

# iamo

Leibniz Institute of Agricultural Development  
in Transition Economies



# 2017

Leibniz Institute of Agricultural Development  
in Transition Economies (IAMO)

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## Foreword

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The future of global food security depends on our ability to activate the enormous agricultural potential of the Eurasian continent.

IAMO is one of the world's leading research institutes, analysing agricultural development in economies in transition and emerging economies across the Eurasian continent.

For more than 20 years IAMO has been making extremely valuable contributions to research, capacity building and scientific policy advice in the region.

The FAO (Food and Agriculture Organization of the United Nations) and IAMO have been cooperating ever since the foundation of the Institute.

Over the past few years, the collaboration between our two organisations has reached new levels. In 2016, this was reflected in our joint organisation in Samarkand of a large international conference on the Central Asian food sector, as well as an expert meeting on trade issues in Halle.

The next IAMO Forum in 2017 will be jointly organised by IAMO and FAO. We hope to further deepen our fruitful cooperation and offer the Institute our very best wishes.

This IAMO Annual offers a highly valuable overview of ongoing research at IAMO, covering all aspects of agricultural development in one of the world's most important agrarian regions. Readers will be amply rewarded for their time.



**Vladimir Rakhmanin**

*FAO Assistant Director-General and Regional  
Representative for Europe and Central Asia*





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## Introduction

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Every Institute among the Leibniz Association is externally evaluated on a regular basis to assess eligibility of funding. In November 2015 an independent inspection committee evaluated IAMO a third time, following previous evaluations in 2000 and 2007.

Based on the committee's results, the Senate of the Leibniz Association drafted a report on the quality of the Institute's work and its eligibility for future funding. The report was published on 13 July 2016. The Senate recommended that the Institute should continue to receive joint funding from the German federal government and the *Länder*. The report affirms that IAMO is performing very well in its mission to monitor the academic transition process in agriculture and to analyse the resulting economic and social effects. In addition, the concept for the future orientation of the Institute has convinced. For members of staff at IAMO, this represents both: a reason to be pleased and an obligation to keep up the good work.

In detail, the Senate's report says, "Since the last evaluation IAMO has developed very well. As recommended, the publication activity has been significantly increased, while policy advice and the transfer of knowledge has been intensified and better structured. The Institute has attracted funding for important large

projects [...] The Senate particularly welcomes the orientation towards economic issues of the environment, resources and health [...] The Senate welcomes the fact that cooperation with the University of Halle-Wittenberg [...] has improved considerably since the last evaluation [...] With its programme of fellowships and guest visits IAMO creates a very effective transfer of knowledge in the target region [...] The Senate is particularly pleased to note the Institute's success in acquiring EU funding [...] Young academics are given excellent training and care at IAMO."

After 21 years in service as manager in charge of the Administration and Central Services/IT department at IAMO, Ms. Hannelore Zerjeski retired on 30 April 2016. She was one of the founding directors of IAMO in 1994 and throughout her time she played a key role in the Institute's successes. With her leaving, we have said goodbye to one of IAMO's outstanding personalities. We would like to thank Ms. Zerjeski for her commitment to the Institute and wish her all the best for the next chapter in her life.

On 1 May 2016, Dr Stephanie Garling took over the management of the Administration and Central Services/IT department. Previously she was administration manager of the Biotechnology Centre of Dresden

Technical University (BIOTEC) and prior to that she was temporary academic director of the doctoral programme at GIGA – the German Institute of Global and Area Studies. Stephanie Garling studied political science and public administration at the University of Leipzig, where she also gained her doctorate.

On 1 July 2016 the research group project 'TRAFOBIT' was born. IAMO obtained 1.487 million euros of funding for a period of five years from the German Federal Ministry of Education and Research (BMBF) for this project. The group is investigating innovation and interaction processes in selected "bioclusters" within the European Union. Within these clusters regional businesses, government agencies, research institutions and universities are working together to develop the bioeconomy, in order to replace our current fossil energy sources with renewable ones. Social network analysis and statistical network models will be of particular importance to analyse the innovation processes.

The Institute also succeeded in winning funding from the Leibniz Association's internal competition for a project comparing agricultural policy in the Russian Federation and the EU: "FEDAGRIPOL – Political economy of agricultural policy in federal systems". Another new project, "Analysis of the Russian Federation's strategy for expanding agricultural production" (STARLAP), which is financed by the German Federal Ministry of Food and Agriculture (BMEL), is investigating the effects of Russia's import substitution agricultural policy measures

on the competitiveness of the Russian agricultural and food sector. The Leibniz Association has been funding the newly established Leibniz ScienceCampus "Eastern Europe – Global Area" since July 2016. Under the leadership of the Leibniz Institute for Regional Geography (IfL), IAMO, the Universities of Leipzig, Halle-Wittenberg and Jena, the Max Planck Institute for Social Anthropology in Halle, the Fraunhofer Center for International Management and Knowledge Economy (MOEZ) as well as the Centre for the History and Culture of East-Central Europe (GWZO) are all involved with the ScienceCampus.

From 13-16 September 2016 an academic symposium on the topic "Explaining Transition of Chinese Rural Areas: A System Perspective", took place in Chengdu, the capital of the Chinese province of Sichuan. The event was organised by IAMO along with the Center for Chinese Agricultural Policy at Peking University (CCAP-PKU) and the Sichuan Agricultural University (SAU). Over 40 Chinese and Western academics discussed new promising research topics and potential joint research projects. In the period covered by this annual, IAMO was also involved in two major conferences in Central Asia on agricultural development. Close to 200 participants joined the IAAE inter-conference symposium "Agricultural Transitions along the Silk Road", which took place from 4-6 April 2016 and was organised jointly by IAMO, the International Association of Agricultural Economists (IAAE) and the Kazakh National Agrarian University (KazNAU). Topics covered

were the restructuring of agriculture, the management of natural resources, regional trade and economic integration within the region. In Samarkand, Uzbekistan, a conference on the topic "Regional and International Cooperation in Central Asia and South Caucasus: Recent Developments in Agricultural Trade" took place from 2-5 November 2016, organised by IAMO, the FAO and the University of Samarkand. The three-day event focused on the effects of the expansion of the Eurasian Economic Union, the accession of various countries to

the World Trade Organisation (WTO) and the globalisation of agricultural value chains. Renowned international and regional experts discussed in dialogue with political decision-makers.

Without a modern, high-standardized and excellently managed administration, IAMO would not be able to react as quickly to the rapidly changing requirements of a globalising science. In addition to this are the increased requirements in the support and promotion of young academics, who are mainly from our



*IAMO's Directorate (from l. to r.):*

*Professor Thomas Glauben, Dr Stephanie Garling, Professor Thomas Herzfeld, Professor Alfons Balmann*

partner countries. IAMO guest scientists and scholarship holders are from more than 30 different countries. An administrative department that successfully meets these challenges and works flexibly is one of the pillars of IAMO. Therefore at this point the members of the Administration and Central Services/IT department should be thanked for their extraordinary commitment, especially during the Institute's evaluation.

IAMO's successful evaluation would not have been possible without the constructive help of the Ministry of Economic Affairs, Science and Digitalisation of Saxony-Anhalt and the German Federal Ministry of Food and Agriculture (BMEL). Important impulses also came from members of the Board of Trustees and Scientific Advisory Board who, with their wealth of expertise, were always providing advisory support. We would like to express our gratitude to all of them.

As in the past, this edition of IAMO Annual 2017 is intended to provide an insight into the Institute's work. The first article 'The social acceptance of modern agriculture' deals with a very prominent topic in the public sphere. This has far-reaching consequences for agriculture, not only in the EU, but also increasingly in

countries with a growing middle class such as China and Russia. This article is followed by three articles on agricultural development in Central Asia, with one questioning if the Russian import ban on Western food produce will bring improved export opportunities for Central Asia and the southern Caucasus farmers. The topic of water and climate change is addressed in a comparative study of countries from a Central Asian perspective, as well as the determining factors for the development of livestock holdings in Kazakhstan. The fifth, sixth and seventh contributions are looking at different aspects of agricultural development in selected countries. One is a comparative analysis of the vertical integration of agricultural value chains in CIS countries. Another analyses regional differences in the development of productivity in Hungarian agriculture. The next article examines Community Supported Agriculture (CSA) in Romania. CSA is a form of contractual farming in which a group of local consumers enters into a partnership with a farmer. The eighth article looks at multifunctional land use as a contribution to rural development. Finally there is a report on the IAMO Forum 2016 "Rural Labor in Transition: Structural Change, Migration and Governance".

# The difficulty of accepting modern agriculture

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ALFONS BALMANN, LIOUDMILA CHATALOVA, VLADISLAV VALENTINOV, TARAS GAGALYUK

## Caught between the efficiency and value of agriculture

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In Germany and many other Western countries, agriculture is a subject of controversial and ideological debate. Sometimes the reasons for this are obvious, such as the maintenance of agricultural privileges or systematic failures in animal and environmental protection. But the main tenor of these debates is determined by very contradictory public expectations (BALMANN et al., 2016). On the one hand, agriculture today is continually facing new challenges with regard to climate, energy policy and demographics, which require improvements in efficiency and technological innovation. On the other hand, we hear loud demands for the preservation of traditional farming structures, both technologically and in the way things are run, despite the fact that most agricultural productions in Germany have long been based on industrial principle.

Both viewpoints – agriculture as a progressive economic system and as something of value outside of the economic sphere that must be preserved – are essential and of equal worth in a society geared towards the

principle of sustainability. In an European context this parity is manifested in the juxtaposition and the partial cross-linking of existing approaches by politicians and civil-society organisations to mitigate the negative consequences of industrialisation (e.g. in the EU LEADER initiative). Yet the polarity of these social expectations does not just lead to an increasing untrustworthiness of agriculture, it also produces moralising debates about what is supposedly good or bad agriculture. Such preaching, which often charges the discourse with ideology, emotion and myth-making, reveals an increasing alienation between agriculture and society. Ultimately this development is fuelled by the particular social importance of agriculture as a producer of food, energy and raw materials, as well as a provider of ecological services. Given such trends, the question arises again as to what extent today's increasingly industrialised agriculture can satisfy the expectations society places on it.

## The technology treadmill

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Although in most countries of the world agriculture has long been put on the same footing as the industrial



sectors of the economy, it exists in a very particular competitive environment, which was described by the American agricultural economist WILLARD COCHRANE (1958) using the theory of the technology treadmill. The treadmill says that, as a rule, progress in agricultural productivity only leads to increased profit opportunities in a few innovative farms. The major amount of farms with outdated technology, untapped economies of scale and suboptimal management becomes unprofitable as prices start to fall. Especially for small farms which are usually run by families, agricultural income sinks noticeably on the cost of input factors. All that the farms can do is to keep developing accordingly and keep the treadmill going through further innovations or quit production. Via this compulsion and the constant emergence of new innovations, the agricultural treadmill gives rise to the process of "creative destruction" (SCHUMPETER, 1942). This ongoing process is ultimately the foundation of technological and economic progress, although it also means that individual enterprises or sectors lose their formerly advantageous position. One particular social achievement of this technology treadmill is that innovation-led productivity increases and the consequent reduction in prices is a benefit to poorer consumers.

There are considerable social and economic costs to set against this achievement, however. For one, the technology treadmill means that farms are forced to look

permanently for new ways of reducing costs. Faced with a constant income squeeze and the continual pressure to adapt, less and less farms are able to perform social services that are not rewarded by the market. As a consequence it may be necessary to impose certain costs (such as those relating to infrastructure and the environment) on the whole of society (VALENTINOV and CHATALOVA, 2014). As shown before in many transition countries, it also prevents small-scale agricultural producers from accepting social responsibility to the same extent as large farms usually do. Without their engagement, all the economic activities in many rural areas in Central and Eastern Europe would have ground to a halt and the social infrastructure would have fallen apart completely. Besides, because of their nationwide profile, large agricultural enterprises have a considerable interest in cultivating their image to customers and the public sphere as part of their branding. Therefore, in the upstream and downstream of agriculture, large cooperations don't fail to display their corporate social responsibility (CSR) on their website. (GAGALYUK et al., 2013; HANF and KÜHL, 2005).

The smaller farms on the technology treadmill can barely keep pace with industrial structures when it comes to assuming social responsibility. This opens up a gap between farming and society which, if it is not closed, leads to an alienation between the two. Such a situation suggests that the technology treadmill hinders the assumption of CSR.

## Implications for corporate social responsibility

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In the literature on business ethics, CSR is understood as a business policy geared towards accepting social responsibility. The moral dimension of the CSR difficulties is based on the assumptions of enterprise possess resources and the power that gives them the particular scope for moral action. The agricultural treadmill is challenging this assumption, with most of today's literature on business ethics regarding it as self-evident. This also makes clear that CSR is connected to a corporate or large-scale business structure. As far as farming is concerned, this is a key point because despite of the existence of some large enterprises and agrohholdings, farms (both in Germany and the rest of the world) are small in comparison to industrial concerns. In 1960 the American management theoretician Keith Davis formulated the "Iron Law of Responsibility", which states that powerful actors who fail to use their power responsibly, ultimately lose it. This law offers an explanation as to why CSR has become an imperative in big business. By implication it also means that those businesses with no real power are not under the same pressure.

