That this result is realistic is proven by the fact that the very same households indeed diversify to a high degree: more than two-thirds of the farm households are diversified; 77% of those who have the potential do indeed use it.

Clearly, distress-push motivation is the key to understanding this behaviour. It is rooted in the transition shock which is, even after 20 years, still not overcome – especially in rural areas. Small farm structures, which are found in all the NMS5 to differing degrees, push farm families into opening up alternative income sources. That this additional income is vitally important is shown by the results indicating the share of households that can escape poverty with the help of their non-farm income sources. Around 7% of the farms are poor, based on the 60% median national poverty line. This number would be much higher if the farm households had to rely on farm income only. Depending on the country, non-farm income shifts between 11% and 42% of households above this line. Also, unearned income (pensions and other social transfers) shift on average 9% of the farm households above the poverty line. Unearned income has a particularly high impact in Hungary, whereas non-farm income shifts are especially high in Slovenia.

Based on the NMS5 study we can identify some general patterns of diversification. First of all, the level of diversification is high. In four of the five countries non-farm income contributes around 30-40% to total incomes. Poland is an exception with a lower, but nevertheless sizeable contribution (27%). Here households rely to a greater degree on their farm operations. This has no implications on the Polish equalised per capita income, which is similar to those of, for instance, Hungary in PPP-€ terms. However, it seems to have an impact on some income groups. While the poorer Polish income groups rank second in the cross-country comparison, the wealthiest quintile lags behind all other countries. Income differences between the income groups are particularly high in Bulgaria, where the richest quintile earns four times more than the second richest and 20 times more than the poorest. Whether this is due to farm or non-farm income could not finally be clarified, but there are indications that farm income plays a major role. Looking at the cross-country average, apparently the poorest quintile has the lowest diversification capacity and probably the least remunerating job opportunities. The richest income group partly concentrates on farming, which leads to a lower diversification level for this group as well. Full-time farms (with at least 90% income from farming) are doing particularly well. They earn an additional 25% more than other farms in the fifth quintile.

Econometric results confirm that the chosen variables have a significant impact on the level of diversification, measured by a Herfindahl diversification index. Among the important drivers of diversification is education, which can be seen as a door opener for rural non-farm employment. Old age, on the other hand, constrains the chances of tapping into non-farm income sources. This is also confirmed by the negative impact of the share of unearned income on the diversification level, which often indicates that pensioners are in the household. Personal preferences also play an important role: a positive attitude towards waged non-farm employment influences diversification positively. Typical push

factors are a high number of dependent household members and small farm incomes. Both should increase the economic pressure to open up alternative employment and the level of diversification. However, we find no significant results for the dependency ratio. Farm size, which we use as a rough indicator for farm income, has a negative impact on diversification, however the impact is low. The perception of a high chance of finding a job is an indicator of a positive economic environment and/or the favourable employability of farm household members. This variable goes along with higher levels of diversification, probably demand-pull diversification. Finally, we can confirm that diversification is closely related to the pursuit of risk reduction. Risk reduction is supposed to be a major concern in employment diversification and the risk taking variable shows a significantly lower diversification potential if a household states a high willingness to take risks.

The question arises of how rural development, and particularly rural development based on the rural non-farm economy can be supported by policy makers. The high level of diversification shows clearly that rural policies need to look beyond agriculture. Yet for some, especially the poorer households, farming is still a key component and subsistence farming is a reality in many NMS. Therefore, the search for alternative pathways out of poverty should consider the barriers that poor households in particular face in opening up alternative employment. For some groups, such as elderly farmers who have few chances of expanding their income base on their own, a general social security policy is needed. For all others, an economic policy that addresses market failures, such as those frequently found in the credit and land markets, helps best to promote regional development.[2] As we show, both the potential and willingness for diversification are there, but reality shows that on the one hand better paid and attractive jobs are lacking and, on the other hand, qualified staff are missing to fill such jobs if they were available. Clearly, the importance of education and professional training for grasping non-farm employment opportunities cannot be overemphasised. Investment in the employability of the rural population is thus a key policy recommendation. Regional rural development could furthermore be supported by strategic investments into small and medium sized enterprises with an effect on labour markets. Territorial approaches such as those offered under the LEADER[3] axis of the Common Agricultural Policy are promising to foster sustainable development in this

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[2] Launched on September 3, 2010, the UNRISD Flagship Report, *Combating Poverty and Inequality*: *Structural Change, Social Policy and Politics*, explores the causes, dynamics and persistence of poverty and points in a similar direction as our findings. The report shows that among others, socio-economic progress was achieved best by combining state-directed strategies that combine economic development objectives with active social policies (UNRISD, 2010).

[3] Liaison entre actions de développement de l'économie rurale, in English: Links between actions for the development of the rural economy

direction. Nevertheless, elderly farmers who have few chances of expanding their income base on their own depend on a functioning social security net.

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Appendix 5

Table A5.1 Descriptives of metric variables of the Tobit analysis

	Mean	StDev
Age of household head (in years)	51.41	11.94
Dependency ratio	0.21	0.23
Farm land cultivated (in hectares)	12.43	76.98
Share of unearned income in total income	16.52	21.98
Attitudes towards non-farm self-employment (scale 1-5; 5=positive)	3.07	1.33
Attitudes towards non-farm waged employment (scale 1-5=positive)	3.89	1.08
Perceived chances to find a non-farm job (scale 1-5; 5=very good)	2.27	1.15
N	754	

Source: Chapter authors based on SCARLED database

Table A5.2 Descriptives of non-metric variables of the Tobit analysis

	#	%
Highest level of education (scale 1-5, 5= university degree)	1 = 3	0.40
	2 = 44	5.84
	3 = 211	27.98
	4 = 340	45.09
	5 = 156	20.69
Subsistence farming (1=subsistence share in total income >10%)	0 = 248	32.89
	1 = 506	67.11
Agricultural training (dummy, 1=yes)	0 = 548	72.68
	1 = 206	27.32
Credit access (dummy, 1=yes)	0 = 570	75.60
	1 = 184	24.40
Future of the farm (dummy, 1=intends to continue)	0 = 49	6.50
	1 = 705	93.50
Income perception (scale 1-4; 4=enough for comfortable life)	1 = 167	22.15
	2 = 290	38.46
	3 = 251	33.29
	4 = 46	6.10
Risk taking (scale 1-3, 3=take substantial risk)	1 = 349	46.29
	2 = 301	39.92
	3 =104	13.79
Economic development of region (dummy, 1=prosperous region)	0 = 502	66.58
	1 = 252	33.42
Hungary (dummy, 1=Hungary)	N = 126	16.71
Poland (dummy, 1=Poland)	N = 138	18.30
Romania (dummy, 1=Romania)	N = 199	26.39
Slovenia (dummy, 1=Slovenia)	N = 83	11.01
Bulgaria (Bulgaria is active when all other country dummies =0)	N= 208	27.59
N	754	

Source: Chapter authors based on SCARLED database

Chapter Six

Rural Livelihoods in Transition: Market Integration versus Subsistence Farming

Sophia Davidova, Lena Fredriksson and Alastair Bailey[1]

Subsistence farming is still widespread in the EU NMS where a majority, or nearly five million farms, produce mainly for own consumption. Chapter 6 focuses on the role of subsistence farming and the impediments to commercialisation in the five NMS included in the SCARLED survey. Valued at market prices, the results show that production for own consumption acts as an important safety net for the rural poor, notably in the poorest NMS, Bulgaria and Romania. A typology of farm households is generated by means of factor and cluster analysis, which indicates that farm households in the NMS are heterogeneous. Six farm types are identified, which differ in terms of both attitudes towards commercialisation and factual circumstances, such as degree of market integration, farm endowments and income diversification towards off-farm income sources. The farm types range from smaller farms facing a wide range of impediments to increasing their market participation, both internal and external to the household, to larger commercial farms for which increased commercialisation seems little problematic. The analysis concludes that favouring technological progress and investing in infrastructure are areas where policy can positively influence market participation, while the effect of expensive land consolidation processes is questioned. Low market prices constitute another perceived impediment by most farm types. However, it is important that any policy aimed at increasing market participation does not undermine the important safety net subsistence production constitutes for the rural poor. In addition, while some households engage in subsistence production out of necessity, others appear to do so by choice. The latter group would consequently be little affected by policy measures, and subsistence farming is therefore likely to persist in the NMS despite policies facilitating structural change.

Twenty years after the start of the transition in Central and Eastern European (CEE) countries, small scale subsistence and semi-subsistence farms are still widespread. The resilience of these farms has raised a heated debate about their role and future, particularly in relation to European Union (EU) membership, as

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producers in the New Member States (NMS) have to compete in the single EU market.

In the literature, there is no agreement about the role and prospects of subsistence farming. One school of thought treats subsistence and semi-subsistence farms in Europe as an unwanted phenomenon and an impediment to rural growth. Subsistence farming has been associated with a traditional technology, inefficiency, and a use of scarce resources which could have been allocated to a more efficient use (KOSTOV and LINGARD, 2002). Often, subsistence has also been related to poverty (MATHIJS and NOEV, 2004).

However, subsistence farming could be considered as an important survival strategy, not only in low but also in middle income countries, during periods of drastic economic reforms and/or economic recession. BRÜNTRUP and HEIDHUES (2002) argue that subsistence farming is a way for people to survive under difficult and risky conditions and to cope with high transaction costs in fragile economies.

In the economic literature the persistence of subsistence farming has been explained by market failure and particularly high transaction costs. As different farm households face different transaction costs, the evidence is that subsistence and commercial farms co-exist (e.g. KEY et al., 2000). The general wisdom is that subsistence farms are not market integrated and market based policies cannot be effective. Recently, this isolation from the output markets and non-responsiveness to price signals has been challenged. DYER et al. (2006) argue that subsistence households do adjust their supply to changes in agricultural output prices through multiple factor linkages when there is at least a single commercial producer in the vicinity. In the NMS there are commercial producers in most villages, thus the subsistence/semi-subsistence farms may react to output price changes even if indirectly.

All the arguments mentioned above treat subsistence farming not as a voluntary choice but as a necessity; households are forced into subsistence by economic shocks and/or imperfect markets. As long as there is perpetuation of 'selective' market failures affecting heterogeneous farm households differently (DE JANVRY et al., 1991) subsistence farming will persist.

However, subsistence farming might be a strategy selected by choice. Subsistence production could be favoured by households with non-farm income or by retired households in order to satisfy their lifestyle and consumption preferences. This aspect of subsistence farming has been much less explored, but there is some evidence that even if EU accession may lead to a decrease and eventual disappearance of subsistence farms, hobby farming is likely to persist even in the longer term (MÖLLERS et al., 2009).

In order to understand the barriers to, and facilitators for, commercialisation of subsistence farmers in the NMS where households with small farms are wide-

spread, understanding the role of subsistence farming in these countries is key. This chapter aims to briefly evaluate the role of subsistence farming in the five NMS analysed by the SCARLED project, namely Bulgaria, Hungary, Poland, Romania and Slovenia (NMS5). The main focus of the chapter lies in analysing the attitudes and perceptions of farm households about a range of impediments to their commercialisation and factors that could facilitate their market integration, using data for 2006 – the year for which primary data were collected. Multivariate statistics (factor and cluster analysis), and regression analysis are employed to investigate the impediments and facilitators to commercialisation and factors driving the exit from agriculture.

6.1 Background

There is no universally agreed definition of subsistence farming. Most of the definitions stress the objective to satisfy household food needs. BARNETT et al. (1996) define the following characteristics of subsistence farming: (i) the farming activities form a livelihood strategy; (ii) the output is consumed directly; (iii) only a few purchased inputs enter the production process; and (iv) the proportion of output sold is low (see KOSTOV and LINGARD, 2004, for a more extensive review of definitions of subsistence farming).

BRÜNTRUP and HEIDHUES (2002) argue that any definition of subsistence farming is always arbitrary since it is based on pre-determined thresholds. This is acknowledged by MATHIJS and NOEV (2002), who argue that another problem of defining subsistence farming lies in the possibility of considering the activity from either a consumption or a production point of view within a spectrum of zero to 100% of output consumed or sold respectively. In this study, the applied approach is to classify households from a production point of view. The consumption approach is not preferred since any commercial operation, fully integrated in input and output markets, may still cover a great deal of food consumption of the household.

WHARTON (1969) addresses the experienced difficulty created by an imprecise and non-uniform use of the term subsistence. Focusing on agricultural output markets, he argues that farm households can be placed on a continuum from zero to 100% depending on the proportion of their output sold. At the two extremes are purely subsistence and purely commercial operations with different mixes in between. With regard to this continuum, he introduced a threshold of 50% of marketed output, classifying farmers selling less than this as subsistence and semi-subsistence while labelling those above the threshold as semi-commercial and commercial. Moreover, he defines 'subsistence production' as a situation where the agricultural activities undertaken by the household are directed towards meeting consumption needs, without any, or with few, market transactions. Several authors (LERMAN, 2001; BRÜNTRUP and HEIDHUES, 2002;

KOSTOV and LINGARD, 2004) utilise this approach, which also informs the analyses in this chapter. Apart from the two extremes mentioned above, the following groups are defined based on this criterion and used in this study:

- Households selling 0 to 49.99% of their agricultural output – *subsistence oriented*

- Households selling 50 to 100% of their agricultural output – *commercially oriented*

The analysis of subsistence and semi-subsistence farming in the NMS is difficult owing to the lack of adequate data. One of the sources of comparable data (although not catering for subsistence farming) is the EU Farm Structure Survey (FSS). In compliance with EU requirements, the most recent FSSs in the NMS5 were carried out in 2005 and 2007. To understand the importance of subsistence farming in the NMS, consider first the farm structure of the NMS which differs from the established Member States (EU15) (Table 6.1). While NMS farms are concentrated at the smaller scale of the spectrum, the prevailing farm structure in EU15 shows a different pattern with a higher concentration of larger farms. Bulgaria, Hungary and Romania differ most from EU15, while the farm structure of Poland and Slovenia is more similar to the structure of the EU15, although they do not have as many farms larger than 20 hectares (ha).

MCCONNELL and DILLON (1997) argue that farms below 2 ha could be defined as semi-subsistence. As can be seen from Table 6.1, according to this definition the majority of farmers in Bulgaria, Hungary and Romania are semi-subsistence. In the cases of Poland and Slovenia, which did not experience the same collectivisation of land under communism, the farm structure is more similar to that of the EU15. Slovenia even has a lower share of semi-subsistence farmers in comparison to the average for the EU15.

Table 6.1   Shares of total number of holdings by farm size, 2007, %

Farm size (UAA*, ha)	Bulgaria	Hungary	Poland	Romania	Slovenia	EU-15
0<2	87	82	44	65	25	34
2<5	8	8	24	25	34	21
5<20	3	7	26	9	37	23
20<	2	4	5	1	4	22
Total	100	100	100	100	100	100

Note: *Utilised Agricultural Area. The UAA comprises total arable land, permanent pastures and meadows, land used for permanent crops and kitchen gardens. The UAA excludes unutilised agricultural land, woodland and land occupied by buildings, farmyards, tracks, ponds, etc.
Source: EUROSTAT FSS data, 2007

Another measure of farm size is the ESU, which measures the economic size of the farm and gives an indication of its production value.[2] Table 6.2 clearly illustrates the dominance of farms smaller than 1 ESU (defined by EUROSTAT as subsistence farms) in the NMS5. Slovenia places itself somewhere in between the NMS and EU15, with more farms larger than 1 ESU than the other NMS5 but still with fewer farms larger than 8 ESU compared to the EU15.

Table 6.2   Farm structure by ESU and corresponding UAA, 2007, %

	Bulgaria		Hungary		Poland		Romania		Slovenia		EU15	
ESU	% of total farms	% of total UAA	% of total farms	% of total UAA	% of total farms	% of total UAA	% of total farms	% of total UAA	% of total farms	% of total UAA	% of total farms	% of total UAA
<1	76.1	6.0	77.5	4.1	52.8	10.5	78.0	30.9	18.4	5.6	15.7	3.5
1<8	21.6	10.8	17.9	13.7	36.9	38.0	21.4	31.3	66.0	50.1	44.9	11.2
8≤	2.3	83.2	4.6	82.1	10.3	51.6	0.6	37.7	15.6	44.3	39.4	85.3
Total	100	100	100	100	100	100	100	100	100	100	100	100

Source: EUROSTAT FSS data, 2007

In absolute numbers, there are nearly five million farm holdings in the NMS5 which produce mainly for household consumption (Table 6.3). In general, they are very small farms. One notable exception is Slovenia where most of these farms are larger than 1 ESU.

Table 6.3   Subsistence oriented farms in the studied NMS, 2007

	Bulgaria	Hungary	Poland	Romania	Slovenia	Total
Total number of farms (thousands)	493.13	626.32	2,390.96	3,931.35	75.34	7,517.10
Share of farms producing mainly for own consumption (%)	69.7	83.4	38.0	80.7	60.5	66.4
Share of farms <1ESU (%)	76.1	77.5	52.8	78.0	18.4	69.2
Share of farms <1ESU producing mainly for own consumption (%)	81.8	91.8	54.3	85.6	88.8	78.3

Source: EUROSTAT FSS data, 2007

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[2]   As an example, in England, one ESU roughly corresponds to either 0.6 ha of cereals, or two dairy cows, or 13 ewes, or equivalent combinations of these. http://www.defra.gov.uk/evidence/statistics/foodfarm/farmmanage/fbs/sub/min-size.htm, accessed October 2010

Farms producing mainly for own consumption dominate the farm structure in Bulgaria, Hungary, Romania and Slovenia. Still, 38% of farmers in Poland can be defined as subsistence oriented according to the share of production for own consumption. The table above also shows the small size of these farms in terms of ESU.

6.2 Methodology

The methodology employed here involves two steps necessary to achieve the objective of this study. The first one is the valuation of unsold output and analysis of its importance for the household income of various types of farm households. This step helps answer the following questions: (i) does subsistence farming provide an important contribution to household incomes? (ii) is this contribution more important in the poorest EU Member States (Bulgaria and Romania) than it is in the Central European countries? (iii) what is the role of subsistence farming for poor and vulnerable households? The constructed variable, household income per capita including the value of unsold output (the latter is also referred to here as income-in-kind or subsistence production), is also used at the second step as one of the validation variables for the cluster analysis.

As mentioned earlier, it is important to investigate the importance of subsistence production for poor households (PETROVICI and GORTON, 2005). In order to identify poor households, the EUROSTAT definition of at-the-risk-of-poverty is used. This measure refers to individuals living in households where the equivalised income is below the threshold of 60% of the national equivalised median income.[3] Equivalised income is defined as the household total income divided by the equivalised size of the household. The household equivalised size was calculated using the modified Organisation for Economic Cooperation and Development (OECD) equivalence scale.[4]

The second step in the methodology is to create relatively homogeneous groups of farm households, using factor and cluster analysis. The criteria used here depend on: the farm households' current aims in farming; their assessment regarding household agricultural production; their perceptions about the impediments to commercialisation that they face; and those measures they believe can facilitate the increase in their market integration. Within the country surveys, respondents were asked to answer statements related to: their aims in farming; their attitude towards their current agricultural activities; their perceptions about barriers to increasing output; and some measures that might

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[3] The EUROSTAT at-the-risk of poverty thresholds in 2006 were: Bulgaria €1022, Hungary €2308, Poland €1867, Romania €828 and Slovenia €5589.

[4] This scale gives a weight of 1.0 to the first adult, 0.5 to any other household member aged 14 years and over, and 0.3 to each child.

enable them to increase the share of output sold. Households had to state the degree to which they agreed or disagreed with the set of statements, measured on 5-point Likert scales from 'Totally disagree' – 1 to 'Totally agree' – 5. Altogether, 28 statements were included in the questionnaire. They are presented in Table 6.8 later in the chapter. The statements were used as variables in factor and cluster analysis. First, in order to assess the structure of the inter-relationships between these variables, and summarise and reduce the data, factor analysis was performed (HAIR et al., 1998). Factors presenting an eigenvalue of one or greater were chosen. The cut-off applied here used factor loadings (the correlation coefficients between a variable and a factor) ≥0.5 on at least one factor. The application of factor analysis was justified by two tests: the Barlett test of sphericity to test the null hypothesis that the inter-correlation matrix comes from a population with non-collinear variables, and the Kaiser-Meyer-Olkim (KMO) measure of sampling adequacy to define whether the data matrix has sufficient correlation to justify the application of factor analysis.

The factors were subsequently used in a two stage cluster procedure. First, Ward's method, a hierarchical technique, was used to identify outliers and profile the cluster centres. Then, the observations were clustered using a non-hierarchical method with the cluster centres from the hierarchical results used as the initial seed points. PUNJ and STEWARD (1983) argue that this procedure maximises the benefits of both the hierarchical and non-hierarchical approaches while it minimises their shortcomings.

In the final step, the resulting clusters were included as dummies in a linear stepwise regression using share of output sold as the dependent variable. The rationale of this approach is to investigate the group (cluster) effect on the degree of commercialisation. In addition to the cluster dummies, several other variables were tested for their predictive power. Continuous variables included: share of food consumption from own production as a proxy for the importance of farming activity for covering household food needs; distance to the nearest urban centre as a proxy for external transaction costs; total cultivated area as a measure of farm size; and a land dispersion index as a proxy for internal transaction costs (this variable was calculated by multiplying the number of household land plots by the distance to the most distant plot). Country dummies were included, as well as dummies for production technologies that could affect productivity rates, output and sales (farming predominantly with machinery; with machinery and draft animals; or manually).

6.3   Data

The objectives of this chapter require a valuation of the unsold output. Production of crops, meat and processed products (including milk and eggs), were all valued product by product at market prices as a proxy for opportunity

costs. If a household had sold a portion of the output in the market, the same price was imputed to the unsold quantity since it was assumed that the price the household had achieved was the best indication about the quality of output. In cases when the household consumed 100% of the output, crops and processed products were valued using a weighted average price for the village. In some instances, where there were only a few observations of output sold in a particular village and there was a large difference in reported prices, either regional averages or country averages reported by the national statistics were imputed. The data did not allow computing a weighted average for livestock products, as only the average weight and the average price per head were reported, and not the quantities sold. For this reason, when a village/regional livestock price was calculated it was a simple arithmetic average.

As data from the five countries were merged, all values were converted into Euro using EUROSTAT purchasing power parities (PPPs) for 2006, the reference year for the collected data.[5] Table 6.4 presents the descriptive statistics of the sample used in the analysis.

