IAMO

LEIBNIZ INSTITUTE OF AGRICULTURAL DEVELOPMENT
IN CENTRAL AND EASTERN EUROPE

IAMO 2008

Leibniz Institute of Agricultural Development
in Central and Eastern Europe (IAMO)

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Introduction

Since the beginning of transition the countries of Central and Eastern Europe, as well as those of Central and Eastern Asia, have undergone an impressive economic development. The agricultural and food economy of these countries has also taken part in this development. A considerable development gap exists, however, between successful and stagnating regions both within individual countries and between countries. It is chiefly rural areas that are in danger of failing to keep pace with the accelerated development processes. These developments are being combined with the challenges of globalisation, the demands of environmental protection, climate change, increasing energy shortages, and the possibilities of technological progress – for example in the sphere of biotechnology – or the use of biomass as a source of raw materials and energy. Against this background the former transition countries acquire an ever more important international significance for the agriculture and food sector. Important contributions to meet the growing demand for food and energy on the global market are expected from the development of the huge, hitherto unexploited agricultural potential in, for example, Russia, Ukraine and China.

Particularly in structurally weak rural areas – this is equally true of the European Union as of Eastern Europe and Asia – the agricultural and food economy is a significant economic factor. It is therefore important that growth in the agricultural and food sector, which has good prospects, is used to ensure an integrated and sustainable economic development in the countryside. In the interest of economic and political stability, rural poverty must be fought effectively, and future prospects must be created for the people who live there, particularly for young men and women.

As a research institution dealing with agricultural economics, IAMO focuses primarily on the structural economic processes of change in the transition economies of Europe and Asia, and thus makes a decisive contribution – in Germany's interest, too – to the understanding of the development of the agricultural and food economy, and of rural areas in these regions. This is demonstrated by the successful acquisition of third-party

Dr Gerd Müller, Parliamentary State Secretary in the Federal Ministry of Food, Agriculture and Consumer Protection

funding, as well as large sums from the "Pact for Research and Innovation". Besides money for a graduate school "Prospects of small-scale agricultural structures in the agri-business complex", Pact funding was also made available for the establishment of an international research group at IAMO working on "Economic dynamics and social equilibrium in agricultural areas of rural China".

I am delighted that IAMO has established itself as an internationally recognised academic education institution for young academics from Germany and our partner countries. Here mention should also be made of the IAMO Forum which has been held every year since 2003. With this internationally renowned platform for discussion of current agro-political issues, IAMO has made an important contribution to the dialogue between research, politics and business. As a member of the Leibniz Association, IAMO fulfils its task of undertaking challenging esearch on socially relevant topics to a very high degree. For this reason The Federal Ministry of Food, Agriculture and Consumer Protection is grateful to be able to turn to the expertise of IAMO and its staff members. With its clearly excellent academic expertise combined with its close contacts with the political and business worlds, IAMO makes an important contribution to German agriculture and agricultural policy which operate in a globally interlinked world.

I would like to thank all the members of staff at IAMO for the excellent work they have done, and wish them a successful continuation of their efforts in 2008.

Contents

Foreword

The sphere of activity at IAMO revolves around three core tasks: Research into international agricultural development, further education of academic scholars, and forum for the exchange of academic ideas. Over the last few years we have noticeably succeeded in synchronising progress in all three areas so that they enhance each other. The engine of the Institute's work is, and will remain, successful research, documented by publication activity which is as high quality as it is diverse. This chiefly involves publishing articles in leading international specialist journals. Over the last couple of years, huge progress has been made in this area, with regard to both quantity, but more importantly, quality. And yet, for an institute of agricultural economics with the task of providing policymakers with scientifically based approaches to solve socially relevant problems, and giving factually based information to an interested public, a much broader publication field is needed than specialist journals alone. We should point out here that IAMO staff have succeeded in expanding their publication activity in this area, as well as obtaining considerable volumes of funding – both at a national and European level – for high-quality policy advice.

Successful publication and increased funding are mutually dependent. A focus here has been, and still is, on attracting funding from DFG projects (German Research Foundation). The exceptionally positive work in this regard of 2006, when the project sums acquired were higher than in the preceding years, was even more successful in 2007. Project funding approved by the DFG had reached about 681,000 Euro by September 2007. This covered a broad spectrum of research, from agroholdings in Russia, via econometric impact analyses of policy measures, to models of structural change at farm level.

With an increasing academic reputation, the Institute also becomes more attractive to young academic scholars and established foreign researchers. This is reflected by the continually high level of visiting scholar internships at IAMO, as well as the increasing number of research visits by the Institute's academics to renowned international institutions. Of key importance to the further strategic development of supporting young academics is the funding provided by the "Pact for Research and Innovation"

The IAMO Directorate (from l. to r.)
Prof. Dr Alfons Balmann (Managing Director)
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Prof. Dr Thomas Glauben (Director)

for the support of the great German public research organisations. This Pact corresponds with the excellence initiative for German universities, and its funds are also allocated in a competitive process. Following IAMO's successful acquisition of funding for a graduate school – "Prospects of small-scale agricultural structures in the agri-business complex" – which was set up in 2007, we were also successful in gaining approval for the establishment of an international research group looking at the topic "Economic dynamics and social equilibrium in the agricultural areas of rural China". Besides leading Chinese institutions, Stanford University, Cemagraf, and LICOS of Leuven Catholic University are also involved.

With the IAMO Forum, which in 2008 will take place for the sixth time from 25-27 June, IAMO has succeeded in establishing an increasingly renowned national and international platform for the exchange of academic ideas and for the dialogue between science, politics and business. The topic this year will be: "Agri-Food Business: Global Challenges – Innovative Solutions". At the heart of this are questions of global accelerated structural change in the agricultural and food economy, where the global challenges can be divided into three areas: (1) Food quality, (2) Bio-energy, (3) Redefinition of agricultural policy. As part of strategic quality management, further improvements to the IAMO Forum are planned, such as the publication of the best papers as a special issue in an international journal, and prizes for the best paper presentation and best poster.

Without our administrative staff, the ongoing progress made at IAMO in research, promoting young researchers, and academic exchange would not have been possible. They have reacted flexibly and rapidly to the constantly changing demands of an Institute operating internationally in the global competition of research, and have always found solutions even in difficult situations.

IAMO's success would not have been possible either without the many suggestions and important contributions from the federal government and the individual *Länder*. We would like to offer our special thanks at this point to the Federal Ministry of Food, Agriculture and Consumer Protection, the Ministry of Education and Cultural Affairs of Saxony-Anhalt and the Ministry of Agriculture and the Environment of Saxony-Anhalt. Thanks are also due to the members of the board of trustees and the scientific advisory board, in particular for their substantial contribution to the Insitute's preparations for its evaluation by the Leibniz Association in December 2007.

The ten articles presented here offer an overview of the diverse academic work of the Institute. The opening three articles deal with issues of land use in Central and Eastern Europe. The first of these provides information on effects of the decoupling of EU direct payments on agricultural structures and income, as well as future policy scenarios. The second article looks at why the expansion of conservation tillage in Bulgaria's coastal plain is so sluggish, although it is not just ecological reasons but also purely business ones that are behind this. Building on spatial-statistical analyses, changes in land use in post-socialist Albania are the focus of the third article.

The second block of contributions consists of three articles on the larger topic of business development and structural change. Using the newest econometric approaches, the fourth contribution examines whether small farms are actually more inefficient

than large ones, or whether – besides economies of scale of farm size – there are not other factors which are more important in determining farm efficiency. The example looked at here is Poland, one of the most important agricultural countries of the expanded EU. The fifth article examines the extent, the causes, and the success of foreign direct investment in agricultural enterprises in Ukraine. The basis of these findings is the analysis of an extensive survey of foreign investors. The evaluation of a survey also forms the basis of the article that follows. From the viewpoint of current farms managers who were already active at the time of the collapse of the former GDR and the transition to a market economy, this evaluates the influence of agricultural extension services on enterprise restructuring in Eastern Germany 1989-1992. This block of contributions concludes with an article summarising the findings of the IAMO Forum 2007 which, under the title, "Sustainable Rural Development: What is the Role of the Agri-Food Sector?", dealt with the changing role of agriculture for rural development in the EU as well as in European and Asian transition countries.

The third and last group of contributions looks at markets in the widest sense. In the article on credit markets in Armenia, there is an empirical examination of the role of social capital and social networks for the efficiency of micro-credit programmes. Until now there has been a widespread lack of such studies for transition countries. The ninth article has as its subject the labour market participation of rural households in China. This determines to a considerable extent which groups of the rural population and which rural regions are exposed to a higher risk of poverty. A knowledge of the labour market behaviour of rural households offers important insights for a targeted policy to combat poverty. The econometric studies are based on a wealth of household data. On the basis of a means-end chain approach, the final article examines surveys of German and Ukrainian women to analyse differences in purchasing behaviour. Here the aim is to identify those values which lie behind the preferences when purchasing decisions are made.

Rice terraces in Chenzhon in the South of Hunan province, China

Winners and losers of the 2003 CAP reform – Does decoupling actually accelerate structural change?

CHRISTOPH SAHRBACHER, KONRAD KELLERMANN, ALFONS BALMANN

Introduction

For decades now, the analysis of structural adaptation processes in the agricultural sector has been an important area of research in the agricultural sciences. And yet the debate on structural change is extremely controversial. At the same time, both the face of agriculture and agricultural policy itself have changed fundamentally over the last few years. The MacSharry reform of 1992 heralded a paradigm shift in the Common Agricultural Policy of the EU, which was continued by Agenda 2000 and the 2003 CAP reform. Now complete, this paradigm shift is characterised by a suspension of the previous market and pricing policy instruments in favour of an environmentally and process oriented agricultural policy. Thus the 2003 CAP reform aims at a complete decoupling of direct payments – hitherto only partially decoupled – with the result that agricultural enterprises must orient themselves more closely to the market.

At the level of the internal organisation of a business, this brings about a reorientation in production, which can lead to a stronger specialisation in individual areas such as pig breeding, pig fattening or field crops. A strategy of diversification is also possible, however, i.e. the development of new sources of income such as bio-energy, direct marketing, or holiday lets on the farm. As far as the external organisation is concerned, there is, for example, the possibility to integrate the enterprise vertically with processing businesses and even retail. The efforts of the enterprises must concentrate on adapting to a permanently changing environment, and either surviving in the market or dropping out of production. All this gives rise to the question, an important one for decision-makers in agricultural policy and farmers: "Who are the losers and winners of the 2003 CAP reform?"

Modelling of structural change in agriculture

This question goes to the heart of agricultural practice. To provide a scientific answer, we can use the computer-based simulation model AgriPoliS (Agricultural Policy Simulator). With its help it is possible to produce a virtual depiction of agricultural regions and their development using a computer. The special feature of this agent-based model is its bottom-up approach: AgriPoliS models the development of a region from the actions and interactions of single farms and their reactions to changing environmental conditions. It is therefore possible to understand the development of single farms or a group of similar farms. To focus solely on the farms in operation, as most model analyses do, is not sufficient for analysing policies that, by decoupling the payment of premiums, could offer an incentive to give up production. For this reason, farms that quit agriculture are included in the analysis here. The model is based on the assumption that those farmers quitting production are able to deploy their labour and capital outside of agriculture. These farmers lease their

own land to surviving farms, giving them the possibility of several income sources. By considering the farms that quit, we can compare the incomes of these with the surviving farms. This allows us to ascertain whether the decision to give up farming was the right one, or whether the farmers became losers of the reform of agricultural policy.

To this end, we have simulated the development of agricultural enterprises until 2013 for the following two scenarios: (1) continuation of Agenda 2000 (AGENDA); and (2) the reform of the CAP agreed on in 2003 and implemented in 2005 (REFORM) (see Table 1 for individual scenarios). As the policy change took place in 2005, the results compare the years 2004 and 2013.

As mentioned above, the 2003 CAP reform is characterised by the decoupling of direct payments, i.e. payment entitlements are no longer coupled to the production of certain goods. When decoupling was carried out there were a variety of proposals as to how it should proceed. Germany decided on the so-called dynamic hybrid model. In this, a proportion of the payments that the farmers received in the past comes in a regional pot, and is allocated according to the total area within the region. The remainder, which used to be paid for livestock production, remains with the farms and is allocated equally to each hectare of arable land and grassland of the farm. The two payments are gathered together into a so-called payment entitlement. Each farm now has a payment entitlement of a particular value for each hectare. As, prior to the reform, farms received different

Table 1: Policy scenarios

Name	Description
AGENDA	Continuation of Agenda 2000
REFORM	Dynamic hybrid model
	Payment entitlements consist of regional payment and a farm-specific element
	Value of premium entitlements varies at the start of decoupling
	Differences between payment entitlements will be gradually reduced from 2010 to 2013
SFP	Farm-specific decoupling
	Value of premium entitlements varies
BOND	Complete decoupling, i.e. payment is independent of whether the farm produces something or not
	Payment continues after giving up farming

Source: Own calculations.

premium levels per hectare, the value of payment entitlements in a region differs. From 2010 to 2013, however, the differences will be gradually reduced so that in the end each payment entitlement will have the same value. It will then be a case of a regional premium.

Originally the EU had suggested farm-specific decoupling (Single Farm Payment – SFP), where there would be no reallocation of payments between farms. For farm-specific decoupling the total premium of a farm is divided by the total area of the farm to calculate the value of the payment entitlements. In order to be able to compare the decoupling of direct payments as originally planned with how it was actually implemented in Germany, the third scenario shows the shift to Single Farm Payment.

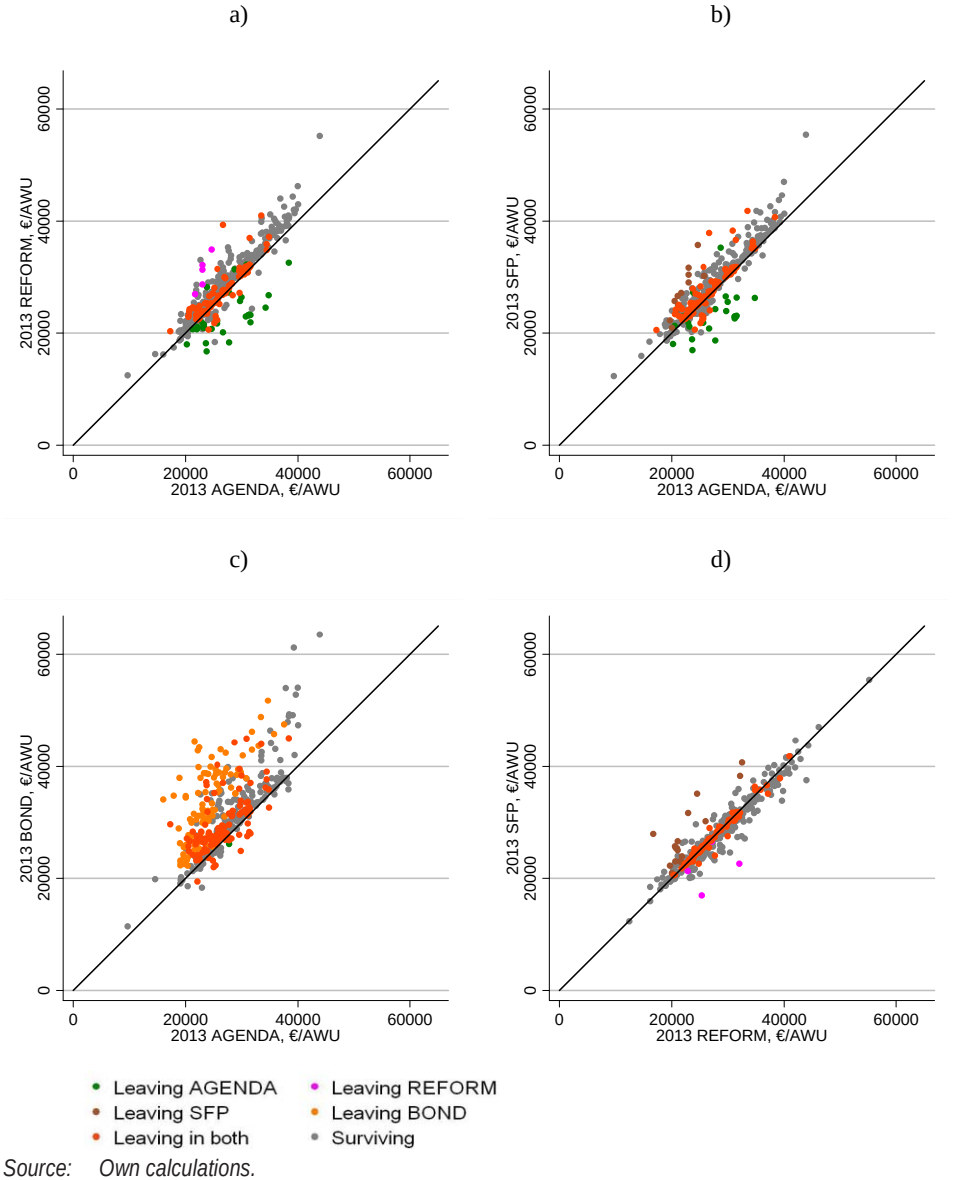
As the agricultural reform means that the payments are only paid if the land is used, a sort of coupling still exists: To the agricultural land. Thus the oft-discussed problem of payment capitalisation into the lease prices for agricultural land has not been solved. For this reason, in the fourth scenario (BOND), following the "Bond scheme" proposed by Tangermann (1991), the payments are decoupled from agricultural land and tied to the farmers themselves. This means that farmers receive the payments irrespective of whether they produce something or not, or even if they quit agriculture altogether. As a case study we have chosen the region of Hohenlohe in the *Land* of Baden-Württemberg, in the South-West of Germany. This region is characterised by small-scale agriculture, intensive processing on the plains, and livestock in the valleys. About half of the farms in the area operate as part-time enterprises which use around 22 % of the land.

Results of the policy analysis

Returning to our original question, "Who are the winners and losers of the 2003 CAP reform?", each of the four diagrams in Figure 1 – relating to 2013, and including surviving farms as well as those that quit agriculture – compares household incomes per family work unit for two policy scenarios. Included in the household income are all revenues of a farm, i.e. even the income of family members who do not work in agriculture. Figure 1 uses different colours to signify which farms quit agriculture in both scenarios, or in only one of the two; and which survive in both policy scenarios. Farms that are on the dividing line develop independently of policy. Farms represented by a grey dot survive both with a continuation of Agenda 2000 and in the individual reform scenarios REFORM, SFP and BOND. It is clear that these farms develop better in the reform scenarios than in the AGENDA scenario.

At the same time, however, the REFORM and SFP scenarios show that decoupling of payments can actually slow down structural change compared with Agenda 2000 (see Table 2). This can be explained by the fact that, because of the decoupling of payments, it is easier for the farms to obtain payments. The use of pastureland, for example, is no longer guaranteed by payments for cattle farming, but by a payment for grassland. With decoupling, farmers also receive the grassland payment for less labour input than with cattle farming, because it is possible to care for the land simply by mulching it once a year. This means that smaller farms, in particular, reduce their labour input rather than quitting agriculture, and thus become part-time farms. The BOND scenario, which gives farms the most freedom

Figure 1: Household income per family work unit for farms ceasing production and surviving farms in different policy scenarios in 2013



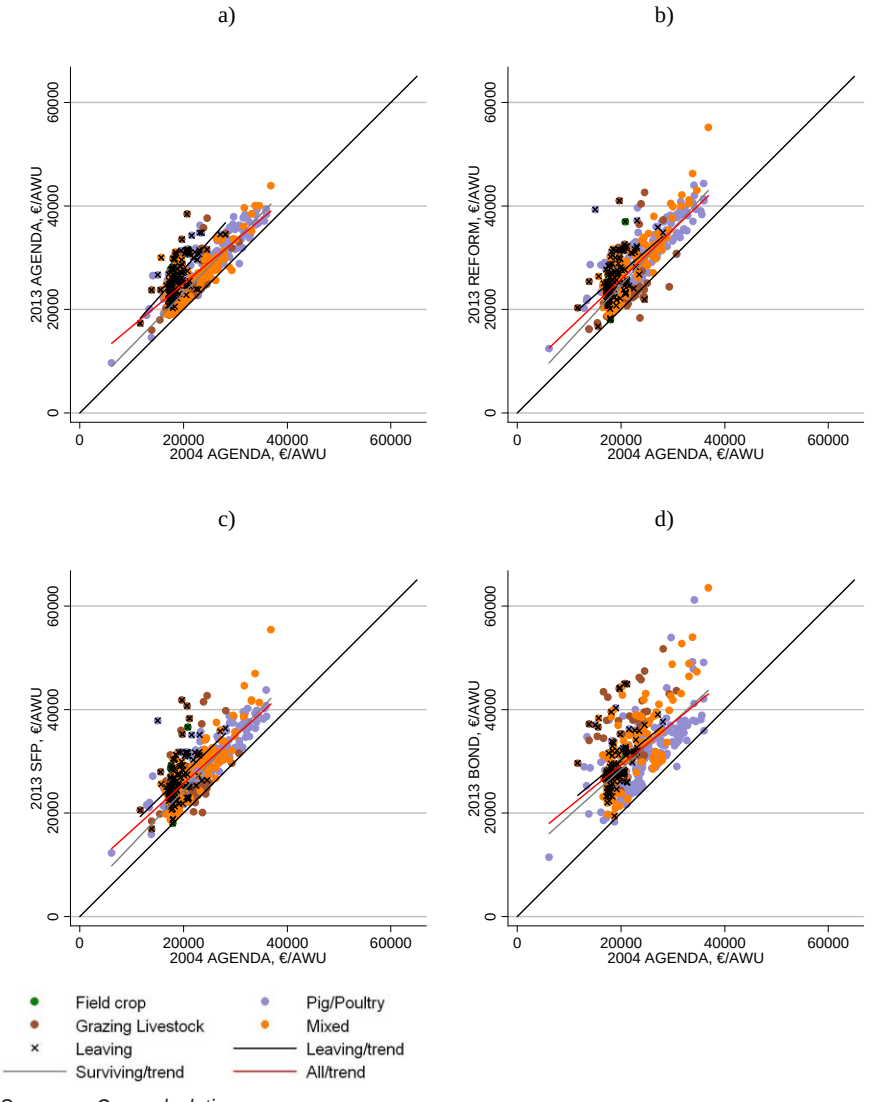
Source: Own calculations.

in their use of payments, leads to the strongest structural change. Figure 1 a and b show, moreover, that some farms which quit agriculture in the AGENDA scenario continue to exist in the REFORM and SFP scenarios (represented by green dots), but that these have a lower household income than in the AGENDA scenario. These farms that are willing to quit can thus be counted amongst the losers of the reform. The same result can be seen in the comparison of the BOND and AGENDA scenarios (Figure 1c). Here, a larger number farms leave agriculture in the more liberal BOND scenario, thereby obtaining in 2013 a higher household income than in the AGENDA scenario (represented by orange dots). The comparison between REFORM and SFP (Figure 1d) reveals, in the dispersal around the line through the origin, amongst other things the unequal distribution of premiums in the SFP scenario relative to the REFORM scenario, which has a uniform regional payment in 2013.

Figure 1 does not, however, allow any conclusions about whether farms will have a positive development in income compared with the situation prior to the 2003 CAP reform. This comparison is illustrated in Figure 2. Comparing the years 2004 and 2013, it shows the household income per family work unit for farms quitting agriculture and the surviving farms for the various policy scenarios. The regression line marked in red takes into account both surviving farms and those quitting agriculture, and shows that household incomes will, irrespective of the policy scenario, on average rise up till 2013. Some grazing livestock farms (marked in brown) will see either a drop in income, however, or only a slight rise. For all farms the course of the red regression lines shows that enterprises with lower household incomes per family work unit benefit slightly more in the AGENDA and BOND scenarios than in the REFORM and SFP ones. In absolute terms their incomes show a greater rise in these scenarios than those of farms whose household income per family work unit is already relatively high. This is due to the fact that, in the BOND and AGENDA scenarios, farms with lower incomes compared with the REFORM and SFP scenarios can obtain higher incomes outside of agriculture and thus quit agriculture, rather than switching to part-time farming. In addition, the opportunities for growth for surviving farms are better in the BOND and AGENDA scenarios. They benefit from the quitting of other farms who are not themselves losers, however, as Figure 2 shows. Farms quitting agriculture are marked with a cross, and in 2013 they obtain higher incomes on average than those who continue production. We must take into account, however, that one of the assumptions built into the AgriPoliS model is that all family members engaged in agriculture are able to find a job outside of the sector.

Another result of the simulations, emerging from the model, is that farms persist in the agricultural sector even though by quitting agriculture they could achieve a higher income in 2013. This is shown by a comparison with farms quitting agriculture which in 2004 obtained a similarly low income. In order to explain this "persistence" we should at this point outline in more detail the assumptions built into the model. We assume for AgriPoliS that farms make their decision to continue operating or to quit production on the basis of the opportunity costs arising from the factors deployed. If these exceed the expected income from continuing agricultural production, the farm will quit agriculture. This assumes a sufficient quantity of non-agricultural job opportunities, and presupposes that with a change of generation

Figure 2: Household income per family work unit for farms quitting agriculture and surviving farms – A comparison between 2004 and 2013 in various policy scenarios



Source: Own calculations.

Table 2: Relative drop in the number of enterprises between 2004 and 2013

Szenario	Ø Annual drop	**Overall drop**
AGENDA	3,9 %	30 %
REFORM	3,0 %	24 %
SFP	3,4 %	27 %
BOND	7,8 %	52 %

Source: Own calculations.

the potential successor to the farm, who has a better education and training, can reckon on a salary 25 % higher than that of an older farmer. The latter, without training, looks for a new job. On the basis of the evident income disparities between agricultural and non-agricultural occupations, this seems a plausible assumption. In addition, the model's decision-making mechanism only considers monetary target values; non-monetary values, e.g. personal satisfaction from agricultural labourare excluded. These would probably mean that farmers' "persistence" in the sector is underestimated. A further explanation for the "persistence" might be the hypothesis that, when making decisions, farmers are more likely in practice to orient themselves to their current situation and less to other possible options. Farmers would thus overestimate their continued existence in the sector.

Conclusion

It can be argued that, given the provision of non-agricultural jobs, those farms quitting agriculture will not, in the long term, be amongst the financial losers. It must be taken into account, however, that in the simulations none of those farms quits agriculture because of financial straits, i.e. policy change does not lead to losses threatening the existence of any enterprise.

In the long term, the losers from the reforms could include those farms that are willing to quit agriculture, i.e. enterprises that would have stopped farming under the Agenda 2000 conditions, but do not when they have simple access to decoupled payments. This problem would seem to be corrected with the implementation of a BOND scenario. This means that more farms would profit from a more liberal policy or one that provides fewer obstacles to structural change.