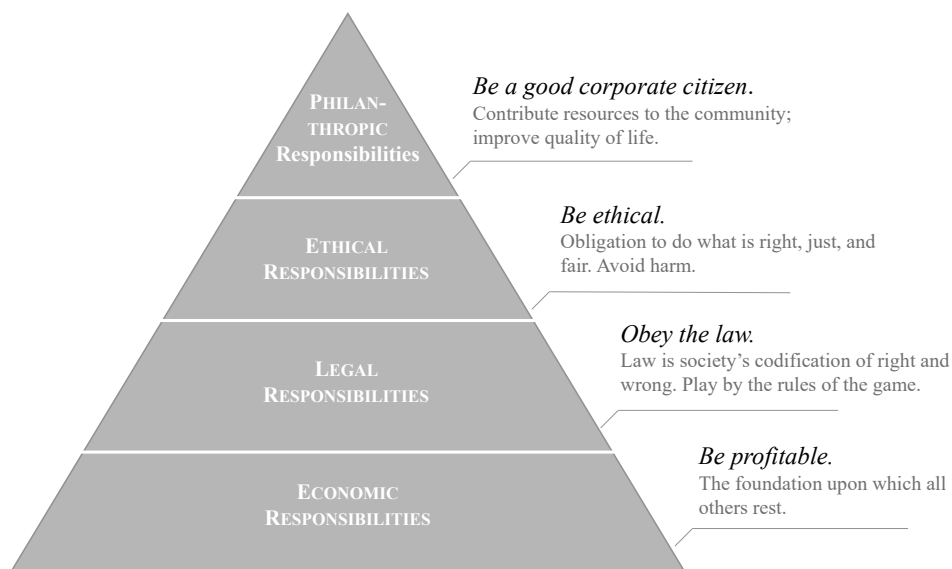
In addition, the measures taken to support incomes as a response to the treadmill, both in Germany and the EU, are largely responsible for preserving existing farming structures as they create major incentives to continue running unprofitable farms when generations

change in spite of poor economic prospects. They also impede the development potential of other farms, especially neighbouring ones, which are substantially closer to the profitability threshold. Given their limited power and a relatively low resource base, even large farms can only make a small contribution in solving social problems. Also active farmers on the treadmill have very different prospects. Whereas some of them can transform innovations into new potential for development, such potential is limited or non-existent for others. Consequently, not only the opportunities for farms vary, but also the incentive to be receptive to social responsibility.

Another difficulty can be seen in the traditional difference between various levels of CSR. A well-known typology was devised by Archie B. CARROLL (1991), whose pyramid model includes the levels of economic, legal, ethical and philanthropic responsibility (Figure 1).

The central idea of the model is that the less particular CSR practices are legally enforceable, i.e. the higher they are in the pyramid, the greater the moral value of CSR. The continually growing social demands on agriculture, however, are pushing their CSR activities downwards in Carroll's pyramid, and away from meeting the norm one would hope for, to the mere satisfaction of legal requirements. Even when services are performed for society as a result of making regulations tighter, the alienation between farming and society means that their recognition and effectiveness is low.

**Figure 1: The pyramid model of corporate social responsibility after CARROLL (1991)**



Source: CARROLL, 1991.

### Ideological shaping of the dialogue about agriculture

The American agricultural philosopher and ethicist PAUL THOMPSON (2010) describes the agricultural treadmill as a social dilemma, which in his words, is an undesirable collective process of self-harm by farmers. As this self-harm provides a particular handicap to agriculture it is often cited as a reason for agricultural subsidies. At this point we can draw a connection between the treadmill and the discussion about the special place of agriculture in our economic system.

The treadmill stimulates a debate, which plays out as a conflict between the traditional farming philosophy and an agro-industrial one. The former, amongst others, is favored by the Russian agricultural economist ALEXANDER V. CHAYANOV (1923), who for ethical and anti-capitalist reasons saw small-scale farming organised on a cooperative basis as a social ideal. With his glorification of the rural way of life, Thomas Jefferson, the third President of the USA, is another prominent representative of the traditional farming philosophy. In their point of view, agriculture has a unique moral role, which is endangered by the treadmill and thus

needs to be protected by a favourable agricultural policy. One advocate of the agro-industrial position is the American agricultural economist Michael Boehlje. BOEHLJE (1999) argues that modern agriculture increasingly resembles biological manufacturing and is based more on science than art. This viewpoint is substantiated by the increasing integration into value chains and the recent rise in the use of outside labour.

This ideological controversy is another obstacle to farms consciously assuming social responsibility. On one hand, the recognition of agriculture's unique moral role reduces the pressure for legitimacy that is usually associated with the implementation of CSR practices. In this case agriculture is seen as a value in itself that needs no further legitimisation through CSR. The stakeholders who do not share this point of view, however, can continue to identify exposed deficits in legitimacy. On the other hand, pumping ideology into the agricultural discourse hardens the positions of those on both sides of the debate and produces an emotionally charged inflation of social expectation with regard to agriculture. A number of conflicts between agriculture and society emerge, which in turn lead to aggravating disputes within society (e.g. poor people against environmentalists) and within agriculture (e.g. big against small, conventional against organic, traditional against industrial). Agricultural CSR activities that amount to a positioning within these conflicts then cannot solve the systemic alienation between agriculture and society either.

## Conclusion

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The social demands of modern agriculture are high and also very contradictory. Besides making technological progress, farms are expected to carry out environmentally sustainable and ethically acceptable practices (VALENTINOV, 2013). But the main driver of agricultural progress, the technology treadmill, which is the basis for agricultural competition, prevents many farms from exercising their social responsibilities towards people, animals and the environment. The treadmill means that farmers have to keep engaging new technology – not to achieve higher profits, but just to be able to survive. This fight for survival, however, hinders the formation of larger industrial structures that could generate sufficient resources and power to exercise CSR, thereby encouraging the alienation between agriculture and society.

The conflicts of aims of social expectations, which can be solved only to a limited extent, are transformed into ideological comfort zones in which social groups position themselves without suggesting any useful solutions (CHATALOVA et al., 2016). Instead discussions are dominated by emotional arguments, the sensationalisation of certain topics (such as intensive livestock farming or agricultural speculation) and unrealistic demands. The consequences of the distorted debates that ensue may be policy measures that preserve existing structures, such as supporting unprofitable small

and family farms (COLLIER, 2008) or misjudging the value of financial derivatives and green genetic technology in means of securing the food supply (PREHN et al., 2015). This indicates that not only the balance between the economic and non-economic expectations of agriculture is forgotten, but the picture that emerges of the actual challenges facing the assumption of social responsibility is obscured.

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*Grainfield in Eastern Europe*



# Does the Russian import ban on Western foodstuffs improve the export prospects of farmers from the Caucasus and Central Asia?

## The findings from a survey of farmers

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### Introduction

In August 2014 Russia imposed a ban on food imports from EU countries, Australia, Canada, Norway and the USA. This import ban had a broad resonance in the media of the countries of the Caucasus and Central Asia (CCA) (KRIVONOS, 2014). Comprehensive reports appeared detailing the attitude of policymakers in the CCA countries towards the embargo. Within this region the Russian sanctions were seen as a great opportunity to increase their own agricultural exports to Russia. More than anything else, this attitude is a result of the fact the foreign trade of many CCA countries is strongly geared towards the Commonwealth of Independent States (CIS), especially Russia, and that the

development of trade relations with non CIS countries has been slow (ADB, 2006).

The close trade relations are chiefly down to the evolution of historic ties, shared borders, a common language as well as the agricultural specialisation inherited from the Soviet Union. As they did in the Soviet era, Kazakhstan, Russia and Ukraine export wheat to the CCA countries, which supply cotton, fruit and vegetables in return. The climate in the CCA countries is highly favourable for many varieties of fruit and vegetables and, especially on the Russian market, there is a great demand for these products. Currently, however, the share of fruit and vegetable imports on the Russian market from Central Asia and the Caucasus is very low. Since the collapse of the Soviet Union, Russia had mainly

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<sup>4</sup> International Center for Agribusiness Research and Education (ICARE).



been importing these products from the West, which is to say Europe, Australia, Canada, Norway and the USA. Greater productivity and highly developed logistics gave Western producers virtually unmatched competitive advantages and made their products attractive for Russian supermarkets. The imposition of the import ban suddenly improved the sales prospects of other, hitherto inferior producers, including those from CCA countries.

Immediately following the import ban all the CCA countries indicated an interest in expanding their agricultural exports. Whether these countries will actually be able to exploit the current situation to their own advantage, however, will only be decided in the coming years. In all probability the actual implementation of plans to increase agricultural exports will differ greatly from country to country, depending on their agricultural specialisations, how developed value chains are, as well as national agricultural policy. Despite very similar backgrounds with regard to the organisation of their agricultural sectors, the current agricultural policies of the now independent states of Central Asia and the Caucasus differ greatly (SPOOR, 2007; LERMAN, 2009). This variance is also seen in trade policy, both with neighbouring countries and as far as the global market is concerned. Although for all CCA countries, the sales channels for agricultural products from the Soviet era remained in place during the first years of independence and they managed only very slowly to get a foothold on global markets (DAVIS, 1997;

DJANKOV and FREUND, 2002; POMFRET, 2005), the current degree of integration in markets outside the territory of the former Soviet Union (FSU) varies substantially from country to country (LERMAN, 2009). Some CCA countries, for example Uzbekistan and Turkmenistan, isolate their domestic markets comprehensively from the global market and pursue a marked policy of self-sufficiency with regard to food produce. By contrast, other countries such as Armenia, Georgia and Kyrgyzstan have opted for very liberal agricultural policies with open agricultural markets.

We can assume that the agricultural and trade policies of the Caucasian and Central Asian countries will be a crucial factor in deciding whether these export opportunities to Russia will be exploited. To date there are no studies, neither in the regional or international specialist literature, that examine the effects of these policies on shaping farmers' decisions to intentionally produce for export. This study is an attempt to fill the gap by analysing the effects of changes in agricultural policy on the export focus of farmers by considering the business decisions they make under a variety of policy parameters. It is a question that till now has barely been addressed by research into transition economics. For our study we chose two countries with very different agricultural policy conditions. Armenia was selected as an example of a country with a very liberal agricultural policy and a market-oriented agricultural sector. By contrast Uzbekistan is illustrative of a country with substantial state intervention in the agricultural and food

industry, offering very limited scope for farm level decision-making. Armenia is also closer to Russia, and since its independence – but also as a member of the Eurasian Economic Union (EAEU) – has had the best political links to Moscow. Uzbekistan, on the other hand, is geographically further away and has no plans to join the Russian-led EAEU.

### **Agricultural reforms and exports**

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Armenia, a landlocked country, is in the Caucasus region and is surrounded by four countries: Georgia to the north, Azerbaijan to the east, Iran to the south and Turkey to the west. Uzbekistan is in Central Asia with five countries surrounding it: Turkmenistan, Kazakhstan, Kyrgyzstan, Tajikistan and Afghanistan. In both countries during the Soviet era, agricultural production was concentrated in large collective farms – sovkhozes and kolkhozes (GRIGORYAN et al., 2009; DJANIBEKOV et al., 2012). As is true of all the CIS countries, both the states in our study have undergone a transition of their agricultural and food sector since achieving independence. Initially land and property, which was effectively owned by the state, was partitioned into small production units with different forms of land ownership. Today the vast majority of agricultural enterprises in both countries are households and private farms. However, the categories of households and private farms mean slightly different things in Armenia and Uzbekistan. In general the differences between household and private farms

are not so great in Armenia. In Uzbekistan, on the other hand, there are strict differences in the definition of both these farm types. In Uzbekistan private farms are considerably larger, they have a clearly defined legal status and are regarded as commercial producers, but which have to farm according to guidelines stipulated by the state purchasing policy (BOBOJONOV et al., 2013). Household farms, by contrast, have small amounts of land and essentially produce for their own consumption, perhaps selling any surpluses. In Armenia one of the most important differences between private and household farms is in their official registration. Private farms are registered as businesses whereas household farms are not.