Table 6.4   Descriptive statistics of the sample analysed

	Mean	Min	Max	Std. Deviation
Number of observations	668			
Age of household head	54.3	22	89	12.9114
Time spent on-farm by household head (%)	72.4	0	100	36.6507
Number of household members	3.5	1	9	1.62244
Total cultivated area (ha)	8.7	0.005	132	14.2779
Size of the biggest plot (ha)	2.9	0	67	5.16438
Distance to the most distant plot (km)	3.7	0	45	4.67885
Distance to the nearest urban centre (km)	22.5	4	78	18.9999
Share of sales in output (%)	52.9	0	100	32.61537
Share of food consumption from own production (%)	45.3	0	100	26.97347
Equivalised income per capita (PPP-€)				
- excl. subsistence production	8,304	254	52,264	7,137.38
- incl. subsistence production	10,245	451	68,627	7,817.87
Subsistence production as share of total household income (%)	21.4	0.0	80.4	17.933
Value of agricultural equipment (PPP-€)	17,773	0	68,0343	4,1616.52

Source: Chapter authors based on SCARLED database

Table 6.4 indicates that farmers in the five NMS are relatively old. They spend nearly three quarters of their time on-farm. The mean household is not large, 3.5 members on average. The mean cultivated area is small, 8.7 ha, but the size of the largest cultivated area is well over 100 ha.

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[5]   PPP rates used here can be found under http://epp.eurostat.ec.europa.eu/.

On average, the sample households sell half of their agricultural output, which places them at the margin between semi-subsistence and commercially oriented, based upon the criteria discussed previously, but pure subsistence households are present in this sample. Home produced food covers a substantial part, about 45% on average, of their food consumption. The contribution of subsistence production to household income is 21.4%. However, most of these observations refer to the sample mean. The minimum and maximum indicate extreme cases of very high dependence on subsistence farming, or conversely, of a lack of any reliance on subsistence.

The mean household income per capita, with and without the valuation of subsistence production, is less than 10,250 (PPP-€) per annum. It should be noted that the standard deviation of household income is large, and both the mean and standard deviation increase with the valuation of the unsold output. At first glance, the location characteristics, represented by the distance to the nearest urban centre, do not suggest remoteness, but in situations where there is poor or inadequate transport infrastructure some households might find that distance acts as an impediment to reaching buyers and wholesale markets, or to cultivating their most distant land plots.

6.4 Results

6.4.1 Importance of subsistence farming for agricultural household incomes

Table 6.5 provides a general picture of the contribution of subsistence production to the total household income.

Table 6.5   Contribution of subsistence farming to total household income per capita, by country

	Bulgaria	Hungary	Poland	Romania	Slovenia
Equivalised income per capita excluding subsistence production (PPP-€)	8,902	9,957	6,744	5,280	11,805
Value of subsistence production per capita (PPP-€)*	2,864	507	2,146	2,365	1,601
Share of the value of the unsold output in income per capita (%)**					
- All households	28.29	5.99	23.53	32.68	12.54
- Poor households	39.49	19.07	40.44	50.82	23.29

Note.   * Based on equivalised household size.
        ** Calculated as equivalised value of unsold output per capita/equivalised income per capita including the value of unsold quantities.
Source: Chapter authors based on SCARLED database

Subsistence production valued at market prices contributes significantly to household incomes, particularly in Romania, Bulgaria and Poland. Although in Hungary there are more than half a million farms, producing mainly for self-consumption (see Table 6.3), their contributions to household income is modest. It is likely that many of these farms are semi-subsistent by choice and generate much of their incomes from off-farm or non-farm activities.

As expected, the contribution of subsistence farming is higher for households that are below the poverty line (the poverty line is calculated before the valuation of unsold output). Notably, subsistence farming appears to be crucial for the survival of poor agricultural households in Romania. The share of the value of the income-in-kind in the total household income of the poor Romanian households is large at 51%.

Despite this central importance of subsistence production for the incomes of the Romanian poor, it is in Bulgaria where its valuation has the largest effect, measured by the switch of households from below to above the poverty line (Table 6.6).

Table 6.6   Contribution of subsistence farming to poverty alleviation, by country

Country	Below poverty line excl. subsistence production		Below poverty line incl. subsistence production		Pushed above poverty line when incl. the value of unsold output	
	Number	Share (%)	Number	Share (%)	Number	Share (%)
Bulgaria	19	20.9	8	8.8	11	12.1
Hungary	14	13.3	9	8.6	5	4.8
Poland	14	9.5	3	2.0	11	7.5
Romania	6	3.5	2	1.2	4	2.3
Slovenia	39	25.7	26	17.1	13	8.6
Total	92	13.8	48	7.2	44	6.6

Source: Chapter authors based on SCARLED database

Surprisingly, Slovenia, which on average is the richest amongst the NMS5 measured by gross domestic product (GDP) per capita, has the highest share of poor households. It has to be borne in mind that the poverty lines are relative and country-specific. What the above table indicates is that in relation to the average incomes in the country, Slovenia and Bulgaria have the highest proportions of rural poor.

6.4.2 Aims and perceptions of farm households to farming and commercialisation

The aims of the majority of respondents regarding their farming activities are both to provide food for the household (49.7% totally agreed) and to generate cash income (40.4% totally agreed) (Table 6.7). These attitudes reflect both subsistence objectives (providing food for the household) as well as commercially oriented intents (generating cash income). However, it appears that some households with small farming activities are hobby farmers. In this regard, 24.1% of respondents totally agreed with the statement that their aim in agriculture was to 'Enjoy farming', 25% totally agreed with the statement 'We only produce for the provision of safe food for the household' and 18.7% totally agreed with the statement 'We do not produce for pecuniary reasons'.

Table 6.7   Aims regarding farming activities, %

	Totally disagree	Some-what disagree	Neither agree or disagree	Some-what agree	Totally agree	Total
To provide food for the household	7.2	5.5	6.7	30.8	49.7	100
To provide work for household members	18.7	13.9	17.1	31.7	18.6	100
To transfer to the next generation	15.0	10.3	25.6	24.6	24.6	100
To enjoy farming	8.5	8.4	25.3	33.7	24.1	100
To generate cash income	10.2	7.0	12.3	30.1	40.4	100
We only produce for the provision of safe food for the household	15.3	17.7	15.1	26.9	25.0	100
We do not produce for pecuniary reasons	24.9	24.1	18.6	13.8	18.7	100

Source: Chapter authors based on SCARLED database

Concerning the respondents' perceptions about barriers to commercialisation and factors/policies that may facilitate their market integration, the survey suggests that they are influenced by market prices and policy support, thus they appear not to be purely subsistence farm households. More than half of the respondents perceive that the prices they receive are low and that this is their main barrier to increasing production and sales. Consistently, they totally agree that in order to increase the degree of commercialisation 'Agricultural prices would need to be higher' and they 'Would need (higher) policy payments to agriculture and rural development'. The latter presents the respondents as Common Agricultural Policy (CAP) supporters, at least in its current format for

the period until 2013. Insufficient capital, their own old age and health problems are other important barriers to commercialisation perceived by respondents.

ANOVA indicates that the country differences in the mean scores for Likert scales are statistically significant. Almost all households in the two poorest countries analysed (according to GDP per capita) totally agree that the main objective of farming is to provide food for the household (the mean scores are 4.60 for Bulgaria and 4.83 for Romania, whilst the mean score for the whole sample is 3.38). On the other hand, the attitude to farming as an activity households enjoy is the most pronounced in the richest amongst the NMS5, Slovenia, where the score for the objective to generate cash income is lower than the sample average. However, the relationships between farm household perceptions and the country level of economic development need to be interpreted with caution as they may reflect cultural rather than economic differences. As barriers to increasing production, the perceptions that output prices are low are particularly strong in Poland and Romania. The Romanian households also perceive the existing infrastructure and their own old age/health problems as impediments to increasing farm output. The latter were consistent in their responses as they totally agreed (a mean score of 4.22) that an improved market and transport infrastructure could facilitate their commercialisation.

However, these differences in the means cannot help the heterogeneity in the attitudes and perception of the sample households to be understood. For this purpose, as mentioned previously, factor and cluster analyses were employed. The list of all of the variables considered and those variables extracted for the factor and cluster analysis (those highlighted in bold) are shown in Table 6.8. The remaining un-emboldened variables had low factor loadings (below the cut-off point of 0.5) and were excluded from further analysis.

In addition, several variables were used to validate the clusters. They included variables characterising the household head (e.g. age, percentage of time spent on-farm); other household characteristics (number of household members; equivalised income per capita (PPP) with and without the valuation of subsistence production; share of subsistence production in total household income; share of own produced food in food consumption); farm characteristics and location (total cultivated area; number of plots; size of the biggest plot; distance to the farthest plot from the residence; share of output sold).

The factor analysis generated six factors, explaining 65% of the variance (the rotated component matrix is presented in Appendix 6). The KMO measure of sampling adequacy was 0.84, indicating that the data matrix had sufficient correlation to justify the use of factor analysis. Bartlett's test of sphericity was statistically significant at the 1% level, rejecting the null hypothesis that the correlation matrix was an identity matrix.

Table 6.8   Statements included in the questionnaire and cluster profiling variables (in bold)

Current aims for agricultural activity
To provide food for the household
To provide work for household members
To transfer to the next generation
To enjoy farming
To generate cash income
Perceptions about current agricultural activity
We have good profitability
We fully employ household members
We only produce for the provision of safe food for the household
We do not produce for pecuniary reasons
We get satisfactory income from current sales
Perceptions about barriers to increasing production
We lack capital
We receive low prices for agricultural output
We lack necessary skills and education
We lack information and advice on market prices
We cannot meet standards of buyers or public regulations
Market and transport infrastructure prevent us from selling our products
Age/health prevent us from producing more than we currently do
Perceptions about facilitators to commercialisation
Agricultural market prices would need to be higher
We would need more land
We would need to specialise production into fewer products
We would need to invest in new machinery
We would need credit
We would need to collaborate with other households or farms to collectively market output
Market and transport infrastructure would need to be improved
We would need advice on how to meet buyers' quality standards and how to comply with public regulations
We would need training in marketing
We would need contracts with buyers
We would need (higher) policy payments to agriculture and rural development

Source: Chapter authors based on SCARLED database

The first factor relates to facilitators to commercialisation, including investment, training, farmers' collaboration, and contracts with buyers. The second one is associated with informational barriers to market integration and a lack of skills. The third factor indicates the perceived facilitators to commercialisation 'Agricultural market prices would need to be higher' and 'We would need higher payments for agriculture and rural development'. The fourth factor is related to two farm objectives, namely cash income and non-pecuniary aims in farming. The fifth factor relates to insufficient capital and low market prices as barriers to increase production. The last factor could be labelled farming lifestyle and summarises two aims for agricultural activity 'To enjoy farming' and 'To transfer to the next generation' (see Appendix 6).

Using these factors as a basis for clustering and following the clustering procedure presented in the methodology section, a six cluster solution was obtained (Table 6.9). The clusters were validated with a set of continuous variables (Table 6.10) and the analysis further informed through a range of binary validation variables (Table 6.11). The geographical distribution of clusters was also considered (Table 6.12).

Cluster 1 could be labelled '*low income part-time farmers'*. Households within this cluster claim they do not produce for pecuniary reasons. They have the lowest equivalised per capita incomes in the sample, both excluding and including the value of subsistence production, 6,368 and 7,675 PPP-€, respectively (Table 6.10). Members of this cluster are located near an urban centre; the mean distance is only 15.8 km. The proximity of non-farm jobs may explain why this cluster has the highest share of household members in wage employment. Concerning farm endowments, this cluster has the smallest land holdings in comparison to the other five clusters, operates with the lowest level of technology and makes the least use of hired labour (Table 6.10). The members of this cluster (together with Cluster 6) sell the lowest share of output, 37.5%, and subsistence production is relatively unimportant for the household income (13.7%). The households of this cluster claim to be constrained by low market prices. Owing to the low level of the existing technology and market integration, they also state that they would need to invest in machinery, cooperate with other households and establish contracts with buyers in order to become more commercially oriented. Polish households dominate this cluster with 59.0% of the cluster membership (Table 6.12). Considering the low incomes of the households in the sample, it is likely that some households in this cluster are pushed to keep farming to secure household food consumption needs (the share of food consumption from own production is 47.8% which is higher than the sample mean of 45.3%). It is also possible that part of the cluster are hobby farmers, whose agricultural activities are a lifestyle choice although they contribute little to household incomes.

On the surface, **Cluster 2,** *commercially oriented market constrained households,* and **Cluster 4**, *commercially oriented market unconstrained households,* have several similarities. Generating cash income as an objective for farming is most pronounced for these two clusters, and their members also sell the highest shares of output, 61.3 and 61.2% respectively. With that they represent the most commercially oriented clusters in the sample, and the commitment to commercial agricultural activity is also reflected in the time allocation of household heads, who spend the highest shares of time on-farm (77.6 and 83.3% respectively) in comparison with the other clusters. The two clusters also share similar characteristics with respect to farming technology. However, the two clusters differ substantially with respect to their perceptions about the barriers to increase sales (Table 6.9). While Cluster 2 has the highest

Likert-scale scores regarding the statements related to barriers to increase production, Cluster 4 has the lowest. This profiles Cluster 2 as *commercially oriented market constrained households* and Cluster 4 as *commercially oriented market unconstrained households*. The perceptions about facilitators to commercialisation also differ substantially. While the members of Cluster 2 agree relatively strongly with all the statements about what would help them increase their market integration, households in Cluster 4 do not seem to experience the same level of difficulty in accessing markets. In contrast to all other clusters supporting strongly the need for an increase in policy payments, Cluster 4 members disagree with the importance of these policies for their increased commercialisation (a mean score of 1.81 compared to the sample mean of 4.10).

An explanation for the attitudinal differences between Clusters 2 and 4 might be the household circumstances. Members of Cluster 4 have more land and higher incomes than Cluster 2 (Table 6.10). In addition, a greater proportion of Cluster 4 uses own machinery (Table 6.11).

Table 6.9   Cluster profiling variables

Attitudinal statement		Cluster mean						Sample mean	6-cluster *F*-test	Sig
		1	2	3	4	5	6			
	N=	100	157	79	78	152	102			
Current aims for agricultural activity										
To transfer to the next generation		3.13	3.62	3.25	3.27	3.57	2.84	3.33	5.856	0.000	***
To enjoy farming		3.27	3.64	3.95	3.46	3.76	3.23	3.56	5.807	0.000	***
To generate cash income		2.55	4.44	3.2	4.17	4.47	3.46	3.84	56.155	0.000	***
Perceptions about current agricultural activity										
We do not produce for pecuniary reasons		4.52	1.97	2.99	2.13	2.45	3.11	2.77	67.929	0.000	***
Perceptions about barriers to increasing production										
We lack capital		4.32	4.24	2.1	4.03	3.06	3.97	3.66	66.8	0.000	***
We receive low prices for agricultural output		4.64	4.75	2.11	4.21	4.3	4.02	4.14	96.248	0.000	***
We lack necessary skills and education		2.08	1.82	1.71	2.29	2.6	3.6	2.35	49.973	0.000	***
We lack information and advice on market prices		2.17	2.6	1.94	2.76	2.87	3.8	2.72	34.846	0.000	***
We cannot meet standards of buyers or public regulations		2.2	2.33	1.54	2.28	2.49	3.62	2.44	45.837	0.000	***

Table 6.9   Cluster profiling variables (continued)

Attitudinal statement	Cluster mean						Sample mean	6-cluster F-test	Sig	
Perceptions about facilitators to commercialisation										
We would need to specialise production into fewer products	2.93	3.71	3.34	1.45	2.57	3.3	2.96	44.275	0.000	***
We would need to invest in new machinery	3.46	4.41	4.13	1.74	2.59	4.11	3.46	88.094	0.000	***
We would need credit	3.07	4.02	3.61	1.77	1.78	3.68	3	89.579	0.000	***
We would need to collaborate with other households or farms to collectively market output	3.14	3.88	3.22	1.65	2.45	3.5	3.05	48.919	0.000	***
Market and transport infrastructure would need to be improved	2.92	4.1	3.86	1.62	3.22	4	3.39	61.456	0.000	***
We would need advice on how to meet buyers' quality standards and how to comply with public regulations	2.4	3.96	3.53	1.45	2.65	3.7	3.04	69.129	0.000	***
We would need training in marketing	2.43	3.9	3.67	1.69	2.18	3.45	2.94	67.82	0.000	***
We would need contracts with buyers	3.46	4.01	3.53	1.67	2.89	3.91	3.33	52.181	0.000	***
Agricultural market prices would need to be higher	4.55	4.68	3.89	2.26	4.63	4.51	4.25	99.091	0.000	***
We would need (higher) policy payments to agriculture and rural development	4.22	4.59	4.03	1.81	4.61	4.3	4.1	110.048	0.000	***

Note: *Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Source: Chapter authors based on SCARLED database

Table 6.10 Continuous cluster validation variables

Variables	Cluster mean						Sample mean	6-cluster F-test	Sig	
	1	2	3	4	5	6				
N=	100	157	79	78	152	102	668			
Age of household head	55.78	55.21	54.00	51.63	54.34	53.85	54.34	1.153	0.331	
Time spent on-farm by household head (%)	70.5	77.6	66.2	83.3	67.6	69.9	72.4	3.174	0.008	***
Number of household members	3.59	3.57	3.89	3.58	3.11	3.25	3.46	3.246	0.007	***
Total cultivated area (ha)	3.69	9.98	9.90	12.19	10.95	4.56	8.67	6.480	0.000	***
Size of the biggest plot (ha)	1.98	3.41	3.01	3.37	3.38	1.82	2.89	2.239	0.049	**
Distance to most distant plot (km)	2.59	3.99	3.23	5.11	4.00	3.02	3.68	3.376	0.005	***
Distance to nearest urban centre (km)	15.8	21.5	25.3	34.5	21.3	20.9	22.5	9.982	0.000	***
Share of sales in output (%)	37.5	61.3	55.6	61.2	53.3	45.6	52.9	9.121	0.000	***
Share of food consumption from own production (%)	47.8	42.9	41.8	47.9	45.3	47.0	45.3	0.857	0.510	
Equivalised income per capita (PPP-€)										
Excl. subsistence production	6,368	8,226	10,396	10,635	8,572	6,481	8,304			***
Incl. subsistence production	7,675	10,398	11,754	13,301	11,005	7,874	10,245			***
Subsistence production contribution to total income (%)	18.96	21.34	13.35	24.44	24.68	23.13	21.42	5.290	0.000	***
Value of agricultural equipment (PPP-€)	8,167	22,150	25,656	20,887	18,787	8,955	17,773	1.999	0.078	***

Note: *Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Source: Chapter authors based on SCARLED database

Finally, Cluster 2 is dominated by Romanian households (35.7% of the cluster members) which are hardly represented in Cluster 4 (2.6%). Bulgarian households account for the largest share of the membership of Cluster 4 (37.2%) and the lowest one of Cluster 2 (10.2%) (Table 6.12). Hungary and Poland each represent approximately 15% in Cluster 2 and 18% in Cluster 4.

**Table 6.11   Binary cluster validation variables, share of cluster
membership in %**

Variables	Cluster Number						Total sample
	1	2	3	4	5	6	
Below poverty line excluding subsistence production	13	7	20.3	21.8	8.6	21.6	13.8
Below poverty line including subsistence production	10	2.5	12.7	9	3.9	10.8	7.2
No household member self-employed	95	94.3	96.2	89.7	92.8	91.2	93.3
No household member in wage employment	25	37.6	31.6	39.7	48	35.3	37.3
Farming with household labour only	91	84.7	89.9	75.6	80.9	87.3	84.7
Formal credit used for production and marketing	3	7.6	5.1	14.1	8.6	3.9	7
Technical assistance used	6	17.2	11.4	17.9	15.8	8.8	13.3
Main farming technology							
Own agricultural machinery	42	48.4	55.7	56.4	46.1	35.3	46.7
Other peoples' agricultural machinery	30	39.5	16.5	26.9	38.8	48	35
Own draft animals and agricultural machinery	3	0	1.3	2.6	4.6	2	2.2
Other peoples' draft animals and agricultural machinery	7	3.2	1.3	1.3	2	2.9	3
Manually	15	8.3	24.1	9	6.6	11.8	11.4

Source: Chapter authors based on SCARLED database

Table 6.12   Cluster membership by country, %

Country	Cluster Number						Total sample
	1	2	3	4	5	6	
Bulgaria	7.0	10.2	25.3	37.2	6.6	8.8	13.6
Hungary	6.0	14.6	15.2	17.9	24.3	12.7	15.7
Poland	59.0	15.3	3.8	17.9	20.4	15.7	22.0
Romania	16.0	35.7	7.6	2.6	35.5	38.2	25.9
Slovenia	12.0	24.2	48.1	24.4	13.2	24.5	22.8
Cluster total	100	100	100	100	100	100	100

Source: Chapter authors based on SCARLED database

   Cluster 3, labelled *high-income part-time farmers,* **and Cluster 5,** labelled
commercially oriented externally constrained households have similar degrees
of market integration with 55.6 and 53.3% of output sold. They are therefore
defined as commercially oriented, even though to a lesser extent than Clusters 2
and 4. The two clusters share similar demographic characteristics, size of

holdings and household head time allocation to work on-farm. While both clusters agree with enjoying farming, generating cash income is a strong objective for Cluster 5 but less so for Cluster 3. There are two plausible explanations for this. On the one hand, households in Cluster 3 are slightly larger and have a higher share of members engaged in waged employment in comparison with Cluster 5, which has the lowest degree of income diversification of all clusters. This could explain the high average incomes of Cluster 3 and its low share of subsistence production in total household income. On the other hand, there is a high degree of poor households in this cluster and subsistence production plays an important role in shifting these households above the poverty line. Providing food for the household could hence be a stronger objective than producing for pecuniary reasons. Nevertheless, the higher involvement in off-farm employment and lower degree of commercialisation relative to Clusters 2 and 4, and the higher incomes than Cluster 1 best define Cluster 3 as *high income part-time farmers*.

The high income part-time farmers of Cluster 3 appear relatively unconstrained in increasing output, but seem to be facing constraints with respect to increasing sales where they lean towards agreeing with all the proposed statements about facilitators to increase commercialisation. It should be borne in mind that these farmers are mainly farming part-time, are integrated in off-farm labour markets to a high extent and already enjoy high incomes. It is likely that for them to increase sales, it would be necessary to allocate more time to on-farm work, thus requiring a higher pay-off than current income activities would generate. Policy payments to agriculture and rural development together with increased market prices and improved infrastructure are the external factors that would have the highest impact. At the farm household level, investing in new machinery and accessing credit are the two factors that would matter the most. Training in marketing and how to meet quality standards are other factors that could be important, as well as establishing contracts with buyers. Specialising in production and collaborating in marketing output seem to matter only to a lesser extent.