Further literature

HAPPE, K. (2004): Agricultural policies and farm structures – Agent-based modelling and application to EU-policy reform, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 30*, IAMO, Halle (Saale), URL: <http://www.iamo.de/dok/sr_vol30.pdf>.

HAPPE, K., KELLERMANN, K., BALMANN, A. (2006): Agent-based analysis of agricultural policies: An illustration of the Agricultural Policy Simulator AgriPoliS, its adaptation and behavior, *Ecology & Society, 11 (1)*, p. 49, URL: <http://www.ecologyandsociety.org/vol11/iss1/art49/>.

KELLERMANN, K., HAPPE, K., SAHRBACHER, C., BRADY, M. (2007): AgriPoliS 2.0 – Documentation of the extended model. Deliverable 20, IDEMA Project, Halle (Saale), URL: <http://www.sli.lu.se/IDEMA/WPs/IDEMA_deliverable_20.pdf>.

SAHRBACHER, C., SCHNICKE, H., HAPPE, K., GRAUBNER, M. (2005): Adaptation of the agent-based model AgriPoliS to 11 study regions in the enlarged European Union. Deliverable 10, IDEMA Project, Halle (Saale), URL: <http://www.sli.lu.se/IDEMA/WPs/IDEMA_deliverable_10_2007 %2003 %2030.pdf>.

SAHRBACHER, C., SCHNICKE, H., KELLERMANN, K., HAPPE, K., BRADY, M. (2007): Impacts of decoupling policies in selected regions of Europe, URL: <http://www.sli.lu.se/IDEMA/WPs/IDEMA %20deliverable_23.pdf>.

TANGERMANN, S. (1991): A bond scheme for supporting farm incomes, in: MARSH, J. S., GREEN, B., KEARNEY, B., MAHÉ, L., TANGERMANN, S., TARDITI, S. (eds.): The Changing Role of the Common Agricultural Policy: The Future of Farming in Europe, London, Belhaven.

Conservation tillage in Bulgaria

SVEN-OLIVER JUNGKLAUS, KATHRIN HAPPE

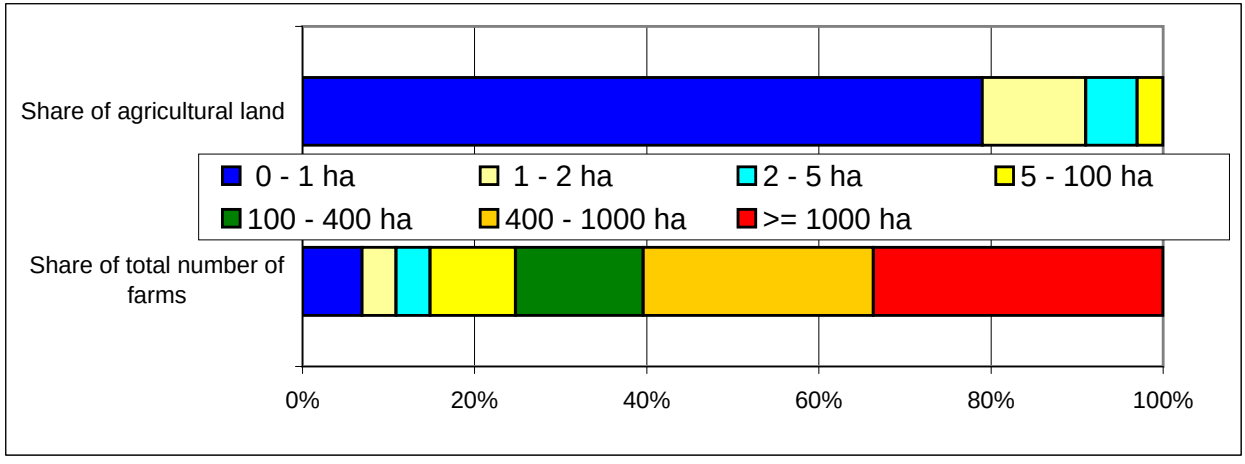
Since 1/1/2007 Bulgaria has been a member of the European Union, an entity that has now grown to 27 states. The accession of this small Balkan country (7.7m inhabitants) was in no way uncontroversial, however. In the run-up to entry, there were intensive debates as to whether accession should not be delayed by a year. It was argued that disparities vis-à-vis the "old EU" appeared too large; too little had been done to combat corruption; and – not least – agriculture seemed very poorly developed. Taking the most important agricultural regions of Bulgaria, this article analyses the potential of careful practices in tillage to improve business results and avoid ecological damage. The paper thus could help orient Bulgarian agriculture to the EU concept of multifunctionality.

Bulgarian agricultural structure

Bulgaria's farm structure is typical for a European country in transition.

The usual dual structure is present. As Figure 1 shows, about 90 % of the agricultural enterprises are smaller than 5 ha, but these account for only about 16 % of total farmland. By contrast, only 1 % of farms are larger than 100 ha, but these operate about 76 % of farmland in Bulgaria. The average farm size is only about 6.2 ha. This average size is a result of the large number of small subsistence and semi-subsistence farms, which produce almost exclusively for the family's own consumption. If one

Figure 1: Agricultural enterprises by size distribution and share of agricultural land



Source: BG Annual Report 2004.

Much of the land in North-East Bulgaria is extremely fertile

considers the cooperatives alone, the average land holding is about 710 ha per enterprise. With the help of programmes to prepare for EU entry (e.g. PHARE and SAPARD), but also thanks to rise in product prices over the last few years, many enterprises have been able to update or add to their machinery.

Bulgaria's north-east – Almost perfect for crop farming

It is predominantly in large-scale enterprises that the updating of machinery has taken place. This size of farm can make use of economies of scale and thus produce more efficiently than smaller enterprises. In addition to this, many large farms have

been turned into private enterprises and have restructured, which means that a higher level of debt and illiquidity – which many cooperatives suffer from – is not a problem. There is a particularly high proportion of large-scale farms in the north-eastern region by the Black Sea, in the Dobruja. The Dobruja has traditionally been Bulgaria's granary. The area is characterised by black earth soils (chernosem) which are very fertile but also very heavy. The climate is predominantly continental, with very warm summers and cold winters. The low levels of rainfall – 400mm to 450mm per year – represent a limiting factor for agricultural crop farming. Some sources are reporting wind and water erosion.

Visits to the region confirm the problems of erosion. It has also become apparent that the technology deployed often only exacerbates the existing problems or produces new ones. For example, the stubble is often burned after the harvest and before the next tillage. The reasons for this could be that the combine harvester does not leave the field ready for tillage because of poor chopping of straw, or that the tillage "cannot deal" with the crop residues. It may also be the case that many farms – probably to save costs – do not undertake any tillage after harvest, but just plough for sowing. Moreover, the predominant tillage system is ploughing, i.e. inverting the soil completely. Particularly on the heavy black earth soils of Bulgaria, ploughing is tied up with high costs as well as the ecological risk of soil deterioration.

Conservation tillage versus ploughing

The literature on this subject describes conservation tillage as an alternative to ploughing with the potential to save on production factors and protect resources. This begs the question as to why conservation tillage is not yet widely practiced in Bulgaria. Implemented correctly, this system of soil management can have economic and ecological advantages for an agricultural enterprise.

The use of conservation tillage means that, unlike ploughing which is fuel and labour intensive, the soil is not completely turned over; and thus the crop residues which remain on the surface are not buried – instead there is a thorough mixing of soil and crop residues. Direct sowing is a particularly extensive form of conservation tillage where there is only slight interference with the soil. In this method the soil is left completely uncultivated, and the seed is just placed in a narrow "drill". In contrast to ploughing, both conservation tillage and the direct sowing method offer clear potential for savings to be made. First, the tillage machinery needs less power due to the fact that the depth of cultivation is usually shallower (as a rule of thumb, each extra centimetre means shifting about 150t more soil per hectare). This means that wider tools can be used with greater operating speeds. Second, capacity is increased as well. This means either that other crops can be brought out at the optimal sowing time, or less manpower is needed. For an efficient structuring of the crop farming system, however, all the machinery must be coordinated. Sowing machines for use in a system of conservation tillage, for example, need different, more robust coulters than for plough sowing. In addition, the combining technology must be so well optimised that even in variable conditions there is a proper distribution of crop residues equally over the whole field.

The literature also frequently points out that conservation tillage is beneficial for crop growth as well as the environment. A consistent implementation of this method of cultivation creates a soil structure with a solid capillary structure. This enables the transport of water from below to above (capillarity), with the consequence that the plants obtain more water. Because of the high proportion of coarse pores, there is more space for a variety of soil organisms, thus increasing the biological activity of the soil. The soil can also better absorb heavy rainfall. There are advantages for the environment, too. With crop residues remaining on the surface, the run-off of water is reduced as is the discharge of nutrients and plant protection active ingredients which could otherwise lead to the eutrophication of bodies of water. The crop residues, on the other hand, make it easier for the humus to form, and prevent a large proportion of it from running off, thus preserving the natural fertility of the soil.

With the correct application of this method the features of conservation tillage outlined above can prove advantageous in comparison to conventional (turning) tillage systems. And yet there are reasons why farms are not moving to this system, or (even if this is unintentional) they are not using the system correctly and thus are unable to realise the benefits. (1) Deep-rooted traditions often play an important role in the way the production process is organised. Particularly those with small part-time or subsistence farms often have only limited knowledge which is restricted to methods that have been handed down. These farmers are frequently less receptive to innovations. (2) Incorporating conservation tillage is often tied up with follow-up costs. For most farms, adaptation to combining and sowing technology, or to tractive output means investment, as most farms do not possess complementary machinery. (3) The management of conservation tillage is in some points very different from conventional tillage. Although turning the soil suppresses weeds, in some cases conservation tillage provides a higher degree of plant protection. In many cases the seed corn, sowing time and crop management requirements are very different from other systems. (4) Poor adaptation to local conditions means in many cases that the drop in yields is greater than the saving made by the more extensive system of cultivation.

Some farm managers in former socialist countries, due to the lack of prospects in other sectors, only started practising agriculture after the collapse of the planned economy, even though they were not specifically trained for agriculture, nor had any experience of farming. In these instances there is often an inability to deploy machinery correctly; but also a lack of knowledge about the effects of agricultural activity on the environment, or about the connections between farming methods and crop farming conditions. There are also internal obstacles within farms. Farm managers might well be able to identity problems and want to do something to solve them, but it is difficult to motivate or educate the poorly trained and low-paid employees who carry out the field work.

Empirical analysis – Interviews with experts and farm surveys

One question that we would like to examine in our research project is the extent to which these hypotheses correspond with the reasons why Bulgarian farms do or do not adopt conservation tillage. To assess conservation tillage in Bulgaria we carried out 16 interviews in Sofia with experts from science, politics and the upstream sector in Sofia. Many experts agreed that the

adoption of conservation tillage produces lower yields and higher costs for plant protection, and thus the financial savings are cancelled out. They also reported there have been widespread attempts to introduce conservation tillage in Bulgaria dating back to the 1970s. Up till now these attempts have more or less failed because the machinery used came from places like the USA. Problems were caused by the fact that these machines were adjusted to the conditions in the country of origin, and they could not satisfactorily cultivate the much heavier soils in Bulgaria. There were also political reasons for abandoning the recommendation to switch to conservation tillage. Overall, the experts also doubted that the level of education or knowledge of farmers – who were described as not particularly innovative – was sufficient to make a successful switch to this other systemwhose requirements differed substantially from traditional ploughing.

To discover how some farm managers adopt conservation tillage, and the reasons for, or obstacles to, its application, 47 farms in north-eastern Bulgaria were surveyed in conjunction with members of staff from the Institute of Agricultural Economics in Sofia (BG). The comprehensive survey of farm managers and crop specialists focused on the appraisal of various cultivation systems. The average farm size was about 1,400 hectares, giving a total area of farmland of 70,000 hectares. Although we could only find one farm which used conservation tillage (in this case the more extreme form of "zero cultivation") on the whole of its land, three-quarters of the farms surveyed used the technology on at least a part of their land. The remaining farms did not practise conservation tillage at all and ploughed their entire arable land.

The analysis of the survey showed the reasons why farmers use conservation tillage and how they perceive the system. Similar to studies in the USA and Western Europe, it was mainly economic reasons that were given for the adoption of the system. The potential for savings was the most-cited reason. In particular the farmers mentioned savings of time, costs, manpower and fuel. Only two of the farms cited the ability to conserve the soil moisture as one of the main reasons for practising the system. Overall, the results suggest that improvements in crop farming conditions or positive environmental effects are not of great interest for farmers, and that economic factors are most important for them. The farmers were also presented with some statements about tillage to which they were asked to give a positive or negative response. Here, too, the farmers emphasised economic aspects, whereas some environmental consequences, such as avoiding erosion or the possibility of conserving soil moisture, were even contested.

Summary and outlook

The technology of conservation tillage is employed by many of the farmers surveyed. On the other hand, there is clear evidence that in many cases not all advantages are exploited when the system is put into practice. Only one farmer practised direct sowing with all her seeds, in all fields, and every year. This enterprise was managed by investors from Switzerland who apparently have long-term experience of this form of cultivation. The other farms used the conservation tillage system primarily for economic reasons. They saw it as an opportunity to save money and to sow their winter grain in autumn, after the late maize harvest, and before winter made this impossible. Overall,

As harvest and cultivation technology are not coordinated, the maize stubble is often burnt

however, many farmers did not cite the potential of conservation tillage to improve crop farming and environmental conditions; in several cases this capability was even questioned.

In comparison to the plough, conservation tillage is a very new technology, which also makes very different demands on management, staff and machinery. The climactic and arable conditions in north-eastern Bulgaria would seem to support the increased use of conservation tillage, particularly as, given the increasing energy prices and the ever more expensive factor of labour in Europe, the time might come when agricultural enterprises in Bulgaria would have to expand their use of conservation tillage. A further expansion of the practice, or a more incisive use of the system including the advantages for crop development and the environment, could be achieved by an improved system of training and consultancy.

Further literature

Butorac, A. (1994): Conservation tillage in Eastern Europe, in: Carter, M. R. (ed.) 1994: Conservation tillage in temperate agroecosystems, pp. 357-373.

Carter, M. R. (1994): Strategies to overcome impediments to adoption of conservation tillage, in: Carter, M. R. (ed.) 1994: Conservation tillage in temperate agroecosystems, pp. 3-19.

Lankoski, J. (2006): No-till technology: Benefits to farmers and the environment? Theoretical analysis and application to Finnish agriculture, *European Review of Agricultural Economics, Vol. 33 (2)*, pp. 193-221.

Panell, D. J., Marshall, G. R., Barr, N., Curtis, A., Vanclay, F., Wilkinson, R. (2005): Understanding and promoting adoption of conservation technologies by rural landholders, *Australian Journal of Experimental Agriculture, Vol. 46, No 11,* pp. 1407-1424.

Unger, P. W. (1990): Conservation tillage systems, *Advances in soil science, Vol. 13,* pp. 27-68.

Conservation tillage offers potential for savings in labour hours and costs

The influence of post-socialist transition on land use in Albania

DANIEL MÜLLER

In 1976 Albania became the only socialist country in Central and Eastern Europe to nationalise its entire agricultural land. Under socialism, the agricultural sector was a central pillar of the Albanian command economy. In the course of a rigorous policy of autarky, the enlargement of collective farms to increase production was given high priority. Strict import barriers together with state procurement and subsidies meant that, by the end of the 1980s, the agricultural sector contributed more than a third of gross domestic product (GDP) and employed more than half the country's population. The heavy subsidy of the agricultural sector led to a much higher proportion of farmland in Albania than now exists under market conditions. This was particularly due to the use of relatively marginal land in collective and nationalised agricultural production.

The transition at the beginning of the 1990s resulted in a further rise in the proportion of GDP from the agricultural sector to 56 %, caused principally by the drop in industrial production and the still under-developed service sector. Since then agriculture's share of Albanian GDP has fallen to 23 % in 2005, whereas the contribution from industrial production and the service sector was 22 % and 56 %, respectively. In 2005, only 21 % of the working population were still employed in agriculture. And yet the economic development of post-socialist Albania has not followed a completely linear course. As a direct consequence of the collapse of socialism, Albania suffered a recession, followed by a gradual upturn. The collapse of the pyramid schemes at the end of 1996, however, precipitated another downturn, which was followed in turn by gradual growth. The two recessions were both accompanied by several months of anarchic conditions, which had negative effects on land use. Amongst other things, trees were chopped down, and irrigation systems, fruit plantations and grapevines were destroyed (STAHL, 2007).

The Albanian land reform and its effects on land use

As in other post-socialist countries, the collapse of the socialist system in Albania also caused a fundamental change in property relations. In 1991 Albania became the only state in Central and Eastern Europe to implement an egalitarian land reform (*Land Law 7501*), which legalised again the private ownership of land, something that had been abolished under Enver Hoxha. In the course of this land reform almost all collective farmland was redistributed to the rural households that had worked in socialist cooperatives, or which resided in rural areas for other reasons. The distribution took place by issuing property titles to each family on a per capita basis. No consideration was taken of historical ownership or property claims. Until today there have only been isolated cases where historical owners have been compensated.

For the redistribution, the available agricultural land was divided up according to the following quality criteria: Distance from the centre of the village, soil fertility, irrigation capacity. Village land distribution commissions determined the plots to be distributed, based on household size – considering all people belonging

to the household (including pensioners and children). The land commissions attempted to allocate to each household parcels of land of similar quality and quantity, so as not to infringe the egalitarian principle, and to avoid conflicts within villages. In a few villages, particularly in mountainous regions, official policy was ignored, however, and the land was returned to its former owners in contravention of the official regulations. Overall, this land distribution in Albania resulted in the highest decollectivisation index of all the states of Central and Eastern Europe and the Commonwealth of Independent States. Albania became a nation of smallholders: In 2002, 440,000 family farms operated 1.8 million parcels of land. On average, each agricultural enterprise farmed 1.5 hectares, divided between three to five plots (Ministry of Agriculture and Food, 2002). The practice of adhering strictly to the principle of equality in the land redistribution led to an extreme fragmentation of agricultural holdings (Figure 1).

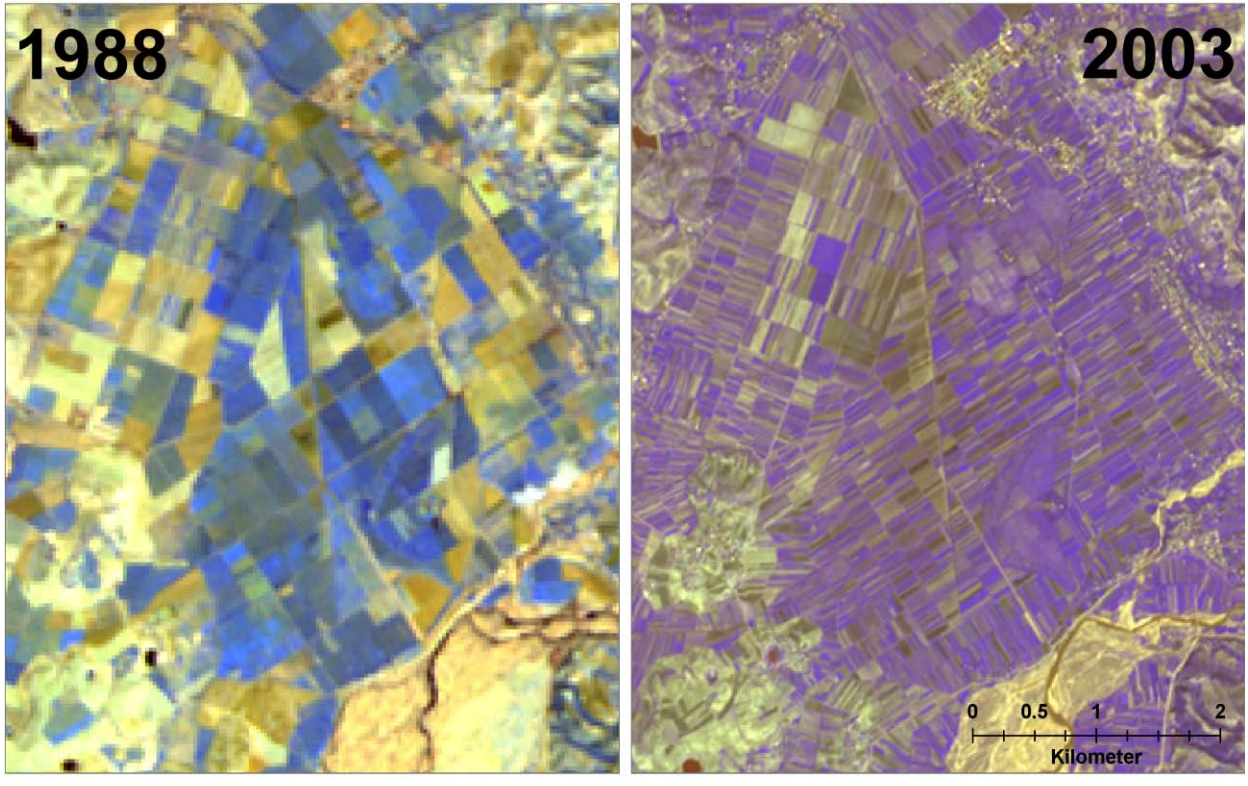
With considerable financial assistance from abroad Albania mapped its farmland and settlement land, and produced a digital real estate register based on parcels. But even the registration of parcels could not – as had been widely expected – stimulate a dynamic land market, as there was a lack of both economic and social incentives to encourage landowners to buy or sell their plots. In addition, there is still uncertainty today about whether and how the question of compensating former owners can be solved. The EU, amongst others, is calling for compensation for reasons of historical justice; but in most instances the issue is still outstanding. The resulting lack of long-term security of the new land titles, as well as the largely dilapidated transport infrastructure have led to low land prices and have also contributed to inertia in the land market.

Cropland decline is the dominant land use change

Land use can be empirically determined by analysing remote sensing data (for example, aerial photographs, satellite images, GPS data). In the case of Albania, land cover was analysed for a study area in south-eastern Albania using Landsat satellite images, the most frequently used earth observation satellite. The derived land cover data served as the basis for producing maps of land use. Superimposing land use maps from different points in time reveals the extent and the patterns of changes in land use. Spatially explicit changes in land use can be compared to other data and illustrate, for example, the geographical characteristics of these changes. The land use data also allow for spatial statistical analyses by integrating the change data with other variables.

For this study, analyses were carried out of satellite images from 1988, 1996 and 2003 of a research region in south-eastern Albania (Figure 2). The principal change in land use was the drop in the proportion of cropland from 26 % to 20 % – a fall of 28 % relative to the cropland farmed in 1988 (Table 1). The majority of these plots have since become overgrown with shrubs and pasture; some have even become covered with young secondary forest. The results also show that overall the proportion of forest has only changed slightly, although primary forest has degraded into secondary forest. In the study area, this can be partly explained by the almost exclusive dependence of rural households on firewood. Rough estimates of firewood usage also suggest that there are many additional, smaller patches of degraded forest land which cannot be identified from the spatial resolution of the satellite data that has been used, but which

Figure 1: Fragmentation before and after the land reform



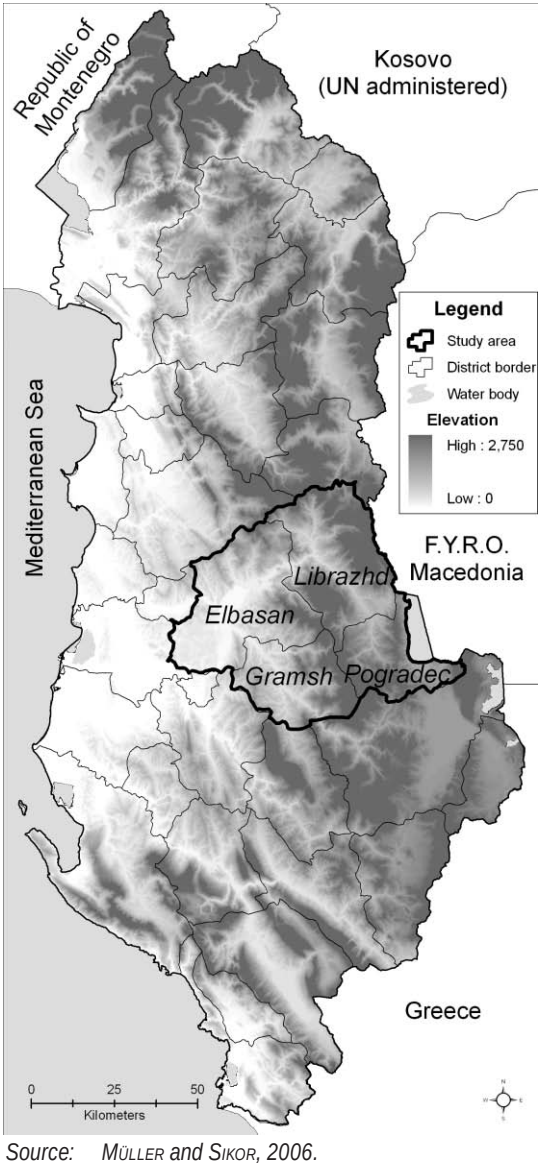
Source: Own diagram (on the left, collective agricultural holdings in 1988 from a Landsat satellite image; on the right, the same region after the land redistribution from an Aster satellite image in 2003).

could be confirmed for selected villages from satellite images with higher resolution. Moreover, Table 1 reveals a doubling of built-up areas. Although this represents only a small proportion of the total area, it is concentrated on those plots with high agricultural potential and best market access.

Growing influence of market principles on land use

The analysis of factors determining land use and its changes was carried out using a data set which linked the results from the remote sensing with geophysical and biophysical data, market access variables, and socio-economic determinants from quantitative surveys in 100 randomly selected villages. For two periods (1988 to 1996, and 1996 to 2003) and for each village, the

Figure 2: Location of the study area



Source: Müller and Sikor, 2006.

Table 1: Changes in land use, 1988-2003

	Square kilometers			Change
	1989	1996	2003	2003 compared to 1988
Primary forest	1,091	1,124	1,038	-5%
Secondary forest	380	461	441	16%
Shrub and grassland	1,180	1,263	1,398	18%
Cropland	920	713	659	-28%
Build-up areas	20	22	39	98%
Total	3,591	3,582	3,574	

Source: Own calculations from analyses of satellite images (areas of water not included in the table).