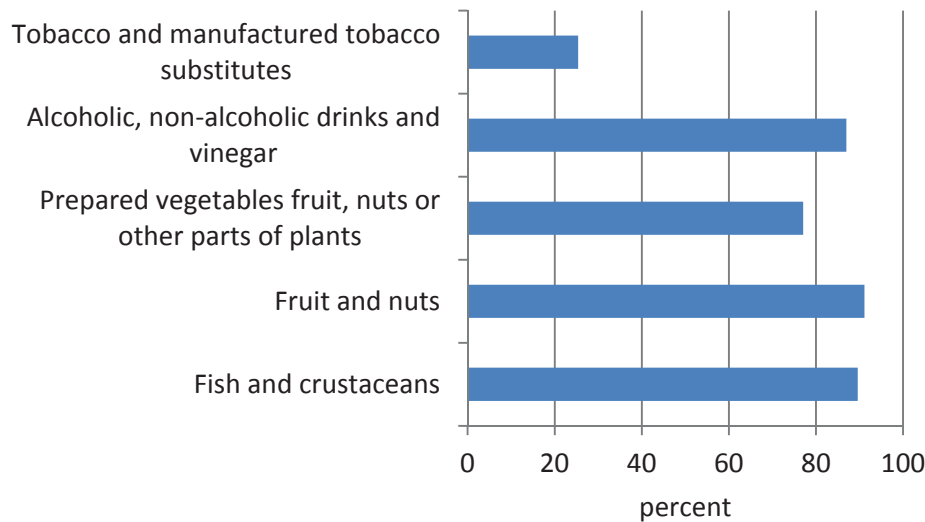
Agriculture in Armenia is dominated by small production units in family ownership with an average farm size of 4-5 ha. A few large farms of between 100-500 ha. exist in mountainous regions (ROBINSON, 2008). The chief activities of these small farms is the production of potatoes, vegetables, fruit, milk, eggs, wheat as well as beef and pork. Until the global food crisis of 2008 there were only very limited support measures in Armenian agriculture, and these were mainly from projects with third-party funding. Agricultural production and marketing, including foreign trade, were in the hands of private actors, with minimal involvement by the state. After some threatening food crises, however, the government reacted to the huge price spikes in recent years by implementing a variety of reforms to increase their level of self-sufficiency, not least in the view of

escalating border conflicts with Azerbaijan. The programme of support basically involves the provision of seed, fertiliser and diesel to raise the domestic production of cereals (ICARE, 2012).

Agricultural exports make up a considerable proportion of all Armenian exports. More than 24 per cent of exports are processed foodstuffs and agricultural raw materials. The largest share of these are wine and wine products. Fruit exports have also been on the increase for a few years, which suggests that fruit farming has a certain potential to create jobs and income in rural areas (ICARE, 2012).

In 2015 Armenia joined the Eurasian Economic Union (EAEU), although with the exception of agricultural goods most of its export trade is with countries outside of the former Soviet Union (DJANKOV and FREUND, 2002). As Armenia has always exported the majority of its agricultural products to the Commonwealth of Independent States (CIS) (Figure 1), the question arises as to whether Armenia’s accession to the EAEU will have a noticeable effect on the country’s agricultural exports. With the exception of tobacco, currently more than 80 per cent of agricultural goods are exported to CIS countries, predominantly Russia. It is perfectly conceivable,

**Figure 1:** *Armenian exports to the CIS of selected agricultural products as a share of overall exports*



Source: ARMENSTAT, 2014.

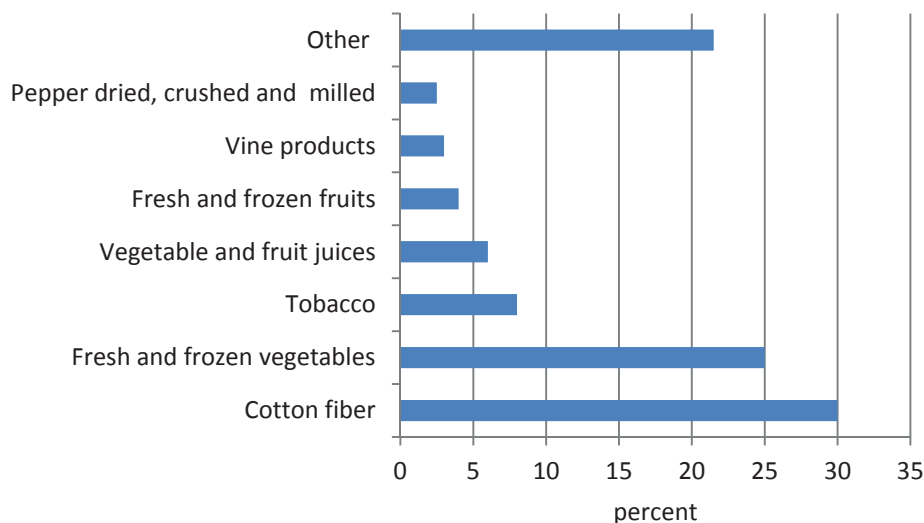
however, that the country's membership of the EAEU will bind Armenia more strongly to the CIS countries.

Earlier studies concluded that Armenia does not have a comparative advantage in cereal production and therefore recommended the farming of higher-value crops (e.g. ICARE, 2012). As a result, the current export opportunities to Russia might be a key impetus for the development of efficient vegetable and fruit farming in Armenia.

The transition process and the current farming systems in Uzbekistan are more complicated than in Armenia. The first difference from other CCA countries is that

there were several waves of transition in Uzbekistan. In the first phase the sovkhozes and kolkhozes were transformed into so-called agricultural cooperatives (shirkats), which continued to exhibit large similarities with the former state farms. Later, however, the land of the cooperatives was divided up into small private farms, with an average size of 10-15 ha. The agricultural infrastructure developed in the Soviet era proved unsuitable, however, for the needs of these small farms (DJANIBEKOV et al., 2012). In 2008, therefore, these small farms were amalgamated into larger production units with an average of 80-100 ha.

**Figure 2: Uzbekistan exports to Russia of selected agricultural products as a share of overall exports**



Source: UzSTAT, 2015.

The agricultural sector in Uzbekistan is also characterised by the existence of large-scale state purchasing organisations for cotton and wheat. The state prescribes a minimum area for cotton and wheat cultivation, which means that more than 70 per cent of all arable land is reserved for these crops (BOBOJONOV et al., 2013). The entire cotton yield and around half of wheat grown on this reserved land must be sold to state processing concerns at fixed prices. In return the state subsidises farmers with credits and inputs at sowing time, with the stipulation that these must be paid back after the harvest.

Cotton is one of the most important agricultural exports and it is closely linked to the state purchasing system described above (Figure 2). The export of fruit and vegetables is also an important source of income for farmers in Uzbekistan. In 2008 the government announced an agricultural diversification strategy with the goal of developing agro clusters for fruit and vegetable production. The Russian import ban ties in very well with the state-expedited diversification strategy, as since 2008 it has been a priority of agricultural policy to increase the production of fruit and vegetables.

## Data and methods

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Using a survey sample of four hundred farmers and household farms in the most important regions of

Armenia and Uzbekistan for wheat cultivation, we were able to learn more about the effects of the new export opportunities on the business decisions of agricultural producers. The surveys were split into several sections and included a review of all the people in the household as well as of farm production data and quality standards. There was also a section investigating the inclination of farmers to produce for the export market. The section on the export market contained thirteen questions, such as those on plans for farm changes, e.g. with regard to methods of cultivation or types of crops as a reaction to the Russian import ban.

The surveys were conducted in late winter and early spring in 2015, in the middle of the planning phase for farming activities in 2015 and before the first sowing following the imposition of the import ban. The surveys were carried out by local institutions in the respective national languages. Instead of the standard printed questionnaires, mobile devices were used for this study, which sped up the process and facilitated the supervision of the survey.

The findings of the survey can also be used to establish differences in the farming systems between Armenia and Uzbekistan and their agricultural policy determinants. Based on the literature we can also ascertain what role the developments in value chains and state agricultural policy play in the decisions of farmers to produce for export.

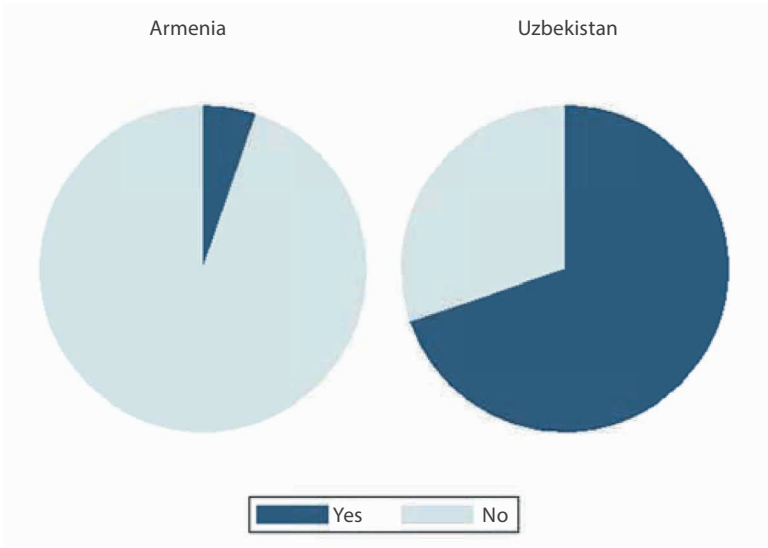
**Findings of the survey on the influence of new export opportunities on farm production decisions**

The surveys reveal great differences between Armenia and Uzbekistan with regard to how prepared farmers are to gear their production more strongly towards export in response to the Russian import ban on goods from the West. Only 5.2 per cent of farmers surveyed in Armenia said they were prepared to orient their production decisions in 2015 on potentially improved

sales opportunities for certain agricultural goods on the Russian market (Figure 3). By contrast, 69.9 per cent of farmers surveyed in Uzbekistan said that they were very keen on strongly aligning their farming activities to Russian demand.

The most important change farmers are planning is to intensify production through increased application of manure and fertiliser and a greater use of machinery (Table 1). Further measures being considered are dedicating more land to vegetable cultivation, an increase in animal production and plans to expand fruit production.

**Figure 3:** *Willingness of farmers to factor potential emerging export opportunities into their business decisions*



**Table 1:** *Effect of improved export prospects on farmers' business decisions (percentage of farmers who intend to implement the individual measures in 2015)*

	Armenia	Uzbekistan
Use more inputs	4,2	55,3
Expand wheat area	3,5	19,8
Shrink wheat area	1,0	15,8
Expand vegetable area	1,2	50,6
Shrink vegetable area	0,7	1,5
Increase animal stock	2,0	36,5
Increase trees, orchards	0,5	48,9
Construct a greenhouse	1,0	33,6

Source: Own survey.

Some of differences in the results between Armenia and Uzbekistan can be explained by the fact that the two countries have very different farm structures. For example, more than 77 of full-time private farmers in Uzbekistan said that they were factoring export-induced changes into their business planning. This is a higher figure than for all agricultural producers surveyed, including family farms (70 percent). Similar results were seen for the question relating to the intensification of input use. Here, 60.8 per cent of private farmers were in favour of such a move, again a little more than for the sample as a whole. In Uzbekistan, the proportion of those surveyed who planned to expand

their vegetable, fruit and animal production was also slightly higher for private farms than the sample as a whole. In Armenia, on the other hand, the differences in the survey results between private and family farms are negligible. The marked differences in the farming systems of both countries and in the development of their value chains can be seen as major factors explaining the significant differences in the survey results. In the following sections we will examine this in detail to obtain a better understanding of why there is such variance between farmers in Armenia and Uzbekistan with regard to their willingness to respond to potential export opportunities.

## Review of the findings

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The findings of our survey show marked differences in the attitudes of farmers about gearing their production more strongly towards export. Only 5.9 per cent of agricultural producers in Armenia are considering undertaking business changes to profit from the improved export opportunities that are emerging. By contrast 69.9 per cent of farmers surveyed in Uzbekistan are planning to respond to these. Different farm sizes in both countries could be a factor explaining the lack of motivation amongst Armenian farmers to adapt to the new export possibilities, as has already been noted in several international studies in the literature on the subject (e.g. COLLINS, 1995). The average farm size in Armenia is relatively small by comparison to Uzbekistan. But even when the survey results are differentiated by farm type, in Uzbekistan the majority of household farms, i.e. the smallest producers, are also willing to gear their production more strongly towards export. This finding suggests that besides different agricultural structures there are other important factors that encourage farmers to focus their production more strongly towards export. In line with international studies, therefore, the level of development of value chains and differences in market infrastructure or farmers' market access were also taken into consideration to explain the big differences in attitudes towards export between farmers in the two countries (COLLINS, 1995; PINGALI and ROSEGRANT, 1995; TIPRAQSA and SCHREINEMACHERS, 2009).

In Armenia an underdeveloped rural infrastructure may be a factor seriously restricting the opportunities for farms to market their goods and fully exploit their agricultural export potential. In rural areas roads are in very poor condition and logistics barely developed at all. There is a lack of storage capacity, cold storage, abattoirs and other facilities to support the marketing of agricultural products (ICARE, 2012). The findings of this study confirm these shortcomings and offer a detailed insight. Our analysis shows that the lack of cooperatives, a proper system of certification, agricultural extension services and sufficient market information are the main problems preventing Armenian farmers from being able to profit from the emerging export opportunities.

One would expect the smallest farms in Armenia to practise formal or informal cooperation – especially when compared to the larger farms in Uzbekistan. But the findings paint a different picture. With their much larger agricultural units, farmers in Uzbekistan engage in closer cooperation than those in Armenia. As everywhere during the period of transition, types of informal cooperation, in particular, play an important role in minimising risk, something already discussed by VAN ASSCHE and DJANIBEKOV (2012). Here it should be noted that the greatest cooperation is in the (shared) use of agricultural technology, whereas cooperation in product marketing and the maintenance of infrastructure tends to be limited. Yet in both countries an improvement in cooperation in these two areas would be of great



significance to increasing the export potential of farms. In addition, Uzbekistan has gone further than Armenia in implementing quality standards. Quality standards and controls exist mainly along the value chains for wheat and cotton, while they are far less developed in the value chains for animal products, vegetables and fruit. And yet it is precisely for this product – fruit – that an increasing demand exists in the Russian retail sector. Producers in Armenia and Uzbekistan will not be able to make use of export opportunities if they fail to implement appropriate quality controls along the relevant value chains.