In contrast, the low degree of involvement in off-farm employment of household members in Cluster 5 gives the impression of this cluster as more oriented towards agriculture and as such more similar to Clusters 2 and 4. Comparing the attitudes towards perceived barriers and facilitators for commercialisation, Cluster 5 is very similar in its opinions to Cluster 4 (commercially oriented unconstrained households). However, the perceptions about external constraints to market integration differ in comparison to Cluster 4, thus Cluster 5 is labelled *commercially oriented externally constrained households*. The members of Cluster 5 claim they receive low prices for agricultural output and in order to increase sales they strongly agree that market prices would need to be higher. Policy payments to agriculture are an equally

important factor. Infrastructure improvement could also benefit their market integration, although to a lesser extent. A final point to make with respect to this cluster is the indication of a high proportion of households in this cluster being pensioners; the high share of vulnerable households and the high average age of household heads. It is therefore likely that a large proportion of households in this cluster would not respond to policy measures aimed at increasing commercialisation, even if through increased policy payments.

Slovenia dominates Cluster 3 (48.1% of the cluster membership), followed by Bulgaria (25.3%). This distribution of households within the cluster may explain why there is a large share of households below the poverty line, despite average incomes being high. As indicated in Table 6.6, Bulgaria and Slovenia have high shares of rural households below the poverty line, and at the same time Slovenia has the highest GDP per capita amongst the NMS5. Both Slovenia and Bulgaria only represent smaller shares of Cluster 5, where Romania has the largest share (35.5%) and Hungary and Poland make up 24.3 and 20.4% of the cluster, respectively.

Cluster 6 incorporates *subsistence oriented low-income households*. Output sold is 45.6% and incomes are, together with Cluster 1, the lowest in the sample. Generating cash income is not a strong objective for farming. Considering that 21.6% of households fall below the poverty line before subsistence production is valued, satisfying household food consumption needs is likely to be a stronger objective. After valuation of subsistence production, this figure falls to 10.8%. Income diversification of this cluster is high, with a high share of household members working off-farm and household head time allocation to on-farm work being slightly lower than average. Land assets are small and ownership of agricultural machinery is low. It is not expected that these households will shift away from part-time subsistence oriented farming to commercially oriented agricultural activities since this would require major adjustments. This is reflected in the perceptions about barriers to increasing production and facilitators for increasing commercialisation, where households highly agree with all proposed statements. Naturally, increased policy payments and increased market prices could impact on this decision as could infrastructure improvements but, most importantly, the answers of this cluster indicate that, at present, these subsistence oriented farmers do not possess the necessary assets, skills and contacts to commercialise. It appears that what would benefit the households in this cluster the most are not policies aimed at commercialisation of agricultural activities as much as policies in favour of developing rural labour markets. Such measures would allow the small land assets of these farmers to be put to more efficient use by larger commercially oriented holdings.

Geographically, Romania occupies the largest share of this cluster (38.2%) followed by Slovenia (24.5%). The other countries only make up smaller shares of the cluster (Bulgaria 8.8%, Hungary 12.7% and Poland 15.7%).

As explained in the methodology section, the resulting clusters were used in a regression analysis.

6.4.3 Stepwise regression

The approach taken to model specification reflects that, while there is some theoretical a priori reason to think that a range of variables is likely to affect the degree of agricultural commodity market integration of farmers in the sample, there is no real idea of which are the most important. As a result, the approach makes use of a stepwise variable inclusion procedure with share of output sold as the dependent variable. The process begins with the most parsimonious specification and subsequent iterations of the model test for the inclusion of additional parameters, one per iteration. In each subsequent iteration, the excluded independent variable that has the smallest probability of F is entered in an iterative manner as long as the probability of F is sufficiently small, while those independent variables already in the regression equation are removed if their probability of F becomes sufficiently large. Iteration stops when no more variables are eligible for inclusion or removal. Each model is estimated using ordinary least squares (OLS).

The most general model considered here could include four continuous variables, six cluster dummies, three technology dummies and five country dummies. As previously mentioned, the independent variable, used to indicate the degree of agricultural commodity market integration of each farm household, is the share of agricultural output sold. The variables used are listed below:

Continuous variables

Y = Share of agricultural output sold

$X1$ = Share of food consumption from own production

$X2$ = Land dispersion index (number of land plots x distance to furthest plot)

$X3$ = Total cultivated land area (ha)

$X4$ = Distance to nearest urban centre (km)

Dummy variables

C1= Cluster dummy – Low income part-time

C2 = Cluster dummy – Constrained commercial

C3 = Cluster dummy – High income part-time

C4 = Cluster dummy – Unconstrained commercial

C5 = Cluster dummy – Externally constrained commercial

C6 = Cluster dummy – Subsistence oriented low-income

S1 = Country dummy – Slovenia

S2 = Country dummy – Bulgaria

S3 = Country dummy – Romania

S4 = Country dummy – Hungary

S5 = Country dummy – Poland

T1 = Technology dummy – Mechanical

T2 = Technology dummy – Manually

T3 = Technology dummy – Draft animals

Summary statistics of the continuous variables considered are presented in Table 6.4. The dummies for Romania, Cluster 1 (*low income part-time farmers*) and mechanical technology were dropped to avoid singularity.

The estimation procedure began with a model which included a constant and one continuous censored variable: the share of food consumption from own production. Iteration continued through nine further models during which time no variables included in a previous step were dropped. The final model selected included a constant, two continuous variables, one technology dummy, two clusters and four country dummies. The procedure has eliminated six variables from the model: Technology – Draft animals, the Land dispersion index, the Distance to the nearest urban centre and three clusters - C3, C5 and C6. We can conclude that these variables do not help explain farm households' integration into formal markets.

Table 6.13   Preferred specification. Predictors of farm market integration

	Unstandardised Coefficients		Standardised Coefficients		Sig.
	B	Std. Error	Beta	T	Std. Error
(Constant)	43.411	3.354		12.943	0.000
Share of food consumption from own production (2006)	-0.224	0.043	-0.187	-5.224	0.000
Total cultivated land area 2006 (ha)	0.416	0.082	0.173	5.055	0.000
Manually	-28.547	3.796	-0.275	-7.520	0.000
Hungary	33.611	3.746	0.364	8.972	0.000
Slovenia	23.692	3.124	0.309	7.585	0.000
Bulgaria	14.561	4.005	0.157	3.636	0.000
Poland	14.475	3.258	0.181	4.443	0.000
Cluster 2	10.616	2.580	0.139	4.115	0.000
Cluster 4	8.332	3.533	0.083	2.358	0.019

Source: Chapter authors based on SCARLED database

Table 6.13 presents the parameter estimates in unstandardised and standardised forms along with their respective standard errors, *t*-statistics and probability values. The order in which the independent variables appear in this table indicates the order in which they were included in the model and therefore conveys information about their relative statistical importance in the model itself. As such, the share of food consumption from own production and total cultivated land area are the most important explanatory variables, while the cluster memberships are the least important.

As we might expect, the proportion of consumption derived from own production and the reliance on manual technologies reduces the households' degree of integration in agricultural markets. Households with access to more land, and who have been estimated to be members of attitudinal clusters *constrained commercial* and *unconstrained commercial* are far more likely to be integrated in agricultural commodity markets.

As for the spatial component of the analysis, it would appear that Romanian agricultural households, the base against which the other countries are measured, are the least integrated into agricultural markets, followed by Polish, Bulgarian, Slovenian and finally Hungarian households.

6.5   Conclusions

Subsistence oriented farming with varying degrees of market participation is still wide-spread across the NMS. The analysis in this chapter provides several conclusions that might inform policy.

The value of income-in-kind is crucial for the rural poor, and particularly in the poorest of the NMS5, Bulgaria and Romania, where subsistence production

hence constitutes an important safety net. Policies strongly in favour of commercialisation through incentives encouraging structural change might undermine the safety net provided by subsistence production (especially for households who are below the poverty line). Possible threats of such policies might be pressure to sell off land to expanding farm businesses due to the disappearance of market outlets for semi-subsistence farmers' surplus production in favour of larger supermarkets dealing with contract suppliers. Particularly sensitive to such policies might be the farm households in Romania since the regression analysis indicated that Romanian farmers were the least market integrated.

Farm households in the NMS5 claim they respond to market prices, so they appear not be completely isolated from markets and might not base their decision-making on their shadow pricing alone but also on market prices. In addition, farm households in the NMS5 seem to be 'interventionists' wanting more CAP support for agriculture and rural development with the notable exception of households in Cluster 4. This corroborates the work of GORTON et al. (2008) who found that, in comparison to the EU15, farmers in the NMS strongly opposed any idea for agricultural policy liberalisation and did not feel that the CAP imposed restrictions on their farm plans.

Those households who sell more than 50% of their output and have been labelled here as '*commercially oriented*' are also not homogeneous (Clusters 2, 3, 4 and 5). Some of them claim to be constrained by factor and human capital endowment while others are more optimistic that they could increase sales under the conditions of higher agricultural prices and policy support.

One of the factors that negatively affects market integration and which could be influenced by policy is technology, and particularly the cases when the main field operations are performed manually. This is consistent with several previous studies which have argued that technological improvements and productivity, and not price support, should be at the centre of policy interest in order to achieve a higher share of market integration (TOQUERO et al., 1975; RIOS et al., 2008). Policies to promote the use of machinery co-operatives, the so-called 'machinery rings', can help capital-poor farm households to increase production above subsistence levels.

Remoteness as measured by the distance to the nearest urban centre was not statistically significant in the regression analysis. While the average distances to the urban centres are not large (22.5 km on average and maximum 78 km), the real impediment might not be the distance but the under-developed and inadequate transport and market infrastructure. These issues were highlighted, in particular, by members of Clusters 2, 3 and 6. This is a typical case in which targeted rural development policies could help significantly to improve the welfare of the rural poor.

This study does not find that the farm dispersion index, the measure of household land fragmentation employed in the analysis, acts as a barrier to commercialisation. This may suggest that policies for land consolidation, itself a very expensive and slow process, may not provide such a strong boost towards market integration, at least for the small farm sector itself, as had been hoped. However, caution is necessary as it is difficult to generalise based on one survey per country.

In summary, agricultural households are heterogeneous. While some households are already well integrated into formal markets, others are not. The factors that limit the integration of the willing households into markets are many but significant patterns appear from the analysis of this work. Furthermore, there appears to be some prospect of designing coherent policies to aid the integration of these groups of households. However, for others, semi-subsistence agriculture is a choice rather than a necessity. These households enjoy their lifestyle, produce for non-pecuniary reasons and insist on producing their own safe food. Such households will rarely respond to market based policy signals designed to provide incentives for market integration, and if these values and attitudes do not change (and changes in these areas could only be expected in the long run), subsistence oriented farming in the NMS is likely to persist despite policies facilitating structural change.

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Appendix 6

Table A6.1 Rotated Component Matrix

	Component					
	Facilitators to market integration	Information and skills constraints	Market and policy facilitators	Pecuniary farming objectives	Financial constraints	Farming lifestyle
We would need to invest in new machinery	**.799**	.000	.077	-.089	.028	-.003
We would need credit	**.797**	-.039	-.061	-.122	.079	.025
We would need training in marketing	**.767**	.016	.045	.107	-.062	.091
We would need advice on how to meet buyers' quality standards and how to comply with public regulations	**.727**	.103	.213	.166	-.105	.048
We would need to collaborate with other households or farms to collectively market output	**.681**	-.032	.189	-.062	.157	.054
Market and transport infrastructure would need to be improved	**.662**	.139	.327	.139	-.110	.008
We would need to specialise production into fewer products	**.633**	-.036	.181	-.055	-.029	.090
We would need contracts with buyers	**.603**	.030	.355	-.069	.062	-.029
We lack necessary skills and education	-.061	**.806**	.029	-.083	.004	.069
We cannot meet standards of buyers or public regulations	.058	**.779**	.092	-.040	.132	-.006
We lack information and advice on market prices	.055	**.771**	-.057	.121	.119	.026
We would need (higher) policy payments to agriculture and rural development	.377	-.002	**.767**	.055	-.020	.013
Agricultural market prices would need to be higher	.315	.052	**.749**	-.045	.081	.048
We do not produce for pecuniary reasons	-.003	.067	.093	**-.867**	.049	.031
To generate cash income	-.045	.069	.119	**.765**	.157	.287
We lack capital	.103	.202	-.147	-.082	**.817**	-.019
We receive low prices for agricultural output	-.088	.077	.223	.176	**.805**	.084
To enjoy farming	.101	.032	.028	.016	-.117	**.849**
To transfer to the next generation	.072	.051	.016	.166	.183	**.764**

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser normalization. Rotation converged in six iterations.

Source: Chapter authors based on SCARLED database

Chapter Seven

The Role of Social Capital and Informal Cooperation: Market Integration of Farms in Poland

Dominika Milczarek-Andrzejewska, Tomasz Wołek, and Beata Łopaciuk-Gonczaryk

Chapter 7 looks at the role of social capital and informal cooperation in market integration. Cooperation among small-scale farmers is often advised as a remedy to help them to overcome barriers to market integration. It is also argued that the commercialisation of subsistence agriculture can influence structural change in rural areas. Therefore, the main goal of this chapter is to analyse the role of individual social capital and the availability of own production factors for the informal cooperation between farmers. The role of informal cooperation for farm households' commercialisation is then scrutinised. The research is based on the SCARLED survey conducted in Poland. We show that social capital facilitates informal cooperation among small-scale farmers and informal cooperation positively influences the level of commercialisation. However, households which most often cooperated informally were focused on off-farm activities and represented the smallest farms equipped with the most basic machinery. We conclude that traditional forms of cooperation characterising small-scale farmers can help them to survive, but only advanced forms of cooperation can consitute a development strategy. Therefore, the policy intervention aiming at an increase in the level of commercialisation should be focused on the modernisation of farms. Other measures – in the fields of social policy and labour market policy – are needed for farmers who are likely to quit agricultural production in the future.

The farm structure in Poland is characterised by a large number of small-scale farms, of which the majority are subsistence or semi-subsistence farms. According to the Central Statistical Office, in 2007 there were over 908 thousand subsistence and semi-subsistence farms[1] (around 38% of total number of farms conducting agricultural activity) (GUS, 2008).

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[1] Defined here as agricultural households consuming more than 50% of the value of their agricultural production (see also Chapter 6).

It is often argued that the commercialisation of subsistence agriculture can influence structural change in rural areas. Crucial factors affecting market access and integration in the market supply chains[2] are: ability and willingness to adopt new technologies; level of transaction costs; cooperative membership; contracts; and possible supply channels (e.g. BALINT and WOBST, 2006; FERTO and SZABO, 2002; HOLLOWAY et al., 1999; GUO et al., 2007; KEY et al., 2000). Cooperation among farmers is also often advised as a remedy helping farmers to overcome barriers to market integration (CSÁKI et al., 2008). It can increase the possibility of accessing markets since it increases the total pay-off to a potential group over what they could do individually (SCHMID, 2004). However, this kind of cooperation is usually understood to be formal membership of producers' organisations, which requires a larger scale production potential than most subsistence and semi-subsistence farms possess. In the case of small-scale farms, different kinds of informal cooperation may be the only available strategy for accessing the necessary resources for agricultural production and, further, for their market integration. When the scarcity of resources is recognised as the tangible determinant of cooperation it is crucial to analyse farmers' cooperation under the wider framework of social capital since this concept refers to intangible aspects of collective behaviours (WOŁEK and MILCZAREK-ANDRZEJEWSKA, 2008).

Available studies on social capital and cooperation among farmers in Poland have been concentrated mostly on the propensity to cooperate formally (for example: BOGUTA et al., 2000; BANASZAK 2008). There is a lack of studies on different aspects of social capital and their role in facilitating informal cooperation, especially among small-scale farmers. Therefore, the main objective of this research is to deliver an in-depth analysis of the role of social capital in promoting informal cooperation and the role of informal cooperation in the commercialisation of farms.

The next section presents an overview of the concepts and theories concerning social capital which are used for the further analysis. In the second section the methodology of empirical research and data are described. The following section includes results of empirical research on the role of social capital in facilitating informal cooperation, the relationship between production factors and informal cooperation, and determinants of commercialisation. Finally the conclusions are set out.

7.1 Social capital – an overview of the concepts and theories

The concept of social capital has drawn together different disciplines such as sociology, economics, political sciences, anthropology, urban and regional

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[2] See also Chapter 6.

planning, and social work. Despite the immense amount of research, it still remains an elusive concept. There is a broad range of different definitions in use, but no general one has yet been accepted. Consequently, there is no common theoretical approach that has clear implications in the field (DUFHUES et al., 2006).

The term 'social capital' was introduced into social sciences by LOURY (1977) but COLEMAN'S (1990) and PUTNAM'S (1993) prominent publications have attracted academic and journalistic attention. Both COLEMAN and PUTNAM refer to trust and norms as the aspects of social structures which facilitate certain actions of individuals within the structure. According to definitions used in these two studies, social capital can be considered to be a type of positive group externality (DURLAUF and FAFCHAMPS, 2004). FUKUYAMA argues that only certain norms and values constitute social capital: 'they must lead to cooperation in groups and therefore are related to traditional virtues like honesty, the keeping of commitments, reliable performance of duties, reciprocity, and the like' (FUKUYAMA, 2000: 3).

Economists, in general, are concerned with the contribution of social capital to economic growth. 'At the microeconomic level this is seen primarily through the ways social capital improves the functioning of markets. At the macroeconomic level institutions, legal frameworks, and the government's role in the organisation of production are seen as affecting macroeconomic performance' (GROOTAERT, 1998: 2). FUKUYAMA (1997) states that the reduction of the transaction costs associated with contracts, hierarchies, bureaucratic rules, and the like (which constitute the forms of formal coordination mechanisms) is the economic outcome of social capital. Some authors point out that trust can affect economic performance. KNACK and KEEFER (1997) identify advantages which individuals, societies and governments can gain from a higher trust environment. In development economics, mainstream and transition economics, social capital is considered to be an important capital asset for the welfare of individuals and communities[3] (BUCHENRIEDER, 2007).

Much research is also concerned with the role of social capital in the economy of rural areas. In general, the economic effects of social capital in rural economies do not differ from those specified for the whole economy. Depending on the definition of social capital, trust, norms and networks in different configurations are considered. There is growing empirical evidence suggesting that social capital is of key importance for poverty alleviation (e.g. studies of The World Bank in developing countries). Social capital can help households to overcome the deficiencies of other forms of capital and in many cases is called 'the capital of the poor'. Research shows that the level of social

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[3] See also Chapter 1.

capital may influence the level of personal income (NARAYAN and PRITCHETT, 1999) or agricultural performance (WOLZ et al., 2006). Nevertheless, several studies stress that not all forms of social capital may have a positive impact (e.g. PORTES, 1998; KNACK and KEEFER, 1997).

Research on social capital in rural areas deals also with the notion of cooperation. The fact that people act collectively can be either a result of social interactions or their manifestation, however, independently of its roots, cooperation is closely connected to the concept of social capital. Formal and informal cooperation is of particular importance for small-scale farms which face barriers to the market, and more precisely to rapidly restructuring supply chains (CSÁKI et al., 2008). Cooperation among small farmers, could be thus described as one of the crucial means by which small farmers manage to survive (CHLOUPKOVA, 2002).

Across the literature social capital is more often associated with positive effects. Most of the definitions of social capital assume that the concept is normative and related to a wide range of positive development goals (DUFHUES et al., 2006). However, many scholars, independently of the definition they use for capturing the sense of social capital, note its negative aspects. According to the multidimensional nature of its sources, PUTNAM (2000) has introduced the most common and popular distinction between 'bonding' and 'bridging' social capital. 'Bonding' refers to relationships among family members, close friends and neighbours, and 'bridging' to more distant friends and colleagues. The former kind of social capital can bring negative effects due to the 'closure' of the integrated group on the relationships with individuals or groups from outside.

In much research dealing with social capital one can find enthusiasts inspired by the still unexplored nature of the concepts but, however, the number of different definitions and conceptual vagueness has led to severe criticisms of social capital. For instance, DASGUPTA (2002) points out that the idea of social capital is awkward in economic theories. Even though intuitively it seems to be a very attractive and promising concept, one of its greatest weaknesses is the absence of consensus on the methodology of measurement. For quite a long time, it has been possible to distinguish two main streams in social capital research: the first focuses on social norms facilitating cooperation, trust and civic engagement (e.g. PUTNAM, 1993; FUKUYAMA, 1997); and the second looks at resources embedded in social networks and mobilised for individual goals (e.g., BOURDIEU, 1986; LIN and DUMIN, 1986). These two approaches have had an impact on how social capital is measured. In the first, social capital indicators are, for instance, generalised trust, organisational membership, civic engagement, voting and tolerance towards minorities. One example of such an approach is the social capital research conducted by BULLEN and ONYX (2000) among five communities in Australia. The other approach uses indicators of

network structure characteristics, such as closure and brokerage. In this approach there are two prominent tools for measuring social capital: the position generator introduced by LIN and DUMIN (1986); and the resource generator introduced by SNIJDERS (1999). Both of these are based of the conceptualisation of social capital as resources accessed through networks. Recently, the definition of social capital including network components in its measurement has become more prominent.

The mechanisms of social capital's creation need further investigation. Social capital is often believed to originate from a bottom-up process, as a by-product of social interactions (PUTNAM, 2000; COLEMAN, 1990). The role of local leaders in creating and activating social capital in communities is also recognised (e.g. DURLAUF and FAFCHAMPS, 2004). Perception of social capital as a public good or private good generating positive externalities leads to the conclusion that the free market economy may deliver sub-optimal amounts of this good. Therefore, an important question is whether it is possible to raise the level of social capital through policy intervention. For example, SVENDSEN and SVENDSEN (2004) conclude that local production in the rural areas (such as local dairies) should be supported by policy intervention, because production centralisation, reasonable from the point of view of free market competition and economies of scale, harms the social capital connected with entrepreneurship and trust in local village communities.

Initially, the concept of social capital did not gain prominence in studies on the process of economic transition. However, recently many authors studying the transition period in Poland have started to refer to a category of social capital as an important determinant of the success or failure of different social groups. In particular, with regard to the self-organisation of communities and the quality of civil society, the importance of social capital has been recognised for the transition process in rural areas in Poland. This has had positive effects on the process of economic and social change (FEDYSZAK-RADZIEJOWSKA, 2006). Much research has focused on social resources representing mainly the informal social networks, mutual trust, readiness to cooperate and the presence of leaders being able to stimulate others (GIZA-POLESZCZUK et al., 2000). It has been stressed that, when activated, social resources constitute social capital (FEDYSZAK-RADZIEJOWSKA, 2006).