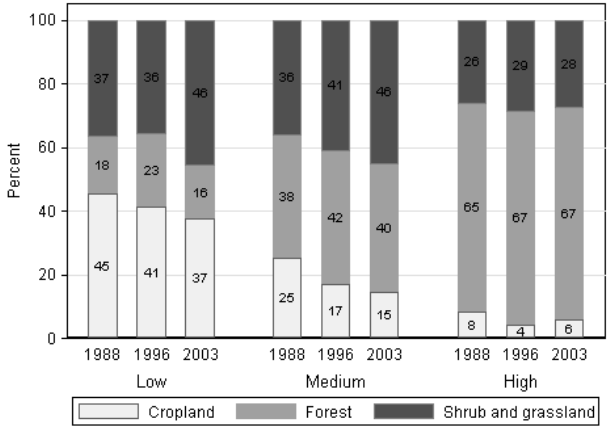
detailed analyses determine (in a spatially explicit fashion) the direction and strength of each influence variable. From these results conclusions can be drawn about the spatial and temporal changes in factors that determine land use. The spatially explicit statistical analyses allow the combination of spatially continuous variables (processed in a Geographical Information System, GIS) with spatially discrete socio-economic influences. In the calculations, therefore, data from both natural and social sciences are used simultaneously to analyse the socio-ecological interactions in the study area. The statistical procedures that are applied allow the testing of hypotheses about possible influences on land use, and the calculation of the relative importance of influencing factors. The goodness-of-fit of the estimations was assessed by means of conventional statistical criteria, but also visually using maps of values predicted by the regression analysis.

The results show a reduction in the economic attractiveness of agricultural production due to falling land rents, while at the same time alternative economic strategies are growing in importance. In the early days of transition, the income that could be obtained from non-farm activities was much lower. This provided for economically competitive agricultural production at local level compared to non-agricultural income earning strategies, even on more marginal land which is characterised by low soil fertility and poor market access. With the arrival of other economic options in later phases of transition, the importance of geographical proximity to markets increased as an incentive for agricultural land use.

The rising opportunity costs of agricultural production were also manifested in the significantly negative influence of higher remittances on the amount of cropland used in the second phase of transition (since 1996). The proportion of land no longer farmed was considerably higher in those villages where receipts from migration were a central livelihood element. In 2006, for example, already a third of households throughout Albania already had at least one relative living abroad. The transfers from these relatives accounted for most of the income of these households (MILUKA et al., 2007). Frequently, however, this money is not invested in agriculture but in consumer goods, or put away as savings. The high rate of emigration also led to increasing labour shortages in agriculture; this is primarily a result of the above-average emigration of young men. Emigration also has a noticeable spatial dimension and is concentrated in areas with better physical access to the host countries. Emigration is thus highest in the south and south-east of Albania, along the border with Greece, and in the coastal cities of the Adriatic.

The increasing influence of market principles on land use also manifests itself in the spatial distribution of abandoned agricultural plots, a large proportion of which are situated in lower-lying areas (Figure 3). In these regions both the emigration rate and the availability of non-agricultural employment are higher. Another cost factor for agricultural production is the fragmentation of farming plots. Those villages with a higher degree of fragmentation had a statistically significant higher proportion of abandoned plots in the second period (1996 to 2003).

Figure 3: Land use for elevation terciles, 1988 to 2003



Source: MÜLLER and SIKOR, 2006.
Note: Separated into terciles of elevation (low, medium, high).

Economic strategies have also changed within the agricultural sector. Livestock farming has become more popular to the detriment of crop production. Correspondingly, the proportion of pastures has increased at the expense of cropland. However, this aspect could only be examined at the village level, as the satellite data does not allow the separation of pastures from

(abandoned) grassland. In addition, spatially disaggregated information about the spatial distribution of farm animals is non-existent.

Interesting conclusions can also be drawn about the changes in forested land that have been identified. Between 1988 and 1996, young secondary forest expanded onto areas that had been used by cooperatives in the socialist era, and that were abandoned immediately after the land reform. After 1996 the natural regeneration of the forest was outpaced by the intensive, mostly illegal, harvesting of firewood. A further factor for the decline in forest was the unrest in reaction to the collapse of the pyramid schemes at the end of 1996. The temporary lack of national executive organs, including forest protection enforcement, encouraged the clearing of forest land. A comparison of maps reveals that the decline in forest between 1996 and 2003 took place primarily in lower-lying areas that are easier to access. A growing influence of market principles on the utilisation of forest products is also observable. In the early years of transition the harvesting of firewood was chiefly oriented towards home consumption, mirrored in a larger decline of forest cover closer to dwellings and populated areas. In later stages of the transition period, firewood was increasingly extracted for commercial purposes, thereby creating an active fuelwood trade. As a consequence, the decline in forest was concentrated in areas which were close to market centres.

Possible effects and ecosystem services

The effects of the decline of cropland on the environment and on the provision of ecosystem services are dependent on local factors. A decline in cropland can lower soil fertility, reduce the local biodiversity, harm water circuits, and lead to a loss of cultural landscapes. Landscape heterogeneity is reduced because the secondary vegetation is often dominated by a few plant species. In particular, the effects on the biological diversity of local ecosystems are of global significance, as Albania is located within the global biodiversity hotspot of the Mediterranean Basin, which is home to numerous endemic species of flora and fauna.

Yet the abandonment of cropland can also have positive effects on environmental parameters. Certain species of secondary vegetation store higher levels of CO_2 than would occur under cropland cultivation, produce more biomass, and can reduce soil erosion because they provide a more consistent ground cover. In the long term, biodiversity may also increase, when formerly cultivated areas convert into more natural ecosystems.

Conclusion and outlook

The period of transition in Albania was characterised by a dynamically changing landscape and spatially heterogeneous changes.The regime change in 1991 and the transition period that followed, with its accompanying political, economic and social changes, resulted in substantial changes in land use. In Albania these land use changes were marked by a rapid adaptation to the changed political and economic environment. This in turn resulted in a massive reduction in the area of land under cultivation in the early years of transition. Over time market forces became more important in shaping land use. The access to migration networks, to revenue opportunities from abroad, as well as other factors that influenced agricultural profitability had an increasing influence on the shape of Albanian rural landscapes.

Compared with the majority of Central and Eastern European countries, the abandonment of cultivated areas in Albania is proportionally lower, however. An important reason for this may be that the frequently applied reform strategy of land restitution to former owners often led to a return of farmland to people who were already living in cities or abroad, and who often had few opportunities or little interest in farming the land which had been restituted to them.

Rural Albanian landscapes will continue to evolve and change. Some processes of land use change may accelerate. For example, cropland abandonment could be fostered by the continuing depopulation of rural areas resulting from high, selective flows of emigration and the concomitant aging of those land users who remain. Climate change may also aggravate this trend, as it will probably bring higher temperatures and less rainfall to a region which already suffers from water shortages. Moreover, a continued dependence on firewood may impede the regeneration of forests. Both developments will magnify the problems relating to Albania's electricity provision, which at present is highly dependent on hydro power.

Further literature

Miluka, J., Carletto, G., Davis, B., Zezza, A. (2007): The vanishing farms? The impact of international migration on Albanian family farming, *Policy Research Working Paper,* The World Bank, Washington, D.C.

Ministry of Agriculture and Food (2002): Annual Report 2002, Tirana: Ministry of Agriculture and Food.

Müller, D., Sikor, T. (2006): Effects of postsocialist reforms on land cover and land use in South-Eastern Albania, *Applied Geography, 26 (3-4)*, pp. 175-191.

Stahl, J. (2007): The political ecology of postsocialist land use change: Case studies from three villages in Southeastern Albania, Doctoral dissertation, Humboldt University, Berlin.

On many farms, old and new technology can be found side by side, Bulgaria

Farm heterogeneity and the efficiency of Polish family farms

HEINRICH HOCKMANN, AGATHA PIENIADZ

Many studies deal with the efficiency and productivity of factor input in agriculture. Particularly for transition countries this subject was and is highly relevant, as the reallocation of farm resources has great potential in itself to improve overall productivity.

Farm heterogeneity as a neglected factor in productivity analyses

One feature of efficiency and productivity studies is that they do not only reveal the influence of inefficiencies and technological progress on total factor productivity, but also attempt to ascertain the determining factors of inefficiencies, and develop from these conclusions relating to economic policy. There are, however, critical methodological and conceptual problems with the majority of these analyses; serious reservations must be overcome before a rigorous and consistent interpretation of the results is possible. The first issue is that the determinants of efficiency are mostly identified on the strength of simple interdependencies, without considering the complexity of the interplay between various factors of influence. Second, the approach makes the implicit assumption that the factor input of different enterprises is comparable. Differences in factor quality, such as soil fertility, the age of equipment and machinery, or the experience and knowledge of the farm manager, and their effect on the structures of factor input and production are not given sufficient consideration in the studies. It is also to be expected that enterprise characteristics such as size, specialisation or organisational form place particular demands on the allocation of resources. We must assume that these factors have a long-term influence on the effectiveness with which agricultural enterprises use physical resources. This article will refer to the differences amongst farms as farm heterogeneity (farm-specific production factor). Simple productivity analyses do not give these effects sufficient consideration, probably because their influence on the production function cannot be seen explicitly.

This paper presents an approach which addresses the problems outlined above using the example of Polish agriculture. There are two stages to the approach. The first stage will determine farm heterogeneity endogenously within the analysis of a production function; the second will identify the determining factors of these variables.

The Polish agricultural sector is dominated by relatively small family farms, which are characterised by low productivity on the whole, and which the literature tends to describe as inefficient. On the other hand, in spite of increasing globalisation and the rising pressure of competition, the dual agricultural structure in Poland has survived the years of transition as well as EU entry. One possible explanation for this is that family farms have production factors which are specific to their business, and which can compensate for the inefficiencies. The extent to which farm heterogeneity influences the effectiveness of these farms' factor allocation is still unclear.

For this analysis we had the accounting records of 567 family farms in Poland from the period 1994-2001. The data were provided by the Polish Institute for Agricultural and Food Economics (IERiGZ-PIB). Besides production figures, the data set contains a wealth of information about the organisation as well as socio-demographic and socio-economic indicators. In the analysis of the production function, besides conventional inputs (labour, land, capital, farm materials) and technological progress, farm heterogeneity was also considered as a further production factor. Conceptually there is a difference between the effective (x^e) and actual (x) factor input. This relationship is made clear by the following formula:

$$x_{it}^{\ e} = x_{it} e^{a_t t} e^{a_i m_i}$$

Here the indices i and t refer to the respective enterprise and point in time. The term $e^{a_t t}$ gives the change in factor quality over time, i.e. the technological progress. This was approximated by the variable t, i.e. the time of observation. The farm-specific effects are considered in $e^{a_i m_i}$, where m_i represents the farm-specific variable, i.e. the farm heterogeneity. As this input is not observable it was determined with the help of appropriate econometric methods. The farm-specific effects were standardised in such a way that their distribution amongst enterprises has a standard normal distribution. The indicator obtained from this gives information about the effectiveness of the enterprise factor input relative to the sample average. In the analysis the labour input was determined by the number of labour hours worked. The land input was defined as the area of farmland. To work out the materials, the figures for agricultural supplies were used. The capital input was determined on the basis of the aggregate of buildings, machinery and equipment.

Conventional efficiency and productivity analyses give a distorted picture of actual production structures

The results of the analysis show that farm heterogeneity is an important determinant of agricultural production. If analyses fail to take into account this heterogeneity, then marked distortions of the production structures emerge. As a result, conventional productivity and efficiency analyses clearly overestimate the efficiency potential, and thus do not produce any consistent conclusions relating to agricultural and economic policy.

A further stage of the analysis determined the farm influences ($e^{a_i m_i}$) for the individual inputs. The results illustrate that, particularly for the produced inputs, the assumption of homogeneity must examined very critically, and that empirical studies must consider the farm-specific structures of this aggregate in detail (Figure 1). Here we can cite, for example, materials for crop and animal production, materials that increase yields (fertilisers, feed), or materials that safeguard yields (plant protection, medications), or the division of real capital into machinery, buildings and equipment. A further important finding concerns the correlation between the variables. The effect of farm heterogeneity on the factors of labour, land and supplies takes a similar path for each: If the indicator rises, the effectiveness of the factor input increases, too. By contrast there is a negative relationship between capital and farm heterogeneity. A reason for this might be the less-than-satisfactory identification of the capital input, given that farms with large capital inputs have a

high proportion of obsolete capital goods; this tends to reduce the productivity of the capital input.

Input-specific effects of farm heterogeneity can also be observed (Figure 1). For land and labour inputs farm heterogeneity is fairly insignificant. By contrast, for bought-in production resources (materials, capital) the effects are clear. Figure 1 demonstrates, for example, the impact on capital input ranges between 0.9 and 1.1. This implies that up to 20 % of the differences in partial capital productivity between farms can be explained by farm-specific differences in effectiveness. The conclusion we can draw is that an increase in human capital should be seen as a second-best development strategy, compared with technological progress.

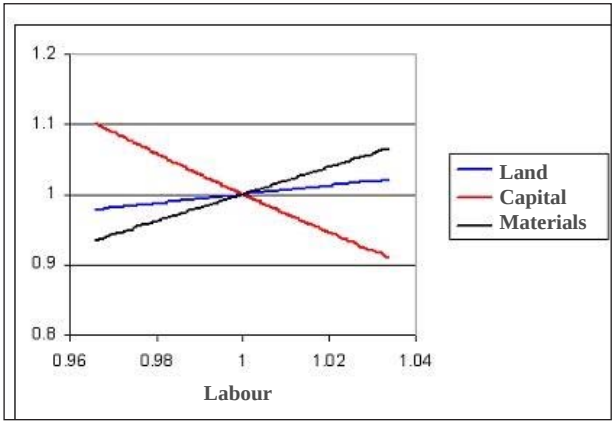
Overall we can say that conventional efficiency analyses bring inadequate results vis-à-vis the extent of inefficiencies. This alone creates a serious problem for the identification of inefficiency factors. Moreover, important factors of influence cannot be viewed directly; they must be approximated in the form of theoretical constructs using individual variables. In many respects it is also unclear just how accurately the chosen variables actually reflect the implicit effect. Furthermore, insufficient consideration is given to the complex interplay between the theoretical constructs.

Farm heterogeneity is determined by farm size, factor quality and enterprise organisation

Given these flaws, the second stage of the analysis uses an alternative strategy. First, following the conventional approach, we identified those variables which are suspected to have an influence on business efficiency or heterogeneity (Table 1). A factor analysis of the data set followed, so as to exploratively produce indices under which the various influencing variables could be grouped. The groups were drawn up taking into account theoretical considerations as well as the results of the factor analysis. The purpose of this was to help assign the data to individual factors in those cases where a variable was significant for several factors.

To simplify the illustration and interpretation the variables were divided into three groups, which are theoretical constructs representing the quality of the factor input, the farm size and the farm organisation. Finally, a structural equation model was used for an explicit analysis of the interplay between the theoretical constructs or factors, in order to carry out a more in-depth investigation of the determinants of farm heterogeneity (Figure 2).

Figure 1: Effectiveness of the factor input of Polish agricultural producers



Source: Own calculations.

Table 1: Determinants of farm heterogeneity

Construct	Variable	Symbol	How determined	Hypothesis
Farm size	Plot size	Par	Total area of farmland divided by number of plots [ha]	+
	Degree of mechanisation	Inten	Land intensity of labour [ha/labour hours]	+
	Farm size (in terms of production)	Siz_pro	Production value [Zloty]	+
	Farm size (in terms of factor)	Siz_ha	Total area of farmland [ha]	+
Factor quality	Ag. training	Ag_tr	Agricultural training of farm manager (schoolleaver's certificate or college degree) [highest level of education]	+
	Soil quality	Soil_Q	Index of soil quality	+
	Soil productivity	Soil_P	Production value per hectare	+
Organisation	Hired labour	Out	Hired labour as a proportion of total farm labour input	+
	Market integration	%Mark	Marketing as a proportion of gross production	+
	Specialisation (intra-sectoral)	Herfin	Herfindahl - index of agricultural production	+
	Land-related transaction costs	#Par	Number of land plots	+
	Diversification (inter-sectoral)	Ag_lh	Labour hours spent on farming as a proportion of total household working time	-

Source: Own calculations.

Farm size: The agricultural production value and land input are conventional variables used to determine farm size. Larger farms are also characterised by a high degree of mechanisation (land intensity of labour) and comparatively large plots. The theoretical variable "farm size" positively influences all the variables indicated here.

Factor quality: Indicators of factor quality are soil quality and human capital. Human capital is measured on the basis of the level of training of the farm manager. It can also be assumed that as the quality of production factors increases, so does the tendency of the yield per hectare.

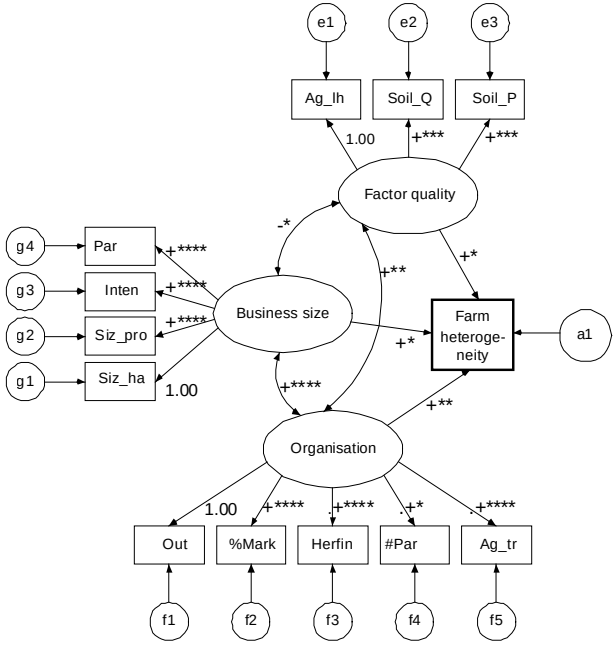
Farm organisation: This encompasses a variety of attributes which influence farm behaviour internally and externally, and thus can lead to differences in performance between farms. As an example, the more a farm is integrated in the market, and the higher its intra-sectoral specialisation, the more it is exposed to risks produced by changes in the institutional and economic conditions of the agricultural sector. Such an organisational form places high demands on the allocation of resources and thus on farm management. The intersectoral diversification of the economic activities of farm households also means that the farm management must be more effective in its application of the scarce resources that remain. Farms that rely on outside labour face additional administration and security costs. Additional land-associated transaction costs also emerge in units that have a large number of component parts. Both types of costs are another challenge for the management. Thus each one of these aspects positively influences the theoretical construct "organisation".

Structural equation models can be resolved when, taking into consideration the data structure, a factor analysis is carried out to determine the theoretical constructs. This model is then regressed in line with the theoretical interdependencies on its influence on the variables to be defined (the farm heterogeneity).

Figure 2 provides information about the findings of the structural equation model. For the purposes of transparency, only the direction of action (negative or positive) and the level of significance of the estimated parameters are represented. Observable variables are depicted by rectangles and theoretical constructs (or latent variables) by ellipses. The simple arrows leading from the latent to the observable variables give information about how the identified constructs manifest themselves in practice. Principally they represent partial regression coefficients. Correspondingly, the circles are the error terms of the regressions. Double arrows between the theoretical constructs reflect the interplay between them in the form of covariances.

For the purposes of interpretation we must remember that a variety of restrictions had to be imposed for the identification of the latent variables. A standardisation took place which set a regression coefficient at the value of 1. The findings show that the latent variables have a significant influence on the observable variables. In the factor-analytical interpretation this means that the latter are significant for the manifestation of the theoretical constructs. The regression coefficients thus confirm the allocation of the variables to the factors, as they were dealt with in Table 1. They also confirm the hypotheses formulated for the latent variables (factor quality, farm size and organisation).

Figure 2: Factors determining farm heterogeneity



Source: *Own calculations.*

Note: *Significance level **** α = 1 %, *** α = 5 %, ** α = 10 %, * = 15 %.*

The significant covariances show that the theoretical constructs are not stochastically independent, but that there is a mutual influence between them. The correlation between the organisation and the other latent variable is positive. The negative correlation between farm size and factor quality is noticeable, however. It means that with farm growth it becomes increasingly difficult to maintain the quality of the resources deployed, perhaps because only land with low yield capacity can be acquired, or because the human capital has to be divided to manage a larger provision of resources.

All theoretical constructs have a positive influence on farm heterogeneity. Together, they account for about 55 % of the total variance of the endogenous variable. Although this explanatory power is relatively low, it can be seen as satisfactory for the approach outlined here, particularly as the results calculated for the relations between the variables were, on the whole, highly significant. A reason for the low explanatory content is the lack of availability of information. It was not possible, for example, to consider any variables which would have registered farm differences in the quality of capital input. In this context one could cite the average age of the stock of capital goods, but also structural differences in the form of the importance of buildings or equipment. Other factors that received insufficient attention were related to management. Although it was possible to identify individual elements of the latent variable "organisation", important details such as how much work time is given over to management tasks, or whether use was made of extension services, are missing in the available data set.

Farm heterogeneity, defined as the capacity to deploy inputs efficiently, is a fundamental element of the production structures of Polish family farms. It is possible, moreover, with the aid of structural equation models, to describe the determinants of farm heterogeneity in Polish agriculture in the form of a complex system of interdependencies. Important factors of influence are factor quality, farm size and the organisation of agricultural enterprises. Farm heterogeneity must not, however, be equated with inefficiency, as happens in conventional efficiency analyses. On the contrary, it shows the maximum productivity – given the existing factor input – that a farm can achieve. Comparisons between farms only allow inference to be made about the variation

of the optimal form between farms, and thus cannot be used to draw conclusions about economic strategy. These can only be made when it is possible to identify to what extent and why an enterprise has not exhausted all the potential at its disposal.

Further literature

HOCKMANN, H., PIENIADZ, A., GORAJ, L. (2007): Modelling heterogeneity in production models: Empirical evidence from individual farming in Poland, *Zagadnienia Ekonomiki Rolnej [Economics of Polish Agriculture], Vol. 2,* pp. 5-71.

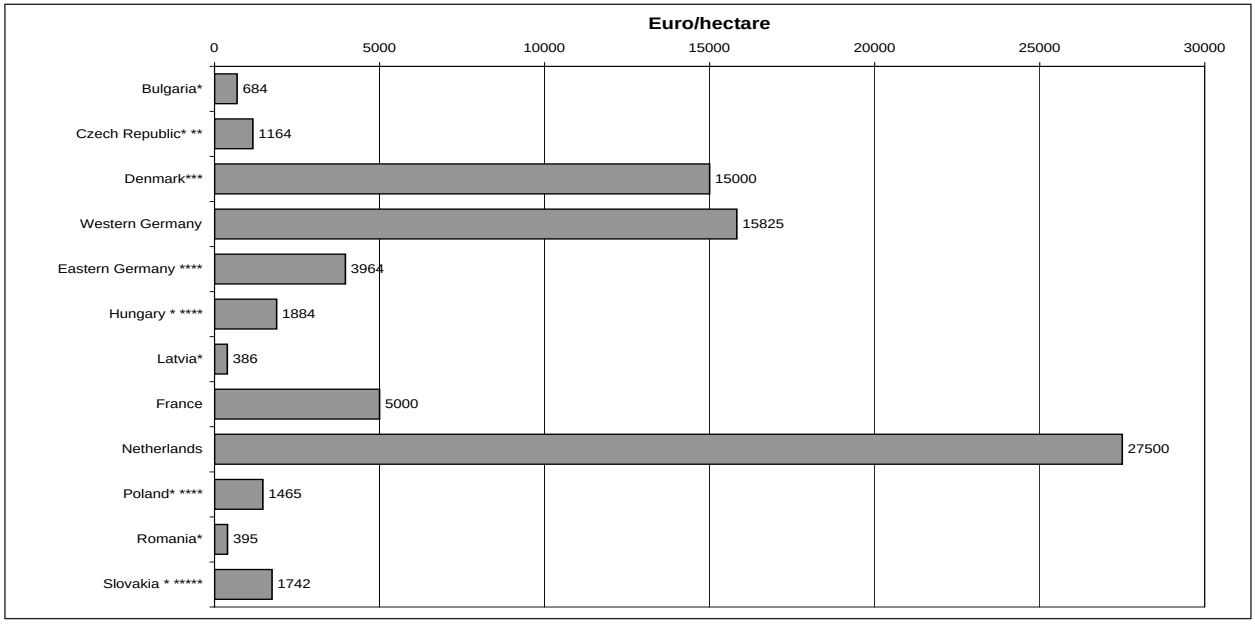
Payment in kind – Many landlords prefer flour or grain as rent, Ukraine

The internationalisation of agricultural enterprises using the example of foreign direct investment in Ukraine

HENRIETTE STANGE

The framework conditions of the European farming sector are undergoing substantial changes as a result of the realignment of the Common Agricultural Policy towards a free-market orientation, and a reduction in the level of subsidy; the WTO negotiations; and the growing concentration of the downstream sector. Against this background, commercial behaviour and innovative strategies are becoming more important for agricultural enterprises. At the same time, with German reunification and the eastern expansion of the EU, where agriculture was previously dominated by family farms, very heterogeneous enterprises structures have developed with relation to farm size and organisation. Large farms have noticeably become more important.

Figure 1: Purchase prices for land (Utilised Agricultural Area) in selected countries of the EU in Euro, 2005



Source: Neue Landwirtschaft Bodenmarkt, 2007.

*Notes: Countries are listed alphabetically according to their appellation in that language * 2004. ** Only areas of farmland >5 ha. *** 2003. **** Current market values, other values applicable to EAGGF farmland. ***** Only arable land. ****** No differentiation made between agricultural and non-agricultural use.*

One important market-oriented adjustment strategy for agricultural enterprises in the course of accelerated structural change is business growth. And yet in many areas of Western Europe, farm sizes of up to many thousand hectares – which exist in parts of the new German *Länder*, Czech Republic, Slovakia or Hungary – will not materialise in the foreseeable future. High factor prices and low factor availability, particularly land, limit the expansion of business production capacity (Figure 1). An alternative to growth at the original site seems to be growth outside the region, or abroad.

There are many examples of agricultural enterprises which have chosen a geographical or international growth strategy, or which have relocated their site. These include Western German and Dutch farms which invested in Eastern Germany after the Wall came down. Overall the differential in factor prices and availability seems to favour investment flows from Western to Eastern Europe, as examples of Western European agricultural investment in the new EU member states and also in the Russian Federation and Ukraine show. The significance of this phenomenon and the problems it throws up, such as the process of establishing enterprises abroad and the organisation and management of several businesses at home and abroad, create new, interesting research questions.