The disparities in development between value chains can be explained by the very different state policies in the two countries during the transition period. Armenia is one of those CCA countries that has pursued a very liberal agricultural policy (SPOOR, 2007). The almost complete withdrawal of the state from the agricultural sector led to the disappearance of organised value chains beyond informal channels, as the private sector lacked both the financial means and the experience to carry out the necessary investment. For this reason the value chains are now dominated by informal institutions and most agriculture is subsistence-oriented farming. By contrast, the Uzbekistan government has made major interventions in the entire agricultural sector through the state-organised purchase of cotton and wheat (DJANIBEKOV et al., 2013). One of the effects of

this policy, extensive monocultures, has already been discussed at length in the international literature and is seen as a limiting factor for export diversification and sustainable production (e.g. BOBOJONOV et al., 2013). However, the fully developed state purchasing system also appears to have some positive effects, such as the maintenance of the nationwide rural infrastructure as far as irrigation, extension services and quality control are concerned. In addition, the input for cotton and wheat, which are still subsidised, can also be used to increase the output of other crops such as vegetables and rice (VELDWISCH and SPOOR, 2008). This study, however, underlines clear weaknesses in the current value chains in Uzbekistan, especially crops that could be alternatives to cotton and wheat.

Since 2008, in fact, the Uzbekistan government has issued a number of directives and laws for the diversification of agricultural production.<sup>5</sup> The goal is to increase the export of fruit and vegetables, especially to neighbouring countries. A result of this policy has been a slight increase in the production of alternative crops. Nonetheless, reforms to date have been insufficient to modernise the value chains of alternative crops. The lack of a market infrastructure, with serious deficits in certification, processing and packing, is currently hampering agricultural exports from Uzbekistan apart from cotton. Here it is up to the state to eliminate institutional obstructions to export in the near future.

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<sup>5</sup> Directive of the Council of Ministers from 2008.

Our study has examined the possibilities for farms to increase agricultural exports. But there are various external factors which threaten the growth of the export potential of CCA states in the future. First of all, it is very hard to predict whether the sanctions will remain in place for long or will soon be removed. In case of the former, a rapid growth in exports is certainly possible, even with minimal investment in value chains. If the sanctions are removed soon, however, the current optimistic prognoses for export growth are very unlikely, given the expected competition with Western producers who already enjoy highly developed value chains and the most modern technology. For this reason state policy should create an investment-friendly environment, especially for the downstream stages of the value chains. Central Asian and Caucasian producers must also focus to direct their investment into value chains in which they have advantages on the Russian market compared to other competitors.

## Conclusion

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There is currently an intensive discussion about whether farmers in the Caucasian and Central Asian countries can profit from the Russian import ban on Western foodstuffs by raising their agricultural exports to Russia. In all likelihood the profits from increased exports in the individual CCA countries will vary substantially as a result of their different farming portfolios, geographical locations and the considerable

differences in the effectiveness of their value chains. This study has looked at the prospects of increasing exports of two CCA countries with very different agricultural policy parameters: Armenia and Uzbekistan. We have analysed how both these countries could exploit the new potential market opportunities and which factors influence the export orientation of farmers. Our study is based on secondary data from national statistics as well as primary data obtained from a survey we carried out of private and household farms in spring 2015. Developments in the value chains and policy reforms were also considered, where they had an impact on farmers increasing their export production.

The findings suggest a high motivation amongst farmers in Uzbekistan to increase their export production. Of those producers surveyed, 69.9 per cent said that they were planning to increase the production of crops for export to Russia. Around 50 per cent of those farmers surveyed talked of their plans to increase the amount of land given over to vegetable cultivation and the number of fruit trees. By contrast the farmers in Armenia seemed reticent in their responses to the new export opportunities. Only 5.9 per cent were intending to gear their production plans and farming methods more closely towards export. All in all, our study comes to the conclusion, that the modernisation of value chains and market infrastructure has a greater influence on farmers' inclination to produce for export and their capacity to profit from new export opportunities, than the closeness of the political relationship with

Russia. For this reason the countries of Central Asia and the Caucasus should support investment in food value chains, especially in marketing cooperatives, extension services and the implementation of effective quality standards so that they can increase their export potential in future.

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*Market in Yerevan, Armenia*



# Models of crop diversification in Central Asia

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NODIR DJANIBEKOV, MARTIN PETRICK

## Introduction

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For many decades, agriculture in the five post-Soviet Central Asian republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (CA5) was characterised by a high degree of crop specialisation (monoculture). While irrigated areas concentrated on growing cotton, the rain-fed areas of Northern Kazakhstan were instructed to grow wheat. Such specialisation implied that, in many regions, the development of agricultural infrastructure and organisations was geared towards monoculture in a collective farm system. After the 1991 collapse of the Soviet Union, each country needed to revise its agricultural growth strategy as a response to new challenges from export and import constraints. The approaches taken to shift away from monoculture can generally be grouped into two models of crop diversification in CA5. The first model led to the dominance of private farms. This model is characterised by farm-led evolution of crop production,

(often) with the participation of foreign traders and investors. In the second model the opposite happens: the state guides the evolution of crop production through the issuing of directives and plans. The first model dominates in Kyrgyzstan and Kazakhstan, where newly established forms of production (family farms and agricultural enterprises) have been leading the changes in crop production. The experience of Turkmenistan, Tajikistan and Uzbekistan reflects state-led changes in crop production. Both models have resulted in a broad set of changes in cropping patterns, some of them globally unprecedented. In this article we will examine the outcome of these two crop diversification models in Central Asia. We will review the evolution paths of post-1991 crop production and thus try to provide a better understanding of the variety of outcomes in CA5. We have used a database consolidated from official agricultural statistics at a subnational level within the AGRIWANET ([www.iamo.de/agriwanet](http://www.iamo.de/agriwanet)) project. The project's current country analyses have been used to explain the observed patterns.



*After the harvest, children and young people collect cotton stalks, which are used as fuel*

## Food self-sufficiency concerns after 1991

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At the dawn of the 1990s, wheat had become the single largest food import of the non-grain producing CA5, i.e. excluding Kazakhstan (SHIFERAW et al., 2013). The remaining four countries, formerly substantial importers of food grains from the former Soviet Union, faced the problem securing their wheat supplies while being dependent on wheat imports – the major staple crop and the main source of cereal calories and proteins in the region. To tackle this issue, all four governments opted for wheat self-sufficiency and import substitution. This strategy had startling effects. The size and magnitude of the wheat area expansion was more rapid than any other crop in the history of post-1991 agriculture of the CA5. The largest increase in area and harvested area and volume of wheat production was observed in Turkmenistan<sup>1</sup> and Uzbekistan (Figure 1). These two countries gave wheat the status of a "strategic" crop, similar to cotton, mandating the sale of part of the harvest to state-operated mills (AGANOV et al., 2016; PUGACH et al., 2016). In this process, increasing yields through short-statured high yielding and fertiliser-responsive wheat varieties was a more important factor for production growth than area expansion (SHIFERAW et al., 2013). From 1992 to 2003, the four new wheat producing countries brought an

additional 1.8 million hectares under wheat cultivation. This area partially compensated for the decline in wheat production that had occurred in the wake of the transition crisis in Kazakhstan's rainfed production regions.

In the early 2000s Kyrgyzstan, Turkmenistan and Uzbekistan managed to reduce the share of imported wheat in domestic supplies to below 5 %. Despite the production levels, wheat imports since 2004, mainly in the form of flour, have been increasing (Figure 1). This is largely a result of the stabilisation of wheat production in Kazakhstan, and of the low quality of wheat produced in irrigated areas. In Kyrgyzstan and Turkmenistan wheat production started to fall in the 2000s (TILEKEYEV, 2012; AGANOV et al., 2016). Uzbekistan, despite rising wheat production levels, has also increased its imports from Kazakhstan (PUGACH et al., 2016).

## Traditional dominance of cotton and new export potentials

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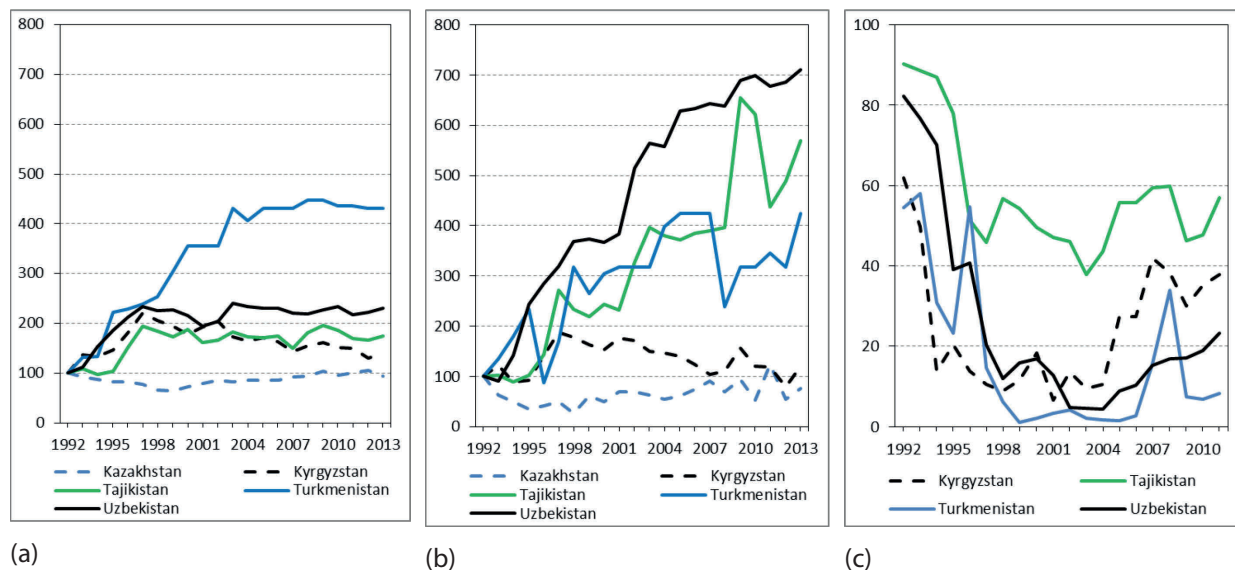
Cotton was by far the most important crop in most irrigated systems of Central Asia. When the region experienced the transition-fuelled recession, and agriculture remained a base for economic growth, the countries opted for two contrasting models to reorganise cotton production. Kazakhstan and Kyrgyzstan chose to

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<sup>1</sup> Post-1998 wheat production figures in Turkmenistan's official statistics were exaggerated to demonstrate the success of the national grain policy (LERMAN et al., 2016). We use corrected figures below based on USDA estimates.



**Figure 1: Evolution of wheat production (a) area, (b) quantity (for both, 100 = 1992), and (c) share of wheat imports in total domestic supply (%)**

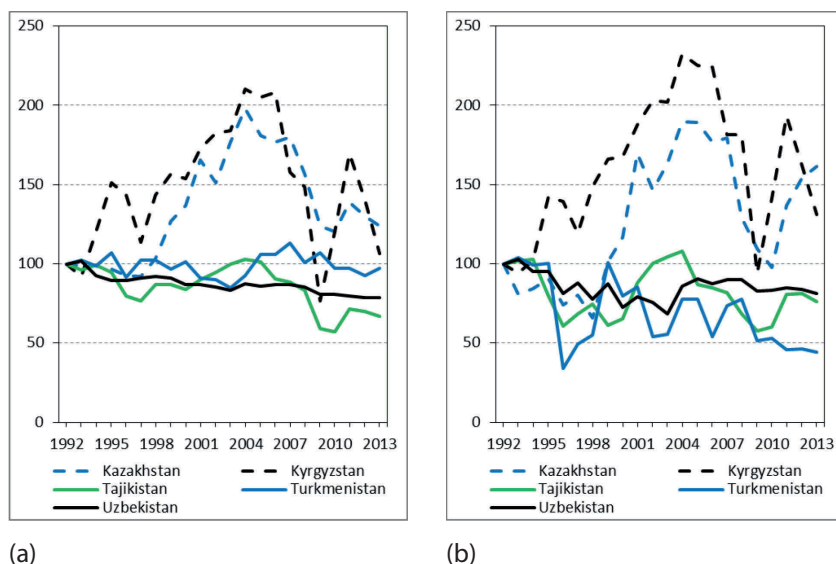


Sources: AGRIWANET PROJECT DATABASE, FAOSTAT. USDA/PSD for Turkmenistan.

liberalise the cotton sector by abolishing production targets and allowing private investment in ginneries (OSHAKBAYEV et al., 2016). This was followed by a doubling of the area under cotton cultivation by the mid-2000s. Despite this deregulation, farmers lacked sustainable access to finance and ultimately the area under cotton cultivation declined back to the 1990s level (Figure 2). Having liberalised its cotton sector in 2007, Tajikistan experienced a monopsony power of ginners, an accumulation of cotton-producer debts and a further decline of cotton production (UMAROV, 2016). By contrast,

Turkmenistan and Uzbekistan, the largest cotton producers in the FSU, retained the state order system so as to divert cotton export revenues into investments in other sectors. While major reforms in the cotton sector were out of question, both countries opted for a gradual state-led decrease of area under cotton cultivation to improve agricultural incomes and diversify to high-value crops (AGANOV et al., 2016; PUGACH et al., 2016). In some former cotton-producing areas in Uzbekistan, for example, farmers were given greater flexibility in their choices of crops.