For the purpose of this analysis and based on the broad literature review, social capital is defined as the norms and networks that enable people to act collectively, which is in line with the definition of WOOLCOCK and NARAYAN (2000). However, it is worth emphasising the important role of trust as a collective asset which promotes the relationships and networks and enhances the utility of embedded resources, or vice versa (DUFHUES et al., 2006). As proxies for social capital the following elements are analysed: different dimensions of

trust; willingness to cooperate; relationships with neighbours; and civil engagement.

7.2 Methodology of the empirical research and data

The main goal of this chapter is to analyse the role of social capital in promoting informal cooperation and to further the role of informal cooperation in the commercialisation of farms. The following research questions were formulated: (i) what is the role of individual social capital and the availability of own production factors for the informal cooperation between farmers? and (ii) what is the role of informal cooperation for farm households' commercialisation?

In order to answer the first research question, aggregated indicators of individual social capital (readiness to cooperate, trust towards people and local institutions, relationships with neighbours, and attendance in the elections) were constructed using IRT (item response theory) models and factor analysis. Then a cluster analysis was conducted to verify the role of social capital and the availability of own production factors for informal cooperation among farmers. The last step included a logistic regression model to verify whether the level of individual social capital and the availability of production factors were statistically significant determinants of informal cooperation. To answer the second research question, i.e. to verify whether different kinds of informal cooperation are statistically significant factors affecting the level of commercialisation, two multiple regression models were used:[4] first, in which selected variables were directly used in the estimation; second, in which regressors were extracted, by applying factor analysis,[5] from the set of variables used in the previous model.

The case study on social capital in Poland is based on 245 observations from the SCARLED survey carried out in 2007 and 2008. As explained in Chapter 1, the survey was conducted in three groups of regions at NUTS3[6] level selected according to their degree of economic development (regions lagging behind, average regions and prosperous regions). Table 7.1 shows for the Polish sample how from each region three villages were chosen in which farm households were interviewed.

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[4] See a detailed description in WOŁEK and ŁOPACIUK-GONCZARYK, 2010.

[5] Applying factor analysis does not allow for multicollinearity which results in obtaining biased estimators to be avoided.

[6] NUTS is the Nomenclature of territorial units for statistics. In the NMS, NUTS0 and NUTS1 refer to the whole country. The NUTS2 level represents 55 administrative units each with approximately 800,000 to 3,000,000 inhabitants. The NUTS3 level encompasses in the NMS 193 regions each with approx. 150,000 to 800,000 inhabitants.

Table 7.1   Survey regions in Poland

Group of regions	NUTS3 region	Gross Domestic Product (GDP) per capita in 2004		Village
		Poland = 100	Poland = 100	
Lagging behind	Krośnieńsko-Przemyski	72.39	60.0	Wróblowa
	Łomżyński	77.72	64.5	Święck Wielki
	Ostrołęcko-Siedlecki	84.40	70.0	Ulasek
Average	Rzeszowsko-Tarnobrzeski	93.78	77.8	Bzianka
	Białostocko-Suwalski	94.30	78.2	Andryjanki
	Jeleniogórsko-Wałbrzyski	97.34	80.7	Witoszów Dolny
Prosperous	Warszawski	114.41	94.9	Chrzczany
	Bydgoski	114.83	95.3	Sławsk Wielki
	Ciechanowsko-Płocki	133.67	110.9	Białyszewo

Source: Chapter authors based on data from Regional Data Bank of the Central Statistical Office (GUS), 2006

7.3 The role of social capital and cooperation in market integration – results of empirical research

7.3.1 Informal cooperation among farmers – descriptive analysis

Among the 245 farm households surveyed, 96 (around 39%) cooperated informally. The most popular form of informal cooperation was help in field work (77% of households engaged in informal cooperation). Other popular forms included common use of machinery, common use of transportation means (each 24%) and common purchase of production inputs (14%). Common use of buildings, common sales of agricultural products and exchange of information belonged to the most infrequent forms of cooperation (3%, 5% and 4% respectively).

More advanced forms of cooperation were limited owing to the low profitability of production, the lack of the possibility of receiving higher prices through common sales and the lack of the possibility of receiving lower prices for production inputs through common purchases (Table 7.2).

Respondents were also asked to evaluate the benefits from informal cooperation with other farmers (Table 7.3). These questions were asked only among those farmers who were engaged in informal cooperation. The most important benefits from informal cooperation were related to decreasing production costs and to accessing machinery (approximately 70% and 68% of farmers, respectively, judged these benefits as very important or the most important). This type of cooperation looks very basic and traditional. It seems that farms engaged in informal cooperation also lacked a long term strategy for developing agricultural activity. Among this group, around 58% indicated that the objective of their agricultural activity would not change in five years, 8% planned to cease farming and 13% to transfer their farms to children. At the

same time, only 10% planned to increase the intensity of farming during the next five years. The same group of farmers was asked to evaluate the economic prospects of their farms within five years. Around 69% of households cooperating informally judged their future prospects as 'very poor' or 'poor'.

Table 7.2   Evaluation of barriers to informal cooperation with other farmers – percentage of respondents who indicated the given answer, among the 96 respondents informally cooperating

	Degree of importance*					
	(1)	(2)	(3)	(4)	(5)	(0)
Other farmers do not wish to cooperate	16	34	36	14	0	0
It is not profitable	18	31	27	23	1	0
In general I do not trust in business cooperation with other people	10	50	36	3	0	1
I do not trust other farmers in my village	12	58	27	1	0	2
There is no possibility of receiving higher price through common sales	1	6	19	49	25	0
There is no possibility of receiving lower price for production inputs	1	4	19	62	14	0
Production is not profitable	1	8	13	45	32	1

Note: *(1) Not important at all, (2) Little importance, (3) Moderate importance, (4) Very important, (5) Most important, (0) Lack of answer.
Source: Chapter authors based on SCARLED database

Table 7.3   Evaluation of the benefits from informal cooperation with other farmers – percentage of respondents who indicated the given answer, among the 96 respondents informally cooperating

	Degree of importance*					
	(1)	(2)	(3)	(4)	(5)	(0)
No need for additional investment in machinery	1	6	21	60	7	5
Increase in scale of production	40	28	17	9	0	6
Increase in sales revenue	39	34	17	5	0	5
Decrease in production costs	5	4	15	56	14	6
Higher prices for products	46	37	10	2	0	5
Possibility of signing contracts with purchasers	46	39	10	0	0	5
Possibility of signing contracts with production input providers	46	39	10	0	0	5
Gaining technological knowledge	40	36	14	5	0	5
Gaining knowledge of marketing	38	36	17	4	0	5

Note: *(1) Not important at all, (2) Little importance, (3) Moderate importance, (4) Very important, (5) Most important, (0) Lack of answer.
Source: Chapter authors based on SCARLED database

Generally, households cooperating informally had lower incomes, worse economic prospects and a larger share of production in household consumption than those that did not cooperate informally. Most households engaged in

informal cooperation classified their income in the first five lowest income bands (Table 7.4). In all higher income bands there are more households which did not cooperate informally.

Table 7.4 **Informal cooperation by income bands (percentage of households)**

	Total (%)	Income bands (in PLN)									
		0-6338	6339-12676	12677-19014	19015-25353	25354-31691	31692-38029	38030-44367	44368-50705	50706-57043	>57043
Informal cooperation	100	2	13	21	24	21	4	7	2	2	4
No informal cooperation	100	0	3	10	12	19	13	9	9	5	20

Note: PLN = Polish zloty

Source: Chapter authors based on SCARLED database

7.3.2 The role of social capital in facilitating informal cooperation

As explained in the methodological section, the following aggregated indicators of individual social capital were constructed: readiness to cooperate, trust towards people and local institutions, relationships with neighbours, and attendance in the elections.

The results of the logistic regression analysis confirmed statistically that, among these four indicators of individual social capital, readiness to cooperate and civil engagement positively influenced the probability of informal cooperation (Table 7.5). Among other significant determinants of informal cooperation the following were found: ownership of sowing machinery, total cultivated land area, agricultural education and general knowledge, self-employment of household head and farming with household's labour only. Also 'living in certain villages' constituted an important factor determining informal cooperation. [7]

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[7] Detailed information on construction of variables and interpretation of results are presented in WOŁEK and ŁOPACIUK-GONCZARYK, 2010.

Table 7.5   Logit model: determinants of informal cooperation among Polish farmers

Dependent variable: Informal cooperation	B	Std. Error	t	Sig.
Readiness to cooperate	1.005 *	0.548	1.834	0.067
Trust towards people and local institutions	0.164	0.331	0.496	0.620
Relations with neighbours	-0.109	0.342	-0.318	0.751
Attendance in the elections	1.486 *	0.802	1.852	0.064
Tractor (dummy)	-0.040	1.003	-0.040	0.968
Lorry, truck (dummy)	-0.351	0.790	-0.444	0.657
Plough (dummy)	1.229	1.056	1.164	0.244
Sowing machinery (dummy)	-0.956 *	0.556	-1.717	0.086
Harvesting machinery (dummy)	-0.127	0.619	-0.204	0.838
Chemical spraying equipment (dummy)	-0.486	0.504	-0.963	0.335
Total cultivated land area (ha)	-0.077 *	0.045	-1.709	0.087
Total number of plots	0.041	0.070	0.581	0.561
Distance to the most distant plot (km)	-0.005	0.085	-0.058	0.954
Age of household head	-0.020	0.017	-1.201	0.230
Agricultural education (dummy)	-1.494 ***	0.532	-2.807	0.005
Level of education (dummy)	-0.878 *	0.477	-1.840	0.066
% time on-farm (household head)	-0.003	0.006	-0.413	0.680
Household member in wage employment (dummy)	0.540	0.509	1.061	0.289
Household member self-employed (dummy)	-1.807 **	0.914	-1.976	0.048
Farming with household`s labour only (dummy)	-1.594 ***	0.614	-2.595	0.009
Livestock (dummy)	0.109	0.492	0.222	0.824
Bzianka (no.2)	2.000 *	1.070	1.869	0.062
Chrzczany (no.3)	3.632 ***	1.073	3.385	0.001
Białyszewo (no. 4)	1.352	1.209	1.118	0.264
Sławsk Wielki (no. 5)	1.038	1.081	0.960	0.337
Święck Wielki (no. 6)	1.513	1.025	1.476	0.140
Witoszów Dolny (no. 7)	3.260 ***	1.090	2.991	0.003
Ulasek (no. 8)	0.624	1.127	0.553	0.580
Wróblowa (no. 9)	3.569 ***	1.070	3.334	0.001
Constant	-1.230	2.044	-0.602	0.547

No. of observations	237
LR chi2(30)	118.29
Prob > chi2	0.0000
Pseudo R2	0.3689

Note: Significance level: *** p<0.01, ** p<0.05, * p<0.1.
          Computation of variance inflation factor used for detection of the multicollinearity of the regressors indicated mean VIF equal to 2.30 which can be interpreted as low multicollinearity.
Source: Chapter authors based on SCARLED database

Figure 7.1 presents the relationship between readiness to cooperate and informal cooperation. The higher the level of readiness to cooperate, the higher the percentage of farmers cooperating informally.

Figure 7.1 Percentage of farmers cooperating informally by the level of readiness to cooperate
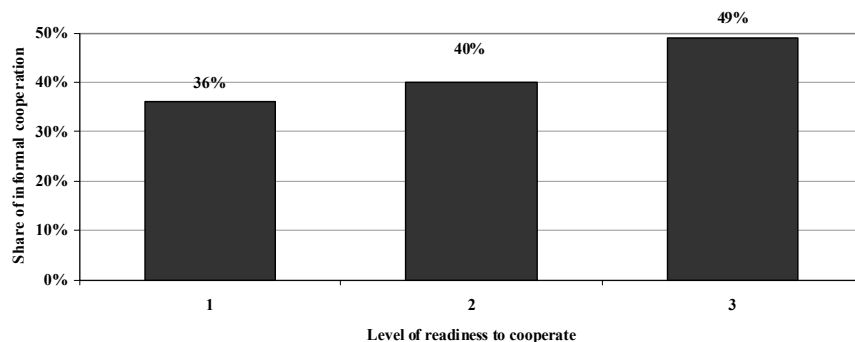
Note: The value 3 means that the person is willing to cooperate in three aspects (readiness to lend a valuable thing, readiness to cooperate in business activity, and readiness to cooperate with people in favour of their own society).
Source: Chapter authors based on SCARLED database

There was also a positive relationship between attendance in elections (local, national, presidential and European Union (EU)) and informal cooperation. Figure 7.2 shows differences in voting behaviour between farmers who do not cooperate informally and those who do cooperate. Farmers cooperating informally took part in all four elections more often than those not cooperating (around 88% and 79%), and also did not take part in any of elections less often (around 4% and 13.5%).

Therefore, it can be concluded that social capital facilitated informal cooperation among farmers to some extent.

Figure 7.2   Share of respondents participating in different types of elections (local, national, presidential and EU)

(a) households not cooperating informally

13.5%
2.7%
4.0%
0.7%
79.1%

⊟ took part in no elections ◣ took part in 1 election
☐ took part in 2 elections ■ took part in 3 elections
▦ took part in 4 elections

(b) households cooperating informally with other farmers

4.1% 1.1%
3.1%
4.1%
87.6%

⊟ took part in no elections ◣ took part in 1 election
☐ took part in 2 elections ■ took part in 3 elections
▦ took part in 4 elections
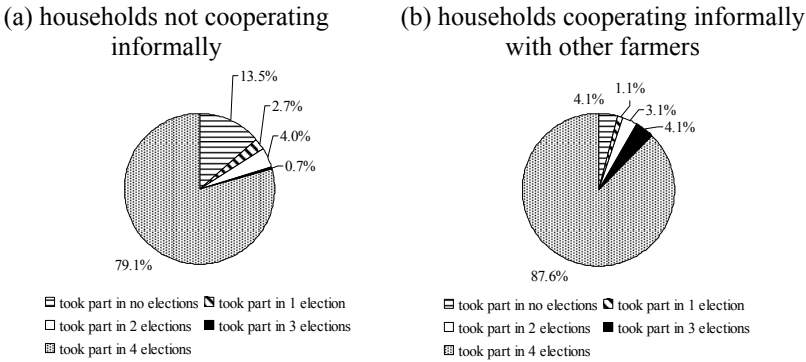
Source: Chapter authors based on SCARLED database

7.3.3 Relationship between production factors and informal cooperation

Informal cooperation is to a large extent determined by the level of the farms' owned production factors (land and capital). More than 70% of households cooperating informally had smaller farms of up to 5 hectares (ha) of land, while this figure was only 35% among households not cooperating. Therefore, farms engaged in informal cooperation were those of the smallest sizes (Figure 7.3).

Figure 7.3   Agricultural land owned by a household versus informal cooperation (a) households engaged in informal cooperation, (b) households not cooperating

(a) households not cooperating informally

7% 4%
15%
38%
36%

(b) households cooperating informally with other farmers

22%
27%
13%
19%
19%

⊟ 0-2 ha ◣ 2.01-5 ha ☐ 5.01-10 ha ■ 10.01-15 ha ▦ 15.01-37 ha

⊟ 0-2 ha ◣ 2.01-5 ha ☐ 5.01-10 ha ■ 10.01-15 ha ▦ 15.01-37 ha
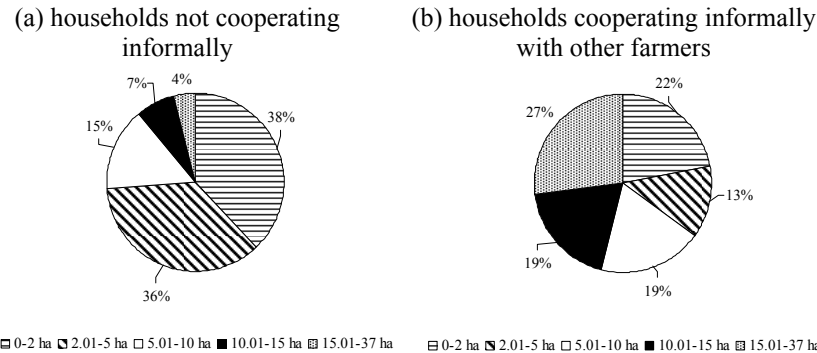
Source: Chapter authors based on SCARLED database

The logistic regression model revealed that being better equipped with some kinds of machinery had a statistically significant negative impact on informal cooperation. Farms cultivating a larger acreage were better equipped and thus did not engage in informal cooperation as often as smaller (in terms of acreage) farmers. Also a better knowledge of farming (an agricultural education) and a higher level of general education increased the likelihood of being self-sufficient in agriculture (Table 7.5).

In addition, the clustering procedure allowed three groups of households to be categorised according to the level of owned production factors. Farmers belonging to Group (1) classified as the best equipped with production factors cooperated informally the least often (16%), while farmers from Group (2) equipped with basic machinery, cultivating relatively small areas and focussing on off-farm economic activities, cooperated informally the most often (53%). Among farmers in Group (3), the medium-sized farms equipped with the basic machinery but focused on farming approximately, 40% cooperated informally (Table 7.6).

Table 7.6   Binary and continuous cluster profiling variables characterising the level of owned production factors

Variable	1 n = 51	2 n = 81	3 n = 112	Sample n = 244	
	Binary (%)				
Tractor	100.0	69.1	78.6	79.9	
Plough	94.1	69.1	81.3	79.9	
Sowing machinery	92.2	48.1	67.9	66.4	
Chemical spraying equipment	82.4	30.9	40.2	45.9	
Harvesting machinery	54.9	8.6	14.3	21.3	
Milk device	39.2	9.9	12.5	17.2	
Lorry Truck	11.8	8.6	5.4	7.8	
Livestock	90.2	70.4	85.7	81.1	
Agricultural education	37.3	33.3	29.5	32.4	
Working in agriculture before 1990 (HH head)	88.2	77.8	88.4	84.8	
Household member in wage employment	27.5	85.2	42.9	53.7	
Household member self-employed	3.9	12.3	2.7	6.1	
Credit for production and marketing used in 2006	45.1	9.9	17.9	20.9	
Farming with household's labour only	74.5	96.3	88.4	88.2	
	Continuous (mean)				Cluster sig. F-test
Total cultivated land area (ha)	22.1	4.5	6.3	9.1	157.05 ***
Total number of plots	9.2	4.3	3.7	5.0	48.87 ***
Distance to most distant plot (km)	5.4	1.6	1.8	2.4	23.33 ***
Age of household head	42.9	45.9	54.5	49.3	18.11 ***
Level of education a)	2.2	2.3	1.7	2.0	20.52 ***
% time on-farm (household head)	98.8	19.4	99.2	72.6	947.49 ***

Note: Significance level: *** p<0.01, ** p<0.05, * p<0.1.
          Education is described by the scale divided into four levels: 1 – Incomplete primary school, Primary school and Middle school; 2- Basic vocational; 3 – General secondary school, Other secondary school; 4 – Post-secondary, Bachelor, Engineer, Tertiary education. HH= household
Source: Chapter authors based on SCARLED database

It is worth stressing that for farms from Group (2) informal cooperation can constitute an important strategy allowing them to diversify the sources of income. Members of households from this group were engaged in wage and self-employment the most often, and household heads spent the least time on-farm.

7.3.4 Determinants of commercialisation

The results of the multiple regression analysis[8] show that informal cooperation that takes the form of the common use of machinery, along with common transportation and purchase of production inputs, and help in field work[9] positively influenced the level of commercialisation (Table 7.7). A variable 'Peripherality and lack of help in field work' negatively affected the share of output sold which also means that engagement in this type of informal cooperation positively influenced the level of commercialisation. 'Equipment with basic machinery' represented a positive influence on the dependent variable (however, a significance level of 0.13 is rather small). The variable 'Pecuniary/non-pecuniary objectives and farming lifestyle' also positively influenced the level of commercialisation. This means that farms aiming at generating cash income, providing work for household members and enjoying farming are integrated more closely in agricultural markets. The variable 'Livestock and food provision' revealed a negative impact of animal husbandry and food self-supplying on commercialisation. 'Land, specialised agricultural machinery and providing services' had a low level of significance. However it is worth stressing that it affected farmers' market integration positively. 'Household head's characteristics' negatively influenced the share of agricultural output sold. This result means that older farmers had a lower tendency to commercialisation, but agricultural education and a higher level of general education tended towards greater market integration. The percentage of time spent by the household head on-farm showed a negative impact on commercialisation, which is not consistent with the presumption that focusing on agricultural production should result in the farm being more integrated with the market. On the other hand, more time spent on-farm allows farmers to differentiate production structure towards products (production of which is more

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[8] The multiple regression model was preceded by factor analysis which enables extraction from the set of variables the regressors presenting common latent traits. For details see the Appendix 7.1.

[9] On the basis of the factor analysis preceding the multiple regression analysis, it was concluded that three types of informal cooperation (common use of machinery, common transportation means, and common purchase of production inputs) constitute independent factors with respect to other production factors. Only 'help in field work' was related to other factors 'distance to the nearest urban centre' and 'the acreage of total cultivated land'.

time-consuming) that can be consumed within the farm such as livestock and vegetables. Neither, 'land dispersion' nor 'specialised non-agricultural machinery, providing services and employing workers' were significant variables in explaining the level of commercialisation.

Table 7.7   Determinants of commercialisation

Dependent variable: Share of agricultural output sold during 2006	B	Robust Std. Error	t	Sig.
(1) Equipment with basic machinery	5.540	3.248	1.706	0.126
(2) Pecuniary/non-pecuniary objectives and farming lifestyle	13.282 ***	1.911	6.949	0.000
(3) Livestock and food provision	-12.071 ***	1.046	-11.544	0.000
(4) Informal cooperation	5.670 ***	1.655	3.426	0.009
(5) Land, specialised agricultural machinery and providing services	0.915	0.611	1.497	0.173
(6) Land dispersion	0.519	1.548	0.335	0.746
(7) Peripherality and lack of help in field work	-3.533 *	1.661	-2.127	0.066
(8) Household head's characteristics	-7.104 ***	1.169	-6.076	0.000
(9) Specialised non-agricultural machinery, providing services and employing workers	-0.864	1.975	-0.438	0.673
Constant	64.034 ***	2.207	29.014	0.000
No. of observations	233			
R-squared	0.4986			

Note: Significance level: *** p<0.01, ** p<0.05, * p<0.1.
To obtain robust standard errors of estimators with regard to observations' dependences between villages the vce (cluster village) STATA command was used. This ensures that the observations are independent across groups (villages) but not necessarily within groups.
Source: Chapter authors based on SCARLED database

7.4   Conclusions

Cooperation among farmers is often advised as a remedy for small-scale farmers confronting the growing power of the processing and retail sectors resulting from rapidly restructuring supply chains. Common action problems and the importance of the effective activity of producers' organisations have also been recognised as important factors influencing the process of economic and social changes in rural areas in Poland.