Agricultural enterprises or entrepreneurs who invest across borders are by definition engaging in foreign direct investment (FDI). In the agricultural and food sector there is a wealth of information on, and inventories and analyses of, FDI in the processing industry and food retail. By contrast, agricultural enter-prises that invest abroad are not recorded in either national or European agricultural statistics. Even FDI statistics have only incomplete records of FDI in agriculture or, because of data protection issues, rarely give details of investors. Because of the shortage of data there are few studies on this subject,

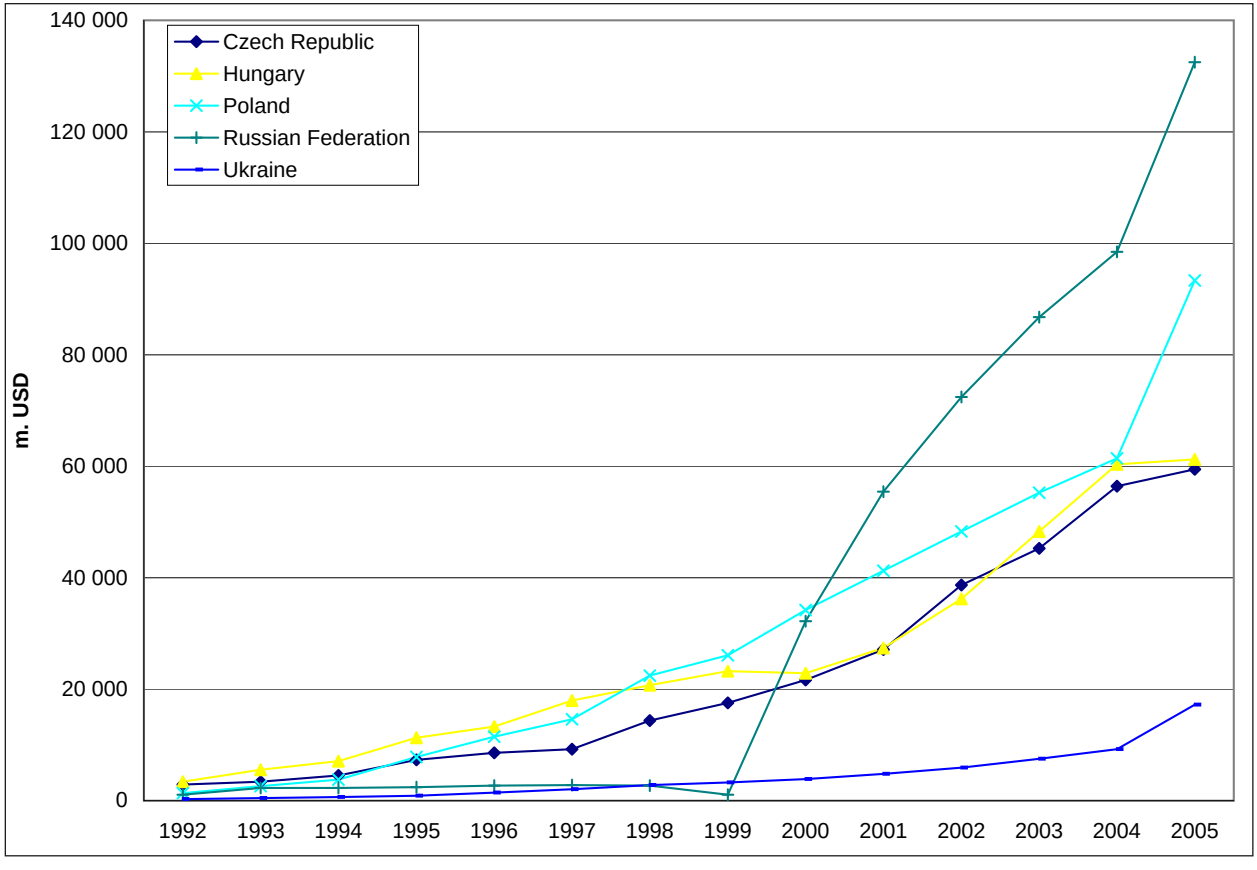
This article examines Western European investment in agriculture using the example of the Ukrainian agricultural sector. After an introduction to FDI in Ukraine and the Ukrainian agricultural sector, the results of a survey of German, Danish and Dutch investors will be presented. The focus here is on the background of the investors, the motivation to establish businesses, and the problems of the organisation of Ukrainian enterprises. Of particular interest are those investors with an agricultural background who are also engaged in agriculture in their home country.

In the last few years FDI in Ukraine has greatly increased

In the countries of Central and Eastern Europe, foreign direct investment has become increasingly important in the economic integration process since the middle of the 1990s. The distribution of FDI amongst the individual countries has developed rather unevenly, however, beginning in states such as Hungary, Poland and the Czech Republic which had progressed furthest in market reforms, privatisation and liberalisation. In Russia and Ukraine the inflow of direct investment started much later and at a lower level relative to their populations and market size (cf. Figure 2)

After low levels of FDI in the 1990s, since 2002 there has been an increase in foreign direct investment in Ukraine. This positive trend continued in 2004 and 2005, when the FDI levels reached 1.7m and 7.8m US dollars. Substantial levels of FDI flowed into Ukraine in 2006 as well. But in comparison to other CEECs and the Russian Federation, they remained at a low level. In 2005, the total FDI in Ukraine had reached 17.2m US dollars, roughly

Figure 2: Development of FDI levels in selected countries of Eastern Europe, 1992 to 2005 (end of the year)

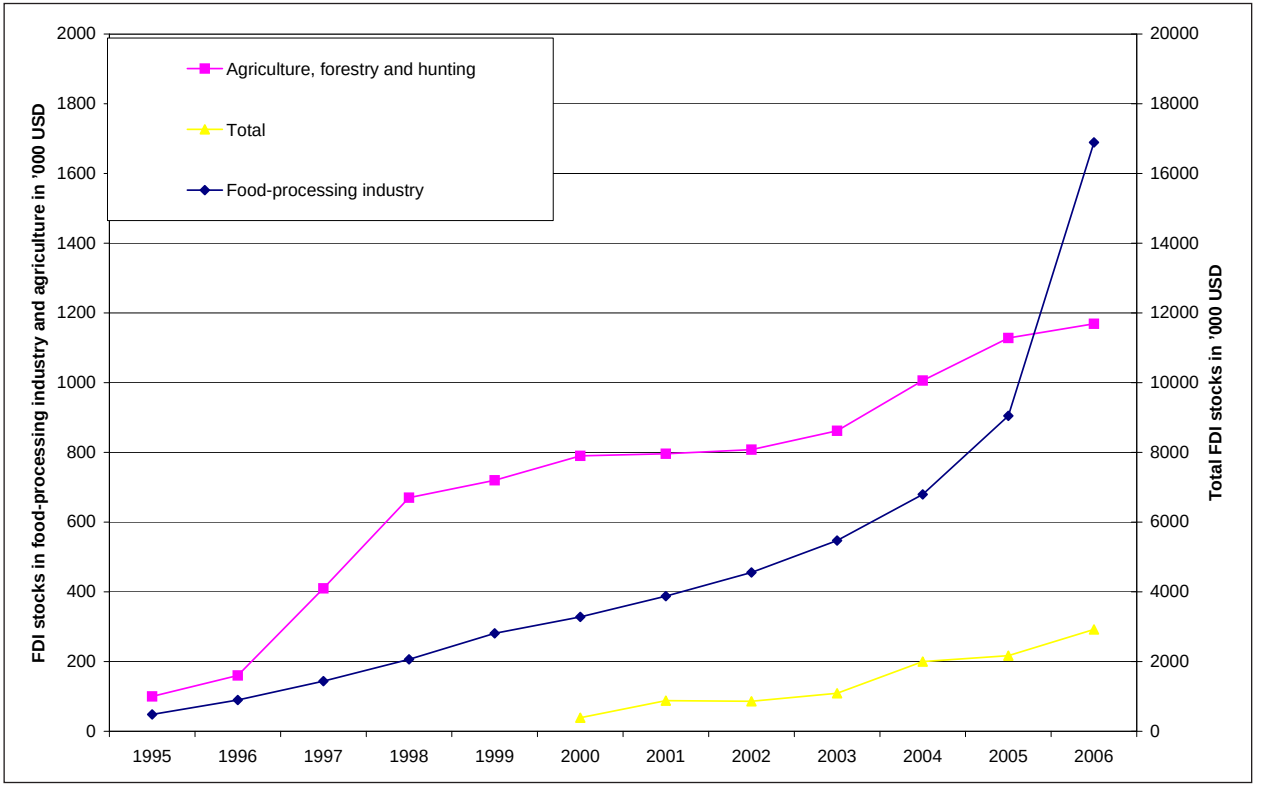


Source: UNCTAD, 2006.

the same as in Slovakia (15.3m US dollars). And yet Slovakia's population is only just more than one-tenth of Ukraine's. The future prospects for further inflows of foreign capital into Ukraine are, however, considered to be bright.

The Ukrainian food industry was one of the first branches of the economy to receive large-scale FDI. This increased greatly in the second half of the 1990s and has grown continually ever since. Its share of total FDI has fallen, however, from 32.5 % in 1988 to 7 % in 2006, because of the increase in investment in other areas (Figure 3). In 2000 agriculture's share of total FDI was 1.1 %; this increased to about 3 % by 2005. But relative to the role that agriculture plays in the Ukrainian national economy, that is a low figure.

Figure 3: Development of selected FDI in Ukraine, 1992 to 2005 (start of year)

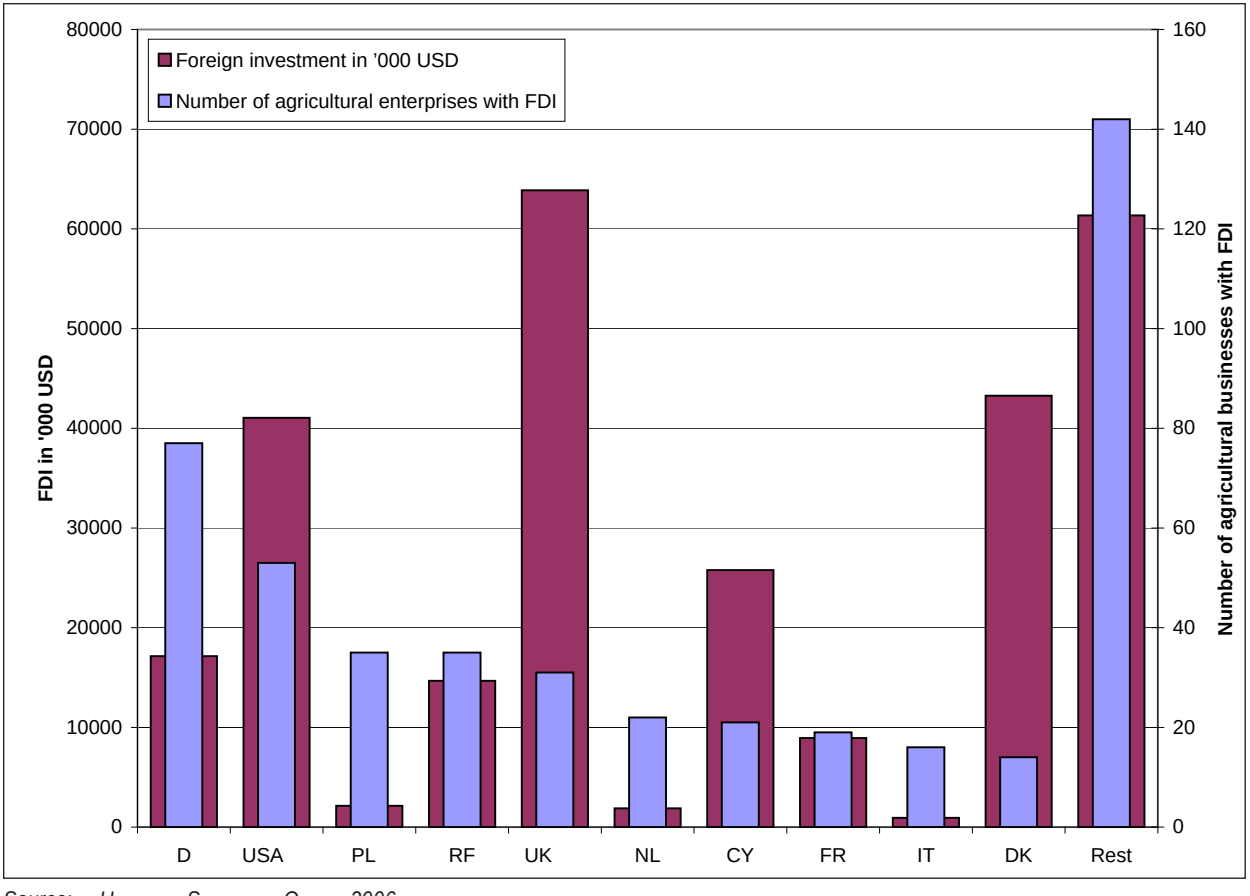


Source: Ukrainian Statistical Office, 2006.

Foreign investment in Ukrainian agriculture

In the agricultural sector, the inflow of FDI in the 1990s was sluggish. The reasons for this included general impediments to investment, such as the absence of stable and transparent institutions in the legal and tax systems, which meant investors had bad experiences with arbitrarily changing legal statutes, corruption and poor enforceability of contracts. Other factors specifically related to agriculture, such as the lack of a rental and land market, also hampered investment in Ukraine. It was not until 2000 that foreign investment in the agricultural sector really started to rise. At the end of 2005 the number of agricultural enterprises with FDI had increased from 111 in 2000 to 465. In the same period total FDI in agriculture grew from 39.4m to 281.2m US dollars. This

Figure 4: Foreign investment in Ukrainian agriculture by invested capital and number of businesses



Source: *Ukrainian Statistical Office, 2006.*

Notes: *D (Germany), USA (United States of America), PL (Poland), RF (Russian Federation), UK (United Kingdom), NL (Netherlands), CY (Cyprus), FR (France), IT (Italy), DK (Denmark). Arranged by number of businesses in descending order.*

means that the volumes of average investment have also almost doubled. The improvement in the framework conditions, particularly increasing legal security when leasing agricultural land through foreign investment, and the economic recovery of the agricultural sector, seem to have played a role here.

The largest group of investors, according to Ukrainian statistics, were Germans (17 %). A scrutiny of the average investment per enterprise, however, reveals clear differences between nationalities. Whereas agricultural enterprises with German participation had on average 227,000 US dollars

of foreign capital, the figure for businesses with Danish participation was 3.1m US dollars (Figure 4). The reason for this might be that most German investment is in cash crop farms which are managed by farmers or smaller investors. The goal of Danish investors is frequently capital-intensive animal production such as pig fattening.

Who invests how?

A survey carried out in October 2006 of 31 German, Danish and Dutch investors in Ukraine shows that in 2005 these businesses on average farmed 1,500 ha, employed 45 members of staff, and had a turnover of 900,000 Euro. The array of enterprises ranges from an organic enterprise with 300 ha, 100 pigs and 10 dairy cows, via a 9,000-acre cash crop farm operating with the most modern Western technology, to a sow plant with a planned capacity of 12,000 sows. The majority have specialised in arable farming.

In almost all cases the businesses were established as Ukrainian limited liability companies, and most investments took the form of new enterprises rather than stakes in existing Ukrainian farms. Investment was predominantly financed by ownership equity and there were no instances of using or guaranteeing credits from a Ukrainian bank. Practically all investors who entered Ukraine before 2000 were agricultural enterprises from the former GDR.

A total of 60 foreign investors are involved in the 31 enterprises. About 50 % of these are private individuals; the remaining 50 % are formally corporate bodies. Owners or participants in an agricultural enterprise in their home country make up 50 per cent of investors, and 13 per cent come from agribusiness. The majority (93 per cent) of these agricultural investors are still operating their own enterprises in their home country. Prior to taking the step of investing in Ukraine, a third of the agricultural investors had already had experience, either at home or in other Eastern European countries, of investment and establishing businesses. For example, there is a Dutchman who founded agricultural enterprises first in Germany, then in Poland, and then in Ukraine.

The organisation and management of the Ukrainian enterprise are a key aspect of such an investment. The management models also vary depending on the investor. All investors state that they take the long-term decisions themselves. The day-to-day management and the length of time spent at the enterprise varies greatly, however, between those investors surveyed. Some farmers, for example, have moved their lives – and families too – to Ukraine. But in the opinion of those surveyed, the social milieu in the village takes getting used to (this is not meant in a negative sense) and the standard of living is not comparable to their country of origin. In these cases almost all decisions, including day-to-day ones, are taken by the investors themselves.

By contrast, those agricultural investors who still operate their existing enterprise, or several enterprises, in their home country, are generally on site for only a few days: During the sowing time, harvest and ordering. In these cases, the day-to-day business is entrusted to a hired farm manager of Ukrainian origin or from the home country. The size of the enterprise must, however, make such a step financially possible, and qualified specialists must be found. Management from within the family is also an option, e.g. the father-son combination where one manages the business at home and the other the one in Ukraine; or both

alternate in managing the Ukrainian business. Another solution can be partnerships, where one partner manages the business on site and the other(s) participate(s) financially.

Evaluation of success and prospects

Of those businesses surveyed, only two intend to give up the enterprise in Ukraine. The majority are planning further growth or no change in the current business size and organisation. Here it must be noted that many enterprises are still at the development stage. Overall, however, the investors face a number of problems, including the search for appropriate staff. This is true for all levels of qualification, from agricultural workers to accountants and staff in management positions.

I In retrospect, another problem area was the reliability of advance information about conditions in Ukraine. The majority of farmers surveyed established their enterprises in Ukraine only shortly after having had the idea to do so, and they admit to having underestimated the problems at the start. For example, the conditions for crop cultivation are different from those back home, and this is reflected in the yields.

A trustworthy Ukrainian partner or adviser, who can help with visits to the authorities and the understanding of Ukrainian economic life, particularly in the beginning, is also essential.

It is nevertheless the case that Ukrainian agriculture presents an interesting option for investors; the number of active Western European investors is bound to rise in the future. Investment societies or partnerships can minimise risks for the individual – given properly functioning internal regulations. The organisation and management remain a challenge, however, particularly for those agricultural investors with several enterprises in a number of different countries.

Excursion during the 2007 IAMO Forum, Saale-Unstrut wine region around Naumburg

Agricultural extension and farm restructuring in Eastern Germany 1989-1992

JEONG NAM CHOI, AXEL WOLZ, MICHAEL KOPSIDIS

The focus of this article is an analysis of the contribution made by extension services to the free-market restructuring of agricultural enterprises in Eastern Germany. In the course of transition from the centrally planned economy to the social market economy as part of German reunification, the collective farms of the GDR lost their *raison d'être*. Although there is a wide array of academic studies looking at transition processes in Eastern German agriculture, only a few of these examine the role of extension services in the transformation of collective farms. And yet, given that all actors lacked experience of the market economy, extension played an important part in establishing competitive agricultural businesses. This is especially true given that the implementation of a free-market system within a few months took place more rapidly and thoroughly than in any other transition country.

From a distance of more than 15 years, this study centres on a retrospective evaluation of the transformation of agricultural production cooperatives (LPGs) by Eastern German farm managers. All the managers of present-day agricultural cooperatives and limited liability companies that were surveyed were already in their management positions when the Wall came down. The chief objective here is to reconstruct the experiences of those concerned of outside extension services during the LPG transformation process, and to identify how they now judge these services from a current perspective. Particularly in the initial phase of system transition, it can be assumed that it was of crucial importance whether or not the new system was accepted by those concerned.

For all agricultural managers the change of system represented a huge challenge. The traditional price and cost structures, as well as the distribution channels collapsed almost overnight. Besides these business and market-economics challenges, the farm managers also had to cope with organisational tasks. The value of agricultural assets needed to be determined and the private owners of these assets had to be confirmed or even identified in the first place in accordance with the general principles of decollectivisation, restitution and privatisation ("individualisation of the LPG assets"). Closely tied to this transition process was the question of under which legal form agricultural production should be organised in the future, given the changed political and institutional framework conditions. As most farm managers had no knowledge or experience of legal forms compatible with free-market-economics, the need for advice was huge.

This study analyses the personal opinions and experiences of the farm managers. In addition to a review of the literature and an evaluation of relevant statistics, 21 farm managers were interviewed by means of a semi-structured questionnaire about their experiences during transition. For reasons of time and expense, the study was restricted to the region of southern Saxony-Anhalt. The farm managers represent the newly established different legal forms of agricultural enterprises in the

new German *Länder*: Eleven chairmen of registered cooperatives, five executives of limited liability companies, and five individual farmers. Of these five farmers, two are former members of LPGs, two had returned from the West after the Wall came down and had their assets returned in 1990, and there is one Western German farmer who, with no previous connection to the area, set up a new farm there in 1990. In addition to these interviewees, five key informants actively involved in agricultural transition in Germany at the time of the change were questioned: Two agricultural advisers from Halle (Saale), an Eastern German politician, and two Western German ministry officials. The authors are aware that this sample cannot be considered representative, and thus the study is explorative.

Transition of collective agriculture and need for advice

Already by the end of 1989, all those involved understood that collective farming could not continue in the same way. Agricultural production had to be reorganised. The last East German government quickly reached the unanimous decision that family farms would have to be reallowed, which of course also corresponded with the demands of the West German politicians and agricultural associations. Whereas West German agricultural policy stood for the model of the family farm, according to the interviews all the East German parties, even the newly founded ones, showed a high level of support for a continuation of the LPGs in a new form. Presumably this also corresponded with the general mood of the rural population. On 29 June 1990, therefore, the East German parliament passed the Agricultural Adjustment Act (LAG I) which, besides family farms, only permitted registered cooperatives (e.G.) as a legal form for farms. In addition the act gave LPG management boards extensive executive powers in the valuation and contesting of assets. It also granted the workers a relatively high share with regard to the division of the assets. Both stipulations strengthened the case of those supporters of a conversion to registered cooperatives and the preservation of large enterprise structures. Not until reunification, with the amendment to the Agricultural Adjustment Act (LAG II) of 7 July 1991 was the position of landowners and owners of other assets strengthened with regard to the distribution of assets. Besides settling many open and imprecise questions regarding the asset controversies, the aim of this amendment was to make it easier to quit a joint enterprise in order to establish one's own family farm. However, the supporters of the agricultural model of the family farm could not get it all their own way. Other legal forms for agricultural enterprises were also permitted. Besides the legal form of the registered cooperative, corporations such as limited liability companies or joint-stock companies were also recognised.

Because of the rapid and radical changes of the legal ownership framework for agricultural enterprises, combined with the speedy introduction of market economics, including the immediate implementation of the Common Agricultural Policy (CAP) of the EU, the chairmen of the LPGs and the new individual farmers were under considerable pressure to adapt. Unlike their peers in Central and Eastern Europe they only had a relatively short time to acquire the necessary knowledge and rules of the market economy. Particularly because of ignorance of the new conditions and great uncertainty as to which strategic decisions – e.g. the choice of legal form – would best serve the well-being of the whole farm, the need for advice and external support was extremely high.

As early as the start of 1990 the LPG chairmen attempted to obtain information about "capitalist" farm management, the CAP, and the possibility of transforming the LPGs. Most of them took part in a large number of seminars, lectures and visits which were offered by agricultural schools, colleges and associations. All saw it as positive that they received very detailed information about possible future enterprise forms, even if these did not correspond with the West German model of the family farm. All emphasised that they realised very quickly that the West German model of the family farm had no prospects in their area. On the contrary, they were reassured that it could only be a legal form which would allow the continuation of the LPGs as an independently operating large enterprise. During training programmes some farm managers had first contact with their later advisers. On the other hand, those who had left the LPGs and started up their own farms did not participate in these programmes. Their main source of information was their advisers.

Table 1 summarises the answers given to the question of what sort of advice the farm managers needed most urgently during transition. Managers of cooperatives and limited liability companies needed to understand rapidly the general workings of the free-market system, and what the particular ramifications for agriculture were. The need for advice was also very great on all aspects of business transformation, such as asset valuation, distribution and transfer to those entitled to a claim, but also advice on liquidation. Here there were also questions on the future legal form of the farm. The massive need for advice is reflected in the following statement by a manager of a transformed LPG: *"In the GDR era there was the LPG law. The LPG law did not provide for any liquidation or transformation of an LPG as is now possible with the registered cooperatives, limited liability companies or joint-stock companies. We didn't have a clue about other enterprise forms."* Farm management was also in the foreground. On the one hand managers had to adapt quickly to

Table 1: Need for advice during the period of change 1989-1992

Type of organisation	Content of advice	**Group/Subgroup**
Managers of farming cooperatives and limited liability companies	• General knowledge about the market economy	All
	• Preparing and carrying out the transformation process	All
	• Choice of (future) legal form for farm	All
	• Tax advice, accounting, farm management	All
	• Applying for financial aid	All
Individual farmers	• Applying for financial aid	All
	• Training during the start-up phase, farm management	Former LPG members
	• Restitution of assets	Those returning from the West

Source: Own survey.

radically changed price-cost relations; on the other hand, they had to draft business plans for future development. These were used both for possible credit applications, but much more crucially they became a prerequisite for access to financial support from the state, as the following statement from a manager of a transformed LPG makes clear, *"If there are subsidies then an economic extension agent is needed to work out our applications."*

Individual farmers also needed a large amount of advice regarding the application for state subsidies. People within this group, moreover, had different priorities. Those farmers from the old German *Länder* knew about market economics and the CAP, as they had already worked as farmers in West Germany. Their need for advice was thus focused on questions of restitution of land and other assets. For those starting a farm who had

Table 2: Regional background of the most important external advisers in the transition process

Legal form		Type and origin of advisers
Transformed agricultural cooperatives	A1	One lawyer each from the East and the West
	A2	Adviser from the East
	A3	An economist and a lawyer from the East
	A4	Lawyer from the East
	A5	Adviser from the East
	A6	Advisers from the East, one lawyer each from the East and the West
	A7	Lawyer from the East
	A8	Advisers from both the East and West
	A9	Tax adviser from the East
	A10	Advisers from the East
	A11	Advisers from the East
Limited liability companies	B1	Three advisers from the West
	B2	Lawyers from the West
	B3	Lawyer from the East, tax adviser from the West
	B4	First an adviser from the East, then advisers from the West
	B5	Adviser from the West
Private farms	C1	Lawyer and tax adviser from the West
	C2	Farm management adviser from the West
	C3	Adviser from the East
	C4	Adviser from the East
	C5	Lawyer and tax adviser from the West

Source: Own survey.

left a former LPG, on the other hand, questions of business know-how were uppermost in their extension needs. Unlike with the managers of large agricultural enterprises, a general understanding of market economics was not deemed so important. Instead, issues relating to setting up a business and safeguarding that business were at the forefront.

Background of consultants

For questions relating to the transformation of the agricultural sector there was a limited number of advisers in East Germany prior to reunification in October 1990. Some lawyers and academics offered their services. Not until after reunification was the development of a variety of extension services in Eastern Germany given massive financial support through programmes. As mentioned above, most LPG chairmen made their first contacts with advisers in the old German Länder during training programmes. In addition, many Western German advisers had, on their own initiative, paid visits to agricultural enterprises in Eastern Germany and offered their services. Because of the considerable financial support offered by the state for extension services, the farm managers were able to maintain very regular contact with their advisers. Table 2 gives basic details of their backgrounds.