**Figure 2: Evolution of cotton production (a) area (1992=100), and (b) quantity (1992=100)**



Sources: AGRIWANET PROJECT DATABASE, FAOSTAT.

As the governments mainly targeted cotton and wheat, the production of vegetables, melons and fruit (VMF) largely remained in the hands of rural households. Except for Tajikistan and Kyrgyzstan, the area of VMF cultivation in other CA countries shrank in the 1990s, largely due to the abandonment of market gardening in former collective and state farms (Figure 3). Kazakhstan experienced a significant loss of garden area, which almost halved in 2006-10, not returning to the 1992 level until 2013. In Uzbekistan, export restrictions placed on fresh fruit and vegetables to satisfy

domestic demand have hindered the rapid expansion of VMF cultivation which was seen in neighbouring Kyrgyzstan and Tajikistan (PUGACH et al., 2016). In 2014, with the Russian embargo of fruit and vegetable imports from the EU, the CA5 turned their attention to these crops. Reforms have been accelerated to boost domestic production beyond the household sector. Kazakhstan introduced a system of targeted credit lines and subsidies for the installment of intensive market gardens and greenhouses in the southern regions. Uzbekistan responded with better coordinated support for

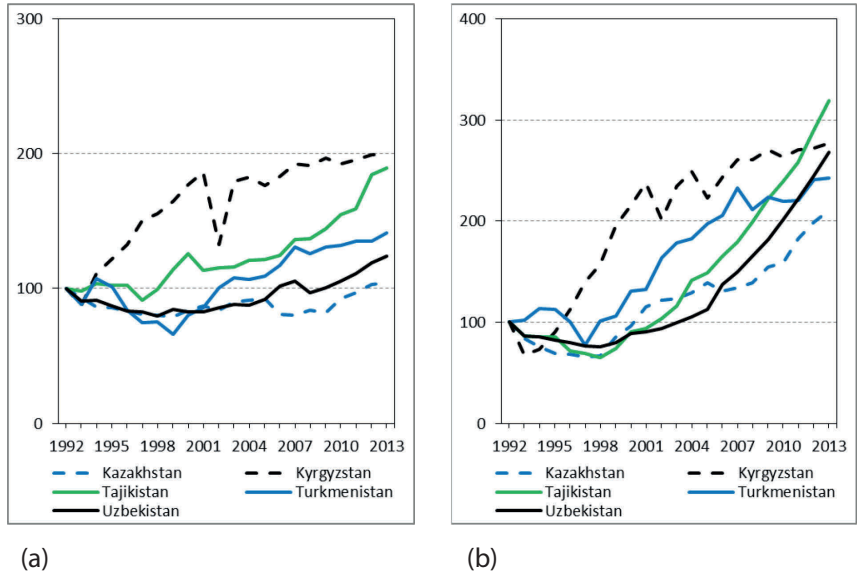
exports by establishing a new state agency which, similar to the one regulating wheat production, will procure a proportion of the fruit and vegetable harvest from farmers to export to neighboring markets (PUGACH et al., 2016).

### The role of the private sector

Except in Kazakhstan, newly established individual farms have taken over the arable land of collective/state farms and enterprises (Figure 4). These farms produce

almost all the cotton in the region, except for Turkmenistan which is dominated by so-called "peasant associations". A similar pattern can also be observed in wheat production, which has shifted to private farms. The experience of Tajikistan and Uzbekistan, however, shows that the wheat self-sufficiency programme also leads to an expansion in wheat cultivation in household farms, which is not the case in the private farm model. For reasons of food security, the proportion of wheat production from households in Tajikistan is the largest amongst the CA5 countries

**Figure 3:** *Evolution of vegetable, melon and fruit production (a) area (1992=100), and (b) quantity (1992=100)*



Sources: AGRIWANET PROJECT DATABASE, FAOSTAT.

(UMAROV, 2016). In Uzbekistan, the availability of private mills and improved seed varieties has meant that household farms have increased their wheat production (PUGACH et al., 2016).

One common feature of post-Soviet Central Asian countries, except for Kyrgyzstan, is that despite their small share of total farmland, household plots dominate the production of VMF. Private individual farms have followed a variety of paths. In Kazakhstan, there has been a continual increase in the share of all crops grown by individual farms. In Kyrgyzstan, individual farms responded rapidly to the land reforms, particularly to the introduction of a land market, expanding VMF production up to two-thirds of the national level. Private farms in Uzbekistan and Tajikistan, on the other hand, exhibit rather slow progress in VMF production, as their vegetables, melons and fruit are associated with domestic self-sufficiency rather than being regarded as export goods. In Uzbekistan, the contribution of individual farms jumped after 2006, when all former collective farms were dismantled, but it still remains below the level of household production.

### **Models of export promotion and food self-sufficiency**

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The examples demonstrate that each model of crop diversification, both for export promotion and food self-sufficiency, can generate contrasting results. These

examples are highlighted in Table 1. The most obvious example of farm-led diversification is the expansion of export-oriented high value crops, particularly in areas dominated by newly established individual farms. Yet for another major export crop, cotton, a U-shaped path is observed. A similar path is visible in Kyrgyzstan's post-1991 experience in wheat production in irrigated areas. As wheat production shifted to the private sector, the stabilisation of the wheat supply from Kazakhstan has reduced the importance of domestic wheat production.

In state-led models similarly contrasting examples can be observed. For instance, the area under cotton cultivation has gradually been reduced to open up space for wheat production, and later for VMF. In contrast to Kyrgyzstan, however, production targets – despite increasing wheat imports from Kazakhstan – have prevented the return of domestic wheat production to 1992 levels. Compared with the farm-led model, the household sector dominates in the production of VMF.

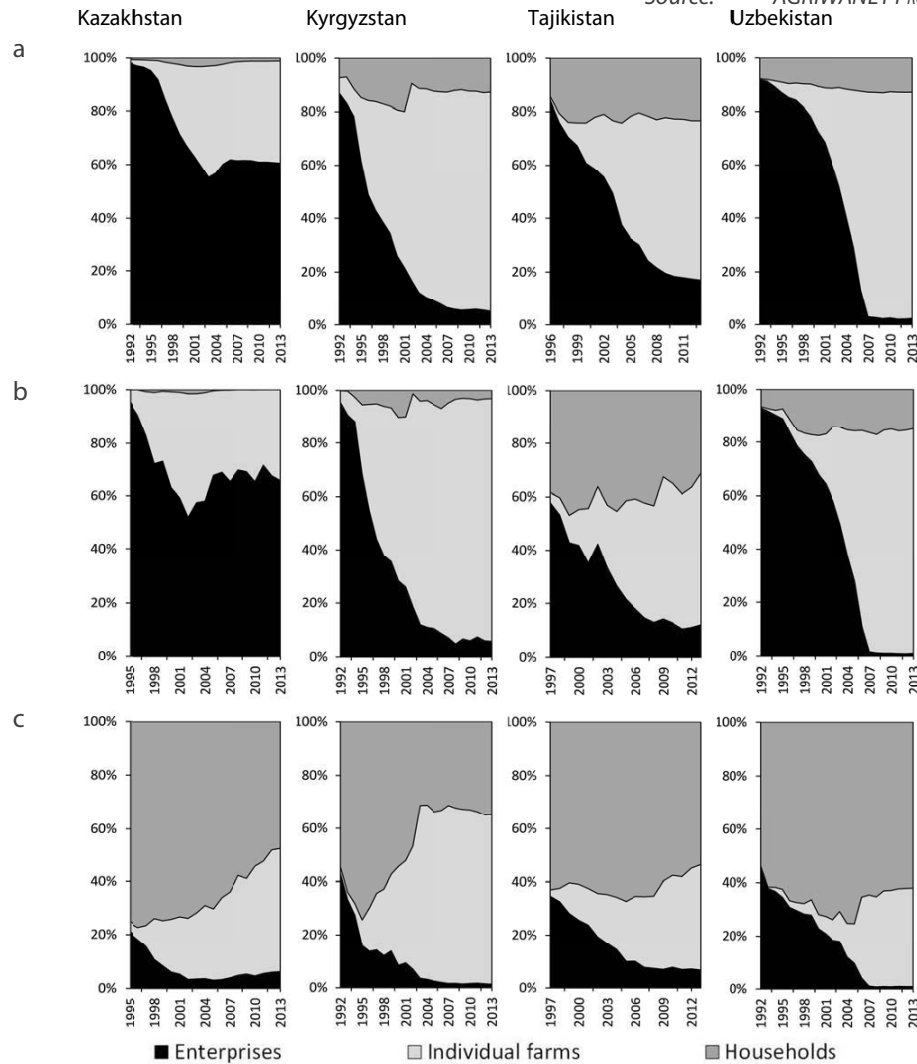
### **Conclusion**

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In Central Asia, the collapse of the Soviet Union forced governments to consider institutional and organisational changes to both the collective farming system and the crop portfolio. One common approach, except for Kazakhstan, was to target self-sufficiency in wheat. Each model highlighted in this study generates

**Figure 4: Share of different producer categories in (a) total area sown to wheat, and (b) production of wheat, and (c) production of vegetables, melons and fruit**

Source: AGRIWANET PROJECT DATABASE.



contrasting results. The state-led model to achieve wheat self-sufficiency cannot suppress food imports altogether. In fact, in all new wheat-producing countries, imports of high-quality wheat from Kazakhstan are increasing. Income growth and urbanisation are expected to push up the demand for high-quality wheat products even further.

Cotton took a very different path and its position as the major crop in irrigated areas for CA5 was weakened,

but for a different reason. Contrary to expectations, the liberalisation of the cotton sector led to its continuous growth and an expansion of the area under cotton cultivation. Where the state kept control over cotton traditionally grown for export, its decline has been orchestrated to meet targets of food self-sufficiency that run in parallel. It was also a measure to divert additional land to exportable crops that have only recently gained in interest.

**Table 1: Crop diversification models in Central Asia**

Model of crop diversification	Direction	
	Export potential	Self-sufficiency
Farm-led	<p>Rapid increase of cotton production followed by a decline</p> <p>Recovery of wheat production in agricultural enterprises</p> <p>Rapid expansion of VMF production in Kyrgyzstan</p> <p>Delayed expansion of VMF production in Kazakhstan</p>	<p>Expansion of wheat production, mainly in individual farm sector</p> <p>After stabilisation of wheat supplies from Kazakhstan approaches previous levels</p>
State-led	<p>Gradual decline of cotton production and exports</p> <p>Delayed expansion of VMF area in individual farms</p> <p>Recent reorientation to VMF for export</p>	<p>Wheat production increased and stabilised, also in household sector</p> <p>Wheat imports from Kazakhstan reemerged</p> <p>Achieved in most VMF via export restrictions</p>

When comparing these two contrasting models, their effects on crop diversification are different. In the farmed model, crop production shifts from cotton to VMF for export, and there is a movement away from the policy of achieving wheat self-sufficiency. In the state-led model, the goal of wheat self-sufficiency through domestic production persists, resulting in a decline in cotton production and only a sluggish increase in VMF production.

### Acknowledgement

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The authors gratefully acknowledge the support of the German Federal Ministry of Education and Research (BMBF) for funding the research project "Agricultural restructuring, water scarcity and the adaptation to climate change in Central Asia: A five-country study (AGRIWANET)".

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*Horses grazing in Kostanay Region, North-Central Kazakhstan*

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# Pasture use and livestock production in Kazakhstan

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BRETT HANKERSON, FLORIAN SCHIERHORN, DANIEL MÜLLER

## Introduction

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Animal products make up 40 % of the current global food demand, and this demand is expected to double by 2050 (from 2005 levels) (TILMAN et al., 2011). Improving the productivity of livestock production is an important step in meeting this increasing demand, but as the productivity increase is stagnating in many regions, it becomes equally important to seek out areas where livestock production can be expanded onto land currently unused or underutilised. In many parts of the world, livestock production is in direct competition with crop production, where the soil is of high quality, and levels of sunlight and precipitation sufficient for growing crops. In drier climates, such as the Eurasian Steppe for example, much of the land receives too little precipitation for cropland agriculture, and grazing is the only agriculturally significant activity possible. In this context, Kazakhstan provides an interesting and globally important case.