According to the results of the empirical research, social capital facilitates informal cooperation among small-scale farmers. However, scarcity of production factors is decisive for their engagement in cooperative action. Informal cooperation is the most common among worse off farmers from all surveyed regions, but most often from the regions lagging behind. The most important benefits from informal cooperation indicated by farmers are related to access to machinery that is lacking and decreasing production costs. This type of cooperation looks very basic and traditional and it seems that there is a lack of a

long term strategy and market orientation behind it. More advanced forms of cooperation are limited owing to the low profitability of production, the lack of the possibility of receiving higher prices through common sales and the lack of the possibility of receiving lower prices for production inputs.

Informal cooperation should be perceived as a possible substitute for production factors which are lacking. Traditional forms of cooperation characterising small-scale farmers can help them to persist and survive, but only advanced forms of cooperation can constitute a development stategy. Therefore, the most important policy measures aiming at an increase in the level of commercialisation should be those focused on the modernisation of farms. However, for several farms informal cooperation seems to be only a strategy allowing them to engage in farming as an additional source of income. According to the survey results, households which most often cooperated informally were focused on off-farm activities and represented the smallest farms equipped with the most basic machinery. It can be argued that other policy measures – going beyond agricultural and rural policy – are required for such households. It is likely that in the future these farms will quit agricultural production. Therefore, for them other policy measures in the fields of social and labour market policies are needed.

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Appendix 7

Factor analysis – independent factors affecting the level of commercialisation

Table A7.1 summarises the results of calculations by presenting all factor loadings for 28 variables on the nine factors. The next step includes labelling all factors according to variables that are the most correlated with them. First of all factor loadings higher than 0.6 or lower than -0.6 are taken as a measure of correlation. However, in some cases factor loadings higher than 0.4 or lower than -0.4 are also considered. Factor (1) 'equipment with basic machinery' comprises three variables indicating equipment with tractor, plough and sowing machinery. Factor (2) 'pecuniary/non-pecuniary objectives and farming lifestyle' combines variables describing the current aims for agricultural production (mostly providing work for members of household, generating cash income and enjoying farming). Factor (3) 'livestock and food provision' shows that animal production, share of food consumption from own production in household's total food consumption and the aim of production 'to provide food for the household' are closely linked. Factor (4) 'informal cooperation' reflects the close relationship between variables describing three types of informal cooperation: common use of machinery and transportation means, and also common purchase of production inputs. Factor (5) 'land, specialised agricultural machinery and providing services' combines variables describing utilised land, equipment with harvesting machinery (also chemical spraying machinery which is equally split among factor (1) and (5)) and providing services to others with own machinery (also split among two factors, (5) and (9)). Factor (6) 'land dispersion' is mostly linked to two variables: 'total number of plots' and 'distance to the most distant plot' (distance to the nearest urban centre is also related to this factor). Factor (7) 'peripherality and lack of help in field work' comprises variables characterizing the distance to the nearest urban centre and the lack of informal cooperation in helping in field work. 'Total cultivated land area' is also related to this factor but at a lower level. Factor (8) 'household head's characteristics' is mainly linked to the age of the household but also to some extent to the type and level of education, and percentage of time spent on-farm. Factor (9) 'specialised non-agricultural machinery, providing services and employing workers' combines variables describing equipment with lorry or truck and providing services to others as well as employing workers.

On the basis of factor analysis it can be concluded that three types of informal cooperation (common use of machinery and transportation means, common purchase of production inputs) constitute an independent factor with respect to other production factors. Only 'help in field work' is related to other factor comprising 'distance to the nearest urban centre and 'the acreage of total cultivated land'.

Table A7.1 Factor loadings (principal analysis, varimax rotation)

Common use of machinery	0.0207	0.0577	-0.0922	0.8032	-0.0461	0.0235	-0.1325	0.0119	0.0792
Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
Tractor	**0.9239**	0.1323	0.0366	-0.0288	0.0459	0.1016	0.0167	-0.0116	0.0278
Lorry, truck	0.0152	-0.0184	0.0769	-0.0823	0.1861	-0.0004	-0.0168	-0.1498	**0.7011**
Plough	**0.9366**	0.0912	0.0590	-0.0423	0.0166	0.0453	0.0058	0.0530	0.0057
Sowing machinery	**0.7866**	0.1325	-0.0451	-0.0767	0.1798	0.0749	0.1978	-0.0565	0.0376
Harvesting machinery	0.1760	0.2591	-0.0302	-0.0200	**0.7673**	0.0895	0.0554	0.0128	0.1459
Chemical spraying equipment	*0.4679*	0.2623	-0.0273	-0.1730	*0.4055*	0.1156	0.1772	-0.2411	0.0432
Provide services to others with own machinery	0.0731	-0.1159	0.1966	0.2326	*0.4101*	-0.0079	0.0538	-0.0105	*0.5584*
Total cultivated land area (ha)	0.3225	0.3864	-0.1968	0.0044	*0.4417*	0.3070	*0.4021*	0.0316	0.0642
Total number of plots	0.2384	-0.0102	0.0428	-0.1198	*0.4467*	**0.6167**	-0.0965	-0.0715	0.0930
Distance to the most distant plot (km)	0.1220	0.1031	-0.0413	-0.0804	0.0631	**0.8031**	0.0624	-0.0917	-0.0064
Age of HH head	-0.0855	-0.1459	0.1300	-0.0165	-0.1062	-0.2276	-0.0762	**0.7504**	0.0299
Agricultural education	0.0994	0.1542	0.2082	-0.1922	-0.2478	-0.0300	0.2151	*-0.4631*	0.3034
Level of education	-0.0775	-0.0596	-0.3398	-0.0669	0.2857	-0.2732	0.0522	*-0.4264*	0.1730
% time on-farm (HH head)	0.1827	0.3994	-0.0098	-0.2092	0.1659	0.1066	0.1889	*0.5819*	0.0823
Farming with household labour only	-0.0524	-0.2197	0.2267	-0.0845	0.0592	-0.0546	-0.0170	-0.2082	**-0.6467**
Distance to the nearest urban centre (km)	0.1142	0.0615	-0.0030	-0.0716	-0.2320	-0.0170	**0.6208**	0.0835	-0.0326
Livestock	0.1584	0.2747	**0.6769**	-0.0749	0.1389	0.0794	0.0861	0.1155	0.0890
Food consumption from own production in HH's total food consumption (%)	0.0819	-0.0220	**0.7774**	0.0266	-0.2291	-0.0483	-0.1565	-0.0549	0.1203
Common transportation means	-0.2918	0.1238	0.0053	**0.7242**	-0.0198	-0.1132	-0.0258	-0.0693	0.0311
Common purchase of production inputs	-0.0339	0.0925	0.0506	**0.7677**	0.0233	-0.1189	0.0867	0.0007	-0.0594
Help in field work	-0.1457	-0.1120	0.1651	0.0432	-0.2460	0.0919	**-0.7305**	0.1112	-0.0448
To provide food for the HH	-0.0655	-0.1141	**0.7837**	-0.0093	0.0958	-0.0358	-0.0722	0.0768	-0.1408
To provide work for HH members	0.1322	**0.7170**	0.1104	-0.0639	0.2652	0.0990	0.0164	0.2522	-0.0868
To enjoy farming	0.0675	**0.6239**	0.3128	0.0748	-0.1637	-0.0807	0.3336	-0.0276	0.0229
To generate cash income	0.2090	**0.7387**	0.1223	0.1007	0.0750	0.0899	0.2395	-0.1383	-0.0419
We only produce for the provision of safe food for the HH	-0.1607	*-0.5715*	*0.4178*	-0.2840	-0.0130	-0.0429	0.3110	0.1287	-0.0984
We do not produce for pecuniary reasons	-0.1530	**-0.7698**	0.2204	-0.1493	-0.1228	-0.0223	0.0557	0.0601	-0.1399

Note: Factor loadings higher than 0.6 and less than -0.6 are marked as bold; those higher than 0.4 and less than -0.4 are underlined and in italics.
As input data a matrix of correlation coefficients was used. The Kaiser-Meyer-Olkin criterion (MSA: measure of sampling adequacy) exceeded 0.77 proving the matrix as middling and therefore suitable for factor analysis. Bartlett's test of sphericity was statistically significant at the 1% level, rejecting the hypothesis that the correlation matrix was the identity matrix. Only factors with eigenvalue greater than 1 were used in the further analysis (Kaiser criterion). Using the principal component analysis method with varimax rotation, 9 factors were extracted from the set of 28 variables explaining 68% of the total variance in the included variables. HH=household.

Source: Chapter authors based on SCARLED database

Chapter Eight

The Impact of Demographic Patterns in Hungarian Farm Households on Structural Change

Hauke J. Schnicke[1]

Chapter 8 focuses on the impacts of the socio-economic features of Hungarian farm households on the direction, speed, and intensity of structural change in a specific model region. Out of the drivers of structural change that are introduced in Chapter 2, it specifically addresses farm internal conditions. It also takes up issues raised in Chapter 4 on non-farm working options. The first part of Chapter 8 presents selected results of SCARLED survey data including age patterns of farm operators, the composition of individual farm households, and farm succession issues. In the second part, these empirical findings are implemented in an adapted version of an agent-based model of farm structure evolution. Simulation experiments on drivers and inhibitors of structural change are carried out. The simulation results predict a steady continuation of structural change through the exiting of small farm households, mainly after the retirement of farmers. The implementation of an age-dependent decline of labour opportunities slows down the number of farm exits significantly. The pronounced over-ageing of operators, especially in the small farm size classes, makes the exiting process more discontinuous; indeed, the age distribution of farmers strongly affects the timing of the persistence or exiting of farms. The lack of farm successors has less impact than one would have supposed ex ante. There are typical 'exit farms' which leave anyway and even before a potential succession event.

The rural transformation process in the New Member States (NMS) of the European Union (EU) often resulted in privatised small-scale farms, frequently headed by holders in retirement age. Besides the large number of small-scale farms there is an important, although smaller, number of corporate farms, which make the major contribution to the market. Because they are poor, the smaller-scale farm holders often put more emphasis on subsistence production. These socio-economic characteristics, economic framework conditions and activities of farm households strongly influence structural change in agriculture whether as accelerating or inhibiting factors (BUCHENRIEDER et al., 2007). Structural change

results from the dynamic interplay among different driving factors (see Chapter 2). Some driving factors are internal to the farm, such as the location of the farm, the financial situation or the socio-economic characteristics of the farm household. Other driving factors are external to the farm – and even to the agricultural sector. Examples are interest rates, wages in other sectors of the economy, and the (agricultural) policy environment (HAPPE et al., 2009). Several studies focus on the impacts of the EU accession on the agricultural sector in the NMS (BLAAS et al., 2007; JELINEK et al., 2007; VRANKEN and SWINNEN, 2009). However, only a few studies analyse this political process against the background of socio-economic conditions such as the challenges coming from demographic change. Comprehensive analyses of rural labour markets inform the background and provide the starting point for addressing demographic specificities of the agricultural labour force (see Chapter 4).

The objective of the following analyses is to link empirically the farm household characteristics such as demographic and succession patterns to an agent-based model of farm structure evolution. The chapter has two main parts: the first is devoted to a survey of farm households which was carried out in three study regions of Hungary. Hungary was chosen as one typical Central and Eastern European (CEE) country that is particularly affected by the tremendous impacts of demographic change. The survey analyses are focused on demography and related issues of farm households. The age patterns of farm family members serve as a basis for further analyses, since age patterns are considered to be an important internal driving factor impacting on the farm household within dynamically changing agricultural farm structures. Apart from the collection of data on age structures, the data analyses contain more details of a broader range of demography-related characteristics of farm households. This refers, particularly, to the status and activities of farm household members and the farmers' plans with a view to their succession. In the second part of the chapter, scenarios are set up based on the findings of age and succession patterns. Repeated simulation experiments are carried out with an agent-based model which has been adapted for the model region. The dualistic farm structures of the model region are represented by differentiated legal types of individual and corporate farms. The analyses of the simulations are driven by the question of how heterogeneous farms evolve in response to their own specific characteristics – which include the aspects of demography – but also in response to their economic and political environment. These analyses are focused on indicators which show the direction, speed and intensity of structural change within dualistic farm structures.

8.1   Demography and demographic change

Demographic change is determined by changes in a population's fertility (thus, change in the reproduction behaviour), mortality and migration. Recently,

almost all economic sectors and thus policy fields have been affected by the tremendous challenges coming from demographic change. Table 8.1 specifies the major fields of operation and challenges connected with this topic.

Table 8.1   Demographic change: fields of operation and challenges

Field of operation	Challenge
Employment / economy	Change in supply and demand for labour
	Education / Qualifications
	Demand for goods and services
Migration	Volume of immigration / outmigration, successful integration
Social security	Pension system, health care system, nursing care insurance
State budget	Tax revenues, structure of administration
Family	Lifestyle / habitation, child care, elderly care
Education	School system, universities, further education
Land use planning, rural areas, municipalities	Sustainable spatial and settlement development, infrastructure, traffic tourism, culture, sports

Source: Chapter author based on FEDERAL OFFICE FOR AGRICULTURE OF THURINGIA (TLL, 2006)

Demographic changes require strong future adjustments in order to cope with public budget restrictions while minimising inter-generational unfairness. Key issues are, for instance, increasing life expectancy as well as the reduction of the share of people working who must support more retired people.

From a more general perspective, one can describe the main problem of demographic change as follows: actual conditions – in all spheres listed in Table 8.1 – are well adapted to the population structure as it developed in the past. Currently, the main problem is the necessity for adjustments, but adjustments entail adjustment costs, including a rethinking and a change of mindset. The main challenges relate to coping with an ageing and shrinking population, while past thinking and policy measures were oriented towards growing processes. Rural areas are particularly affected by negative impacts of demographic change. Furthermore, very few in the farm population paid into pension schemes. In many cases, public services require a minimum critical mass and it is difficult for them to be maintained in the face of the shrinking and ageing rural population.

From the welfare economics point of view, one can expect an increasing deviation from an optimal allocation of resources as older employees are less flexible both with regard to where they live and to an optimal allocation across professions, i.e. younger employees are more flexible while older employees have already invested in a specific education and are less able – and willing – to switch to other professions. In addition, the potential payoff of an adjustment is lower for older employees since their remaining working life is shorter (CHAMPION, 1998).

For some specific reasons, CEE countries are particularly affected by demographic change. Their demographic development is generally characterised by the conjunction of a rapidly ageing and comparatively poor population. Additionally, labour force participation rates are notably low in older age groups and retirement usually takes place earlier compared to the OECD[2] average.

8.1.1   Farm households' demography in rural areas of Central and Eastern European Countries

As in Western Europe, many rural areas in the CEE countries are affected by an outflow of the young and flexible members of the population as a result of labour migration. This leads to an increase in the average age of the remaining population. Besides this ageing process, decision makers have additionally to cope with an overall shrinking of the rural population. This is especially valid if the increase in life expectancy cannot compensate for the migration outflow.[3] Both developments lead to an ageing of the remaining rural population and to an inversion of the population pyramid.

This study does not aim to explain the reasons for changes in the indicators of demographic change. Instead, the analyses focus on the impacts of specific age patterns in the subgroup of agricultural farm households. Table 8.2 gives an overview of the role of individual farms in Hungary, Poland, the Czech Republic and Slovakia. The first half of the table reflects the importance of individual farms with regard to their share in the total number of farms, land use, labour input and production. While the Czech Republic and Slovakia are similar with regard to the high extent of dualism in their farm structures, Hungary and Poland are different. In Poland the role of individual farmers is important with regard to all indicators. In contrast, Hungary shows a kind of 'moderate dualism' as individual farms occupy half of the total agricultural area (46.3%) and contribute almost half of the total output (45.3%).

The second half of Table 8.2 gives details on the age structure in the group of individual farms by focusing on both ends of the age distribution, i.e. the share of young farmers (younger than 35 years) and old farmers (those aged 55 or over, and aged 65 or over). In all countries except Poland, less than 10% of the farmers are younger than 35 years. The share of farmers facing retirement in the short- to medium-term perspective (aged 55 or over) ranges between 39% and 46%. These farms will soon face a generational transfer or closure of their business if the operator retires. The subgroup of farmers who have already

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2   Organisation for Economic Cooperation and Development
3   LUTZ et al., (2004) found that in the Federal State of Saxony-Anhalt (a federal state in the newly formed German states) two-thirds of the rural population decline is caused by out-migration and one third by a decrease in birth rates.

reached the retirement age (those aged 65 or over) is extremely high in Hungary and Slovakia with 28% and 33%, respectively.

Table 8.2   Individual farm characteristics in Hungary, Poland, Czech Republic, and Slovakia, 2007

	Unit	Hungary	Poland	Czech Republic	Slovakia
All individual farms[a]					
Total	% of all farms	95.8	99.7	89.0	88.1
Land	% of total agricultural area	46.3	89.6	28.8	18.2
Labour	% of total annual work units	61.6	96.8	22.7	21.6
Economic size	ESU[b]	6.3	6.6	16.6	6.3
Production	% of total standard gross margin	45.3	90.8	23.8	18.7
Age distribution of individual farmers					
Age < 35 years	% of individual farms	7.6	12.3	9.8	3.6
Aged >= 55 years	% of individual farms	45.3[c]	38.7[c]	41.0[c]	45.8[c]
Aged >= 65 years	% of individual farms	27.8	16.2	18.5	32.9

Notes: [a] Individual farm: synonymously the terms 'private farm' or 'single-holder farm' are in use. The main characteristic is the fact that the farm is managed by a person who actually exists who takes the risks and benefits of the farming activity.
[b] ESU: for each activity on a farm (e.g. wheat, dairy cows etc.), a standard gross margin (SGM) is estimated, based on the area (or the number of heads) and a regional coefficient. The sum of all margins, for all activities of a given farm, is referred to as the economic size of that farm. The economic size is expressed in European Size Units (ESU), 1 ESU being recently equal to €1,200 of SGM.
[c] Data from 2003.

Source: Eurostat, 2007: FSS – Farm Structure Survey

Owing to similar historical development paths, farm structures in the newly formed German states ('New Länder') are to some extent comparable with the dualistic farm structures in the Czech Republic, Slovakia, and Hungary. For the 'New Länder', the negative impacts resulting from demographic change have already been realised (LUTZ et al., 2004; WIENER, 2004). However, these studies focus on corporate farms since they dominate agricultural production and employment. Corporate farms run their business on a full-time basis while a high share of individual farms are only engaged part-time in agriculture and often do not have the same objectives. In addition, individual farms are more heterogeneous which makes it difficult to define them as a target group. There are two major challenges for individual farms coming from demographic change: the ageing of their workforce; and the uncertainty of farm succession. Hence, the challenges differ between individual and corporate farms. The latter tend to ensure a basis of qualified hired labour at all hierarchical levels inside

the firm. They generally operate on a mode of hired employment.[4] By contrast, in the range of individual farms with its family labour mode of operation, the problem of ageing and the uncertainty of the farm succession is more often an additional and current question concerning the continuation of farming. However, irrespective of their size and legal type of farming, the vast majority of farms will be affected by the ageing of their operators or employees.

8.2   A survey of farm households in Hungary, Northern Great Plain

The analysis makes use of the SCARLED database described in Chapter 1. This chapter draws on a sub-sample of Hungarian farm households. In each country, the survey took place in different regions in order to capture some of the variation and heterogeneity existing between regions (see Chapter 1 for more details).

The Hungarian survey data cover about 250 farm households, around 80 in each of the three study regions, and within these regions interviews were conducted in three villages. The chosen study regions (NUTS 2 level[5]) are the Northern Great Plain region in the Northeast, Southern Transdanubia in the Southwest, and Southern Great Plain in the Central South of the country. In the first step, the surveyed farm households were categorised as being smaller or larger than 4 hectares (ha) since the typical farms in the subsequent agent-based modelling approach are at least 4 ha.[6] The model application is based on a set of typical farms representing the region 'Borsodi Mezoseg'[7] which is a smaller sub-region adjacent to and partly inside the Northern Great Plain region. This is important as a strict transferability of the survey results to the aforementioned

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[4]   For simplicity and structural reasons the coincidence between employment and the ownership of production means is neglected as these often overlap in reality. The principles of cooperatives – as a subgroup of the sum of corporate farms – are even based on this inter-relationship.

[5]   The nomenclature 'NUTS' (Nomenclature of Units for Territorial Statistics) is a geocode standard for referencing the subdivisions of countries for statistical purposes. For each EU member country, a hierarchy of three NUTS levels is established by EUROSTAT (the NUTS 0 level is the national state). The NUTS 1 level composes large administrative categories (large regions, parts of a country) while NUTS 2 stands for the medium level of regions and landscapes and NUTS 3 describes the smallest entity of districts and counties

[6]   This constraint has to be made as the model represents typical production activities of farms focused on market production and disregards subsistence and semi-subsistence farms.

[7]   For this region, a collection of data based on regional statistics and on the Federal Accountancy Data Network (FADN) was done within the EU-project Mea-Scope 'Micro-economic instruments for impact assessment of multifunctional agriculture to implement the Model of European Agriculture' – a Policy Oriented Research Project (STREP) of the Sixth Framework Programme. A brief description of this model region is given Section 8.3.2 'The agricultural structure of the model region'.

sample of typical farms is only feasible for farm households larger than 4 ha in the Northern Great Plain region.

8.2.1 Internal composition of the survey farm households

To run the model application there are some assumptions to be made concerning the number of farm-family members and their labour capacities. Hence, the survey has been analysed with regard to the internal composition of farm households. Table 8.3 shows characteristics with regard to the composition of the survey farm households in the region Northern Great Plain. The table specifies the activities of children (the children generation) of the farm household and those of the parents of the farm operator or his/her partner (the parental generation). It is worth noting that the number of children working actively on the parental farm is very low. The majority of children fall into the categories 'below working age (aged under 16)' and 'in education'. The farm households where children explicitly work on their parents' farm are comparatively large. These farms are all in the group of larger farms (with sizes 20 ha, 45 ha, 54 ha, and 70 ha). In these farm households the children are also already designated as farm successors. Surprisingly there are only a few farm households where the parent generation is counted as part of the farm household. The number of farm households where the parent generation contributes actively by labour input to the farm household is even lower.[8]

These survey results are somewhat astonishing since the basic literature on farm households draws a different picture of a family farm household. Farm households are often perceived to be a complex structure where several generations of a family contribute to and benefit from the farm household entity (e.g. SCHMITT, 1989). This can be a main advantage of individual farm households as it has been posited that they are very resilient since there are farm family members who are paid in kind and not by wages for their labour input on the farm (SCHMITT, 1992). This means that the labour input of the parental generation (and also the children generation) lowers the need for liquidity by farm households since the labour input does not need to be remunerated by actual labour costs (as would be the case for hired labour). The lower need for liquidity in turn increases the persistence of these farms compared to corporate farms which have to remunerate all labour input by wage payments.