The statements of the farm managers reveal a very strong regional preference in the choice of advisers. The managers of transformed cooperatives had a clear preference for advisers from Eastern Germany. Only a minority of them used the advice of Western German advisers in the transition phase. On the other hand, all the managers of limited liability companies relied on Western German advisers. This is understandable, as this legal form was totally unknown in Eastern Germany. And yet it was not that common at the time in Western Germany, either. As far as the individual farmers are concerned, there is a clear division. The regional background of the farm operators determined the regional background of the respective advisers. Those farmers who had left LPGs preferred advisers with an East German background and local connections, whereas the farmers coming from the West brought their advisers with them.

In the eyes of the cooperative managers, one of the main reasons for choosing to use Eastern German advisers was that these were well acquainted with this type of enterprise. What is more, they did not only consider factors of economic success; they also knew the historical background and took into account the social effects of management decisions. The aim of the Western German advisers, on the other hand, was to make the farms competitive, even if this meant borrowing substantial credits and dismissing large numbers of the workforce. A mental barrier existed: As one manager of a transformed cooperative put it, *"The mentality of the people in Eastern Germany is different from that in Western Germany. The East Germans were used to cooperation, and trained in sharing their experiences as well. That's how everything developed. But the advisers from the West could not understand or accept that. They tried to make us more competitive, with only a few, or no people, and enormous bank credits."*

Moreover, the farm managers were wary of becoming too dependent on Western German advisers and thus losing

influence over their cooperatives. The farm managers were also faced with contradictory statements, which aroused their mistrust. According to statements from (primarily Western German) politicians, the line taken by specialist agricultural journals, and the opinion of most academics, large-scale enterprises, especially cooperatives, were not at all competitive in a free-market economy. At the same time, however, the farm managers received offers from their advisers working for capital-rich companies in the West to turn their enterprise over to these.

One farm manager remembers it thus: *"Besides our Eastern German advisers, we didn't want to listen to anybody else others. The others from the old federal states wanted to take over the whole farm. There were lots who had some kind of investor as an "outside shareholder" but we've just got locals. We've only got members who've worked here on the farm or are still working. We're not accepting anybody else. If someone works here without any relationship to this farm, he just wants to get capital out of it."* These sorts of conflicts with Western German advisers gave some of the farm managers surveyed additional motivation to carry on in the market economy as large-scale farms.

As Table 2 shows, some farm managers of the transformed co-operatives also had very close contact with Western German advisers, generally in combination with an Eastern German colleague. According to the interviews, this combination proved to be an excellent one. In contrast to most farm managers of cooperatives, their colleagues from the limited liability companies had very good experiences with advisers from the West, although there was mention of some deceitful advisers during the period of change. However, these farm managers realised very early on that their farms would only remain competitive in the longer term by transforming into a corporation. For this type of restructuring, however, there were no advisers in the East at that time. Contacts with individual advisers generally came about by chance. None of the farm managers of limited liability companies surveyed regretted this step, and they are still in contact today with their advisers of the time.

Conclusion

Looking back, most farm managers were highly satisfied with the advice they received on farm transformation. The wishes or ideas of the farm managers, and of the majority of the then LPG members, were satisfied. The reunification-driven German transition was characterised by the fact that, in spite of clear preferences of (Western German) policy-makers, those affected in the East were given more scope to organise farm restructuring around their own ideas. Restructuring towards farms under free-market conditions was thus a relatively open-ended process, representing the opposite of forced collectivisation in the GDR. There were certain political ideas about the future farm model, but no compulsion or fixed guidelines. In this way, nobody was compelled to adopt the agro-political model of the time: The family farm. Particularly with LAG II, it was left completely up to those involved to choose the legal form under which they wanted to carry out agricultural production. The success and high competitiveness of Eastern German agriculture are an affirmation of the decision of the time. Highly efficient large-scale enterprises were able to develop. This was also recognised by a farmer from the old federal states who had set up in the

East: *"The Western German politicians planned to introduce family farms in Eastern Germany. This failed because of the Eastern German politicians. They didn't want privatisation like in the West. The agricultural cooperative was held up as an example. Was that right? I don't know. It was, partly. After all, it's the most modern agriculture in Europe."*

Participants at the 2007 IAMO Forum: PhD Anders Hedtoff, Denmark, and Niaz Ahmed Bhutto, Pakistan

Sustainable rural development: What is the role of the agri-food sector? Findings from the IAMO Forum 2007

MARTIN PETRICK, GERTRUD BUCHENRIEDER

"Does globalization help in poverty reduction? And how does globalization impact on poverty in the economies that went through fundamental transitions of their economic system in the 1990s – and on their agriculture and food system in particular – just when the globalisation trends accelerated? The globalisation opportunities for poor people lie in the fact that globalisation permits them to either directly or indirectly have access to previously unavailable markets, to capital and to related employment, knowledge, and social protection and transfers. Globalisation offers opportunities for growth, and that growth has benefited many poor people. Bottom-end poverty, i.e. hunger, has been reduced less than income poverty during globalisation. This means that the poorest have benefited less, and this should be a major concern for policy. Several transition economies seem to have done relatively better in terms of poverty reduction than other low and middle income economies in the context of globalization." (Joachim von Braun at the IAMO Forum 2007).

The rural areas of many transition countries and emerging nations are characterised by economic backwardness and a lack of development opportunities. For some years, however, investment by food retail businesses operating globally has provided a stimulus which is having a direct effect on the economic situation in rural areas. The large increase in its turnover – also known as the "supermarket revolution" – in countries such as Russia and China has strengthened the rural processing sector and large agricultural enterprises in particular. Where these are absent, a large group of small producers, often afflicted by poverty, can also benefit. Logistical innovation in the management of food chains takes on a key role here. These topics were examined by the "IAMO Forum 2007" which took place from 27 to 29 June 2007 in Halle under the title, "Sustainable rural development: What is the role of the agri-food sector?" As demonstrated by the numerous academic papers given at the conference (attended by 120 experts from around 25 countries), small farms do not necessarily have to be amongst the losers in the global trend towards liberalisation. What are needed, however, are democratic political governance and a social safety net.

Supermarket revolution in Central and Eastern Europe and Asia

One of the first insights gained from the conference was that the development problems of rural areas and the opportunities of globalisation are too frequently looked at in isolation from each other. In fact, it is particularly in the agricultural sectors of many emerging nations that opportunities have been produced by the rapid changes in global food retail. According to Prof. Dr Thomas Reardon from Michigan State University, USA, global investment activity in food retail has hit transition countries in several waves: In the early 1990s it was mainly Central Europe

and Eastern Asia except for China; in the middle of the 1990s it was South Eastern Europe and South East Asia; and around the turn of the millennium it was the successor states to the Soviet Union, China, Vietnam and India. In his lecture at the IAMO Forum, Reardon showed that this last wave developed with incredible rapidity: Turnover in Western-style supermarkets increased ninefold in Russia between 2002 and 2006; in China it tripled over the same period. This "supermarket revolution" is having a direct effect on the rural proces-sing sector and large-scale agricultural enterprises. But small farms can also benefit from the increased competition for distribution channels. Either this occurs by engaging traditional wholesalers, as for vegetables in China, or by an "upgrading" of the small farmers' production opportunities via active technological support from the investors. Examples of this can be seen in Poland.

Prof. Dr Jikan Huang from the Center for Chinese Agricultural Policy (CCAP) in Beijing underlined the significance of the regional and global removal of trade restrictions, and the increased security of land use for Chinese agriculture. Dr Achim Fock from the World Bank in Beijing explained that rural areas in China were showing great successes, with a gradual decollectivisation of socialist agriculture. After a period of neglect during the 1990s they are now also at the heart of a decentralised policy for the "New Socialist Countryside". Because of China's massive size, however, coordination problems exist on a huge scale. According to Fock, the investment by central government is often distributed unequally and not attuned to the needs of the place itself.

Rural development policy more than trade liberalisation

Prof. Dr Joachim von Braun, director of the International Food Policy Research Institute (IFPRI) in Washington, USA, made critical comments about the effects of global liberalisation on rural areas in developing countries and countries in transition. In his view, the direct effects of trade liberalisation on rural households throughout the world with low incomes are rather insubstantial. Instead, new information technologies and state-sponsored elementary research are of key importance, he said. He also advocated improved systems of social security at the national level, which following the model of so-called "conditional cash transfers" could be tied to a requirement to attend training courses. In his lecture outlining an evolutionary, sustainable development of rural areas in Central and Eastern Europe, Prof. Dr Daniel Bromley from the University of Wisconsin-Madison, USA, called for the widespread participation in policymaking of those population groups concerned.

Another topic discussed at the IAMO Forum 2007 was the danger of depopulation of entire stretches of countryside due to falling birth rates and migration. Prof. Dr Alexander Vassilevich Petrikov of the All-Russian Institute for Agrarian Problems and Information Theory in Moscow emphasised that the transition process of Russian agriculture in the 1990s had led to a drop in labour productivity in agriculture, at the same time as rising unemployment in the countryside, an increase in poverty, and a growing need for agricultural imports. According to Prof. Pertikov, a reaction to this was the changed agricultural policy under Putin after 2000 which, amongst other things, had led to an increase in the agricultural budget as well as debt rescheduling and improved credit access for agricultural enterprises.

Prof. Dr Katarzyna Duczkowska-Małysz from the Warsaw School of Economics in Poland underlined the fact that older inhabitants of rural areas were often not in a position to exploit the radical change productively, and that they were frequently reliant on state welfare to secure an income. The experts present agreed that the European Commission's intention to make agricultural policy much more of a cross-sector rural development policy was a step in the right direction. This objective had been outlined by Dr Peter Weinheim from the EU Commission. There should be a target-oriented deployment of instruments, he cautioned, and their effectiveness should be regularly monitored. Besides the keynote lectures, 24 Contributed Papers in 8 sessions were delivered and discussed on the first day of the conference. Around 25 posters were also exhibited as part of the poster presentation. The theme of the excursion on the third day was development stimulus by regional wine production and marketing. To this end, visits were made to the Saale-Unstrut growing area around Naumburg and the Kloster Pforte winery in Bad Kösen. The conference volume – PETRICK, M., BUCHENRIEDER, G. (eds.) (2007): Sustainable rural development: What is the role of the agri-food sector? *Studies on the Agricultural and Food Sector in Central and Eastern Europe Vol. 39,* Halle (Saale), IAMO, 303 pp – was published for the conference with selected papers. It can also be viewed online at <http://www.iamo.de/dok/sr_vol39.pdf >.

A photo gallery of the conference and the excursion can be seen on the IAMO web site (www.iamo.de) under Events/IAMO Forum 2007.

China Hand-picked rice harvest, China

Rural credit markets in Armenia

MILADA KASARJYAN

Abstract

The aim of this paper is to test empirically the role of both cognitive and structural social capital in explaining the repayment performance of individual members under joint liability borrowing in rural Armenia. Based on unique primary data collected in 2006 in Ararat, Armavir and Vayots Dzor provinces, overall 86 observations, we estimated the Logit model to identify the determinants associated with good or bad repayment behavior of individual members.

The results revealed that the members with higher level of structural and cognitive social capital as well as with higher farm productivity performed better. This indicates the importance of social as well as economic determinants for the decision and the ability of borrower's to repay the credit.

Keywords: Microcredit, social capital, group liability, repayment

Introduction

Following theoretical models, joint liability lending schisms have positive impact on the repayment performance of borrowers. The expected success is basically attributed to the non-traditional characteristics of the collateral, specifically social collateral used. In the sense that social collateral of borrowers takes the place of traditionally accepted forms of physical collateral, joint liability lending relies upon social capital[1] of the group (Besley and Coates, 1995). Under such lending conditions, the group takes the liability for the individual loans of members and by that overcomes the problem of lack of traditional forms of collateral. By delegating the function of screening, monitoring, and enforcement of loans to the group members, banks in their turn overcome the problem of asymmetric information and accordingly the problem of prohibitively high transaction costs[2] (Ghatak and Guinane, 1998). Pointing on the main hypothesis of such programs, that is the comparative advantages of collective actions in screening, monitoring and in enforcement activities, Stigliz (1990) argues that group members have better access to information on reputation, creditworthiness and an intended purpose of peer borrowers. Moreover, people connected with social ties have better possibility to enforce repayment by implementing social sanctions against defaulters (Besley and Coate, 1995). Consequently, the horizontal social relations among actors are critical as the base for the knowledge on the reputation, credibility and

[1] The World Bank defined social capital as "the norms and social relations embedded in the social structures of societies that enable people to coordinate action to achieve desired goals" (World Bank, 2000, p.1). In respect to its forms, social capital is divided into structural and cognitive. Structural social capital consists "information sharing, collective action and decision making through established roles and social networks, rules and precedents" (Uphoff, 1999, p. 218). Structural social capital is easily observable in that it can be easily measured, for example, by the number of associations and their members. Compared to structural social capital, cognitive social capital is more difficult to observe. It consists of "shared norms, values, trust, attitudes and beliefs" (Uphoff, 1999, p. 218).

[2] Transaction costs are costs resulting from information search, market entry and exit costs for borrowers, savers, and financial intermediaries" (Heidhues and Schrieder, 1999, p. 13).

enforcement. Ghatak (1999) suggests that by implementing group lending practices, banks get a chance to distinguish good borrowers from the risky ones. Under group lending schemes the good borrowers will select higher joint liability and lower interest rate contracts. Risky borrowers, on the other hand, will select lower joint liability and higher interest rate contracts. The concept of joint liability can thus be understood as a forced risk sharing arrangement technique which in theory can lead to higher repayment rates (Besley, 1995). By the end of 1980s increasing number of microfinance institutions already adopted joint liability techniques to reach the poor and disadvantageous groups of communities[3].

Despite the existing theoretical literature there is little empirical evidence to prove the basic assumptions of screening, monitoring, enforcement and the efficiency of such models. Especially the connection between social capital indicators – i.e. trust, associational life, collective action and the repayment rates of such groups is not well documented. This article aims to contribute to the existing empirical literature by analysing the impact of different aspects of social capital on the repayment performance of individual members of joint liability lending projects in Armenia.

The article is orgnised as follows: Section 1 draws on empirical studies concerning the determinants of repayment rates in group lending. Section 2 presents the data and the methodology used in the analysis. The results of the regression model are presented in section 3 and Section 4 concludes the paper.

[3] The best known example is the Grameen Bank's lending program in Bangladesh.

1 Review of empirical studies

The findings of empirical studies concerning the determinants of repayment rates in group lending in respect to social capital indicators are controversial. Wydick (1999) in his study in Guatemala recorded that social cohesion and the strong social ties have rather negative than positive impact on repayment rates. In the case of Bangladesh, Sharma and Zeller (1997) found a negative relationship between the presence of relatives in the group and the repayment rates. They also stated that the groups which followed the self-selection criterium perform better. Similarly, Van Bastelaer and Leathers (2006) identified a negative relationship between the participation in the same church and the repayment rates of joint liability seed groups in Zambia. Wenner (1995) on the other hand in his study in Costa Rica pointed out that the written internal rules about ones expected behavior in the group facilitate credit repayment. The results were supported by Zeller's (1998) findings in Madagascar where the groups with stronger social ties and with internal rules performed better.

2 Data and methodology

This contribution is based on field research conducted in 2006 in Ararat, Armavir and Vayotz Dzor provinces of Armenia. By the use of direct observations and semi structured questionnaire the members of six randomly selected joint liability groups[4], which include 86 individual group members, were interviewed. The information on different social as well as the economic indicators of respondents was obtained.

[4] The name of the project and the groups are known to the author. The aim of the paper is, however, not to evaluate the very project but to understand how joint liability groups function in Armenia. For this reason the project and the groups have asked to stay anonym.

During interviews it became obvious that the enforcement assumption of peer pressure by the use of social sanctions does not work efficiently in the case of Armenia. It was recorded that though the members have sufficient information to predict who will and who will not default and are aware of each others life situation and the ability or the willingness to repay, they are reluctant to sanction those who default. The cultural factors to keep good and long lasting relationship with the neighbors and relatives (possibly as social safety nets) seem to be more important than the short time benefits accruing from borrowing. This makes it difficult to impose social sanctions, as no case of a social sanction was recorded we hypothese that other specific types of social capital facilitate repayment. By and large following VAN BASTELAER and LEATHERS (2006), we classify the social capital indicators as those affecting collective action, the proxies of structural social capital and the proxies of cognitive social capital.

In order to examine the relative significance of the different aspects of social capital that are believed to influence the repayment behavior of individual credit group members, an empirical logit model was estimated. SPSS 14 was used for the analysis.

3 The empirical model and the results

The logit model tests the hypothesis that the presence of social capital within a group facilitates loan repayment behaviour of its members. The model is as follows:

$$repayment\_behaviour = f(c\_a, s\_sc, c\_sc, sev)$$

where repayment behaviour of joint liability group members is measured as a binary variable (yes = credits are repaid on time, no = credits are not repaid on time). The parameter *c_a* stands for the factors affecting collective action in the group; *s_sc* stands for structural social capital proxied by the associations to which the actors belong. Cognitive social capital, *c_sc* identified by the level of trust towards each other in the group (most members can be trusted, you can't be too careful) and *sev* stands for selected economic variables, i.e., total value of household items. The definitions of the variables involved in the model are presented in Table 1.

By applying this model, the following hypotheses are tested:

1. Factors affecting collective action in groups, i.e. group homogeneity: A positive relationship exists between the perception of group homogeneity and the repayment behavior, as it allows better efficiency of group dynamics (group homogeneity in terms of risks). Furthermore, family relations facilitate collective action and credit repayment since the information flow among relatives is higher.

2. Proxies of structural social capital: A higher level of involvement in associational activities facilitates one's adherence to norms and accordingly to better credit repayment.

3. Proxies of cognitive social capital: The repayment behavior of individual members depends on the existing trust in the group in the way that the higher the trust is the better is the repayment behavior.

4. Selected economic variables: Total value of household items as an indicator of wealth status of the borrowers, off-farm employment as an indicator of increased family budget and risk

Table 1: Definition of variables involved in the model

Variables	Definitions
Factors affecting collective action:	Members' perception of group's homogeneity in respect to income (1 = mostly same income level) and (2 = mixed rich/poor)
	Family relations (1 = yes, else = 0)
Proxies for structural social capital:	Member of production cooperative (1=yes, else = 0)
	Member of political party (1=yes, else = 0)
	Trust in group members (1 = most members in the group can be trusted, else = 0)
Proxies for cognitive social capital:	Off-farm employment (1 = yes, else = 0)
	Farm productivity (US$) divided by 1000
Economic indicators:	Total value of household assets (US$) divided by 1000

diversification and higher farm productivity enhance the capacity of an individual to repay the loans on time and will therefore have a positive effect on repayment behavior. Involvement in non-farm activities will imply income diversification. That means, if for some reason farm income is zero, families still have a source of income and are more probable to repay the loan.

The results of the regression analysis are presented in Table 2. The significance level of variables shows, members' perception of group homogeneity in respect to income (with the negative sign), trust towards other group members, membership in production cooperative, farm productivity are significant determinants for individual members credit repayment.

The significance of the perception of the income homogeneity variable shows rather negative than positive effect on repayment behavior. This indicates that under specific situation group members may use the benefit of collective action rather to avoid than to enforce repayment. The family relations variable seems not to be a significant determinant of good performance. Though family relations may facilitate collective action in a group there is no guarantee that the action is positive. The cognitive social capital, proxied here by trust between group members is significant on 1 % level and is positive. This may indicate that the repayment of individual members depends on their subjective belief that other members in the group will repay their loans too. This is important as the repayment of others may determine if the loan will be available in the next round or not. As Basley and Coate (1995) noticed, if the same good individuals observe others defaulting, they may default too, since they will not receive a new loan even if they repay and they do not need to repay the

Table 2: Results of regression analysis for the repayment model estimated by logit estimation

	Coefficient	S.E.	Wald	Significance
Members' perception of group's homogeneity	- 1.915	1.115	2.949	.086*
Family relations	.523	.907	.907	.565
Member of production cooperative	3.650	1.104	10.922	.001***
Member of political party	.017	1.733	.000	.992
Trust in group members	4.335	1.134	14.608	.000***
Off-farm employment	.428	.858	.248	.618
Farm productivity	1.696	.764	4.923	.027**
Total value of household assets	.137	.328	.174	.676
Constant	- 4.844	1.620	8.937	.003***

Source: Own calculation.

*Notes: Negelkerke R^2 = 0. 736, * Significance at the 10 % level, ** Significance at the 5 % level, *** Significance at the 1 % level.*

loans of others. The significance of one of the proxies of structural social capital, that is the membership in the local production cooperative, indicates that the membership in associations indeed facilitates one's adherence to norms and better credit repayment. However, it may merely be done to secure good social reputation to ensure future economic benefits. As the variable 'membership in the political party' is not significant we may assume that at present economic associations play more important role in relation to rural financial markets in Armenia. The significance of "farm productivity" shows the importance of economic factors on ones decision and the ability for payback of a loan. It seems that the individuals with good harvest performed better, which indicates that higher farm productivity enhances the capacity and the willingness of an individual to repay the loans on time. The total value of household items as the indicator of wealth status of the borrowers and off-farm employment as the indicator of increased family budget and risk diversification failed to explain repayment behavior of members.

4 Conclusions

The theoretical models of joint liability lending argue that through the use of social capital of borrowers, the repayment performance of groups is improved. This is because the peers are better able to screen, monitor and enforce loan repayment of each other. The empirical studies to test the hypothesis of such models are not many and the findings are diverse. This

paper shortly reviewed both, theoretical and empirical literature. By estimating a logit model, the significance of different social capital indicators on the loan repayment performance of individual credit group members on the basis of their social capital structure was studied. The econometric results showed that the members with a higher level of structural and cognitive social capital as well as of higher farm productivity performed better. This clearly points to the importance of both, social as well as the economic factors on credit repayment. However, the impact of social factors such as trust and reputation seems to overwhelm the impact of economic indicators. The significance of both cognitive and structural social capital proxies supports the notion that different aspects of social capital are important in such analysis. Consideration of only one type to the exclusion of the others may produce misleading results and biased estimations.

The findings of this paper are consistent with the results of those existing empirical studies which found the positive impact of social capital indicators on the repayment behavior of borrowers.

Further literature

SHARMA, M., ZELLER, M. (1997): Repayment performance in group-based credit programs in Bangladesh: An empirical analysis, *World Development, Vol. 25, No 10,* pp. 1731-1742.

UPHOFF, N. (1999): Understanding social capital: Learning from the analysis and experience of participation, in: WORLD BANK (ed.): Social Capital, pp. 215-249.

VAN BASTELAER, T., LEATHERS, H. (2006): Trust in lending: Social capital and joint liability seed loans in southern Zambia, *World Development, Vol. 34 (10),* pp. 1788-1807.

WENNER, M. (1995): Group credit: A means to improve information transfer and loan repayment performance, *Journal of Development Studies, Vol. 32 (2),* pp. 263-81.

WORLD BANK (2000): Social capital for development, Washington DC: World Bank, <www.worldbank.org/poverty/scapital/Y, accessed 16.02.07.

WYDICK, B. (1999): Can social cohesion be harnessed to repair market failure? Evidence from group lending in Guatemala, *Economic Journal, 109,* pp. 463-475.

ZELLER, M. (1998): Determinant of repayment performance in credit groups: The role of program design, intragroup risk pooling, and social cohesion, *Economic Development and Cultural Change, Vol. 46, No. 3,* pp. 599-621.

Labour market participation of rural households in China

STEPHAN BROSIG, THOMAS GLAUBEN, THOMAS HERZFELD, XIAOBANG WANG

In China, 60 % of the population currently live in rural regions, and a large proportion of rural households produce their own food. Compared with agricultural enterprises in most developed countries, however, the extent of this household production is for the most part very low. Eighty per cent of households engaged in agriculture farm plots smaller than 0.6 ha, and keep very few livestock. According to an OECD estimate, 30-40 % of those working in Chinese agriculture are underemployed. Labour productivity is low, and thus so is agricultural income. As agriculture represents the dominant source of income for a considerable proportion of rural households, rural poverty and a growing income gap between town and country is increasingly becoming a social problem.

If agriculture is to serve as a sustainable and workable economic basis for households, labour productivity must be increased. This can only happen via rationalisation and the concentration of land use into larger farms, as well as labour-intensive orientation of production. A pre-requisite of this is a movement of labour to outside the agricultural sector. The shift from full-time farming to part-time farming is a step in this direction, as this involves members of agricultural households taking up non-agricultural work.

In the course of the development process the participation of agricultural households in the non-agricultural labour market has already risen considerably. Between 1980 and 2005 the proportion of non-agricultural employment in rural areas increased from 10 % to 40 %. Although the Chinese government has specifically promoted the processing industry since the 1980s (Township and Village Enterprises), the majority of people with non-agricultural jobs in rural areas work in the services sector, are labour migrants, or they commute into the cities. For those households which up till now have been exclusively oriented towards agriculture, obtaining a non-agricultural job improves the economic situation of most families. Seen from the perspective of society as a whole, this is a move towards a more efficient economic division of labour, as well as another step along the path of necessary structural change in agriculture.

Study on the diversification of income of rural households

A research project currently running at IAMO highlights the significance of agricultural and non-agricultural work in selected provinces in China (Brosig, S. et al., 2007) It also identifies mechanisms of, and reasons for, the shift from full-time to part-time farming. The findings can help promote the creation of specific conditions that will facilitate the structural change of rural employment.

Previous studies on the diversification of income of Chinese peasant families have compared household characteristics and exogenously set framework conditions between full-time and part-time farms. Such a treatment of the attributes gives insufficient consideration to dynamic aspects such as path dependencies

Pedal-operated rice thresher, China

and the formation of human and social capital. This study, therefore, looks in particular at the extent to which the probability that a household will take on non-agricultural work depends on the labour market participation *in the preceding years*. Data from a household panel for the years 1995 to 2004, which have been made available by a research institute of the Ministry of Agriculture – the Research Center for Rural Economy (RCRE), Beijing – form the basis for the quantitative analysis. The sample of 1,800 households reflects in a representative way the rural population in the provinces of Zhejiang, Hubei, and Yunnan. The consideration of provinces with very different economic structures reflects the heterogeneity of rural economic development in South-East China.