In the years immediately following the collapse of the Soviet Union in 1991, Kazakhstan's cropland area

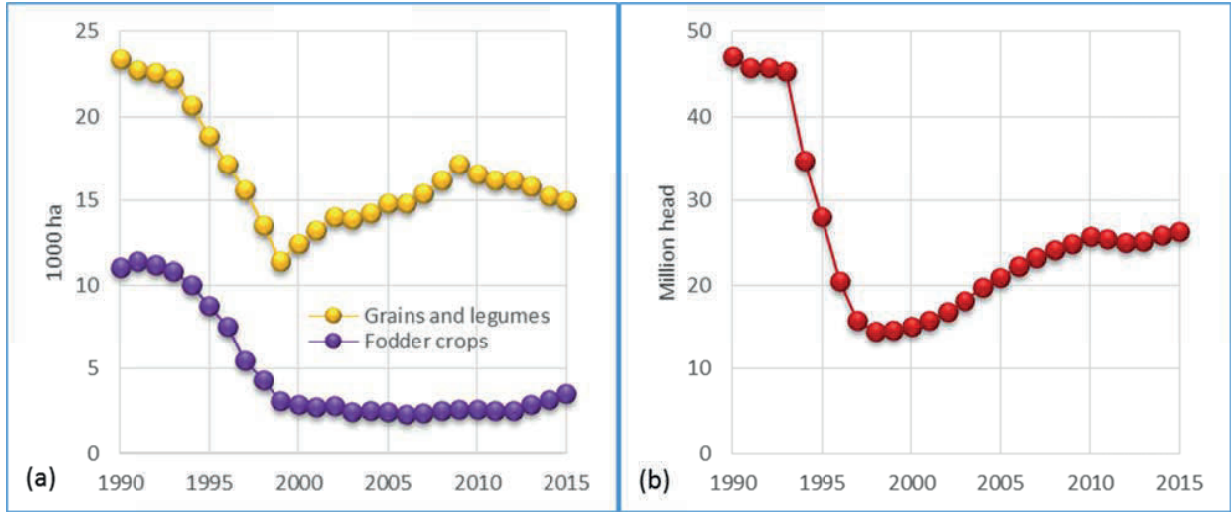
underwent a dramatic contraction, while the 2000s were marked by a steady increase in sown area (Figure 1). At the same time, livestock numbers initially plummeted, then increased steadily during the 2000s, but they are still less than 60 % of those during the late Soviet years. This fall in livestock numbers led to some abandonment of pasture land, but mostly to a large decrease in the density of grazing. During this period, however, Kazakhstan was expanding and developing a different sector, one that would greatly increase its economic status. The second half of the 1990s and the 2000s were marked by a quadrupling of oil and natural gas production and a consequent increase in federal reserves due to increased exports. With this influx of revenue, Kazakhstan laid down a plan to boost the agricultural sector in order to diversify its economy and create an environment for continued economic growth. A priority was placed on the livestock sector – Kazakhstan became highly dependent on the import of animal products during the 2000s – and it is reasonable to assume continued growth considering past levels of production and the ample land resources available.

Becoming a net exporter of meat and milk is a top priority in the government programme *Agribusiness 2020*, which aims to revive the livestock sector by increasing the production of meat and milk, as well as the level of domestic meat consumption and meat exports (PETRICK et al., 2014).

To achieve this, Kazakhstan has directed subsidies towards the procurement of livestock and equipment from abroad, leading to an influx of high-productivity breeds and modern technology. These investments aim to attain production goals similar to the high level of production in the early 1990s, in the knowledge that

this level of production is possible. What is unclear, however, is whether such a level of production is environmentally sustainable. This is extremely important because widespread land degradation due to high livestock densities was a huge problem during the Soviet period (MIRZABAEV et al., 2016). Research must be done, therefore, to assess the feasibility of the development goals that have been put forward in *Agribusiness 2020*. To this end, it is crucial to know the extent of suitable grazing in Kazakhstan and the number of livestock these areas can sustainably support. While there are huge tracts of land that are theoretically available for

**Figure 1:** (a) Sown area of grain and legume crops, and fodder crops in Kazakhstan from 1990 to 2015  
(b) Number of grazing livestock (cattle, sheep, goats, and horses) in Kazakhstan from 1990 to 2015



Source: KAZSTAT, 2016.

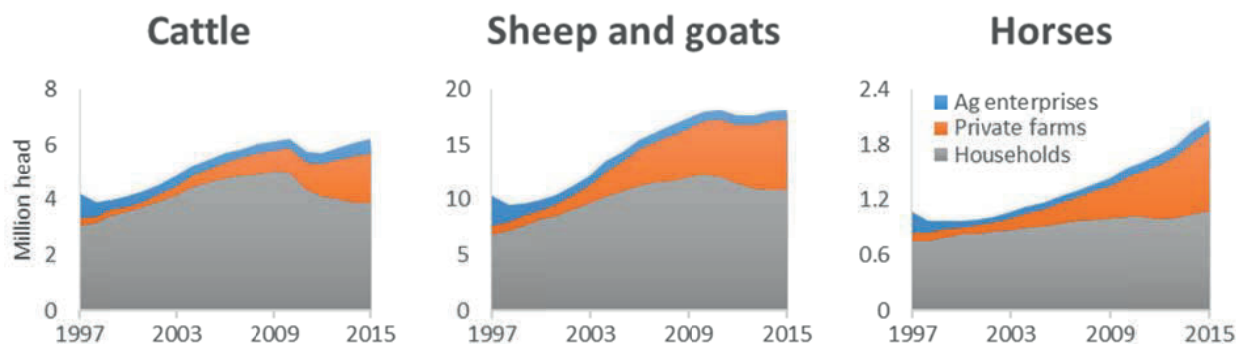
grazing, socioeconomic factors limit the potential for an increase in livestock production. In general, much of Kazakh agriculture suffers from a lack of infrastructure, and poor accessibility is a major issue, particularly for livestock rearing and processing.

### The influence of farm structure on livestock production

The structure of farms in Kazakhstan also limits growth, due to characteristics exhibited by each farm type. In Kazakhstan, there are three distinct types of farms: agricultural enterprises, private farms, and households. The majority of livestock are raised in households (Figure 2). Households are unregistered family farms that

often graze on communal pastures adjacent to the settlement. Household livestock (and to varying degrees, that of private farms as well) are limited in their pasture range to lands reachable within half a day, as the livestock are usually stabled overnight in the settlement. This means that for the vast majority of livestock in Kazakhstan, only a small subset of the potential pasture is actually available. The demand that the livestock in households (and private farms) place on the pasture surrounding the settlements varies depending on the herd size, biophysical conditions, and amount of the surrounding land available for grazing. Knowing that livestock on households and private farms are limited in their grazing range to lands near settlements is the key to disaggregating livestock numbers from rayon-level statistics.

**Figure 2:** *Number of livestock in Kazakhstan by farm type. Open access data exists only from 1997 onwards, allowing only the tail end of the fall in agricultural enterprise numbers to be seen.*



Source: KAZSTAT, 2016.

## Livestock density

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Before the extent of the suitable grazing area can be determined, however, the livestock (and their grazing demand) must be spatially distributed. The only currently available livestock distribution for Kazakhstan comes from a global product (WINT and ROBINSON, 2007) that lacks the high resolution and definition needed for identifying pasture utilisation. Quantifying livestock density, and subsequently grazing density, is the first step to several livestock-focused environmental analyses such as the assessment of soil and water quality and the estimation of greenhouse gas emissions from livestock.

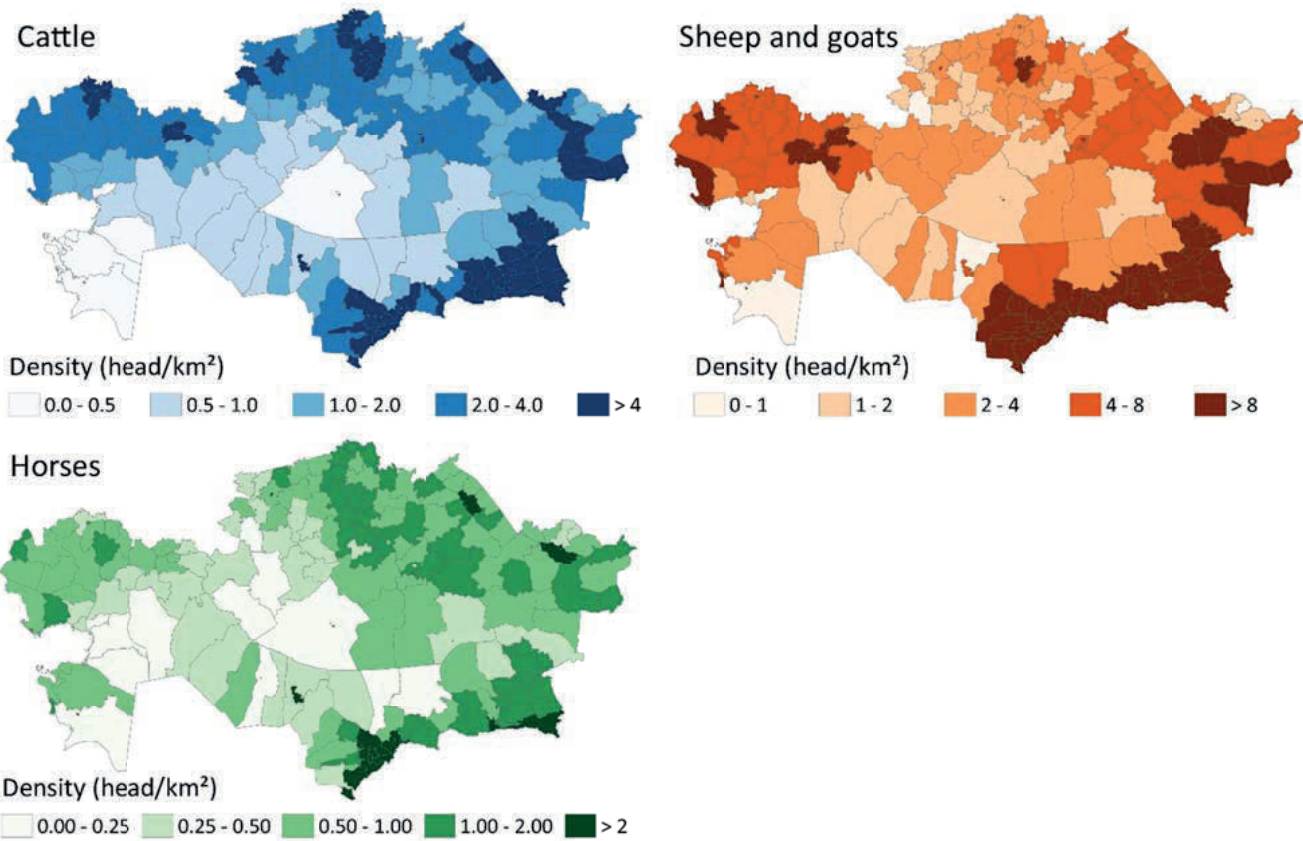
From national statistics, the number of livestock can be determined annually at the rayon (district) level (Figure 3). Clearly, livestock are distributed unevenly throughout the country. The distribution is similar for all livestock species except in two notable regions: in the North Central, where cattle are highly prevalent, but sheep, goats, and horses are not; and in the Southwest, where cattle are almost nonexistent. In order to further disaggregate rayon-level numbers to a higher resolution necessary for spatial analysis, information must be gathered about livestock grazing patterns, land cover and land use, productivity of the available land resources, and nutritive requirements of the livestock.

## Quantifying grazing potential

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We used a recent land cover map to delineate areas that could be used for grazing. Grazing is a difficult land-use type to identify from satellite imagery, due to the fact that grazing typically does not significantly alter the land cover, nor are there easily discernible boundaries of grazing lands (as exist in crop-based agriculture and forestry). Furthermore, grazing can even overlap with other agricultural land uses (e.g. grazing of harvested croplands, silvopasture) (ERB et al., 2016). In Kazakhstan, 95 % of land is classified as cropland or grassland. The latter includes substantial areas (about 10 %) that are deserts and semi-deserts, which can potentially be used for grazing but are generally very low – if highly variable – in biomass productivity. We used recent biomass productivity maps to determine the amount of biomass produced annually on land classified as grasslands (including deserts and semi-deserts). Additionally, croplands are often used for grazing after harvest, and we defined post-harvest grazing in the cropland area as the amount of biomass produced between September and November. We combined the cropland with the grassland to make a spatial distribution of the biomass available for grazing.

Figure 3: Rayon-level livestock density for Kazakhstan in 2015



Source: KAZSTAT, 2016.