The divergence between the traditional understanding of a farm household and the survey results might be explained by an increasing time span between two generations (generational change). Furthermore, over time it is becoming less common that the different generations live together on the farm. However, the survey might underestimate the labour input given by the parent generation.

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[8] This finding has been checked for the two other regions as well and it applies also to these regions.

Yet, because of the relatively small farm sizes and the production structure there is also not much need for additional family labour input.

With regard to the subsequent model implementation of the sample of typical farm households these findings imply defining a farm household as consisting of only two core farm family members – the farm operator and his/her partner.[9]

Table 8.3   Farm household composition in the region Northern Great Plain in two farm size groups

	< 4ha	>= 4ha
Number of farm households [a]	24	49
Sum of children in these farm households	22	44
- No. of farm households with children <16 years [b]	6 (25%)	8 (16%)
- No. of farm households with children working on the farm [b]	-	4 (8%)
- No. of farm households with children in education who could potentially work on the farm (>=16 years)[b]	6 (25%)	10 (20%)
- No. of of farm households with off-farm occupation[b]	4 (17%)	4 (8%)
- No. of of farm households with unemployed [b]	-	3 (6%)
- No. of farm households without children	8 (33%)	20 (41%)
Sum of parents (or single parent) of the farm operator (or partner) living on the farm	-	3
No. of farm households with parents (or single parent) living on the farm [b]	-	3 (6%)
- No. of parents (or single parent) working on the farm	-	1
- No. of farm households with parents (or single parent) working on the farm [b]	-	1 (2%)

Note: [a] Farm households with no agricultural area are not included in this analysis.
         [b] Note that multiple answers are permitted, households might appear in several categories.
Source: Chapter author based on SCARLED database

8.2.2 Age patterns of the Hungarian farm households

The age structures of the surveyed farm households provide the key for understanding the demography on family farms in Hungary. Further, they are used as the empirical basis for applying a dynamic agent-based simulation approach. The simulation results in turn can be used to identify driving forces at the farm level, e.g. the impacts of agricultural policy schemes.

Table 8.4 presents data on the number of farm households and statistical data on the age of farm operators in the region Northern Great Plain. About 60% of the surveyed farm households are larger than (or equal to) 4 ha, slightly more than a third are larger than or equal to 10 ha, and some 8% are larger than or

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9   Following the above mentioned traditional understanding of farm households, the implementation of the farm households' labour capacities would have been different: first, one would have included additional labour capacities of the parental or children generation where necessary; second, these additional labour capacities would have been considered with very low (or even zero) costs.

equal to 75 ha. The age range of operators is from 28 years to 77 years. In the sub-sample of farm households larger than or equal to 10 ha the age ranges between 28 and 74 years while the range is smallest in the group of the largest farm households (larger than or equal to 75 ha). In this group the farm operators are between 28 and 61 years old.

Assuming the age of starting a farming career as a farm successor is 30 years and the end is at 65 years, the theoretical mean value would be 47.5 years. Therefore, one observes an over-ageing in all size classes except for the size class of large farm households (larger than or equal to 75 ha).

Table 8.4   Age structure of farm household operators in the region Northern Great Plain

	All	>= 4ha	>= 10ha	< 4ha	< 10ha	>= 75ha
Number	83	49	29	34[a]	54[a]	7
% of all farms	100%	59%	35%	41%	65%	8%
Mean age	50.6	51.6	51.0	49.1	50.4	45.0
Median age	51	52	52	50	50	50
Standard deviation	10.9	10.2	10.8	11.7	7.1	12.4
Variance	117.8	104.7	116.1	136.7	50.4	154.0
Min.	28	28	28	30	29	28
Max.	77	74	74	77	77	61
Min-Max range	49	46	46	47	48	33

Note: Note that the categories presented here overlap to some extent.
            [a] Includes also farm households with no agricultural area (ten farm households).
Source: Chapter author based on SCARLED database

Figure 8.1 underlines the finding that the age distribution does not differ significantly between groups of different farm sizes. Ages in the group of farm households larger than or equal to 75 ha tend to be younger. However, this group consists of only seven farms and one can assume that farm succession has already taken place in some of these farm households.

Figure 8.1   Age distribution by age groups in the region Northern Great Plain
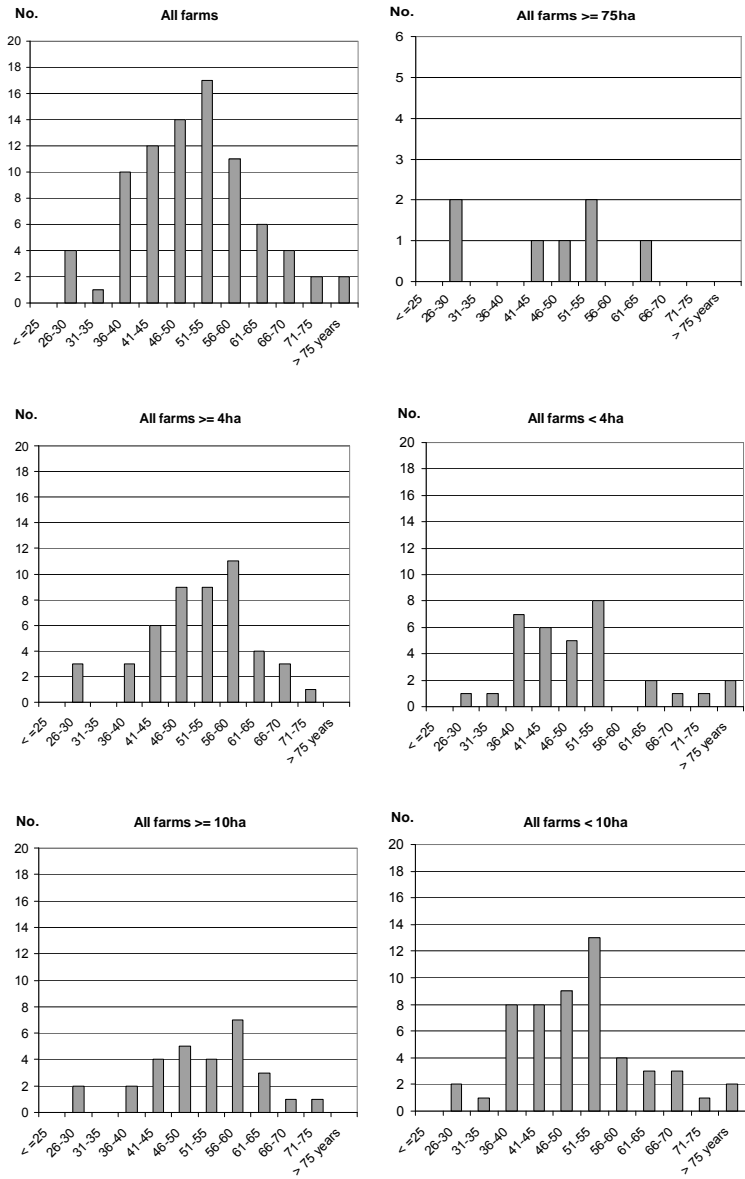
Source: Chapter author based on SCARLED database

8.2.3 Demographic change, farm succession, and the future prospects of farms

Over-ageing as a part of demographic change becomes crucial for farm households when the farm succession is uncertain. With regard to structural change, it is rather the lack of a successor than the over-ageing itself which is crucial. Hence, the surveyed farms were questioned about their future plans.

Table 8.5 shows that only 13 of 49 farm households in the Northern Plain region (27%) have already designated a farm successor while 61% have not.[10] Within the latter group, 19 farm households (39%) state that a potential successor exists but his/her future plans are still unclear.

The average farm sizes of those farm households with a designated farm successor and those which suffer from unclear succession plans do not differ significantly (42.7 ha versus 44.8 ha). But median farm sizes differ – 20.0 ha in the first group compared to 9.9 ha in the second group. This reveals that there are some outliers in the latter group, i.e. one can conclude that larger farms tend to have more definite plans regarding their future.

Among the 13 farm households with a farm successor are four where the successor, generally the child of the both farm household heads, is already working on the farm.[11] There are four farm households without own children and one with a baby. Nevertheless these five farm households state that a farm successor is designated, i.e. a potential farm successor does not necessarily come from inside the family but can also be someone from outside the family. Four farm households have children in the age range between 21 and 40 who have off-farm occupations.[12]

Comparing the average (and median) ages of the farm operators between the group of those stating 'Yes – a successor has already been designated' and those stating 'No - a successor has not yet been designated', it can be seen that the average (and median) values in the group with clear succession plans are higher

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[10] Only the farm households in the region Northern Great Plain larger than or equal to 4 ha were chosen since these farms compose the target group with regard to the subsequent modelling.

[11] Those farm households where the successor is already working on the parental farm (n=4) are all larger than or equal to 20 ha. In the sample of 49 farm households larger than or equal to 4 ha are 21 farm household larger than or equal to 20 ha, i.e. in the subgroup of farm households larger than 20 ha, some 20% of farm households include the designated successor directly into the operational farming business.

[12] Non-farm activities of children can be part of a concept that allows children to get non-farm experiences (working as an employee on another farm) until the operator hands over the farm management to the children. This strategy reveals that working on the parents' farm should not be considered to be a precondition to taking over the farm at a later stage. On the contrary, experiences outside the parental farm can be valuable for the subsequent taking over of the parental farm, in addition to which it generates additional income.

(55.7 years and 56.0 years, respectively). Those stating 'No' are younger (49.3 years and 50.0 years, respectively). However, the group of those answering 'No' contains two subgroups: On the one hand there are those farmers who have a potential successor but the succession is still unclear, and on the other hand those who definitely have no successor (yet). The older the farm operators the more they are faced with the question of the future farm development after their own working life. The farm households who do not have – or not yet have – a successor have the largest average farm size (65 ha) while the median is very low (8 ha).

Table 8.5   Future plans and succession on farm households greater than or equal to 4ha in the region Northern Great Plain

	No. of farm households	Avg. farm size	Median farm size	Avg. age operator	Median age operator
			Characteristics of farm households		
Has a successor already been designated?					
'Yes'	13 (27%)	42.7	20.0	55.7	56.0
Among 'Yes': children working on household	4	47.3	49.5	54.0	55.5
Among 'Yes': no children/too young	5	25.5	7.0	53.0	56.0
Among 'Yes': children with off-farm job	4	59.5	18.5	60.8	61.5
'No'	30 (61%)	44.8	9.9	49.3	50.0
Among 'No': a potential successor exists but succession still unclear	19	29.9	10.0	49.7	50.0
Among 'No': definitely no successor (yet)	9	65.3	8.0	48.1	52.0
'No answer'	6 (12%)	18.5	15	54.2	54.0
Total	49				

Source: Chapter author based on SCARLED database

8.3   The modelling approach

The simulation model applied is AgriPoliS (HAPPE et al., 2006; KELLERMANN et al., 2008). This model treats agricultural farm structures as complex adaptive systems with farm holders as the main (farm) agents who perceive their environment and act and interact in response to changes in this environment. The key characteristics of regional farm structures such as heterogeneous farms, space, product markets and production factors are used to map the landscape. There are farm-internal factors which relate to specific human and physical conditions of the farm, e.g. the age of the farm operator or the quality of the farm land. In addition, there are farm-external factors representing outside forces (e.g. wage levels, agricultural policy framework) which also induce adjustment

reactions. A sample of weighted typical farms represents the characteristics of specific regional farm structures (SAHRBACHER and HAPPE, 2008).

Starting the modelling, the initial endowments of farms with production factors of labour, land, machinery, buildings, liquidity, and borrowed capital are specified based on standard farm management norms and technical data. The production and investment decisions of each farm are calculated using a mixed integer programming model. Each line of production is valued with a specific gross margin.

In view of investment options (buildings and machinery), there are economies of size since the fixed costs per unit of production and the labour demand are lower for larger operations.

The farms interact and compete indirectly in the land market which is endogenous to the model so that actions of farms directly influence land prices. The land market is implemented via an iterative sequential auction. Farms calculate a bid for a free plot of land. This bid is equal to the shadow price minus a specific share of the shadow price for costs such as taxes and fees minus transport costs. Finally, the plot is allocated to the farm with the highest shadow price. A key event within the modelling procedure is a possible farm closure. If this happens, the timing and the reasons for the farm exit are of particular interest. In the standard version of AgriPoliS, farms exit if they are illiquid or if their opportunity costs of the farm-owned production factors of labour,[13] land and capital are higher than the expected farm household income.

8.3.1 Dualistic farm structures in Hungary – two different types of farm agents

As indicated above, the Hungarian study region has a moderately dualistic structure, i.e. there is a small group of large farms which are mainly organised as corporate farms (CF). These farms utilise almost half of the agricultural land. There is also a large number of small individual farms (IF) which utilise slightly more than half of the agricultural land.

CF and IF differ in several aspects: these concern their objectives,[14] their labour endowments, and the assumptions in the course of the inter-generational transfer of the farming operations. The IF are equipped with family labour (and

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[13] As corporate farms operate without exception on the basis of hired labour they only count the opportunity costs of land and capital. Concerning the opportunity costs of farm-family labour on individual farms, different assumptions are made compared to the standard version of AgriPoliS. These assumptions are defined in the section on the scenario description.

[14] See, for instance, Chapter 5 for an analysis of labour allocation choices within smaller-scale farms. Chapter 6 presents the function of subsistence production in coping with poverty among small-scale farm holders.

additional hired labour if necessary) while CF operate solely based on external hired labour. The farm family labour of IF can be partly or fully allocated to off-farm activities if this is more profitable. Furthermore, IF are assumed to maximise their household income while CF maximise profits.

8.3.2 The agricultural structure of the model region

The simulation model was calibrated to represent the dualistic farm structure of the region 'Borsodi Mezoseg' which is located in the North-East of Hungary and is a smaller region adjacent to and partly inside the Northern Great Plain. The surveyed area has a size of about 33,400 ha.[15] About 55% of the area is managed by IF which constitute 97% of farms, the remaining share is occupied by CF (Table 8.6). The average farm size of IF is 21 ha while that of CF is 625 ha. The group of IF is quite heterogeneous as the majority (60%) are smaller or equal than 10 ha. The two largest IF operate on 130 ha and 300 ha. The average livestock density is comparatively low in the model region (0.16 livestock units (LU)/ha). For the IF the livestock density is slightly higher (0.20 LU/ha) compared to CF as they are engaged in all livestock activities (Table 8.6). However, livestock activities are unequally distributed among IF since only 53% of them keep livestock. The specific lines of livestock production – different kinds of cattle and sheep – reveal that livestock is predominantly kept to make use of grassland (28% of the utilised agricultural area (UAA)) and less fertile parts of the arable land. The region is not characterised by intensive livestock activities such as fattening pigs, sows, poultry or egg production.

Table 8.6   Importance of individual farms in the model region

Characteristics	All farms	Share of individual farms
Farms (no.)	901	97%
UAA (ha)	33,362	55%
of which grassland (ha)	9,357	
Dairy cows (no.)	2,185	59%
Beef cattle (no.)	1,645	76%
Suckler cows (no.)	9,140	78%
Sheep (no.)	27,250	58%

Source: Based on the Hungarian Census of Agriculture, 2000 (HUNGARIAN CENTRAL STATISTICAL OFFICE, 2004)

8.3.3 Modelling entry and exit dynamics – successions in individual farm households

The difference between IF and CF with regard to the inter-generational transfer of the farm is the assumption for IF that the farm operator runs the

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[15] Farms smaller than 4 ha are not considered, i.e. this area refers to all farms larger than 4 ha.

farming operations for a period of 35 years and then hands the farm over to be continued by a successor. As the existence and willingness of a potential successor are often connected with uncertainty, this aspect is included within the scenario settings. CF are not faced with any issues on farm succession since it is assumed that all necessary labour input can be hired in the labour market, including potential successors. The assumption of a working life of 35 years is based on two considerations: first, WEISS (1999) approximates the mean age of entering the farming business as a successor as 30 years; second, the date of the farm transfer to the next generation is assumed to take place when the present farm holder is at an age of 65 years.[16] These considerations lead to a generational change of 35 years.[17] Individual farm successors can be farm family members, but also external persons willing to enter and work on the farm.

In any case, a potential successor only enters if the expected farm income is higher than the expected non-farm income. Thereby, there is a mark-up of 25% in the level of the alternative non-farm wage level for a potential successor in the year when he starts his farming activities. This is based on the assumption that he has already had to invest in an agricultural education. Once a successor has decided to enter, opportunity costs revert to the original level without the mark-up. If the opportunity costs for the successor and for own capital and land are higher than the expected farm household income, the farm is closed down and all farm land is released onto the land market.

8.3.4 The agricultural policy framework

The simulations start in 2004 when Hungary became a part of the EU. Hungary opted for the implementation of a simplified single area payment scheme (SAPS) which consists of incrementally increasing payments year by year with a starting level of 25% of the direct payment level of established Member States (EU15). These payments are augmented by coupled Complementary National Direct Payments (CNDP), so called 'top-ups', for specific crops and livestock. This policy framework applies to all scenarios. Table 8.7 shows the assumptions on SAPS and CNDPs financial means. SAPS

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[16] In Hungary, the official retirement age is 62 years. This applies to dependent employees. For private farmers there is no fixed retiring age. The survey data show that only a few farm operators continue farming once they have reached the age of 65 years. This was the case for only 33 of all 256 farm households surveyed (that is, 12.9%). In many countries, there are disadvantages in continuing to work after reaching the official retirement age, since further profits from farming are offset against pension rights. Thus there is an incentive to stop farming or transfer the business to a successor.

[17] The survey data show that the farm operator and the partner are usually of about the same age. Hence, the working life is assumed to be the same for both the operator and the partner.

increase stepwise and they are assumed to be paid on a calculative level of about Euro 235/ha in 2013 and afterwards until the end of the simulations. CNDPs are reduced stepwise and they are scheduled to reach the final level of zero Euro in 2013.

Table 8.7   SAPS and CNDPs in Hungary

	Unit	2004	2005	2006	2007	2008	2009	2010	...	2038	2039
SAPS	€/ha	70	86	100	112	126	152	178	...	235	235
CNDPs*: eligible crops on arable land	€/ha	36	62	61	55	48	44	37	...	0	0
Total	€/ha	106	148	161	167	174	196	215	...	235	235

Note*:   CNDPs are also paid per head to beef cattle, suckler cow and sheep production. CNDPs are
         negotiated annually with the Ministry of Finance depending on the availability of funds.
         € = Euro.
Source: Hungarian Central Statistical Office, 2004

8.3.5 Scenarios

The four scenarios are defined so that the starting scenario is rather simplistic and, through a relaxation of assumptions, the scenario setting becomes more realistic. The scenarios focus on three issues concerning the ageing and succession of farmers:

(i)   The level of opportunity costs for farm family members over the period of their professional life. Opportunity costs could be constant or declining with increasing age.

(ii)   The initial age distribution within the sample of individual farmers. This is an equal distribution in the standard version of AgriPoliS. In this application it is calibrated to an empirical age distribution as detailed in the scenario 'Empirical'.

(iii)   The assumptions regarding the existence and willingness of a successor.

Reference Scenario ('Reference')

In this scenario, it is assumed that the opportunity to find a job outside agriculture is constant over the working life of a farmer, i.e. old farmers face the same opportunity costs as their younger colleagues.

Scenario Age Dependency ('Age-dep')

This scenario assumes an age-dependent decline of opportunity costs over time. This assumption is based on the traditional understanding of a typical farm operator as a person who has a specific agricultural education and skills which cannot easily be remunerated outside the farming sector. Moreover, the mobility

to switch to another (non-farm) profession declines with advancing age following CHAMPION (1998) who states that the potential payoff of a new job is lower for older employees since their remaining working life is shorter. Furthermore, there are several studies on the agrarian labour market in CEE countries which state that middle-aged and old farmers have little or no non-farm job opportunities (BAUM et al., 2006; RIZOV and SWINNEN, 2004; BOJNEC et al., 2003). The decline in opportunity costs is implemented step-wise: it is assumed that a successor becomes the farm operator at 30 years of age and s/he hands over the farm at 65 years. For the first 15 years of operating the farm it is assumed that the farmer still has full opportunities, i.e. s/he would receive the full off-farm wage level. For the next 10 years s/he would receive only half the off-farm wage, and for the last 10 years aged from 55 to 65, s/he would receive nothing. These assumptions apply to all farm family labour, i.e. the operator and the partner.

Scenario Empirical Age Structure ('Empirical')

A further step towards a realistic implementation of model assumptions concerns the initial age distribution within the group of IF. In previous research using the model, the initial age assignment followed an equal distribution owing to a lack of empirical data on the age of farmers. Each individual farm operator was assigned a random age which leads to a random distribution of age among all individual farm operators, irrespective of any farm characteristics. This is now extended by implementing age structures according to empirical data sources, e.g. based on survey data. The initial assignment of age to the farm operator (and the partner) is based on findings on the relationship between farm size and age as shown in Table 8.8.[18] The mean age of 52.5 years in the smallest farm size group (larger than or equal to 4 ha and smaller than 10 ha) is approximated by a triangular function which has its peak at an age of 52.5 years, i.e. the centre is skewed to the right according to the mean value in the respective farm size class.[19] This initial position is applied for each size class separately. Only the size class of the largest farms (larger than or equal to 60 ha) is not affected by an 'over-ageing' as the mean value is only 47.0 years.

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[18] The setting of the farm size borders is somewhat arbitrary but chosen with a view to a suitable fitting for the sample of typical farm households within the modelling.

[19] A symmetric triangular age distribution within the borders of 30 and 65 years has its peak at a value of 47.5 years. A peak at 52.5 years reflects the over-ageing within this farm size class since this procedure generates an age distribution where most farm operators are aged 52.5 years while only a few are older and even fewer are younger farmers.

Table 8.8   Age distribution by size classes (farms larger than or equal to 4 ha in the region Northern Great Plain)

Farms between …	>=4ha and <10ha	>= 10ha and <25ha	>=25ha and <60ha	>= 60ha
Number (N= 49)	20	10	9	10
Mean age of operator	52.5	54.1	52.1	47.0

Source: Chapter author based on SCARLED database

Scenario Random Successor ('Succ_random')

Closely linked to the problem of ageing is the problem of the farm succession. This problem becomes even more pressing the older the farm operators are. The survey results suggest that succession processes in IF households are often uncertain. The number of farm households which state definite plans regarding the farm succession is small (only 13 farms) and the number of those farm households stating uncertainty is comparatively high (19 farms). This scenario covers this issue of uncertainty by setting the probability that there is no willing successor at 50%.[20] This assumption is independent of any other characteristics of IF.