Table 1 contains social and agricultural figures for the provinces examined. According to calculations by the National Statistics Office, annual per capita income in Hubei was close to the national average, which in 2002 stood at 2,622 ¥ (Yuan). Converted at purchasing power parities that corresponded to about 1,600 €. Whereas in the economically better developed coastal province of Zhejiang the average income level was almost double that, in Yunnan it was about one-third lower. In rural Zhejiang, four-fifths of all households farm, while in Hubei and Yunnan almost all rural households are engaged in agriculture. Analyses of the RCRE data on the make-up of household incomes show that, for many households in Hubei and Yunan, agriculture still generates most of the income, but that it also represents an

Table 1: Agricultural activity of rural households in three Chinese provinces (1995-2004)

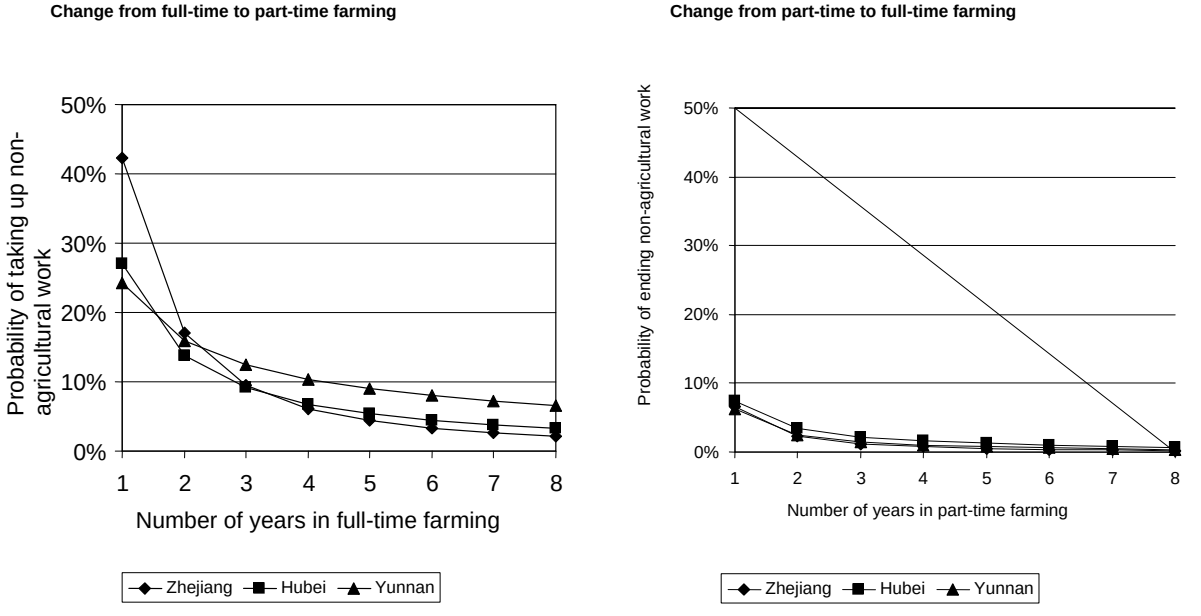
	Zhejiang	**Hubei**	Yunnan
Annual per capita income, 2002 ['000 ¥]	4.3	2.3	1.5
Proportion of farming households	79 %	97 %	93 %
Proportion of income from food production (2004)	26 %	45 %	22 %
Farmland per household [ha]	0.21	0.35	0.48
Most frequent size (arable and vegetable crops)		0.1 - 0.5 ha	
Proportion of farms with 0.1 - 0.5 ha	76 %	77 %	56 %
Annual production volumes ['000 ¥]	5.9	6.9	6.4
Own consumption: Proportion of production volume	50 %	74 %	71 %
Most important product (percentage of production value	Fruit/vegetables (25) Rice (22), Pork (22)	Fruit/vegetables (32) Rice (23) Pork (15)	Pork (21) Maize (20) Cereals without rice (16)

Sources: Statistical Yearbook of the Peoples' Republic of China – 2004 (row 1); own calculations on the basis of RCRE data.

important source of income in Zhejiang. The clear majority of households farm an area of between 0.1 and 0.5 ha, which is less than the national average of 0.5 ha. Food production is in many cases characterised by labour intensive production processes with (by international standards) high yields per hectare, and only a small portion of the produce finds its way to market. Especially in Hubei and Yunnan, growing for one's own consumption – as well as giving away or exchanging surplus produce e.g. between relatives and neighbours – is of great significance. Valued at market prices, fruit and vegetables, rice and pork represent the most important products.

Even if agriculture is still the most significant or only source of income for many households, the importance of non-agricultural activity has increased over the last few years. Essentially, three forms of non-agricultural employment can be identified. Most important is independent non-agricultural work, which has increased substantially since the 1980s. In 2004 these businesses in the processing and service sector accounted for 40 % of non-agricultural income. The share of independent employment in locally based businesses, cooperatives or public institutions was about 20 %. Also important in rural China are the contributions to household income from migrant

Figure 1: Probabilities of rural households moving between full-time and part-time farming, by province



Source: Calculations on the basis of RCRE household data, 1995-2002.

labourers working permanently in other provinces or cities but (officially) still belonging to the rural household. There are also transfers from non household members, mostly relatives, from other regions or abroad. The analysis of the income data shows that the income per head in those households which have secured additional, non-agricultural sources of revenue over the ten-year study period, has developed far more favourably than in purely agricultural households.

Besides a general increase in non-agricultural employment, the data analysis shows frequent shifts between full-time and part-time farming. The IAMO study thus highlights for individual households the probability of moving between full and part-time farming, i.e. between non-participation and participation in the labour market. It examines how much the probability of moving from one participation status to the other is dependent on: Length of time spent in the previous status, structural features of the household, attributes of the farm, and the economic milieu of the local village. The instrument employed to produce a quantitative description of this aspect of the behaviour of agricultural households is the hazard or survival model. This model examines as the central parameter the probability of changing status depending on the length of time spent in the original status and other factors.

Figure 1 illustrates the findings of the econometric analysis. The left-hand graph shows that the probability of moving from full-time to part-time farming decreases with the number of years that a household has lived exclusively off agriculture.

For households that have only practiced full-time farming for one year, the probability of taking up non-agricultural work is between 24 % (Yunnan) and 42 % (Zhejiang). After two years this figure drops in all three provinces to around 15 %; and for households whose members have been engaged exclusively in agriculture for seven years, the probability is between 2 % and 7 %. Plausible explanations suggest themselves for the negative duration dependence, i.e. the negative dependence of the probability of taking up a non-agricultural job on the length of time spent on full-time agriculture. On the one hand, long-term non-participation in the non-agricultural labour market can mean a decline in qualifications and skills, with the result that a return to this market becomes increasingly difficult after a long break. Also over time, members of a household can lose their social networks, which are important for connections with employees or business partners. On the other hand, the profitability of, and preference for, agricultural activity usually increase if, over years of focusing exclusively on agriculture, professional experience and business contacts are developed, and investment is made. The effect of negative duration dependence is strongest in the economically most developed province, Zhejiang. The probability of changing labour market participation is higher at first, but over the course of time it decreases more rapidly than in Hubei and Yunnan. The labour market in Zhejiang clearly rewards (or demands) the ability of households to adapt or specialise very rapidly. A move from part-time to full-time farming is rarely seen. It has a low probability which, starting in all three provinces at about 8 % in the first year, quickly falls to negligible values.

What promotes and what impedes change in labour market participation?

Besides length of time spent in the previous participation status, a number of attributes of households and their surroundings have been examined with regard to their influence on the probability of

a change in status. Table 2 summarises the findings of this in two columns, separating the model of *taking on* non-agricultural work, and the model of returning to full-time farming, i.e. the *giving up* of non-agricultural work. The '+' and '-' symbols denote that, statistically, each attribute significantly increases or reduces the probability of changing employment status. The table shows that most of the selected determinants have a significant influence.

The socio-demographic attributes of households influence the manpower available for employment within and outside agriculture. The greater the number of household members, the greater the probability – as one would expect – that in those households hitherto oriented exclusively towards farming, (at least) one member will take on a job outside agriculture. And as the household size increases, the probability of giving up all non-agricultural activity declines. If the proportion of women in a household's workforce is high, then the likelihood of taking up non-agricultural work is comparatively lower, something which could be explained by the greater involvement of women in household chores and in bringing up children. The finding that having a school-leaver's or higher education qualification did not appear to have a significant influence contradicts diverse studies from other countries. Elsewhere, education and training have been identified as advantageous for income differentiation. Membership of the Communist Party made it more likely that the move would be made towards full-time farming. Earlier studies on Chinese agriculture give a possible explanation for this finding: The social relationships of party members' households give them easier access to land, water and scarce inputs, thus making farming a more profitable enterprise. The findings relating to the impact of farm parameters show that the scale of crop farming and animal production, with its effects on the volume of work, influence the degree to which family manpower is available for non-agricultural employment.

Finally, the economic conditions of the commune, i.e. the direct environment of the household, have a clear influence on the probability of taking on or giving up non-agricultural work. A higher per capita income is linked to greater flexibility when it comes to changing employment status in both directions – both the taking on and giving up of non-agricultural activity is more probable in villages with higher levels of income. A consistently negative influence on flexibility, however, was the expansion of private land leasing, which has only been possible recently in China. This finding – that changing between full-time and part-time farming in villages with higher levels of leasing is relatively unlikely – needs further explanation. A lively rental market can, in fact, work positively for households which want to abandon agriculture and for those which want to expand their farming activity by renting plots of land. It is possible that a better measurement needs to be found for the ease of access to the rental market than represented by the share of leased land.

This study represents a contribution to the discussion about structural change in rural areas in China. The movement of manpower out of agriculture and into other sectors in China is urgently needed for further economic development. Frequent changing between full-time farming and additional non-agricultural occupations is an indicator for the fact that rural households have good access to relatively smoothly functioning labour markets. Especially in Zhejiang, which is far advanced economically, there are good possibilities of returning to non-agricultural activity for members of farming households with a history of non-agricultural employment. The movement from full-time to part-time farming is relatively more frequent in larger households with above-average land holdings and in communes with over-average per-capita incomes.

Table 2: Factors determining whether rural households take on or give up non-agricultural work in Zhejiang, Hubei, and Yunnan, 1995-2002

Attribute examined		Taking on non-agricultural work	Giving up non-agricultural work
Length of time	Years in current status	–	–
Attributes, household			
Household size	Number of household members	+	–
Proportion of women	$\frac{\text{female manpower}}{\text{total manpower}}$	–	·
School-leaver's certificate	$\frac{\text{manpower with school certificate}}{\text{total manpower}}$	·	·
Party membership	Yes / no (at least 1 household member)	·	+
Employment of hired manpower	Yes / no	–	–
Attributes, farm			
Land	Land used for farming [ha]	+	+
Animal production	Production quantity (weighted according to volume of labour) [kg]	·	+
Attributes, commune			
Income	Yuan per capita and per annum	+	+
Rental market	Proportion of land within the commune which is leased	–	–

Note: + / – / ·: significantly positive / significantly negative / no significant influence on the probability of a change in status.

If development policy helps create favourable legal and economic conditions for the development of the processing and services sector, even in the hitherto more backward provinces, labour mobility will help reduce rural poverty in those areas, too. More research is needed to clarify further the points at which government influence on the framework conditions has the prospect of greatest success.

Further literature

BROSIG, S., GLAUBEN, T., HERZFELD, T., ROZELLE, S., WANG, X. (2007): The dynamics of Chinese rural households' participation in labor markets. *Agricultural Economics, 37*, pp. 167-178.

Visit by Russian delegation to IAMO

Values as reasons for consumer decisions – An inter-cultural comparison

ASTRID REWERTS

Introduction

Products obtainable in advanced industrial societies are generally characterised by the fact that they are mature, and thus what different manufacturers offer only exhibit minor differences in quality. The result of this is that the material needs of the consumers are satisfied, and so they look more for the satisfaction of emotional needs. For this reason, a marketing strategy which is primarily oriented at product differentiation based on objective product characteristics is not effective. More important is the attempt at an emotional product differentiation, the goal of which is to make the product distinguishable by the emotional experiences that are tied up with it. In this way, products do not just impart to the consumer a functional use, but emotional experiences as well, e.g. freedom or elegance. Because of the structure of the consumer's needs, these experiences are frequently the most important product characteristics when the consumer makes purchasing decisions (Kroeber-Riel and Weinberg, 2003, p. 128-129).

The priority ascribed to the emotional experiences associated with a product can be seen by the example of the sparkling wine branded Mumm. Whereas the traditional German sparkling wine called Mumm is predominantly used by consumers to celebrate special occasions, the rival products such as Freixenet (cava) and Martini Prosecco (prosecco) convey the emotional experience of the positive change of mood. Such an emotionality is precisely what young consumers associate with sparkling wine consumption and beyond that they want to give expression to their modern lifestyle with the aid of Freixenet or Prosecco. The brand Mumm, on the other hand, which to younger consumers appears stuffy and old-fashioned, is not in a position to generate this emotional experience and thus it is of no interest to this target group. In order to attract the attention of the younger consumer, however, the brand Jules Mumm was developed, which was designed with the emotionality desired by the consumer: The experience of a positive change of mood (Kues et al., 2003).

As this example shows, for a product to style itself successfully on an emotional level, those emotional experiences associated with the product must be of interest to a pre-defined target group (Kroeber-Riel and Weinberg, 2003, p. 128). Current consumer research, therefore, faces the challenge of identifying the non-material elements of a product which satisfy emotional needs. As these non-material elements of a product – which are of prime importance when it comes to purchasing decisions – are derived from the personal values held by a consumer, the identification of values help explain purchasing motives or preferences.

The values which lead to preferences, moreover, vary between different cultural groups. Because of this fact, and of the influence of values on consumer behaviour, cultural values lead to culture-specific patterns of consumer behaviour. By identifying values in different cultural groups, this connection between the

values and consumer behaviour of a cultural group is being investigated as part of the "Values as reasons for consumer decisions – An inter-cultural comparison" project, supported by the German Research Foundation (DFG). The project is examining consumer behaviour using the example of wine in a German-Ukrainian comparison. This article presents the initial findings of qualitative consumer surveys observing the behaviour of wine consumers. It begins with an outline of the behaviour of German wine drinkers using a graphic representation of the mental associations of consumers. Subsequently, the associations of Ukrainian wine drinkers are presented in the same way. The article then concludes with a comparison of the consumer behaviour of German and Ukrainian consumers.

Carrying out the data collection

The applied qualitative consumer surveys take the form of personal in-depth interviews, which allow us to identify how consumers relate all those features of a product which are important to them to their own personality. This produces information about why a particular product feature and a consequence resulting from the purchase or consumption are important to the consumer. This information is obtained by prompting interviewees to think about their preferred product characteristics, as well as the consequences that result from the consumption of the product. The proband is also asked to consider the question of which motivation (value) is the cause of the desire to achieve certain consequences from the purchase or consumption of a product. The assumption is made here that values have the strongest influence on the purchasing decision. The product features that are relevant for the consumer, the consequences that result from consumption, and the value systems underlying the purchasing decision were determined in the course of 40 qualitative interviews in February 2007. The survey comprised 20 German and 20 Ukrainian women aged between 25 and 45 who drink wine at least twice a month.

Results of the empirical data collection

German wine consumers

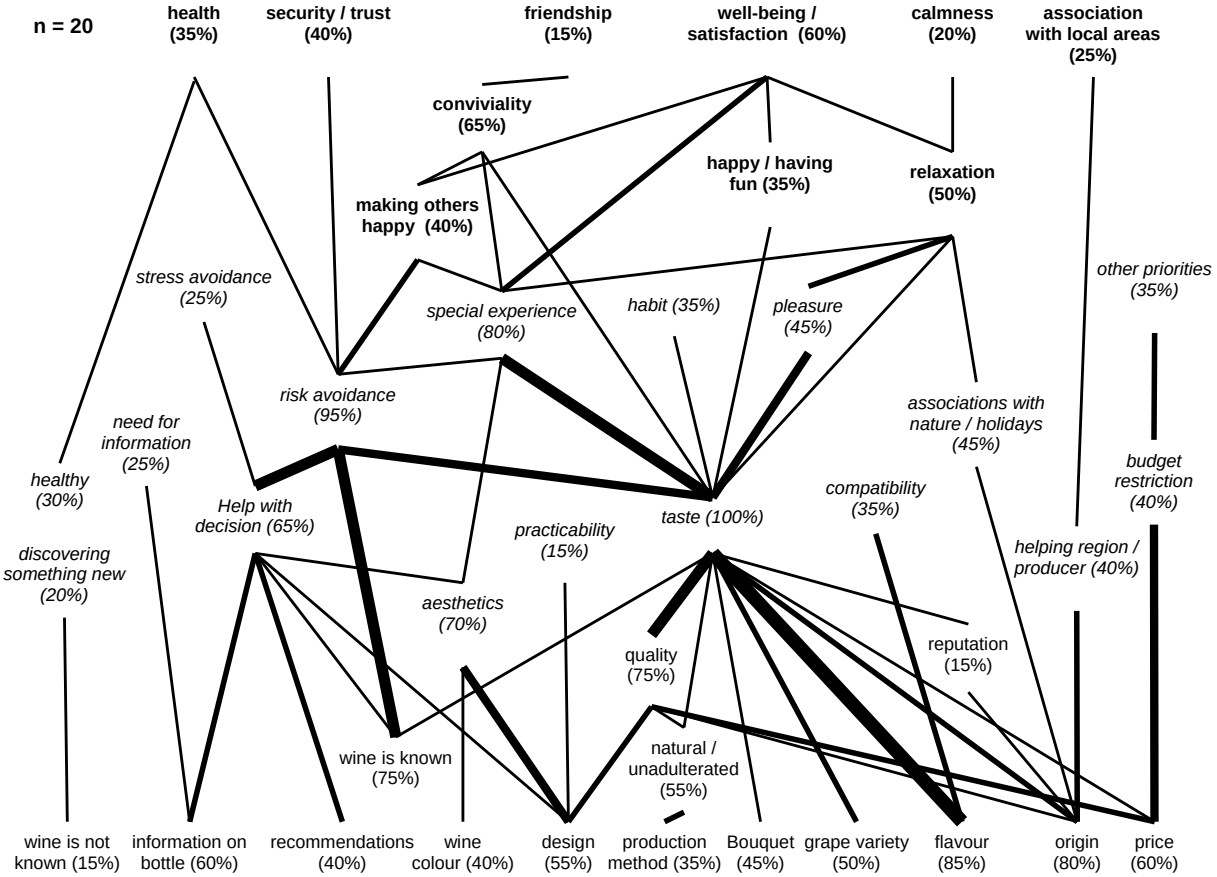
Figure 1 shows the mental associations between product features, the resulting consequences and personal values as cited by the German women surveyed.

These associative chains, whose importance (according the frequency with which they were cited) is reflected by the thickness of the line of each association, begin with the product features listed in the lower section of Figure 1 (normal font). The chains continue with the consequences resulting from the purchase or consumption of wine (italics) and finish with the personal values held by the probands (bold). On the basis of these values, which have a strong influence on purchasing decisions, the following claims can be made about the purchasing behaviour of the female wine consumers surveyed.

When buying or drinking wine, the value well-being/satisfaction is important for 60 % of those surveyed. This value obtains from an exceptionally nice evening (special experience), for example. The consumers experience this if the wine tastes good, which occurs when it is made from their favourite grape variety, or it has a flavour they like.

Also of comparative importance is the value safety/trust. Behind this value cited by 40 % of interviewees is the desire of being certain that they have made the right purchasing decision.

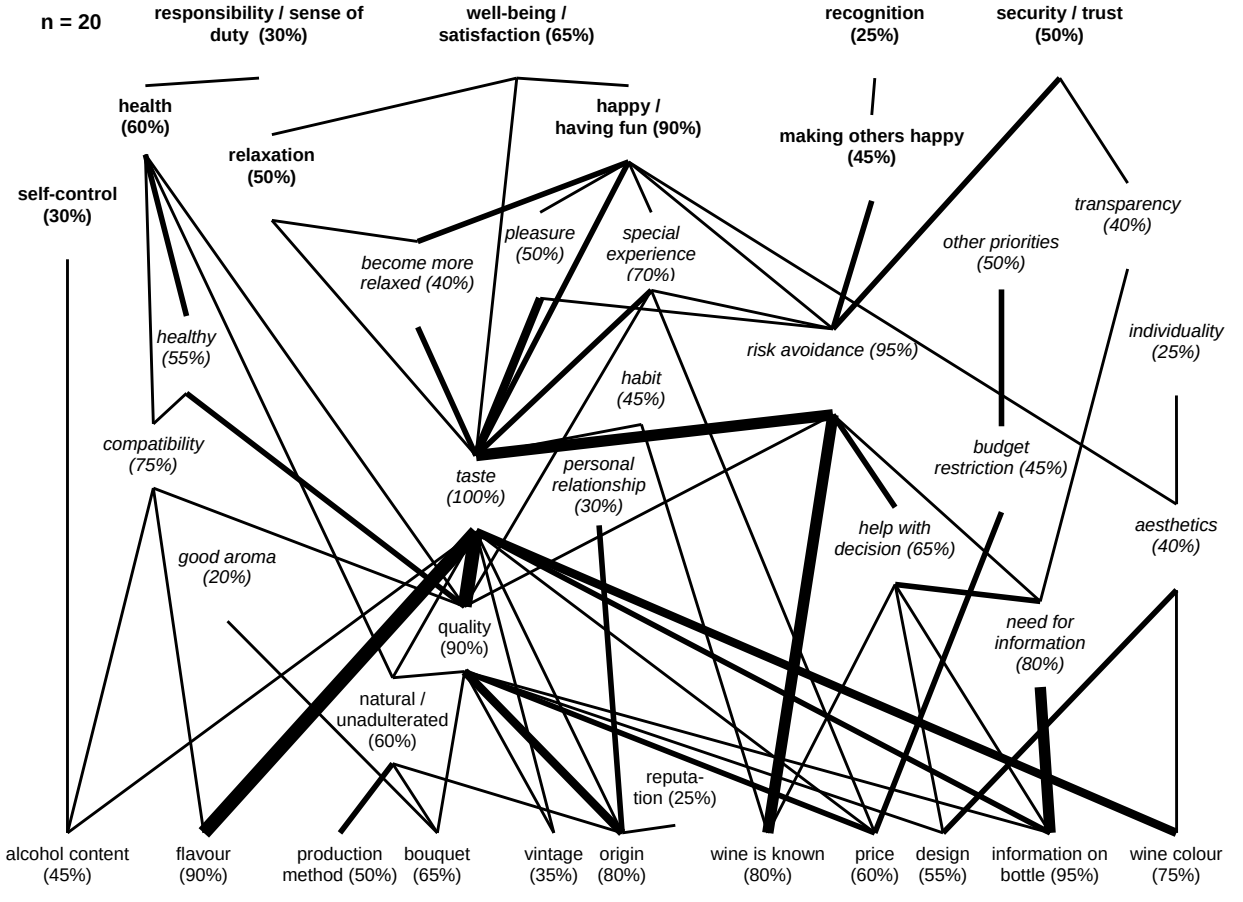
Figure 1: Associations made by German female wine consumers



The consumers obtain this security by reducing the risk of a bad purchase (risk avoidance). This happens in the first instance when consumers decide on a wine that they already know, and which they buy again because of a previous positive experience. Second, consumers can reduce the risk of a bad purchase by limiting their selection and thus facilitating their choice (help with decision). To achieve this, the information on the label and/or recommendations from the sales personnel or acquaintances are considered.

Still a quarter of those surveyed cited the value of an association with their local area. This factor explains why consumers look to help a region or producer economically by selecting wine from that area.

Figure 2: Associations made by Ukrainian female wine consumers



Ukrainian wine consumers

Figure 2 shows the product attributes (normal font) that are important to Ukrainian wine consumers, as well as the consequences associated with these features (italics) and the personal values held by wine drinkers (bold).

As can be seen from Figure 2, the value well-being/satisfaction is important to 65 % of the probands, and it is the most frequently cited value. This value obtains when the consumer is happy or having fun, because she is more relaxed. The relaxation is fostered by

the good taste of the wine, which is a result of a certain flavour or quality, which in turn is judged by the wine's origin.

The value health is deemed similarly important – it was cited by 60 % of participants. The explanation for this high level of importance ascribed to the value was that the interviewees have responsibility for other people, usually children. The way that the value health is reflected in the purchasing decision is when wines are chosen that, in the opinion of the consumers, are healthy or not injurious to health. According to the Ukrainian probands, whether a wine is healthy or not depends on quality, which can be judged in the first instance by its origin, but then by its price.

The Ukrainian probands also exhibit a high need for security, which is reflected in the fact that the value security/trust was frequently cited (50 % of the interviewees). They want to achieve this by avoiding bad purchases (risk avoidance). The risk of a bad purchase is minimised by deciding to purchase wines that are already known to the consumer. The value security/trust can also be satisfied if the consumer gets the feeling that the wine comes from a reputable producer or is made using a reputable method. This desire finds expression in the consequence transparency; this consequence explains why 80 % of the sample cited the need for information. This need for information is, in turn, the reason for the high priority of the product feature information on the label, which is an important characteristic for 95 % of the probands.

The value social recognition was cited relatively seldom, but by a quarter of those surveyed nonetheless. This value is realised when the interviewees are playing hostess, for example, and consider it important to make their guests happy. To achieve this, the factor of risk avoidance is important for the probands. As already stated, the danger of a bad purchase can be reduced by buying wines that are already known to the consumer. Because the consequence risk avoidance also includes the concern that an evening might go wrong because of a poor-tasting wine, probands prevent this by selecting a wine they like themselves. The consequence taste, which was important to all those surveyed, is determined chiefly by the flavour and quality of the wine.

Comparison of German and Ukrainian wine consumers

The first thing that is noticeable in a comparison between the German and Ukrainian consumers is that some values are only significant for one of the two cultures examined. Thus the values friendship, calmness, and association with local area, which were cited by the German women surveyed, did not feature at all amongst the mental associations of the Ukrainians. The Ukrainians, on the other hand, found the value social recognition important, which had no relevance for the German women. The comparison of associations that were cited also shows that some values are important to both cultural groups, albeit with differing levels of relevance. On the other hand, they are obtained via consequences and product attributes that diverge from each other. These sorts of differences between Germany and Ukraine can be seen in the value well-being/satisfaction, for example.

Common to both cultural groups is the fact that the most important value – well-being/satisfaction – is obtained via relaxation and being happy, amongst a variety of other mental associations, but also via the good taste of the wine. According to the

statements of the German participants, the factor of making other people happy also contributes to increasing the feeling of well-being or satisfaction. Although the Ukrainian women also endeavour to make other people happy, the reason for this is not to increase their own feeling of well-being, but the desire for social recognition.