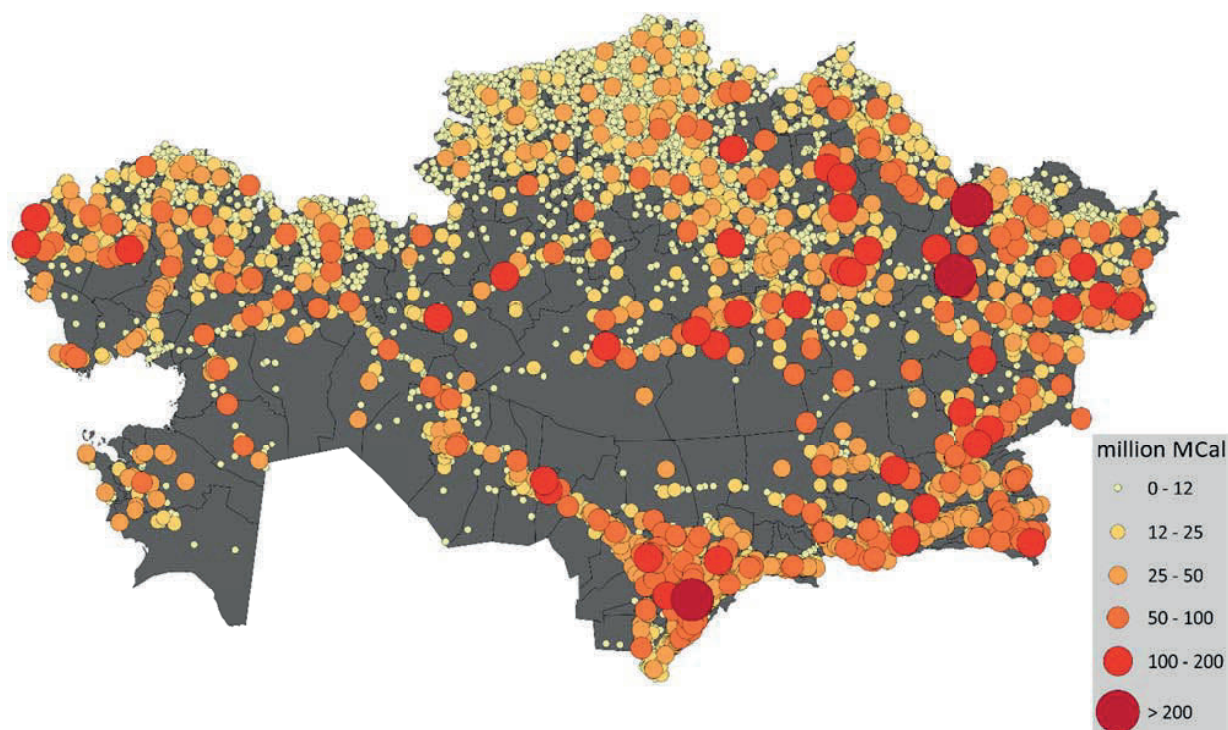


## Grazing demand

The biomass production of grassland and cropland is the amount available to livestock, but what is the amount consumed? To estimate the grazing demand, we proceeded as follows. We used nutritive requirements for livestock as standardised by the Kazakh Ministry of Agriculture that match the current production

levels of meat and milk. Then we disaggregated the amount of fodder produced for livestock consumption from national statistics and subtracted the fodder produced from the total nutritive demand, which results in an estimate of the amount of energy that livestock must receive through grazing. The grazing demand, expressed in energy requirement, of all grazing livestock in 2015 is shown in Figure 4.

**Figure 4:** *Grazing demand in 2015, disaggregated to the settlement level. Mcal = mega calories*



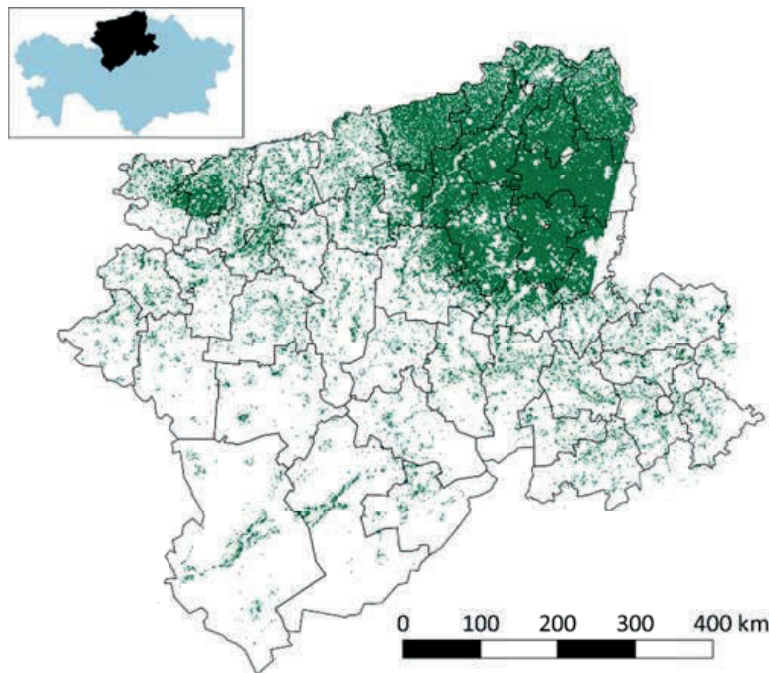
Source: Own calculation based on settlement location, livestock numbers, nutritive demand, and fodder supply.

## Pasture utilisation

After spatially distributing grazing demand to the settlement level, we distributed utilised pasture by applying the grazing demand to the supply in the biomass production map, prioritising land near settlements (Figure 5).

This approach yields spatially explicit information relating to utilised pastures. Figure 5 shows an interesting region of Kazakhstan, one where there is high live-stock production as well as high wheat production. The high grazing density in the northeast is in an area where cropland is the predominant land use. When all nearby grassland is utilised and the grazing demand is still not met, cropland can supply the balance, but the

**Figure 5:** *Utilised pasture in 2015 for North Central Kazakhstan*



Source: Own calculation based on livestock grazing demand and available grassland and cropland.



equivalent amount of biomass available for grazing on cropland requires a much larger area. Further analyses would need to be done, but high density such as this suggests the possibility of overgrazing. This method of distribution cannot determine areas of overgrazing, but it can show areas of high grazing density, and those areas are at risk of overgrazing. It is more certain that the northeastern part of Figure 5 will likely contribute little to achieving the objectives put forward in *Agribusiness 2020*.

### Looking forward: Kazakhstan 2050

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During the Soviet period, farms were state-supported by direct subsidies and the provision of infrastructure. Long-distance pastures were utilised on a regimented rotation and a much higher amount of fodder was produced. After the dissolution of the Soviet Union, this support ceased. Fodder production plummeted (Figure 1(a)) and long-distance pasturing ceased as outposts fell into disrepair (or were disassembled for raw materials) and road conditions deteriorated. Private farms are a new type of farm that became possible after the switch to a market economy. *Agribusiness 2020* is a program that forms part of the overarching development plan called *Kazakhstan 2050*. The latter is a broad economic, social, and political strategy that addresses the need to modernise the agricultural sector through the development of small- and medium-sized enterprises in agricultural processing and trade.

The increase in share of livestock on private farms (Figure 2) has reflected this strategy. However, most of these new operations still lack the means to utilise the abundant grasslands that lie further from the settlements. Preconditions for the utilisation of these distant grasslands are improved access, which can be achieved through the improvement of road conditions and transport networks to decrease transport costs and time, the construction of regional processing facilities to expedite sales, handling, and storage of livestock products (lack of refrigeration is a major problem for small settlements not in the immediate vicinity of large markets), and the reconstruction of wells and shelters to enable overnight pasturing.

Even if the socioeconomic obstacles are removed, the full extent of potential pasture will never be fully utilised, as some areas are simply too remote and unproductive to be of value to economically viable livestock production. The Kazakh Steppe hosts a range of endemic fauna and flora, much of which is sensitive to livestock activities and land-use change. Changes in the composition of plant and animal species due to selective grazing, soil disturbance, and human and livestock presence are prominent features of expanded pasture utilisation (BRINKERT et al., 2015). Livestock (especially cattle) are also substantial emitters of greenhouse gases, and the emissions of any future expansion need to be understood and accounted for. The utilisation of grasslands for pasture in Kazakhstan is an expansion of range-based livestock production, and as such

involves few land-use changes for the production of fodder. This arguably gives livestock expansion in Kazakhstan an advantage with respect to greenhouse gas emissions compared to regions of the world where land is being converted to grow fodder for feedlot systems (BELLARBY et al., 2012), or where pasture expansion replaces forested areas (GIBBS et al., 2010). Programs that aim to expand livestock production need to consider these factors as well, and with the demand for livestock products rising, understanding the potential for expansion is an increasingly important responsibility.

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*Traditional bakery in Armenia*

# Price transmission along the CIS wheat-to-bread supply chains

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IVAN DJURIC, MIRANDA SVANIDZE, LINDE GÖTZ, INNA LEVKOVYCH

## Introduction

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Given the quickly changing market structures of the Commonwealth of Independent States (CIS)<sup>1</sup> and the concentration of supply chain actors, an understanding of how the market functions has become particularly important for the general public, market players, and policymakers (KUBICEK, 2009). Furthermore, the incidences of extreme agricultural price fluctuations, especially in 2007-08 and 2010-11, put the issue of food prices at the top of the political agenda around the world, especially in CIS countries (GÖTZ et al., 2016; GÖTZ et al., 2015). While an extreme increase in commodity prices usually represents a trigger for a surge in consumer prices, commodity price falls do not necessarily lead to an immediate decrease in consumer prices (TAPPATA, 2009). Understanding the price transmission mechanisms along the supply chain is thus

crucial for devising an appropriate agricultural policy which will allow most market participants to benefit from a sustainable distribution of value added along the supply chain (EU COMMISSION, 2009).

The wheat supply chain is one of the most important elements of the agricultural sector in the CIS. On the one hand, Caucasian countries (e.g., Armenia, Azerbaijan and Georgia) depend largely on wheat imports (SVANIDZE et al., 2016), especially from Russia, Ukraine and Kazakhstan (about 90 % of total wheat imports). The pricing strategy of their processing (wheat milling) and retail sectors (for flour and bread) thus rely substantially on the quantity and price of imported wheat and flour. On the other hand, Russia, Ukraine and Kazakhstan have become not only large regional wheat exporters, but major international wheat exporters too. This fact plays a key role when observing domestic prices along the supply chain. In the cases of extremely large wheat

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<sup>1</sup> The analyses are conducted for six selected CIS countries: Armenia, Azerbaijan, Belarus, Russia, Kazakhstan and Moldova. We are also looking at Georgia and Ukraine, countries which are no longer CIS members but have close political and trade relations with other CIS countries.

exports, or severe droughts (significant decrease in production), the CIS domestic supply is usually greatly affected (Götz et al., 2016), causing not only price increases for the domestic downstream sectors (i.e., wholesale and retail flour and bread prices), but also spillover effects on other countries in the region.

Domestic price policies are one of the crucial factors that determine pricing along the wheat supply chains (DJURIC and GÖTZ, 2016; DJURIC et al., 2015). In the CIS countries, the most extreme case is Belarus, where the government intensively monitors and regulates agricultural and food prices (AKHRAMOVICH et al., 2015). The governments of Russia, Ukraine and Kazakhstan, too, often intervene in their domestic markets in order to protect their end consumers from high increases in food prices (Götz et al., 2015). The majority of interventions affect the upstream sector (i.e. wheat producers) of the wheat supply chain where the governments impose wheat export restrictions. The most frequent measures aimed at the downstream sector are bread price controls.

Overall, regional trade relations and domestic price regulations might have significant consequences on the development of the entire wheat supply chain in CIS countries by affecting pricing, supply chain participants (e.g., effects on the gross<sup>2</sup> and operating

margin<sup>3</sup>), and the welfare of consumers. Understanding price mechanisms along the supply chain is, therefore, of great importance not only for policymakers, but also for market participants and the wider public.

In this paper we are investigating the development of gross margins between different members of the CIS wheat-to-bread supply chain, and how fast and to which extent price changes are transmitted along the chains.

### The development of gross margins

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Figure 1 shows the development of the gross margin for flour across selected CIS countries. We are focusing on two gross margin developments. First, we look at how the average gross margin for flour (difference between downstream and upstream prices) changed for the period 2012-14, compared to the average gross margin for the period 2006-08 (horizontal axis). Second, we examine whether the % share of gross margin in the retail flour price changed during the observed period (vertical axis). We thus try to assess whether retailers widened or squeezed their gross margin during the observed period.

The developments of the gross margin for flour shown in Figure 1 demonstrate that the margin increased in all selected CIS countries during the observed period. In

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<sup>2</sup> Price difference between retail and wholesale price (or between retail and producer price).

<sup>3</sup> Profit.

the case of Georgia, Armenia, and Belarus, the % share of gross margin in the retail flour price did not change compared to the base period, which suggests a proportional increase in wheat and flour prices and a possible proportional increase in their operating margin.