Table 8.9 summarises all scenario settings in a matrix and introduces the scenario naming (first column) for the subsequent section of simulation results.

Table 8.9   Scenario matrix

Scenario name	Opportunity costs	Initial age distribution	Succession
Reference	Constant over work life	Equal	Always successor available
Age-dep	**Age-dependent**	Equal	Always successor available
Empirical	Age-dependent	**Empirical age distribution**	Always successor available
Succ_random	Age-dependent	Empirical	**Randomly (50%) no successor**

Source: Chapter author

8.4   Simulation Results

This section focuses on selected aspects of agricultural structures and the changes in them. Each simulation runs for 35 periods, so that inter-generational transfer takes place at least once.[21] Results are based on five independent

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[20]   All other scenarios assume that there is always a willing successor on individual farms.

[21]   The reasonably long 35-year period was chosen because of this fact. For the analyses of rental prices and incomes the time frame was reduced to a narrower time frame of 10 iterations (years). Many model developments show up in the early simulation runs. Generally, one has to admit that the longer the 'prediction horizon' the less reliable are the

replications where the age of assets, the farm location, and the variable production costs are varied randomly.[22] In the first step, the impacts from different assumptions on the opportunity costs of labour of the farm household members are analysed (scenarios 'Reference' and 'Age-dep'). In the next scenario ('Empirical'), the impacts of an empirically-based initial age distribution are addressed to show the influence of demography on the speed and intensity of structural change. Closely linked to this issue, the impacts of a 50% probability of farm successions are examined in the scenario 'Succ_random'.

Furthermore, the analyses cast light on the competition and the different developments within both legal types (e.g. labour input and rental prices give some indication of the efficiency and costs of production, livestock density reveals insights on the production intensity, while farm incomes reflect the remuneration of the whole producing entity and the factors used in it).

8.4.1 Speed of structural change

Figure 8.2 (a) shows that, in the 'Reference_IF' scenario, the number of IF declines over the simulation period of 35 years starting from 2004. The decline is fastest at the beginning if the opportunity costs are assumed to be constant over the working life period of farm family members. Later, structural change slows down.[23]

The decline in IF is notably slower in the beginning of the simulation runs by assuming that age plays a role with regard to the existence and value of opportunities ('Age-dep_IF' scenario). Further investigations show that the only reason for exiting is uncovered opportunity costs which are calculated based on own production factors of labour, land, capital, and quotas.[24] While the group of IF is quite numerous and heterogeneous in the beginning, the group of CF is relatively homogenous. Their number (24) is constant over all simulation runs

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results. However, the issue of ageing in the context of generational changes requires such long observation periods.

[22] As in reality, there are differences with regard to the managerial performance of farms which are reflected in the way in which some farm operators have lower variable production costs compared to others. However, these differing managerial abilities are assigned to farms randomly, i.e. independently of any other characteristic such as age (experience) or farm size and they remain constant throughout the entire simulation.

[23] The 'kink' of the curve at iteration 13-14 marks a point where all potential 'exit farms' of the smallest farm size classes have closed. Afterwards, the exiting concerns other farms and slows down.

[24] The slightly different final levels of the curve of the scenario 'Reference_IF' and 'Age-dep_IF' are caused by complexity since in the scenario 'Age-dep_IF' some farms do not exit which exit within the other scenario (or at another moment during the simulations which makes a difference). Hence, the inter-dependencies can cause farms to exit in one scenario that do not exit in the other, simply because their competitive environment – provided by the other farms – has changed.

and in all scenarios. For this reason, Figure 8.2 (a) shows for CFs only the 'Reference_CF' scenario[25]. CF are declining in size: the average size is initially 625 ha and shrinks to 510 ha in period 35. There is further discussion of this point in the next section.

Figure 8.2 (b) shows the developments in the number of IF in the scenarios 'Empirical_IF', 'Succ_random_IF' and 'Age-dep_IF'. The shapes of the curves differ. Taking empirical age structure together with age-dependent opportunity costs results in even slower structural change in the first periods than in the scenario 'Age-dep_IF'. However, structural change accelerates in the middle periods and slows down again in the final periods. The combination of the two assumptions that: (i) the initial farm sample is over-aged (according to the empirical findings); and (ii) opportunity costs decrease over time, means that many farmers are initially old and have fewer opportunities (scenario 'Empirical_IF'). Hence, these farms persist for a while, but then the number of annual generational changes increases, potential young successors consider the high opportunity costs, and the speed of exits increases (iterations 8-23). Towards the end of the simulations there are increasingly fewer farms confronted with a generational change (compared to the scenario 'Age-dep_IF') and at the end of the simulations (iteration 35) there are as many farms as in the scenario 'Age-dep_IF' with its implementation of an equal initial age distribution. The comparison of these two scenarios shows that the timing of farm exits and their persistence depends on the initial age patterns.

These effects are even stronger in the scenario 'Succ_random_IF' assuming a 50% chance that a willing successor exists. This scenario is characterised, as expected, by a significantly stronger decline in the number of IF. This can be explained by the fact that there are many typical 'exit farms' which quit anyway. This phenomenon can be interpreted as follows: the assumption of having no willing successor at the generational change simply substitutes somehow for the farm's internal calculation of opportunity costs, i.e. if a farm were not affected by a missing successor it would decide anyway to exit from farming because of uncovered opportunity costs.

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[25] A further reason for focussing firstly on IF is that CF are not affected by the scenario differentiations in opportunity costs, age patterns, and the issue of uncertainty of farm successions.

Figure 8.2 Number of farms in different scenarios (relative decline)
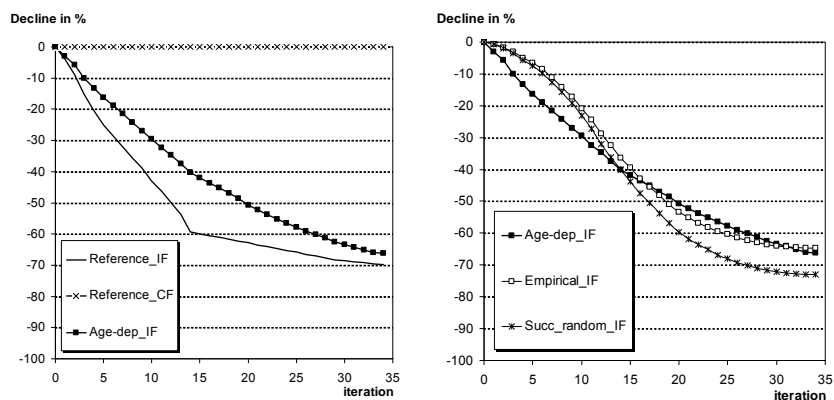
(a) Relative decline in the number of farms (scenarios 'Reference_IF', 'Reference_CF', and 'Age-dep_IF'

(b) Relative decline in the number of farms (scenarios 'Age-dep_IF', 'Empirical_IF', and 'Succ_random_IF'

Note: The technical naming of the x-axis ('iteration') is used because of the computational character of the modelling approach. One 'iteration' corresponds to one year in a real world interpretation of the model results.

Source: Chapter author

8.4.2 Distribution of land in different farm size classes

Figure 8.3 shows that predominantly IF belonging to the two smallest farm size classes lose land during the simulation runs. This land reduction is mainly caused by the exit of the smallest IF in the sample. Only a few manage to increase in size, which is the second – but almost negligible – reason for the land decline in the group of small farms. The share of small farms in land use decreases while that of the initially larger IF increases. Interestingly, the overall share of land farmed by IF does not increase significantly (except for some land gains in the early stages). Apart from the competition for land among IF themselves, they are also competing with the group of CF. In the early simulation runs, CF lose some significant parts of their farming area (Figure 8.3 (a)) while the loss of area is moderate in the later simulation runs. Of the whole region modelled (approximately 33,400 ha), initially IF operate on approximately 18,400 ha and CF on approximately 15,000 ha.[26]

The scenario 'Age-dep_IF' is differentiated from the scenario 'Reference_IF' by the assumption that older farm operators have less (or even no) opportunities

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[26] The two smallest farm size classes should rather be considered as one because there are many farms in the size class less than or equal to 10 ha which grow immediately after the start of the simulation into the next size category (greater than 10 ha but less than or equal to 30 ha).

to exit from farming. Most farmers are in the smallest farm size classes. Thus, by comparing both scenarios one observes that in the 'Age-dep_IF' scenario the two smallest farm size classes hold larger land shares for longer. This is due to the fact that their operators have no option to exit and so continue farming.

Figure 8.3   Area used by individual farms (IF) in different size classes

(a) Scenario 'Reference_IF'	(b) Scenario 'Age-dep_IF'
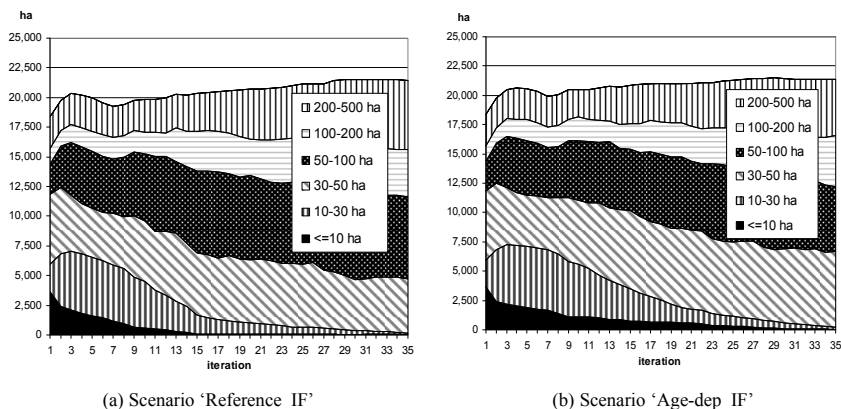
Source: Chapter author

8.4.3   Labour input and livestock

The initial labour input of IF and CF differs (Figure 8.4 (a)). While IF show a value of 1.1 agricultural Annual Working Units (AWU)/100 ha, this figure is only 0.8 AWU/100 ha for CF. Both values are comparatively low which indicates a low livestock density (Figure 8.4 (b)) and mirrors the large-scale farm structures where most land is managed by large CF or large IF.[27]

The reduction in the labour input is stronger in IF than CF, where it remains almost constant. The reduction in IF is primarily caused by the decline in livestock production (Figure 8.4 (b)) which, in turn, is the result of the exiting of small IF. The exit of small IF and the simultaneous increase in size of other IF causes an increase in labour efficiency since larger farms are more able to exploit economies of scale.

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[27] Within the model, economies of scale are reproduced as unit costs which are lower in large production units. The CF make up only 3% of farms in the model region but operate on 45% of the regional area. If the two largest IF (130 and 300ha) are included, then 5% of farms use 57% of the land.

The comparably lower labour decline on CF is caused by some re-investment in sheep and milk production. Within livestock production, there is a strong decline in beef and suckler cow production, while the decline in milk and sheep production is moderate.[28] There are hardly any differences in the different scenarios. This is the reason why the analyses are extended to capture the differences between legal types.

Figure 8.4   Labour input and development of livestock density, IF and CF

| (a) Labour input | (b) Livestock density |
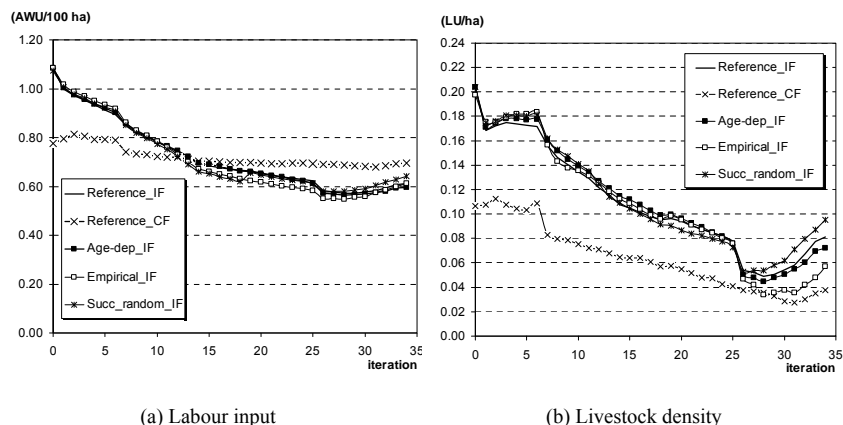
Note: For reasons of clarity for the CF only the scenario 'Reference_CF' is depicted because the developments of labour input and livestock density do not significantly differ in the three other scenarios for this legal type.

Source: Chapter author

8.4.4   Rental prices and incomes

The simulations show an increase in rental prices for both legal types and for all scenarios (Table 8.10). While IF start from a rental price level of Euro 70/ha (arable land) this level increases rapidly to approximately Euro 130/ha after 5 years. Then the increase becomes more moderate up to approximately Euro 140/ha. The slightly higher levels in IF in the scenario 'Age-dep_IF' are caused by the fact that competitive pressure is higher in this scenario since there are fewer farms leaving the sector.

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[28]   However, this depends on many assumptions concerning prices (for costs and revenues), premiums, and the production needs of land, labour, and capital. The sudden decline at the 6th period is caused by peculiarities of the implemented policy scheme as the top-up premiums are fully converted into an area-related premium over time.

For CF, the starting level of Euro 65/ha is even lower than for IF, then prices increase up to approximately Euro 100/ha in the 5-year perspective and even more in the middle term (up to Euro 179/ha).

Table 8.10   Average rental price of arable land (Euro/ha)

		Legal type = IF		Legal type = CF
	Scenario:	'Reference_IF'	'Age-dep_IF'	'Reference_CF'
Iteration				
t=0		70	70	65
t=5		131	132	99
t=10		138	144	179

Note: the developments in the scenarios 'Empirical_IF' and 'Succ_random_IF' are not depicted here as
          they   do not differ from the scenario 'Age-dep_IF'. Similarly for the other CF scenarios.
Source: Chapter author

The larger increase in rental prices results from the comparatively low starting level and the strong impacts from the Common Agricultural Policy (CAP) with SAPS increasing stepwise and specific top-up payments. The top-up payments are reduced in the middle-term perspective.

With regard to total farm income, there are strong differences between the legal types. Initially, the average total farm income of CF amounts to Euro 90,000/farm while it is Euro 11,000/farm for the IF.[29] The remuneration with regard to an AWU is shown in Table 8.11. The strong increase in total farm income per AWU in IF is caused by a 'sampling effect' since many of the small IF leave the sample in the first simulation periods. The increasing volume of CAP payments only has a small effect on this income increase since there is a capitalisation of payments to the landowners via increasing rental prices. This affects CF as well since more than 90% of their land is rented. This is reflected in the very slight income increase per AWU on CF. Initially, CF show a higher remuneration for farm labour. In the middle term the remuneration levels converge, driven by the increase in IF.[30] This phenomenon of convergence is partly due to a few IF which grow strongly and then show characteristics which were previously observed only in the CF.

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[29] Naturally these figures are not comparable. They are given to get an impression of the
       average absolute income level of both legal types.
[30] The income peak of CF at the iteration t=5 is caused by peculiarities of the premium
       scheme since there is a peak of premiums for specific livestock lines of production which
       are predominantly kept on CF.

Table 8.11   Total farm income (profit plus costs for hired labour) per AWU, Euro

	Legal type = IF	Legal type = CF
Scenario:	'Reference_IF'	'Reference_CF'
Iteration		
t=0	7,911	24,076
t=5	17,347	26,422
t=10	23,091	25,752

Note: The developments in the scenarios 'Age-dep_IF', 'Empirical_IF' and 'Succ_random_IF' are not depicted here as they do not differ from the scenario 'Reference_IF'. Similarly for the other CF scenarios.

Source: Chapter author

8.5   Conclusions

The application of AgriPoliS to the Hungarian region 'Borsodi Mezoseg' allows the impacts of demographic patterns on structural change to be predicted. A steady continuation of structural change through the exiting of small individual farms is to be expected. The demographic patterns as observed in the farm survey – over-ageing of operators in the size classes of small farms – provoke a shift in the exiting process and there might be phases of accelerated (or slowed) structural change. The acceleration of small farms' quitting agriculture happens if there is a peak of frequent generation changes because many potential farm successors decide not to enter the farming business owing to better non-farm opportunities. Hence, one can conclude that the age distribution of farmers strongly affects the timing of the persistence or exiting of farms. This phenomenon is even more pronounced if it is assumed (with a probability of 50%) that no successor exists.

In line with EUROSTAT data, the survey results and the simulation experiments give an indication that the next 15 years will be characterised by frequent farm successions or 'non-successions'. Both will have impacts on structural change in agriculture. Non-succession will lead to a reduction of farmers and, since many exiting farms stem from the group of small farms, the land use share within these small size classes will shrink while it will increase in the classes of larger farms. Within the model, a successful farm succession can be interpreted as a survival of the farm. In reality, successful farm successions often imply increasing investment activities (e.g. expansion in farm size, investing in larger buildings, opening of additional lines of production).

However, the exiting options of individual farmers (including all farm family members) depend on opportunities. With regard to the implementation of an age-dependent decline in these opportunities, it was shown in a first simulation sequence that this slows down the number of farm exits significantly.

The group of corporate farms (as competitors within the dualistic farm structure) seems to be well established since the model does not predict that they

are leaving due to illiquidity or uncovered opportunity costs. It can be assumed that they benefit from economies of scale which are implemented within the model as well. However, they suffer a small loss of land in favour of growing individual farms.

In view of the problem of missing farm successors, the conclusion can be drawn that the impacts are not as strong as one would have supposed ex ante. There are typical 'exit farms' which leave anyway and even before a potential succession event. This phenomenon also leads to the finding that the impacts of the different scenarios with regard to the indicators of labour input, livestock density, rental prices, and incomes appear rather negligible. However, this finding depends also on the nature of the sample farms which constitute the model region. If, for example, livestock activities were mainly located on small farms it could be assumed that the differences between the scenarios 'Reference_IF' and 'Age-dep_IF' with regard to livestock and the livestock density would increase as well since the exiting of the small farms would then be linked with a large decline in livestock activities, too.

The differences between the two legal types are significantly more pronounced. To emphasise the result of a decreasing livestock production, the crucial fact that this development goes hand in hand with a further loss of value added and particularly of employment in rural areas should be considered. Once livestock activities are terminated on a particular farm the probability of them restarting is very low.

On the other hand, it should be taken into account that the agricultural policy framework with its increasing area payments leads to a tremendous increase in rental prices, and farm incomes as well. This can in turn somewhat 'overlay' the demographic issues which have been addressed in this analysis. However, increasing payments to farmers lead to the problem of the capitalisation of the premium benefits to landowners in the middle- and long-term perspective. But the policy framework does not inhibit the trend of small farms exiting. This is surprising since other studies (BLAAS et al., 2007) found that increasing premiums lead to a significant time delay of this adjustment reaction.

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Part Three

Summary of Findings and Policy Conclusions

Chapter Nine

Policy Conclusions and Recommendations

Csaba Csáki and Attila Jámbor

Chapter 9 identifies and synthesises the policy implications of the results presented in the previous chapters. It draws policy conclusions from the multifaceted analyses, as well as providing policy recommendations for the future based on the results achieved. First, the chapter sets out policy recommendations for addressing the hidden bias against small farms. Previous chapters have brought forward much analytical evidence regarding the operation and motivation of subsistence and semi-subsistence farms and show that they can hardly be compared with any sections of the EU15 farming sector and may require special attention and policies. Second, the chapter focuses on rural employment and the development of rural labour markets which are a crucial factor for future development. Obviously, actions are needed to increase and diversify rural employment and income-earning possibilities. Third, the chapter draws attention to the urgent need to enhance the competitiveness of the farming sector in the region by analysing impediments limiting the competitiveness of farms and providing policy recommendations for solving the problem. Fourth, the chapter analyses the possible ways of managing rural development programmes in the future CAP and calls for an integrated treatment of rural livelihoods by the integrated management of associated funds. The increased rural poverty in the region during the process of structural change is also highlighted and some recommendations for alleviating significant rural poverty are given. Finally, policy highlights based on the overall project results are provided.

Better knowledge about structural changes in agriculture and their impacts on rural livelihoods in the New Member States (NMS) is of the utmost importance, not only for those areas which are directly affected by these changes, but also for the European Union (EU) and national policy makers following the cohesion objective of the EU and pursuing the 'Europe 2020' Strategy. This chapter identifies and synthesises the policy implications of the results of the SCARLED study's multifaceted analyses on structural changes in rural livelihoods for the new Member States (NMS) and for established Member States (EU15).

The chapter follows the logic of the previous chapters in analysing various aspects of structural change in rural livelihoods. Accordingly, the chapter starts with a discussion of the difficulties and problems of small farms and their policy relevance, followed by an examination of the development of, and lessons learned from, rural labour markets. Policy conclusions and recommendations on

competitiveness enhancement and the integration of policies affecting rural development are also discussed in detail. The chapter closes with policy highlights derived from SCARLED results.

9.1   Hidden bias against small farms

One of the major results of the SCARLED project is the demonstration of the diversity of farming structures in the NMS. This diversity means that both large and small farms exist in national agricultures at the same time, differing in terms of both their attitudes towards commercialisation and factual circumstances (see Chapter 6). However, the large number of subsistence and semi-subsistence farms is a special characteristic of the NMS since these farms are fundamentally different from those which are called 'small farms' in the EU15 (DAVIDOVA et al., 2009). Chapters 5 and 6 have presented much analytical evidence regarding the operation and motivation of these farms, proving that there are virtually no sections of the EU15 farming sector with which they are comparable, and that therefore they require special attention and policies.

However, it appears that several hidden biases exist against subsistence and semi-subsistence farms. Before accession, agricultural policies mainly neglected these farms and currently the Common Agricultural Policy (CAP) provides almost nothing for them. As a result, on the one hand, the agricultural incomes of most small farms fail to provide them with an acceptable level of living. The majority of small farms have hardly any connection with national or regional markets, making it difficult for them to sell their produce. On the other hand, the number of jobs outside agriculture is also limited in rural areas, and therefore family members are often forced to to leave the rural area permanently (see Chapter 1).

There are specific policies for managing this problem including actions focused on small farms. Most of our recommendations presented in this chapter are relevant to small farmers. In the following, we emphasise the most important ones.