There are other differences regarding the values of security/trust and health, which were also mentioned by both cultural groups. For the Ukrainian probands, the values of security/trust and health are not only highly relevant, they are also more tightly integrated into the mental links by means of additionally cited associations. For the Ukrainian women, these additional associations include the satisfaction of the value of responsibility/sense of duty by the value health. Moreover, the value of health is itself satisfied by the consequence compatibility, and the product features of natural/unadulterated and quality. For German women, the value health is simply satisfied by the consequence of healthy, which the German women – in contrast to their Ukrainian counterparts – do not associate with product features. Regarding the value of security/trust, the Ukrainian interviewees differ from the Germans in that they obtain security/trust via the consequence transparency.

The differences between the observed cultures continue at the level of the consequences, which result from different product attributes depending on the cultural background. This can be seen, for example, in the consequence of taste, which was cited by all German and Ukrainian women. Whereas the German probands cited grape variety as an indicator for good taste alongside the product features of flavour, origin, price and bouquet, the grape variety is not important to Ukrainian women. The latter cite the product features of alcohol content, vintage and wine colour as other indicators for taste. Similar differences can be seen with regard to the consequence of help with decision. The German women make their purchasing decisions easier by limiting their choice on the basis of recommendations from acquaintances or sales personnel. This product feature is irrelevant for Ukrainian women. The two cultures also differ with regard to the consequence of compatibility. Whereas only 35 % of those German women surveyed said that compatibility is an important consequence, 75 % of the Ukrainians cited it as significant. Furthermore, for German wine drinkers the compatibility is a consequence of flavour. For the Ukrainian probands, the compatibility also depends on the product attributes of alcohol content and quality.

It can be concluded that, for the female consumers surveyed, the end conditions of well-being/satisfaction, security/trust and health are important values to be aspired to in connection with the consumption of wine. The chains of association portrayed in Figures 1 and 2 show how these personal values are associated with the products. It is precisely these findings that are important for the necessary product differentiation in advanced industrial societies. The examination of different cultural groups has also allowed us to identify how emotional product differentiation must be adjusted to the consumer groups observed.

Further literature

KROEBER-RIEL, W., WEINBERG, P. (2003): Konsumentenverhalten, 8th ed., Vahlen Verlag, Munich.

KUES, J., MICHEL, A., SCHARF, T. (2003): Jules Mumm: Fruchtig, frech und erfolgreich, *Sonderdruck aus Planung & Analyse 1/2003*.

IAMO building

IAMO – A brief portrait

Aims and tasks

The Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO) focuses on the far-reaching economic, social and political processes of change in the agricultural and food sector, and in rural areas. Its geographical area of research extends across Central, Eastern and South-eastern Europe, including Turkey. The transition countries of Central and Eastern Asia have been added to this remit. In spite of great efforts and much success, the development of agriculture and the food economy in many of these regions is still far behind that of Western industrial nations; and some of them are following their own, very specific development paths. In addition, an enormous gap is emerging between successful and stagnating regions within individual countries and between countries. It is clear that agriculture and the food economy, as well as the policy of the expanding Union, are also affected by these divergent developments. Because of this, IAMO is faced with a very broad challenge for research, both thematically and regionally.

With its thematic and geographical focus, IAMO is a unique global research institution. Since its establishment in 1994 it has belonged to the Leibniz Association as a non-university research centre. The Leibniz Association includes research institutes which are scientifically, legally and commercially independent, together with service institutions. Both these are jointly funded by the federal administration and the *Länder* to work on current problems of national interest (www.leibniz-gemeinschaft.de).

IAMO's work is not just aimed at helping to understand, but also to cope with the transition processes that are not yet complete, and to manage the far-reaching processes of change to reduce ongoing development deficits in the agricultural and food sector, as well as in the rural areas of the Institute's geographical area of research. This goal gives rise to the three core tasks of the Institute:

- Internationally oriented research into agricultural and food economics including the development of rural areas;
- Exchange of ideas between the academic, business and political communities;
- Support for young academic scholars.

The Institute sees itself as a driving force of international research into agricultural economics. Outstanding research is the engine of the Institute's development, and it creates the conditions in which the other two core tasks can be performed. For instance, IAMO acts as a forum for exchange, and in this way it supports the interlinking of research and dialogue between decision makers from the academic, political and business communities. It also uses its expertise and capacities to help academic scholars become fully qualified. Here there is a particular focus on supporting young academics from partner countries. Through its international orientation and cooperation with other teaching and research institutes, IAMO is helping to strengthen Halle's profile as a centre of science and research in Central Germany. Our close cooperation with Martin Luther University Halle-Wittenberg (MLU) – especially with the

Institute of Agricultural and Food Sciences as part of the newly created Faculty of Natural Sciences III – is an important factor here.

Academic departments, research fields and key topic areas

IAMO's threefold research structure with the departments *Agricultural policy*, *Agricultural markets* and *Structural development* (these are short descriptions) is derived from the orientation of its research. The basic conditions of agricultural policy and opportunities for shaping policy, markets in the agricultural and food sector, and the development of farms and structures in rural areas are all analysed by the Institute. Developments at the individual farm level and in rural areas, the development of functioning agricultural markets, and the shaping of agricultural policy are all closely interrelated. Correspondingly, IAMO's academic work is organised interdepartmentally into four key research areas which focus on major problem areas of agricultural development in Eurasian transition countries and emerging nations. Within the key research areas are topic fields which combine more than three dozen individual projects, divided between ten working groups. The more intensive level of communication in working groups counteracts any possible fragmentation of research. Besides positive bundling effects, greater individual responsibility of the working groups allows efficient, result-oriented research management.

The idea behind the new medium-term agenda (2008-2015), which came into effect at the start of 2008, was to adapt the key research areas and topic fields to the changing problems in those regions of the world studied by IAMO. Increasingly, it is general questions of agricultural development in the context of globalisation and increasing divergence – between countries and also between structurally weak and dynamic regions – that are coming to the fore. But even if, to take Central Europe as an example, transition-specific questions themselves are scarcely important any longer, the socialist past still influences the development of the agricultural and food economy of that region. Here we could point to the unique dual farm structure of many EU accession states in Central and Eastern Europe. The new medium-term agenda, in effect since January 2008, contains the following four key research areas:

I. Policy reform and institutional change;

II. Structural change and growth processes;

III. Employment and livelihoods;

IV. Competitive strategies and product standards.

Institutional structure

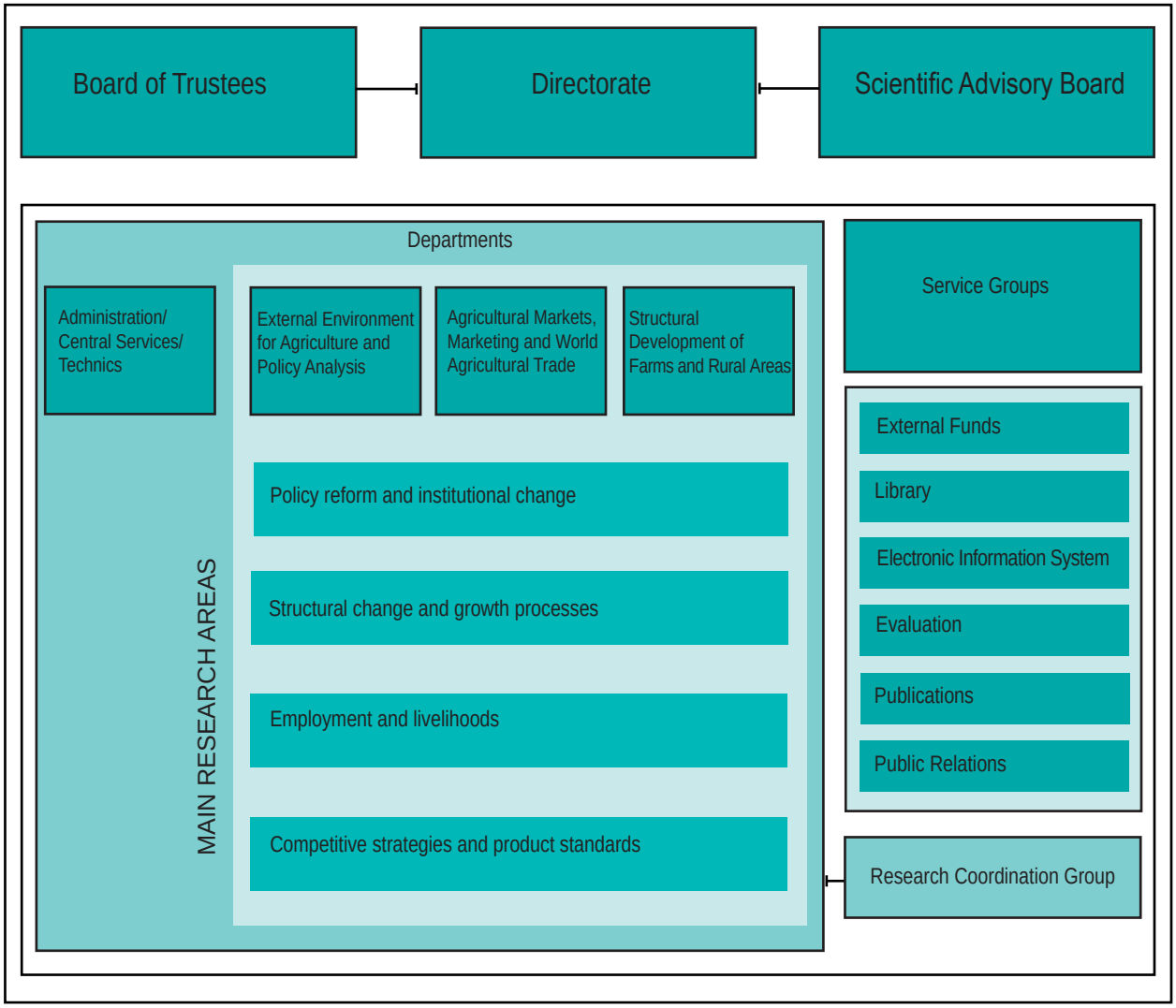
IAMO is a public foundation. Its bodies are the board of trustees, the directorate and the scientific advisory board. The Institute is divided into three academic departments:

- External Environment for Agriculture and Policy Analysis;
  head of department is Prof. Dr Gertrud Buchenrieder (née Schrieder)
- Agricultural Markets, Marketing and World Agricultural Trade;
  head of department is Prof. Dr Thomas Glauben
- Structural Development of Farms and Rural Areas;
  head of department is Prof. Dr Alfons Balmann.

The heads of the academic departments, together with the head of the department of

- Administration and Central Services,
  Dipl.-Ök. Hannelore Zerjeski,

form the directorate of the Institute. IAMO's Executive Director is Prof. Dr Alfons Balmann.



Organigram of the Leibniz Institute of Agricultural Development in Central and Eastern Europe

In co-ordination with the board of trustees, this collegiate body manages the Institute's business and directs the long-term research and development planning of IAMO. The scientific advisory board advises the directorate and the board of trustees on academic matters and carries out a regular evaluation of the Institute's work.

As of 1/1/2008, the following individuals were members of the board of trustees: MinR. Dr Rudolf Wendt (Chair; Federal Ministry of Food, Agriculture and Consumer Protection), Reg. Dir. Dr Ulrich Neubauer (deputy Chair; Federal Ministry of Food, Agriculture and Consumer Protection), MinDirig. Dr Joachim Welz (Ministry of Education and Cultural Affairs of Saxony-Anhalt), State Secretary Dr Hermann Otto Aeikens (Ministry of Agriculture and the Environment of Saxony-Anhalt), Prof. Dr Stephan von Cramon-Taubadel (Georg August University, Göttingen), Prof. Dr P. Michael Schmitz (Justus Liebig University, Gießen), Prof. Dr Bernd Six (Martin Luther University, Halle-Wittenberg), and Dr Franz-Georg von Busse (CEO of LEMKEN GmbH & Co. KG).

As of 1/1/2008, the following were members of the scientific advisory board: Prof. Dr Stephan von Cramon-Taubadel (Chair; Georg August University, Göttingen), Prof. Dr P. Michael Schmitz (deputy Chair; Justus Liebig University, Gießen), Prof. Dr Heinz Ahrens (until 31/12/2007, Martin Luther University, Halle-Wittenberg), Prof. Dr Ernst Berg (Rhineland Friedrich Wilhelm University, Bonn), Dr Tomáš Doucha (Research Institute of Agricultural Economics, Prague, Czech Republic), Prof. Dr Konrad Hagedorn (Humboldt University, Berlin), Prof. Dr Michael Kirk (Philipps University, Marburg), Prof. Dr Ewa Rabinowicz (Swedish Institute for Food and Agricultural Economics SLI, Lund, Sweden), Prof. Dr Eugenia Serova (TCI Institution, Food and Agriculture Organization, FAO, Rome, Italy), Prof. Dr Dr h.c. Ulrich Koester (Christian Albrecht University, Kiel), and Prof. Dr Johan Swinnen (Catholic University, Leuven, Belgium).

Cooperation with university institutions

IAMO's work is closely linked with the Institute of Agricultural and Food Sciences, which is part of the newly created (2006) Faculty of Natural Sciences III at MLU. The heads of IAMO's academic departments take part in MLU's teaching and committee work. Many qualified academic members of staff from IAMO are also involved in university teaching, and in the running of a joint summer school as well as a PhD student programme that is organised nationwide. At the personnel level the links between MLU and IAMO are also strengthened by the membership of the Prorector of Strategic Planning, Prof. Dr Bernd Six, as representative of MLU in IAMO's board of trustees.

IAMO also works closely in conjunction with many other universities, chiefly with faculties of agriculture and economics. Depending on the requirements of interdisciplinary research, other social science and humanities subjects may be brought in, e.g. history. As far as our partners in Germany are concerned, we have strong links with Berlin, Bonn, Hohenheim, Kiel, Göttingen and Münster. There are also close relationships with chairs of agricultural economics and institutes at agricultural and economics colleges and universities in our partner countries. Here we should mention the increasingly close cooperation with Chinese universities, but also with other non-university research institutions.

Amongst our partner universities we should highlight the National Agricultural University of Ukraine (NAUU) and the National University "Kyiv Mohyla Academy", both in Kiev; the Timiryazev

Academy in Moscow; the Agricultural University in Astana, Kazakhstan; the Agricultural University in Grodno, Belarus; the Agricultural University of Warsaw; the Agricultural University of Nitra, Slovakia; Corvinus University, Budapest and Gödöllő University, both in Hungary; and the University of National and World Economy in Sofia, Bulgaria. Furthermore, we should also mention Hanoi Agricultural University in Vietnam, and the Centre for Agricultural and Rural Development (CARD) at Zhejiang University in China. IAMO also exchanges a wide range of scientific ideas with the Institute for Agro-economics and the Centre for Transition Economics at the Catholic University in Leuven, Belgium; Wageningen University in the Netherlands; the University of Kent in Canterbury; and the University of Queensland in Austrialia. In the USA we have close contacts with Pennsylvania State University, the State University of New York, the University of Wisconsin in Madison, and with Stanford University.

Cooperation with non-university institutions

The numerous contacts with non-university institutions are also very important for IAMO's work. We collaborate with the Institutes of Farm Economics, Rural Studies and Market Analysis and Agricultural Trade Policy at the Federal Agricultural Research Centre in Brunswick-Völkenrode (FAL), the Leibniz Centre for Agricultural Landscape and Land Use Research (ZALF) in Müncheberg, and the Leibniz Institute for Regional Geography (IfL) in Leipzig. There are close relations with many non-university research institutions in Central and Eastern Europe. Of note here are: In the Czech Republic, the Research Institute of Agricultural Economics in Prague (VÚZE); in Slovakia, the Research Institute of Agricultural and Food Economics in Bratislava (VÚEPP); in Hungary, the Research and Information Institute for Agricultural Economics in Budapest (AKI); in Russia, the Institute of Transition Economics (IET) and the All-Russian Institute for Agrarian Problems and Information Theory (VIAPI), both in Moscow; in Ukraine, the Institute of Agrarian Economy at the Academy of Agricultural Sciences in Kiev; in China, the Center for Chinese Agricultural Policy (CCAP) at the Chinese Academy of Sciences; and in Turkey, the Agricultural Economics Research Institute at the Ministry of Agriculture in Ankara. IAMO's partners in Western and Northen Europe are: In France, the National Institute for Agricultural Research (INRA) in Rennes, and the National Engineering College for Agricultural Sciences in Paris-Grignon (INA-PG); in Ireland, the Ashdown Food Research Centre; in Scotland, the Scottish Agricultural College (SAC), Edinburgh; in Austria, the Austrian Federal Institute of Agro-economics in Vienna; in Sweden, the Swedish Institute for Food and Agricultural Economics (SLI) in Lund; and in Denmark, the Danish Institute of Agricultural Sciences, Tjele.

Supporting young academics

One of the three core tasks of IAMO is to help develop the next generation of researchers. In particular, therefore, the Institute supports the study for doctoral and post-doctoral degrees. Twenty-eight theses are currently being supervised at IAMO. Several staff members are preparing their post-doctoral degrees. Over the past year, three IAMO staff successfully submitted and defended their theses at Martin Luther University:

- "Efficiency of selected risk management instruments – An empirical analysis of risk reduction in Kazakhstani crop production" (Olaf Heidelbach)

- "Market structure and pricing on the Ukrainian market for raw milk" (in German, Oleksandr Perekhozhuk)
- "Labor market behaviour of Chinese rural households during transition" (Xiaobing Wang)

Two PhD students from the Czech Agricultural University in Prague, who worked on their doctorates at IAMO, also successfully completed their degrees at their home universities:

- "Technical Efficiency and technological change in the Czech dairy sector" (in Czech, Ladislav Jelinek)
- "Investment activity and financial constraints of Czech corporate farms" (in Czech, Tomáš Medonos)

We expect that, with the successful acquisition of sizeable funding from the "Pact for Research and Innovation" in 2006 and 2007 for a graduate school and an international research group, there will be a more rapid development of opportunities for PhD and post-doctoral study, particularly for young academics (see below).

Training for doctoral students: Seminars and PhD programme

As part of its educational provision for doctoral students, IAMO runs a PhD student seminar together with the professors of agricultural economics for agricultural business theory, agricultural market theory, agricultural business management, and agricultural policy and agricultural environment policy from MLU's Institute of Agricultural and Food Sciences. The seminar is a forum for swapping ideas about research questions, methodological approaches and findings. In addition, the agro-economic coffee gatherings at IAMO provide an opportunity to discuss early, often provisional findings.

The Doctoral Certificate Programme in Agricultural Economics, designed and run by agro-economic institutes form several German universities, the Federal Research Institute of Agriculture (FAL) and IAMO, has been in existence since 2005. The "Doctoral Certificate Programme" provides the first structured training in Germany for doctoral students in the areas of agricultural and food economics and rural development. The systematic teaching of essential theory and method should further increase the quality of students' education and the efficiency of their approach toworking on dissertation topics. Doctoral study is the third stage of a consecutive study programme, following bachelor's and master's degrees in agriculture, food and the environment. The PhD study course is jointly run by the Agricultural and Food Economics Faculty of the Christian Albrecht University in Kiel, the Faculty of Agriculture and Horticulture at the Humboldt University in Berlin, IAMO, the Institute of Agricultural and Food Sciences at MLU, The Faculty of Agricultural Sciences at Georg August University in Göttingen, and FAL, Section Agricultural Economics, Brunswick. The PhD course is based on a modular system. In 2007, IAMO professors and staff helped organise academic events relating to the following modules:

- Efficiency and Productivity Analysis I – Deterministic Approaches
- Household Behaviour: Theory and Applications
- Applied Industrial Organisation
- Agent-based modelling in Agriculture

Visiting academics at IAMO and summer schools

The further training and education of academic scholars is one of IAMO's core tasks. As mentioned above, IAMO focuses chiefly on supporting junior academics from our partner countries. Of great importance in this regard are study visits by researchers, which can range from a few weeks to two years. Besides being involved in joint publications, those engaged in long-term visits also concentrate on their doctoral studies, financed by third-party and IAMO grants, and third-party funded projects. In 2007, 36 visiting academics, most of them young, from 20 countries carried out research at IAMO. By working together closely on international, third-party funded research projects, young researchers from partner countries integrate themselves into the international academic community. Former IAMO staff, both from Germany and partner countries, are now working in international organisations such as the EU and World Bank, or they have acquired management positions in their respective national agricultural administrations. An even larger number of them are continuing their academic careers back in their home countries.

From 16 to 27 July 2007, the sixth summer school on "Agriculture in the Transition Process" took place in Chisinau, Republic of Moldova. It was organised for Moldovan agricultural professionals from business, agricultural administration and farming. Dr Vladislav Valentinov from IAMO gave lectures on the role of social capital and the tertiary sector for rural development. As in previous years the summer school was organised by Prof. Michael Grings, Chair of Agricultural Market Theory at the Institute of Agricultural and Food Sciences of Martin Luther University Halle-Wittenberg, and by Dr Jürgen Wandel; and was run with the financial support of the German Academic Exchange Service (DAAD).

"Pact for Research and Innovation" I: IAMO graduate school

On 23 June 2005, the German government and the ministers president of the *Länder* announced the creation of the "Pact for Research and Innovation". The aim of this pact is to increase the support for those large academic and research institutions – including the Leibniz Association – which are jointly funded by the federal administration and the *Länder*. The extra funds from the budget will not go directly to the individual institutes, but will be allocated in a competitive process. Under this pact, which corresponds to the Excellence Initiative of the federal administration and the *Länder* to promote science and research at German universities, IAMO's application for the funding of a graduate school was approved to the tune of 480,000 Euro. It began in 2007 and it deals with the "prospects of small-scale agricultural structures in the agri-business complex of the new EU member states and accession countries." In many Eastern accession countries, semi-subsistence farms still play an important role in safeguarding rural employment and agricultural production, although they are hardly suited to the demands of food chains in the process of modernisation or the increased competition within the enlarged EU. This problem gives rise to the question of whether and how the existing structural deficits in agriculture in many regions of the new EU Member States and accession countries can be overcome; also, how agriculture in these regions can be successfully integrated into changing supply chains in the food economy, and how the social problems of the necessary structural change can be managed. Four German PhD students

and two from the new Member States and accession countries of the EU are now working on individual sub-projects. The research projects are focusing on the following three topic fields:

- Change in the agricultural sector and business adjustment strategies;
- Inter-enterprise and cooperative adjustment strategies in relation to the demands of supply chains;
- Institutional parameters and implications for (regional) policy.

Besides its research activity, the IAMO graduate school provides systematic support for junior academics. This takes the form of structured training of doctoral students via participation in the Doctoral Certificate Programme in Agricultural Economics (see above), and the involvement of IAMO researchers who have successfully completed their PhDs. The latter will be given the opportunity to develop their research ideas further, and to acquire experience in research management.

"Pact for Research and Innovation" II: international research group at IAMO

In 2007 IAMO succeeded in obtaining an additional budget of 680,000 Euro from Pact funds to set up an international research group on the topic, "Economic dynamics and social equilibrium in the agricultural areas of rural China." This aims to integrate IAMO's research activities into international networks in order to analyse the dynamics of agricultural development, as well as socioeconomic and ecological processes in China's rural areas. In eight individual projects, the research group will look at questions of resource-saving enterprise development in the agricultural sector, employment alternatives, migration in rural areas, and the problem of poverty and its persistence in rural China.

Although China has risen to become the fourth-largest economy in the world, the new prosperity has mostly concentrated in the cities. Around 70 % of the population live in the countryside, with an income on a par with those in developing countries. More than 100 million people, mostly small farmers, have to make do with less than one dollar per day. The growing inequality between rural and urban China has already become one of the nation's most serious problems. The most important goal of the project, besides an analysis of the current situation, is to draw up scientifically based recommendations for action to combat poverty.

The research group is intensifying and strengthening existing contacts and cooperations between IAMO and internationally renowned institutions and academics from the field of agricultural economics in China as well as other Western countries. We have been successful in obtaining the following partners for the research group: Center for Chinese Agricultrual Policy, CCAP, China (Prof. Jikun Huang); Center for Agricultural and Rural Development, CARD, China (Prof. Zuhui Hunag); World Bank Peking, China (Dr Achim Fock); Stanford University, USA (Prof. Scott Rozelle); Ohio State University, USA (Prof. Belton Fleischer); Licos Center for Transition Economies, Belgium (Prof. Johan Swinnen); Cemagref, France (Dr Guillaume Deffuant).

The IAMO research group will also give two younger female academics from IAMO, Dr Kathrin Happe and Dr Xiaobing Wang, an opportunity at academic management by coordinating the research association. The research group's work will begin during the course of 2008.

Development of third-party funding

Over the past few years, IAMO has substantially improved the volumes of third-party funds it acquires and awards. The increase in recent years, particularly in 2006 and 2007, was mainly achieved by winning the contracts for research projects in the EU's 6th and 7th Research Framework Programme, and by DFG research funds. In both cases funding was won by competition.

Third-party funded projects for 2007 (October 2006-September 2007)

Funded projects in 2007

I. Research projects for which funding was approved in 2007

- Project title: Werte als Motive von Konsumentscheidungen – Ein interkultureller Vergleich

  Funded by: DFG-Sachbeihilfe

- Project title: Agroholdings im Agrar- und Ernährungssektor in Russland: Entstehungsgründe, Funktionsweise und Entwicklungsperspektiven

  Funded by: DFG-Sachbeihilfe

- Project title: Ökonometrische Wirkungsanalysen von Fördermaßnahmen für die ländliche Entwicklung (FOR 986)

  Funded by: DFG-Sachbeihilfe

- Project title: Modelle betrieblichen Strukturwandels (FOR 986)

  Funded by: DFG-Sachbeihilfe

- Project title: Deutsch-ungarisches Kooperationsprojekt: Marketpower in German and Hungarian food chains

  Funded by: DFG

- Project title: Enlargement Network for Agripolicy Analysis (AgriPolicy)

  Funded by: 7. Forschungsrahmenprogramm der EU

- Project title: Modern Agriculture in Central and Eastern Europe. Tools for the Analysis and Management of Rural Change (MACE)

  Funded by: 6. Forschungsrahmenprogramm der EU

- Project title: Sustainability of Semi-Subsistence Farming Systems in New Member States and Acceding Countries (S-Farm)

  Funded by: EU-Kommission

- Project title: The role of social capital and informal social networks for poverty reduction in Northern Thailand

  Funded by: Eiselen-Stiftung Ulm

II. Ongoing externally funded research projects in 2007

- Project title: Transformation landwirtschaftlicher Familienbetriebe in der VR China

  Funded by: DFG-Sachbeihilfe

- Project title: Social Capital and Informal Social Networks in a Changing Natural and Institutional Environment

  Funded by: DFG-Sachbeihilfe

•Project title: Preisbildung und Wettbewerb auf räumlich differenzierten Märkten – Simulation und Analyse komplexer Marktstrukturen am Beispiel des Rohmilchmarktes

Funded by: DFG-Sachbeihilfe

• Project title: Structural Change in Agriculture and Rural Livelihoods (SCARLED)

Funded by: 6. Forschungsrahmenprogramm der EU

• Project title: Key Factors Influencing Economic Relation ships and Communication in European Food Chains (FOODCOMM)

Funded by: 6. Forschungsrahmenprogramm der EU

• Project title: Micro-Economic Instruments for Impact Assessment of Multifunctional Agriculture to Implement the Model of European Agriculture (MEA-Scope)

Funded by: 6. Forschungsrahmenprogramm der EU

• Project title: Croatia's EU-accession and its socioeconomic implications for farm households

Funded by: Gesellschaft für Technische Zusammenarbeit (GTZ)

III. Externally funded research projects completed in 2007

• Project title: Deutsch-ungarisches Kooperationsprojekt: Price transmission in the Hungarian agri-food chain

Funded by: DFG

• Project title: The Impact of Decoupling and Modulation in the Enlarged Union: A Sectoral and Farm Level Assessment (IDEMA)

Funded by: 6. Forschungsrahmenprogramm der EU

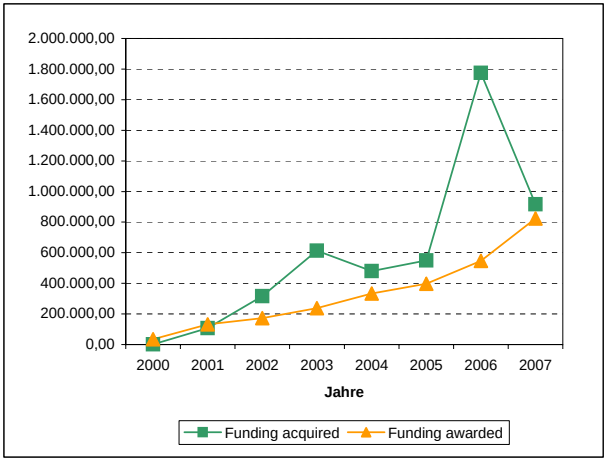
• Project title: The Structures of Civil Society Governance in Promoting Rural Development (on the Example of East Germany and Ukraine)

Funded by: 6. Forschungsrahmenprogramm der EU

• Project title: Contract Promoting Quality of Life in Rural Europe

Funded by: KMU Forschung Österreich

Development of funding



Source: Institute's own statistics.

Selected externally funded projects

Below is an outline of the most important projects for which new funding was obtained in the period November 2006 to October 2007. There are two new DFG projects, one EU tender project, and one DFG research group.

DFG project: "Alues as a motive for consumer decisions – An inter-cultural comparison"

This project was approved by the DFG in December 2006. Under the supervision of Prof. Dr Thomas Glauben and Dr John Hanf, Astrid Rewerts'e project should enable the identification of those values relevant to the formation of preferences amongst branded products in the food sector. The background to this is the fact that objectively determinable quality criteria in purchasing decisions are less important than subjective product connotations. The latter belong to that part of a consumer's cognitive system which associates perceptions of a product with basic purchasing motives and, in combination with situative factors, is responsible for the formation of product preferences. In the research proposal, the analysis of this part of the cognitive system takes place on the basis of a means-end chain approach. During the empirical application of this theoretical approach, which is by means of structured in-depth interviews, the aim is to identify the values that are important in the formation of preferences. Such knowledge is very important for the development of communication strategies. Given that values influence purchasing decisions, and these vary depending on the culture group, the project is attempting an inter-cultural comparison of the connection between values and consumer behaviour. The empirical section, therefore, undertakes a comparison between Ukraine and Germany of the value-orientation of purchasing decisions for high value foods.

DFG project: "Agroholdings in the agricultural and food sector in Russia"

A project proposal submitted to the DFG on the topic, "Agroholdings in the agricultural and food sector in Russia: Reasons for their emergence, methods of functioning, and development prospects" was approved in July 2007, and begins in 2008. Prof. Dr Heinrich Hockmann, Prof. Dr Gertrud Buchenrieder and Prof. Dr Thomas Glauben will carry out this research project in conjunction with the All-Russian Research Institute of Agricultural Economics (VNIIESCh = Vserossijskij Naučno-issledovatel'skij Institut Ėkonomiki Sel'skogo Chozjajstvo) in Moscow. The background to this project is the surprising development in the Russian agricultural and food economy, which has seen the emergence of large vertically – and sometimes diagonally – integrated structures which are described as agroholdings. Such structures are not to be found in the agricultural and food sector of developed Western market economies. This research project aims at a theoretical and empirical analysis of these questions. The theoretical analysis is mainly based on explanatory approaches from New Institutional Economics. Methodologically, the research project is based to a large extent on case studies. The reseach project expects to deliver, on the one hand, detailed information about the reasons for the emergence of these agroholdings, and their commercial, regional, sectoral and economic effects. The findings of the project should also contribute to verify the explanatory power of current Western economic theories of vertical and diagonal integration under different cultural, economic and political conditions.

EU tender project: "Semi-subsistence agriculture in Poland, Romania and Bulgaria"

At the end of 2006 IAMO's proposal for the EU tender project, "Sustainability of Semi-Subsistence Farming Systems in New Member States and Acceding Countries (S-FARM)" was also accepted. The project will be funded by the EU Commission's *Institute for Prospective Technological Studies* in Seville, Spain. It will be supervised by Prof. Dr Gertrud Buchenrieder and carried out by Dr Jana Fritzsch, also from IAMO. In cooperation with partners from Poland (Agricultural University of Warsaw), Romania (University of Agricultural Sciences and Veterinary Medicine of the Banat) and Bulgaria (University of National and World Economy, Sofia), IAMO is looking at the current socio-economic situation of very small farmers in these three countries. In each country there will be a survey of 175 agricultural households. The survey process started in July 2007. Although the development of semi-subsistence agriculture in many countries of Central and Eastern Europe during transition can be seen as an impediment to structural change, it also has huge significance as a social buffer. The research carried out in this project will be a direct contribution to the shaping of European policy on the development of rural areas, as the findings of the investigation should find their way into the EU mid-term evaluation of the development of rural areas. Of particular interest is the question of how policy measures should be designed, so that they give those farmers who are able and willing the opportunity to develop their farms in line with the demands of the markets. For enterprises with no capacity to develop and improve their market orientation, there should be analysis of the chances and risks of abandoning the business with consideration of the appropriate accompanying agro-political measures. You can find further information on this project on the Internet at <http://safh.jrc.es/sstudy6.html>.

DFG research group: "Structural change in the agricultural sector"

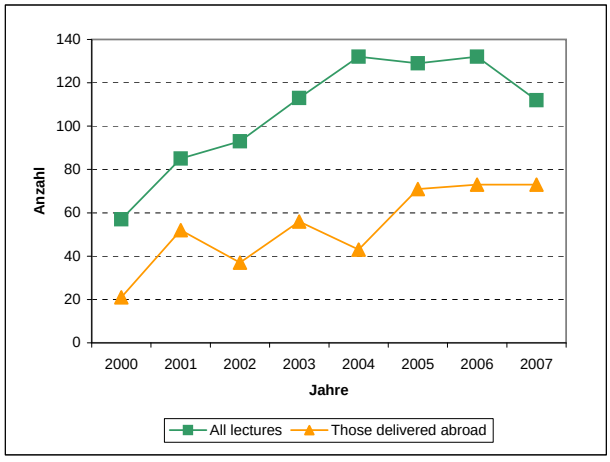
With two sub-projects, IAMO is involved in a research group, "Structural change in the agricultural sector" (SiAg), based at the Humboldt University in Berlin. The research group was approved by the DFG in July 2007, and will begin working in the second half of 2008. The sub-project, "Models of business structural change", is being led by Prof. Dr Alfons Balmann (IAMO) and PD Dr Oliver Mußhoff (Georg August University, Göttingen). The project work is being carried out by Konrad Kellermann at IAMO. Using agent-based modelling, the project is examining the specific influence of policy measures and enterprise behaviour on business structural change. The chief aim is to develop a set of methodological tools which allow decision-making behaviour of businesses to be effectively depicted in an agent-based model framework. Another sub-project being undertaken at IAMO by Patrick Zier under the supervision of Dr Martin Petrick is "The econometric impact analysis of support measures for rural development". At the heart of this project is the quantitative analysis of the effects of rural development policies, using a panel data set of German rural districts. The objective is to adapt the relevant econometric tools to the data set, and to further advance them with reference to the economic issues. A second stage of the project will see the estimation of appropriate models. Besides IAMO and the Humboldt University, other participants in the research group are the German Institute of Economic Research (DIW) in Berlin, and the Federal Research Institute of Agriculture (FAL) in Brunswick.

In addition to the research, other aims of this project are to intensify the cooperation of the participating academics and the fostering of junior academics. The research group is scheduled to last for three years.

IAMO lecture activity

Besides contributing to publications, another important activity of IAMO staff is the presentation and discussion of research findings at national and international conferences, forums and workshops. A large proportion of lectures by IAMO staff are delivered at events with an international audience, and in 2007 about two-thirds of all lectures were given abroad. In the last few years the level of engagement of our staff members in presenting their research findings has been consistently high. The number of papers delivered by IAMO staff at international conferences and specialist symposia has remained at a high level over the past few years.

Development of IAMO lectures



Source: Institute's own statistics.

Conferences and seminars

Conferences and seminars are essential for IAMO to be able to fulfil its third core task, which is to act as a forum for the exchange of academic ideas in all questions of agricultural development in transition countries. The events organised by the Institute represent an important platform for scientific exchange, both on a national and international scale. Besides greater academic collaboration, the meeting of academics with decision-makers from the food industry and politics often provides an impetus for restructuring in the agricultural and food sectors in partner countries. Below is an outline of the most important conferences, symposiums and workshops run by the Institute in 2007.

Agricultural policy symposium at Green Week 2007

As part of the 14th East-West Agricultural Forum at Green Week 2007, IAMO organised an agricultural policy symposium, as we have in previous years. This focused on the topic, "Bio Energy – Strategic alternative or rescue anchor for European agriculture?" The symposium was oriented towards policymakers, academics, and those in the business. Not only is this topic of public interest at a time of rising energy prices and accelerating climate change; quite a lot of farmers, businessmen and politicians are enthusiastically hopeful about the emergence of a new growth market for agriculture which will be highly profitable in the long run. The aim of the symposium was to obtain a scientifically based assessment of the opportunities and risks of bioenergy for the agricultural sector and agricultural enterprises. Several contributions from well-known experts, taking an agro-economic perspective from the farm level as well as that of the economy

as a whole, outlined the future integration of the development of renewable primary products for energy use into the value chains of the agricultural sector. Besides assessing the current potential of sustainably producing renewable primary products for energy use, participants discussed the possible effects of different scenarios of bioenergy subsidy on agricultural structures and factor markets, as well as options for farmers in shaping the corresponding value chains. The speakers were: Dr Tomáš Doucha, first deputy Minister of Agriculture of the Czech Republic; Prof. Dr Folkhard Isermeyer from the Federal Research Institute of Agriculture (FAL), Brunswick; Prof. Dr Jürgen Zeddies from the Institute of Agricultural Business Theory at the University of Hohenheim; and Prof. Dr Alfons Balmann from IAMO.

IAMO Forum 2007

From 27 to 29 June 2007, the Leibniz Institute of Agricultural Development in Central and Eastern Europe held the fifth IAMO Forum. On this occasion the topic was: "Sustainable rural development: What is the role of the agri-food sector?" The first day was devoted to academic exchange, whereas the focus of the second day was to give representatives from science, politics and business a forum for discussion. The IAMO Forum was rounded off with a day-long excursion. The conference was attended by 120 experts from around 25 countries.

Renowned academics from Germany and abroad participated in the conference. The main speakers were: Prof. Dr Joachim von Braun, International Food Policy Research Institute (IFPRI), USA; Prof. Dr Daniel W. Bromley, University of Wisconsin-Madison, USA; Prof. Dr Katarzyna Duczkowska-Małysz, Warsaw School of Economics, Poland; Dr Achim Fock, World Bank, USA; Prof. Dr Huang Jikun, Center for Chinese Agriculture Policy (CCAP), China; Prof. Dr Alexander Vassilevich Petrikov, Russian Academy of Agricultural Sciences, All-Russian Institute of Agrarian Problems and Informatics, Russia; and Prof. Dr Tom Reardon, University of Michigan, USA. There were working group sessions on the following subjects:

- Economic situation of farms;
- Access to credit;
- Operation of factor markets in CIS countries;
- Structural change and trade;
- The role of the agri-food industry;
- Territorial and social issues;
- Regulation and rural policy;
- Lessons from development strategies.

The plenary lectures were on the following subjects:

- The future of the agri-food economy – EU and national perspectives;
- Problems and instruments of a policy for sustainable rural development in the Russian Federation;
- Sustainable rural development from an EU perspective;
- The retail-led transformation of agrifood systems and its implications for development policies;
- Comprehensive rural development strategy in China;
- Agricultural policy in China;
- An evolutionary approach to sustainable development;
- Globalization, rural transformation, and poverty.

A volume of the conference was published and given to every participant. This volume can also be downloaded online at <http://www.iamo.de/dok/sr_vol39.pdf>.

Events announced for 2008

Agricultural policy symposium at Green Week 2008

At the international conference of agricultural ministers during Green Week in Berlin, IAMO organised as a side-event an agricultural policy symposium on the topic, "Consumption potentials in China and Russia". The one-day symposium took place on Friday 18/1/2008. The lectures offered analyses of, and prognoses for, important markets; examined the development trends of demand; set out the role of (Western) food retail and its development trends; and looked at the demand for high-quality food products and their production sites.

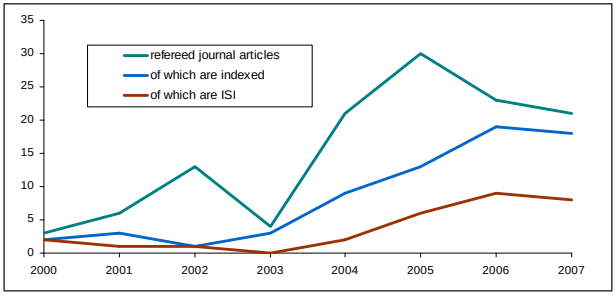
2008 IAMO Forum

As in previous years, IAMO is organising the 2008 IAMO Forum from 25 to 27 June in Halle. This year's topic is, "Agri-food business: Global challenges – Innovative solutions." The agricultural and food sector is currently experiencing accelerated structural change. With a large amount of research still needed, there are important unresolved questions concerning this process of structural change and its far-reaching consequences. Three global challenges are considered to be of major importance for developments in both the agri-food sector and its economic and political environment: (1) Food quality, (2) Bioenergy, (3) Deregulation and liberalisation. The following will be important topic fields: The consequences of globalisation for enterprises and markets in the agricultural and food economy; the significance of new markets outside the food sector, e.g. renewable primary products; trade liberalisation and the associated challenges for the future shaping of agricultural policy. Up-to-date information on the 2008 IAMO Forum can be found on our web site www.iamo.de.

Publications

Academic staff at IAMO publish their findings in scientific journals, monographs, anthologies and discussion papers. A complete list of publication can be found on IAMO's web site on the Internet (www.iamo.de). The diagram below illustrates the development of articles published in journals by IAMO staff since 2000. In 2004 there was a significant increase in print publications, to the effect that the 2001-2003 average of 81 rose to 125 between 2004-2006. The provisional figures for 2007 show that this high level of publication is being maintained. In addition to the rise in general publication activity over the long term, the number of refereed articles listed on the Science Citation Index (SCI) and the Social Science Citation Index (SSCI) has also been on a constant increase; this was true of 2007 as well. Because of the aforementioned growth in high-ranking third-party funding we can expect this promising trend of the last few years to continue.

Development of publications in refereed and indexed journals



Source: Institute's own statistics.

Best journal article

Which benchmark should the scientific consultant use when gauging the social desirability of policy measures? This fundamental question is the subject of an article published by Dr Martin Petrick (IAMO) and Prof. Dr Ingo Pies, Chair of Business Ethics at Martin Luther University Halle-Wittenberg, in the *European Journal of Law and Economics*. It was chosen by the research coordination group as the best journal article by an IAMO member of staff over the past year. The authors present two different approaches to the question. The starting point is the utilitarian view that the benchmark should be the total benefit generated by the results of a policy measure for those concerned. In welfare economics this criterion is generally understood to mean that losers from the policy measures are accepted too, so long as the total of all benefit changes is positive. Against this, the authors propose a contract theory approach, which asks whether alternative laws (and not results) can win the acceptance of all concerned. They work out in detail that the theoretical model of a social dilemma has a particular heuristic value in enabling us to determine the common interest of all concerned in obtaining benefit from cooperation. They apply this model to the problem of structural unemployment in Europe and the poor credit access of households in rural regions, and from this derive recommendations for reform.

Discussion papers

The Discussion Paper series continued in 2007 with the following publications that can all be downloaded free in PDF format from the IAMO web site (www.iamo.de/doc/##):

XIANGPING, J., BUCHENRIEDER, G. (2007): Documentation of a multi-topic questionnaire-based survey on sustainable resource use in rural China, *IAMO Discussion Paper No. 102,* Halle (Saale).

GRAMZOW, A. (2007): Oddolne inicjatywy jako szansa poprawy, jakosci zycia na WSI? Wyniki studium przypadku w Baltowie (Poludniowo-Wschodnia Polska), *IAMO Discussion Paper No. 103,* Halle (Saale).

RUNGSURIYAWIBOON, S., WANG, X. (2007): Recent evidence on agricultural efficiency and productivity in China: A metafrontier approach, *IAMO Discussion Paper No. 104,* Halle (Saale).

TREFFLICH, A., UETRECHT, I., EFKEN, J., SCHÄFER, M., STEINBAUER, C., WENDT, H. (2007): Support scheme of food processing firms: A driving force for rural development?, *IAMO Discussion Paper No. 105,* Halle (Saale).

BOJNEC, S., FERTÖ, I. (2007): Comparative advantages in agro-food trade of Hungary, Croatia and Slovenia with the European Union, *IAMO Discussion Paper No. 106,* Halle (Saale).

FERTÖ, I. (2007): Spatial developments of Hungarian agriculture in the transition: The case of crop production, *IAMO Discussion Paper No. 107,* Halle (Saale).

BRUISCH, K. (2007): Entwicklungstendenzen landwirtschaftlicher Familienbetriebe in Russland seit 1990, *IAMO Discussion Paper No. 108,* Halle (Saale).

HOCKMANN, H., PIENIADZ, A., GORAJ, L. (2007): Modeling heterogeneity in production models: Empirical evidence from individual farming in Poland, *IAMO Discussion Paper No. 109,* Halle (Saale).

BROMLEY, D. W. (2007): Evolutionary institutional change for sustainable rural livelihoods in Central and Eastern Europe, *IAMO Discussion Paper No. 110,* Halle (Saale).

MAKARCHUK, O., HOCKMANN, H., LISSITSA, A. (2007): Ėkonomičeskij analiz bioenergetiki, kak istočnika dochodov agrarnych predprijatij [Bioenergie as a source of income of agricultural enterprise], *IAMO Discussion Paper No. 111,* Halle (Saale).

SCHNICKE, H., HAPPE, K., SAHRBACHER, C. (2007): Structural change and farm labour adjustments in a dualistic farm structure: A simulation study for the Region Nitra in southwest Slovakia, *IAMO Discussion Paper No. 112,* Halle (Saale).

BUCHENRIEDER, G., MÖLLERS, J., HAPPE, K., DAVIDOVA, S., FREDRIKSSON, L., BAILEY, A., GORTON, M., KANCS, D'A., SWINNEN, J., VRANKEN, L., HUBBARD, C., WARD, N., JUVANČIČ, L., MILCZAREK, D., MISHEV, P. (2007): Conceptual framework for analysing structural change in agriculture and rural livelihoods, *IAMO Discussion Paper No. 113,* Halle (Saale).

LEVKOVICH, I., HOCKMANN, H. (2007): Meždunarodnaja torgovlja i transformacionnyj process v agroprodovol'stvennom sektore Ukrainy [Foreign trade and transition process in agri-food sektor of Ukraine], *IAMO Discussion Paper No. 114,* Halle (Saale).

Studies on the Agricultural and Food Sector in Central and Eastern Europe

In the series of "Studies on the Agricultural and Food Sector in Central and Eastern Europe" IAMO publishes monographs and conference proceedings that deal with agro-economic issues in Central and Eastern Europe. All publications from volume 22 onwards can be downloaded from the internet free of charge <www.iamo.de/dok/sr_vol##.pdf. Until now in the studies-series 18 conference proceedings and 24 monographies have been published. In 2007 the following volumes were published:

BOKUSHEVA, R., HEIDELBACH, O., KUSSAIYNOV, T. (2007): Страхование посевов в Казахстане, Анализ возможностей эффективного управления рисками, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 37,* Halle (Saale).

LERMAN, Z., SEDIK, D., PUGACHOV, N., GONCHARUK, A. (2007): Rethinking agricultural reform in Ukraine, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 38,* Halle (Saale).

PETRICK, M., BUCHENRIEDER, G.(2007): Sustainable rural development: What is the role of the agri-food sector?, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 39,* Halle (Saale).

HEIDELBACH, O. (2007): Efficiency of selected risk management instruments – An empirical analysis of risk reduction in Kazakhstani crop production, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 40,* Halle (Saale).

PEREKHOZHUK, O. (2007): Marktstruktur und Preisbildung auf dem ukrainischen Markt für Rohmilch, *Studies on the* Agricu*ltural and Food Sector in Central and Eastern Europe, Vol. 41,* Halle (Saale).

WANG, X. (2007): Labor market behavior of Chinese rural households during transition, *Studies on the Agricultural and Food Sector in Central and Eastern Europe, Vol. 42,* Halle (Saale).

IAMO on the Internet

The Institute's Internet presence (www.iamo.de) aims to provide outsiders and interested users with a quick overview of IAMO's core tasks and aims, as well as of staff research topics, findings and publications. Our Internet presence is based on the Open Source Content Management System TYP03. Each member of staff has the opportunity to maintain and update the

content of their individual pages independently. This ensures that the site is very much up to date. The web site also aims to achieve the goal of maximum accessibility. The advantages of an accessible-to-all, standard compatible web site are: Access for all users, easy maintenance and smaller file sizes.

From the home page, which gives information on news, events and the most recent publications, users can access information from the *Institute, Research, Events, Publications* and *Portal* categories. The *Institute* menu leads to information about IAMO's core tasks, institutional structure, staff and library.

Via the library page, online searches of the library catalogue can be made using OPAC. Current job vacancies can also be found via the *Institute* menu. The *Research* menu leads to information about current research projects, with short project descriptions and details of the staff involved, select publications, and research cooperation with other institutes. The *Events* menu provides details of the annual events either organised by the Institute, or in which IAMO is taking part. These include the IAMO Forum, the PhD workshop, as well as seminars and workshops on a variety of possible topics. Here, users can find out about programmes and speakers in advance, and view papers that have been submitted. The online service also provides access to all in-house publications (IAMO Series, IAMO Discussion Papers, IAMO Annual Reports and IAMO Annual). Publications by staff members can either be viewed in the complete publication list, or directly on the individual staff pages. The *Portal* menu contains a comprehensive and structured collection of links.

Since October 2007 the IAMO web site also has its own alumni homepage <http://www.iamo.de/alumni/index.html>.

alumni@IAMO.de is the communication and service network for former IAMO staff members and visiting researchers. It provides a large number of activities to help alumnae and alumni keep in contact and share their experiences, and thus maintain a life-long connection with each other.

View of inner courtyard at IAMO

How to find us

» by car

From the south: Leave the A9 motorway at the Rippachtal junction, and take the A38 towards Merseburg. At the Halle-Süd triangle change onto the A143 and follow this road until the Halle-Neustadt/Halle-Zentrum exit. Then take the B80 for about 8km towards Halle until you get to Rennbahnkreuz. At the entrance into town get into the left-hand lane and go straight on along the B80 towards Kröllwitz/Universität. Turn left at the ice-rink and follow Blücherstraße to the end. Then turn right. At the end of the avenue turn left into Theodor-Lieser-Straße. IAMO is in the building on the right-hand side.

From the north: Take the A9 motorway (Berlin-Munich) as far as Halle/Brehna. Follow the B100 towards Halle until you reach the outskirts of the city (traffic lights at Dessauer Brücke). Get into the right-hand lane and turn left, still on the B100 to Zentrum and Magdeburg. Turn right immediately into the B6 towards Magdeburg and then take the next exit (Zoo, Wolfensteinstraße). Carry on along Wolfensteinstraße (underpass, several traffic lights, Reilstraße/Große Brunnenstraße crossing) until you reach Burgstraße. Turn right and take the next available left turning over Saalebrücke. Once over this bridge take the first right turning, drive back under the bridge and continue along the embankment of the Saale. Turn left at the next crossroads into Weinbergweg towards Universität, and follow the road until the next set of lights. Continue straight ahead into Walter-Hülse-Straße. The IAMO building is on the right-hand side. Turn right into Theodor-Lieser-Straße and IAMO is now in front of you.

From the north-west: Coming from Magdeburg take the A14 (direction Leipzig or Dresden) to the Halle-Peißen exit, then take the B100 to Halle. See "From the north" for further directions.

From the west (on the B80): Follow the B80 until the Rennbahnkreuz. At the entrance into town get into the left-hand lane and continue along the B80 towards Kröllwitz/Universität. Turn left at the ice-rink and follow Blücherstraße to the end. Then turn right. At the end of the avenue turn left into Theodor-Lieser-Straße. IAMO is in the building on the right-hand side.

» by train

Leave the station by the main exit and follow signs to the tram stop "Riebeckplatz/Hauptbahnhof". From here take tram number 4 towards Kröllwitz. Alight at the Weinberg Campus stop (about 15 minutes from the station). The Institute is on the left-hand side of the road as you get out.

» by plane

Leipzig-Halle airport is 20km from Halle. A regular shuttle train takes you to the main station. See "By train" to find the way from there.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Heide-
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Weinberg-
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Th.-Lieser-Str.
Von-
Secken-
dorff-Pl.
5, 5E, 4
IAMO
TGZ
W.-Hülse-Str.
Gimritzer
Damm
14
B 6
Halle-Trotha
9
Magdeburger
Chaussee
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Halle-Tornau
Saale
Trothaer Str.
B100
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IAMO
Berliner Chaussee
Gimritzer Damm
Rennbahnkreuz
Delitzscher Str.
Halle-Ost
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Riebeckplatz
B 80
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Eislebener Chaussee
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Merseburger Str.
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B 91

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