9.1.1 Targeted and differentiated policies for agricultural producers

First of all, preparing for the challenges of the future requires agricultural policy to recognise the situation. Consequently, it is necessary to implement a differentiated agricultural policy, one which does not apply the 'one-size-fits-all' approach. For large farms, the transparency of economic conditions is the first consideration. Often they are in a position to seize market opportunities, provided that their environment is free from discrimination. However, it should be noted that policies that are strongly in favour of commercialisation might also undermine the safety net provided by subsistence production (see Chapter 6).

This could result from the possible threat of pressure to sell off land to expanding farm businesses. Therefore, small and medium sized farms require effective support adjusted to their conditions and needs in order to help them develop and adapt to market conditions.

9.1.2 Develop market relationships for small farms

It is evident from our results that agricultural households are heterogeneous. While some households are already well integrated into formal markets, others are not (see Chapter 6). This situation should be recognised by agricultural and rural development policies.

Policies for more commercially oriented farm households should favour technological progress, invest in infrastructure and in social capital, thereby influencing market participation. Technological improvements and productivity, and not price support, should be central to policy in order to achieve a higher share of market integration. Policies to promote the use of machinery cooperatives can help capital-poor farm households to increase production above subsistence levels. In addition, transport and market infrastructure should be developed in order to improve the welfare of the rural poor. Furthermore, social capital investment (see Chapter 7) can improve cooperation among small-scale farmers. This can counteract the growing power of the processing and retail sectors which results from rapidly restructuring supply chains. Although the traditional forms of cooperation which are characteristic of small-scale farmers can help them to persist and survive, only advanced forms of cooperation can constitute a development strategy.

Households which are not integrated into the market rely mostly on semi-subsistence farming (Chapter 6). The unsold output is used for household consumption and thus decreases the risk of consumption shocks if the social safety net is underdeveloped. The value of the unsold output (the so called income-in-kind) contributes substantially to total incomes, particularly of those households which live in relative poverty (see Chapter 6). Therefore, it is important that any policy aimed at increasing market participation does not undermine the important safety net that subsistence production constitutes for the rural poor.

However, it should be borne in mind that for many households, semi-subsistence agriculture is a choice rather than a necessity. These households enjoy their lifestyle, produce for non-pecuniary reasons and insist on producing their own safe food. Consequently, they will rarely respond to market based policy signals designed to provide incentives for market integration (see Chapter 6).

9.1.3 Make CAP funds accessible for small farms

Under the current CAP schemes, small farms have limited access to subsidies. With regard to Pillar 1, small household farms of less than 1 hectare (ha) are de facto excluded from direct payments under this pillar. For farms above 1 ha, transfer payments amounting to Euro 1,500 per year (for a period of up to five years) are made to semi-subsistence farms. However, it should be recognised that these payments do not seem to result in farm restructuring to the extent that would allow the farms to develop long term viable market production.

Concerning Pillar 2, subsistence and semi-subsistence households usually do not know how to apply for this pillar's rural development subsidies. Moreover, the design of Pillar 2 programmes does not take into account the fact that small farmers have limited own resources and it is very difficult for them to obtain credit. Our results indicate that efforts should be made to guarantee that CAP funds are equally accessible for small farmers.

9.2   Develop rural labour markets

The poor development of rural labour markets in the NMS is another important factor from an agricultural and rural development policy perspective (see Chapter 4). Well-functioning rural labour markets are important for rural development as they contribute to a more efficient allocation of labour in the economy by reducing the transaction costs of hiring labour and by making it easier for any surplus labour to find employment in other, more lucrative, sectors. Thus, well-functioning rural labour markets are essential, both for those employed in agriculture and those not (see Chapter 4). A well-functioning rural labour market is the major factor in determining where people live, work and spend their income. In rural areas they determine people's incomes, their location, their opportunities and their well-being (Chapter 5).

In order to develop rural labour markets, it is highly recommended that the targeting of the CAP subsidies be improved and that funds be moved from Pillar 1 to Pillar 2 in order to more directly address constraints such as low skills, poor infrastructure, and weak institutions. Moreover, the following actions are also needed to facilitate the development of rural labour markets.

9.2.1 Better targeting of agricultural subsidies is needed

Current farm support under the CAP has a series of effects on rural labour markets – though not in the way one might expect. Our empirical analysis shows that direct payments have a negative impact on agricultural employment. This can be explained by a combination of policy rent dissipation (see Chapter 8), induced reduction of credit constraints, and poor targeting (see Chapter 4).

This does not mean that direct payments cannot play some role in reducing income variation and household risk in the future, but further reform endeavours are necessary, for instance in the social system, so that small-scale farmers become part of a real safety net. Furthermore, the effectiveness of direct payments in terms of risk reduction and providing insurance has to be compared with private instruments. In addition, their effectiveness in terms of a social safety net has to be compared with that of an economy-wide social policy system, which provides a safety net across sectors. In both cases, policy and private sector instruments focused not on agriculture but on the entire economy are likely to be more efficient.

9.2.2 Improve human capital

On average, human capital is low in rural areas and many people employed in farming are old. Few farmers received formal agricultural education. This is a very important constraint, not only for agricultural labour restructuring, but more generally for business development and economic activities in rural areas. The lack of education can be an important barrier to farmers wanting to leave the agricultural sector for another sector (see Chapters 4 and 5).

Investment in education would contribute to several objectives consistent with the overall objective of rural development, such as the improvement of the productivity of existing enterprises, the growth of new enterprises, the reduction of unemployment, and a shift of underemployed farm labour to other activities, thereby increasing the labour productivity of the remaining farms. Investment to improve rural education could also reduce the incentives for young people to leave the rural areas.

9.2.3 Invest in rural infrastructure

Besides subsidies and human capital variables, employment alternatives are found to have a large impact on the decision to leave the agricultural sector. Our results show that farmers living in more densely populated areas where there are, in general, more employment alternatives are more likely to leave the sector (see Chapter 4). These findings indicate the importance of creating alternative employment in remote areas where a key constraint is the lack of development of the rural infrastructure, which is still lagging behind that of the EU15.

Investment in rural infrastructure has several important effects on rural labour markets. First, it improves the access of rural households to urban areas and other sectors. Second, it stimulates investment in rural areas in non-farm activities and thus creates more employment opportunities for the rural population. Third, apart from the impact on employment alternatives, the development of rural infrastructure also has an important impact on the

agricultural sector since roads connect farmers to markets and improve farm profits by reducing transport costs. This could also help to integrate farmers in modern supply chains and directly or indirectly upgrade the quantity and quality of their production

9.3   Enhance competitiveness

Besides small farms and rural labour development issues, it is important that agricultural competitiveness enhancement plays a role in agricultural and rural development policies in the future. The region has significant potential for agricultural production, but this potential is still underutilised. Significant progress can be observed in some of the NMS, which have been able to increase both production and exports. However, as indicated by our study, there are a number of impediments limiting the competitiveness of farms in the region (see Chapter 2). Serious impediments include the underdeveloped status of capital and financial markets as well as inadequate adaptation to changing market structures. Moreover, fragmented farming structures and inadequate agricultural policies have also played a crucial role in limiting regional competitiveness. SCARLED research highlighted important aspects of these factors, which are now discussed in detail.

9.3.1 Enhance capital and financial markets

A lack of agri-rural financing continues to be one of the most serious constraints to growth in both the agricultural sector and the rural private economic sector in general (see Chapter 1). In the NMS, the financing of agriculture has improved considerably since 1994 but still remains relatively weak. The new private financing institutions require managerial capacity building and are financially vulnerable. However, in recent years, a significant share of the banking sector has moved to foreign ownership – resulting in improved efficiency and profitability. The creation of an agriculture-oriented rural banking network has been progressing, indicated by the establishment and increasingly active operations of agricultural credit cooperatives and financial institutions specialising in rural areas.

To achieve broad-based growth in competitiveness, people and enterprises in rural areas need access to financial services. Supply driven agricultural credit has proven unsustainable and unsuccessful in many countries. New instruments in rural finance and the testing of their effectiveness, replicability and sustainability are needed. Another important measure is to support credit to farm and rural non-farm enterprises where market failures inhibit the flow of liquidity.

On the whole, it seems that the financing of primary agriculture, especially the credit supply for small farms, is not sufficient in the NMS. The recent economic crisis has made these problems even more serious. The competitive position of producers should be further improved by access to capital; either through public support (e.g. by the improvement of physical and market infrastructure, investment support, and support for producer groups), or indirectly through private initiatives (e.g. by stimulating micro-credit schemes).

9.3.2 Create farmer-friendly market structures

EU membership has made the NMS part of a large, reasonably competitive market. On the one hand, this market offers tremendous opportunities for their agricultural sectors; on the other hand, they are faced with significantly increased competition in their domestic markets (CSÁKI et al., 2008). This situation is due to the rapid emergence of vertically coordinated food chains including hypermarkets, supermarkets and multinational agro-processing companies. These chains have regional procurement systems which create new and much more competitive conditions for both producers and consumers. As a consequence, the market share of foreign-origin products has increased significantly. Owing to very strong price competition, consumers are generally the beneficiaries of these changes. At the same time, producers are not always able to adjust to, or to cope with, the business practices employed by the large chains which occasionally are not entirely fair. The concentrated and Europe-wide procurement systems of the major chains create high requirements for suppliers and impose strong price pressures especially, as our results suggest, for small farmers (CSÁKI and JÁMBOR, 2010).

On the whole, the SCARLED project shows that the relationship between producers and the market is undergoing a major shift. Vertically organised food chains and the dramatically changing food trade are starting to dominate more and more. The most important task for the near future is to support the adaptation of producers, especially the small farmers, to make sure that they can fit in with the new market conditions. Cooperation among producers, especially small establishments, needs support and stimulus to ensure market access for their products (see Chapter 7). Sales through cooperatives need to be encouraged so that their share reaches EU15 levels. The production and marketing of local and specialty products in local markets should be supported. Moreover, innovative approaches towards the marketing of agri-food products (such as vertical integration or the setting up of local supply chains) and adding value to agricultural products (such as by the use of quality labels, or gastronomy) should be stimulated (see Chapter 5).

9.3.3 Create a more efficient farming structure

One of the most important outcomes of the SCARLED project is the detailed analysis of the post-reform farming structure in the countries studied. As a result of reforms, a mixed farming structure has evolved in the region, with combinations of large scale and small scale farms (with the exception of Poland and Slovenia) (see Chapter 2). The relatively consolidated farm structure with the dominance of small farms has proved to be advantageous for Slovenia and especially for Poland. The consolidated structure also brought with it a higher level of asset endowment.

In other NMS, the so called 'dual farm' structure has prevailed, meaning that a large number of very small farms and a small number of very large farms coexist. This has hardly changed since EU accession. In countries with the dual farm structure, both ends of farming are still suffering from a kind of 'transition phenomenon'. The small farms are generally too small with inexperienced farmers and a lack of resources, while the large farms still have some factors inherited from the collective farming system with some embedded inefficiencies.

Our project brought to light some information about recent changes in the farming structure after accession. In general, a significant number of small farms has disappeared in the NMS (see Chapter 2). In terms of farm size, there are surprisingly no major differences between the countries studied as they all lag behind the average of the current Member States (EU27) – none of them reaches 50% of the EU27 average size. However, there are sharp differences in the size structure of agricultural holdings. In countries where private land ownership was the norm during the socialist era (Poland and Slovenia), the relatively fragmented farm structure remained unchanged throughout the 1980s and 1990s and, in the last decade, structural change has slowed down. However, those countries with a more pronounced experience of land collectivisation (Hungary, Romania and Bulgaria) have recently lost a significant number of their farms (see Chapter 2).

The move towards a more efficient farming sector needs to be promoted both at EU and national levels. On the one hand, measures should be in place to support those small farmers able and willing to grow and survive. On the other hand, the exit of those who are unable to continue farming needs to be facilitated. Moreover, schemes should be developed targeted at the social groups, such as young farmers and young job seekers in rural areas, who are of long term importance for rural development. Measures should not discriminate either positively or negatively between domestic producers and their EU counterparts, nor should they favour any particular group of producers, such as large or small farmers (see Chapter 5).

9.3.4 The need for good governance and institutions

There is no doubt that the institutional measures and policy implementation needed to strengthen competitiveness are of key importance for the entire sector. Good governance and institutions are indispensable for sound rural development.

Institutional reforms have accelerated in the NMS since 1995, stimulated by the challenges of EU accession. However, many NMS have struggled to set up the appropriate EU structures and the lack of the appropriate administrative and financial institutions needed to attract EU funds is still a problem (see Chapter 3). Thus, capacity to absorb the available funds at national, regional and local governments must be improved, together with the ability of both central and local authorities to prepare, select and implement projects. Since most EU projects require co-financing, the development of public-private partnerships should be particularly encouraged.

In many NMS, local institutional capacity and actors' participation remains weak. The excessive turnover of administrative staff linked to the politicisation of the civil service is a special characteristic of the NMS (see Chapter 3). This has resulted in the lack of experience in dealing with various programmes. Therefore, the institutional system of agriculture requires further transformation in these countries. Reforms aimed at the ability to effectively integrate into the common market still remain one of the most pressing issues. In addition to technical and human capacity building in public administration, further qualitative development is required in practically all areas of the institutional systems (including consulting, training and research) for market-oriented agriculture.

9.4 Integrated and better targeted rural policies

Rural development policies have always played a crucial role in shaping rural livelihoods. The lessons from the EU15 suggest that there is no single exclusive model or factor underpinning development. Indeed, there are multiple development trajectories that result from various combinations of local, regional, national and global forces depending on the specific circumstances (see Chapter 3). Therefore, rural policies are required that enhance local capacity and actors' participation, that mobilise initial resources and that cope with external forces, in a way that best meets local needs. In light of these lessons, the future course of rural policies will now be discussed, focusing on the evolution of the CAP and potential reforms.

9.4.1 Reform conducive for the NMS

The EU's CAP has been a framework for rural development since the beginning of the 1990s. The growing debate about the future of the EU Budget post 2013 raises major questions about the future of the CAP (JÁMBOR and HARVEY, 2010). The public debate was launched in April 2010 and a formal Communication on the future of the CAP after 2013 was published in November 2010. The SCARLED project has contributed to the debate by asking various experts for their opinions on reform within the framework of a Delphi exercise (see Chapter 3).

The current CAP is designed and based on the conditions of the EU15. The experiences of the first five years in the NMS indicate that a uniform system – even with possible modifications – does not fully fit the conditions of the new member countries, especially in their poorest sections (CSÁKI and JÁMBOR, 2010). Although the current system allows for certain areas to be treated specially, it is not suitable for providing real assistance to the millions of small farms in the NMS, let alone for tackling rural poverty – although this goes far beyond agriculture in the strict sense of the word. So it is doubtful how far the maintenance of the single and largely uniform CAP is in the interest of poorer countries. Our study results suggest that implementation of the CAP should be decentralised to the regional level, while the design and implementation of rural policy should be based on a territorial approach (see Chapter 3).

The policy Delphi exercise revealed that experts throughout the EU believe that rural development policy should be embedded within a clear regional strategy. The development and implementation of projects should also involve local and regional stakeholders, including small businesses. On the desirability of potential reform options for the CAP, however, there was no consensus. Overall, both EU15 and NMS experts were reluctant to endorse major changes to the CAP.

9.4.2 Better coordinate all rural related policies

Currently, rural related policies including support are implemented using different instruments and are not managed under a common rural label. For example, one major source of support is under CAP Pillar 2, which is supplemented both by structural and cohesion funds and by national budget funds. Unfortunately, these different avenues are managed by different ministries and institutions and have never been integrated under the rural label.

However, people living in rural areas are seeking an overall improvement in living conditions and this can, to some extent, be targeted by agricultural policies alongside regional or social policies. Therefore, it is advisable to integrate all rural development policies under a common umbrella by establishing a new fund containing the rural development elements of all

associated EU policies. This would decrease overlaps and increase the efficiency as well as the focus of rural development measures. The new approach and the associated new fund would support more integrated and better coordinated treatment of all rural-related policies.

Moreover, the design and implementation of rural development policy measures should be based on a devolved, territorial but integrated approach, with funds allocated according to regional needs (see Chapter 3). This requires policies that enhance social interaction and networking at all levels, but also that encourage investment in human capital through education and training, particularly in the rural areas. Dynamic and meaningful participation in intra-regional and external networking is critical in order to mobilise internal resources and cope with external forces in a way which best meets local needs. This must involve institutional capacity and local actors. Making the most of EU membership requires an understanding of funding systems and the creation of appropriate national and regional structures and institutions capable of attracting, administering and monitoring EU funds (see Chapter 3).

9.4.3 Actions to alleviate significant rural poverty

The study highlights the increased rural poverty in the region during the process of structural change. This phenomenon has to be fully recognised both at the EU and national levels. The study also leads to important conclusions regarding the complexity of rural poverty and the potential difficulties in dealing with this problem. On the basis of SCARLED, it can be concluded that a complex approach and a high profile programme is needed to alleviate rural poverty in the region.

In particular, our results suggest that non-farm employment diversification can contribute tremendously in the NMS to lowering income risk and thus to poverty reduction. It is clear that the potential for increasing the income of farmers in the NMS and ensuring improvement in their well-being solely through farming operations is limited (see Chapter 5). Increasing incomes through non-farm diversification can also help pull farmers out of semi-subsistence. This is often a poverty trap (see Chapter 6). Diversification of farm activities should be the key to alleviating significant rural poverty and SCARLED results show that not only do farm households in the NMS have the potential to open up non-farm sources, but they actually do so to a high degree (see Chapter 5). Therefore, rural policies need to look beyond agriculture and search for alternative pathways out of poverty, taking into consideration the possible barriers that poor households might face. For elderly farmers, for instance, a general social security policy is needed as their chances of expanding their income base on their own depend on a functioning social security net.

Therefore, substantial changes in the social security system may be required to alleviate rural poverty.

However, it is obvious that agriculture alone cannot do the whole job. There is a clear need for a complex economic development of rural areas with the following priorities.

First, policies should also focus on education as a door opener for non-farm employment, especially for better paid jobs. It is obvious that better education and professional qualifications result in a wider range of employment opportunities (see Chapter 5). Investment in the employability of the rural population is thus a key policy recommendation.

Second, local economic development and the creation of inter-sectoral linkages are also advisable. It should be recognised that many ministries and private players share sectoral responsibility for the rural economy. Therefore cross-ministerial and other working groups should be formed nationally and locally with both public and private participation. Such groups at the sub-national and local levels should address local-level competitiveness and the wider enabling environment of both the farm and non-farm sectors. They should identify barriers (legislative, regulatory, taxation, etc) as well as seek the means of removing them.

Third, supply chain and product linkages should be strengthened. Trends in consumer markets, quality requirements and competition require better planning and coordination of supply chains from input suppliers, primary producers and processors to retailers (Csáki et al., 2008). Competitiveness depends on effective and flexible logistics and low transaction costs within the chain. The public sector's role is to create adequate conditions for the development of effective private sector supply chains, promote investment in physical infrastructure, and support effective subcontracting systems and quality inspections through appropriate legal frameworks and enforcement systems.

Fourth, micro-, small and medium enterprises should be supported. The development of small rural enterprises requires first and foremost a good investment climate. Especially in rural areas, the development of small and medium enterprises is inhibited by the lack of a skilled labour force as well as public and private financial, technological and other services (see Chapter 2). In the case of medium enterprises, efficient service delivery and rural infrastructure services also cause problems.

Fifth, labour mobility should be recognised and supported since migration and labour mobility are essential aspects of economic development, job creation and poverty reduction (see Chapter 4). Particular attention needs to be paid to policies minimising the potential for social tensions and environmental change.

9.5 Policy highlights

The multifaceted complex nature of SCARLED has led to a broad range of policy conclusions as discussed above. In the following, the major lessons are summarised (see also MÖLLERS et al., 2011).

1. The transition of the 1990s and 2000s as well as accession to the EU has made a significant impact on the structure and the status of rural livelihoods in the region. The integration into the EU has had a visible positive impact on all aspects of the rural life. At the same time, rural-urban gaps have widened and rural poverty has increased and become apparent.

2. Agriculture is still a relatively important economic sector in most of the rural areas, however, it is not the major source of income for most rural families. It is clear that the potential for increasing the income of farmers in the NMS and ensuring improvement in their well-being solely through farming operations is limited. Diversification of farm activities should be a key priority in the future.

3. The large number of subsistence and semi-subsistence farms is a special characteristic of the NMS. SCARLED has presented much analytical evidence regarding the operation and motivation of these farms. It is difficult to find any part of the EU15 farming sector which is comparable with these farms. Currently, the CAP provides almost nothing for these farms, and small farms urgently need more equal access to CAP funds.

4. Rural employment and the development of rural labour markets have been discussed in depth by SCARLED as a crucial factor in future development. The study highlights that better targeting of agricultural subsidies, improvement of human capital and development of rural infrastructure are needed in order to increase and diversify rural employment and income earning possibilities.

5. The region has significant potential for agricultural production, but this potential is still underutilised. As indicated by our study, there are a number of impediments limiting the competitiveness of farms in the region. Serious impediments include the underdeveloped status of capital and financial markets as well as the inadequate adaptation to changing market structures. Moreover, fragmented farming structures and inadequate agricultural policies have also been important factors in limiting regional competitiveness.

6. Rural development policies have always had a critical role in shaping rural livelihoods. The lessons from the EU15 suggest that there is no unique model for managing rural development nor is there a single determining factor for a region's economic trajectory. Therefore, rural policies are required that enhance local capacity and actors' participation, mobilise initial resources, and cope with external forces, in a way that best meets local needs.

7. The CAP plays a crucial role in agriculture and rural development in the NMS. The study outlined three factors for consideration in future CAP reform.

First, it is evident that a fully uniform CAP only partially addresses the needs of the NMS. Second, a better balanced distribution of funds between agricultural and non-agricultural measures is needed and a considerable share of rural funds should be invested in human capital through education and training in rural areas. Third, EU15 and NMS experts appear reluctant to endorse major changes to the CAP.

8. At present rural related policies, including support, use different instruments. Unfortunately, these different avenues are managed by different ministries and institutions and have never been integrated under the rural label. Therefore, it is advisable to integrate all rural development policies under a common umbrella by establishing a new fund containing the rural development elements of all associated EU policies. Moreover, the design and implementation of rural development policy measures should be based on a devolved, territorial but integrated approach, with funds allocated according to regional needs.

9. The study highlights the increased rural poverty in the region during the process of structural change. This must be fully recognised both at the EU and national levels. It can also be concluded that a complex approach and a high profile programme is needed to alleviate rural poverty in the region. Agricultural policies should promote the diversification of farm activities, while rural policies need to look beyond agriculture and search for alternative pathways out of poverty.

10. The SCARLED project demonstrates the potential value of complex research on ongoing changes in rural areas of NMS. Further investigations are highly recommended.

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