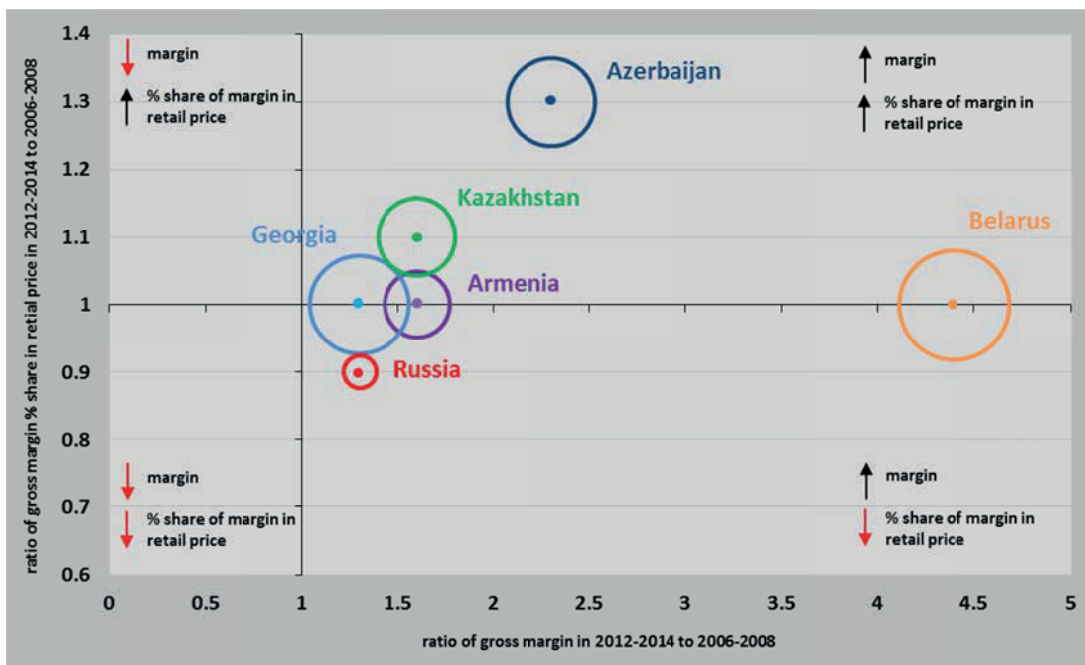
In Kazakhstan and Azerbaijan, the % share of gross margin in the retail flour price increased compared to the base period, which indicates that flour prices increased (decreased) to a higher (lower) extent than wheat

prices. The results might, therefore, lead to the assumption that retailers widened their gross margin for the observed period. On the other hand, despite a gross margin increase, the % share of gross margin in wholesale prices decreased in Russia. This suggests that flour prices increased (decreased) to a lesser (higher) extent than wheat prices. The results might, therefore, lead to the assumption that retailers squeezed their operating margin compared to the base period.



*Traditional bread-making in Armenia*

**Figure 1: Developments of gross margin for flour across CIS countries**



Source: Own calculation and depiction.

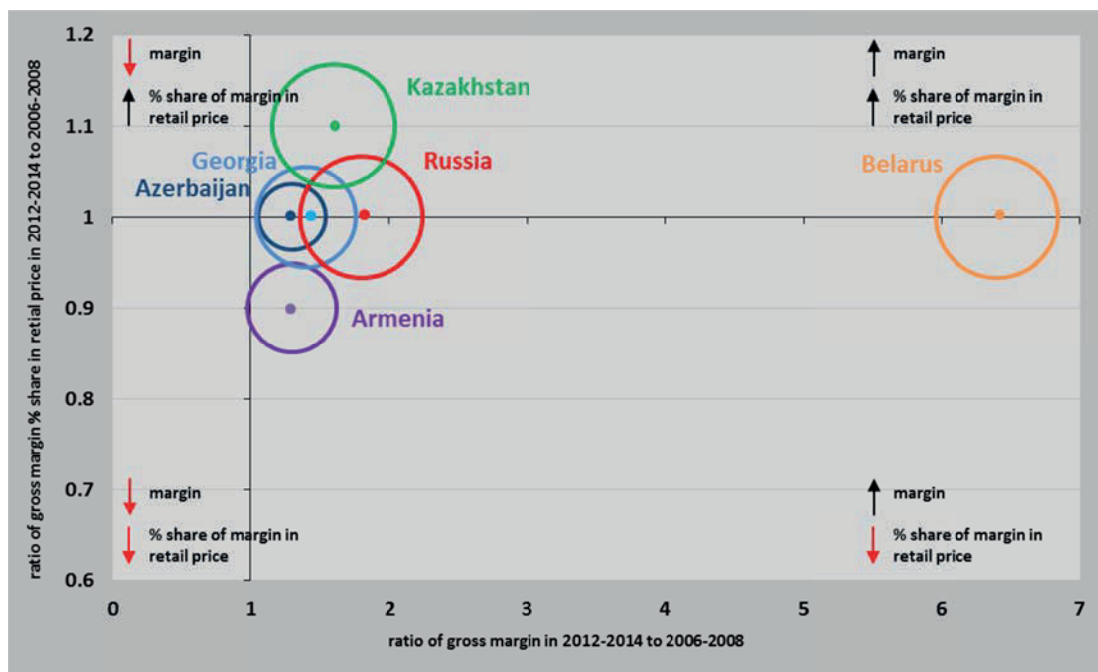
Note: The size of a circle around each point (country) is scaled according to the % share of gross margin in the retail price for the period 2012-14 (average); the gross margin for Georgia is calculated by subtracting the wheat import price from the flour retail price; the gross margin for Russia is calculated by subtracting wheat producer prices from the wholesale flour prices.

As far as the developments of the gross margin for bread are concerned (Figure 2), we can also observe that the gross margin increased for all selected CIS countries. The % share of gross margin in the bread retail price did not change for Azerbaijan, Georgia,

Russia and Belarus, indicating a possible proportional change in the operating margin for the observed period. The data also indicate that retailers in Kazakhstan widened their margin, while retailers in Armenia squeezed their margin compared to the base period.



**Figure 2: Developments of gross margin for bread across CIS countries**



Source: Own calculation and depiction.

## Price transmission analysis

The price transmission results shown in Figure 3 indicate that, in the long run, an average of 75 % and 60 % of the wheat price changes are transmitted to the flour and bread retail prices respectively. These results are in accordance with the % share of wheat costs in the production of flour and bread. The only exceptions

are Azerbaijan for retail flour prices (Figure 3, A), and Kazakhstan for retail bread prices (Figure 3, B). In Azerbaijan, a 10 % increase in wheat producer prices will cause an increase in flour prices of almost 14 % in the long run. This result is supported by the analysis of gross margin development, where we observed that both the gross margin and the % share of gross margin in the retail flour price increased for the observed



period in Azerbaijan (Figure 1). In Kazakhstan, a 10 % increase in wheat producer prices will almost double retail bread prices in the long run. Nearly perfect price transmission is observed for Belarus (Figure 3). Once again, this result was expected considering that the government is adjusting retail flour and bread prices to the developments in wheat prices.

The results in Figure 3 also show that the speed at which consumer prices adjust to the deviations from the long-run equilibrium is very low. It takes more than 8 months for retail flour prices – and more than a year for bread retail prices – to correct 50 % of deviations from the long-run equilibrium caused by changes in wheat producer prices. The slow price adjustments are not surprising considering that wheat prices are prone to much higher and quicker price fluctuations than retail prices.

At country level, the highest bread price adjustments are observed for Azerbaijan, where it takes about 4 months for the price disequilibrium with wheat to be corrected by 50 %, by adjusting the consumer prices for bread. The main reason here might be that the government is monitoring price developments and making changes accordingly. On the other hand, we were unable to identify any price adjustments for Ukraine and Kazakhstan. One of the main reasons is that the bread prices in these countries were set high and did not change over the long period of being heavily supported by the respective governments. This was especially the case during the global commodity price peaks of 2007-08, and 2010-11 (Götz et al., 2015).

## Conclusions

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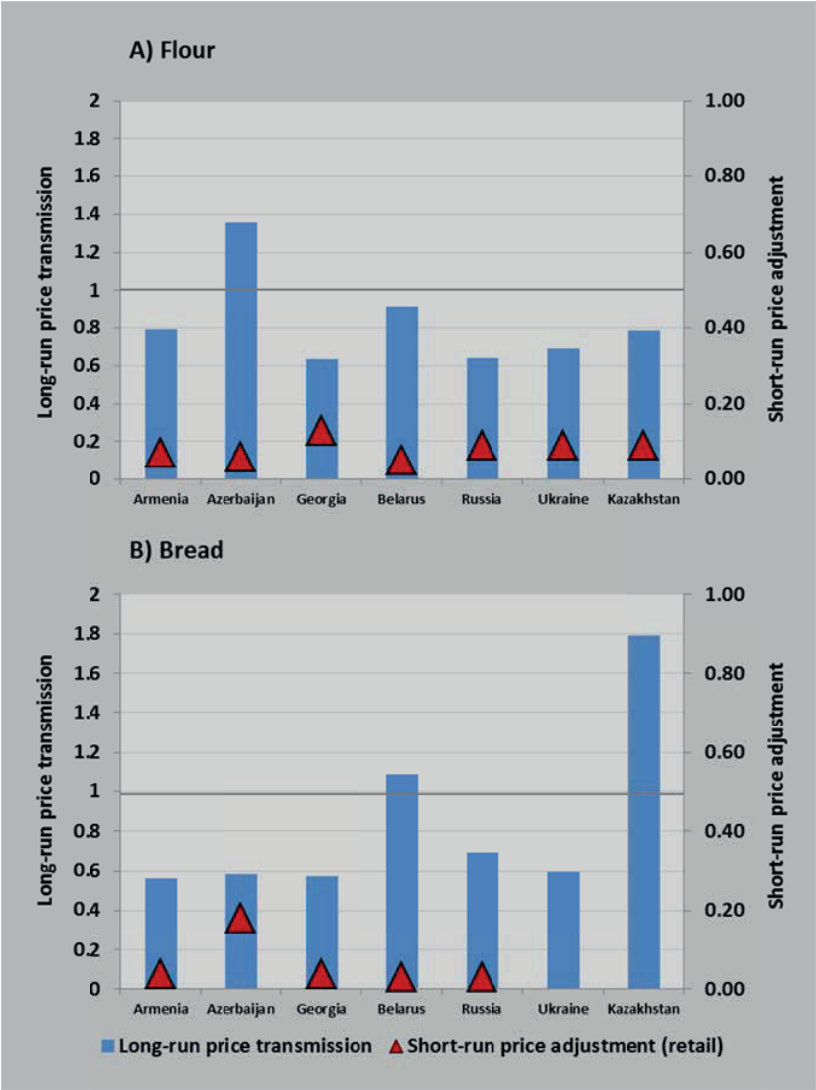
Our aim in this paper has been to analyse the developments of gross margins and price transmission mechanisms along the wheat-to-bread supply chains in the selected CIS countries.

The price dynamics indicate that the gross margin of the downstream sector increased for both retail flour and retail bread prices in all selected CIS countries. Also, in most of the countries the % share of gross margin in the retail price did not change. The results indicate that the retail prices for flour and bread had a greater increase than wheat producer prices. We might assume, therefore, that the operating margin of the downstream sector increased during the observed period.

The price transmission results indicate that 75 % and 65 % of wheat price changes are on average transmitted to retail flour and bread prices respectively. The main exceptions are Azerbaijan and Belarus, countries in which retail prices are strictly controlled by their respective governments. Furthermore, our results indicate a very slow adjustment of retail prices in the short term, which might indicate the exercise of market power at the downstream levels of the supply chain.

Overall, the obtained results can be explained by several factors: a) most of the CIS domestic producers need to compete with large importers; b) the retail sector of the CIS countries has been developing very rapidly over the last decade, leading to their higher concentration, and

Figure 3: Price transmission along the wheat supply chain: CIS cross-country comparison



Source: Own calculation and depiction.

Note: The long-run price transmission (left axis) indicates the extent to which price changes from one level of the supply chain are transmitted to another level in the long term. Speed of adjustment (right axis) indicates the speed at which prices adjust to their long-run equilibrium.

thus possible exercise of market power; c) domestic policy measures (e.g., price regulations) play a significant role in price developments along the supply chains.

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# Technological differences, theoretically consistent frontiers and technical efficiency: A random parameter approach in Hungarian crop producing farms

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LAJOS BARÁTH, HEINRICH HOCKMANN

## Introduction

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An analysis of farm efficiency using frontier methods can deliver significant insights into the competitiveness of farms and their potential for increasing productivity and improving resource use. Policymakers are particularly interested in the potential impact of their decisions on the performance of farms. The results of this study are of technical efficiency, therefore, they have far-reaching policy implications.

Numerous papers are already addressing the technical efficiency of the agricultural sector, but in the majority of literature on this subject, homogenous technology is assumed for every farm. For a variety of reasons, however, farms may adopt different technologies, or be subject to different natural resources and economic conditions. Without considering this possible heterogeneity, the efficiency and productivity of farms can be

over-estimated. There is a growing body of literature on macro agricultural productivity which emphasises the importance of modelling these possible technologies. Recent papers revealed that the assumption of a homogeneous production function in the farm sector may mask or distort important insights into development, and it demonstrates that the failure to account for technological heterogeneity leads to defective empirical models with serious implications for any total factor productivity (TFP) estimates obtained.

By contrast, in the field of stochastic frontier analysis there are only a few papers on agricultural efficiency/productivity that account for technological differences. On a related issue – the separation of unobserved heterogeneity from efficiency estimates using different, mainly variable intercept models – extensive investigations have already been conducted, but there is a lack of systematic studies of more generally formulated

models that are able to distinguish efficiency from technological differences across farms.

Two classical methods which allow us to model different technologies, have been developed in the productivity analysis with frontier models: the random parameter model and the latent class model. Random parameter formulation models consider firm heterogeneity in the form of continuous parameter variation. The latent class model, on the other hand, can be seen as an approximation of this since the variation of the parameters is treated as if generated by a discrete distribution. Although latent class models have been used in some studies and compared with traditional SFA models, only a few authors have examined efficiency with random parameter models, and there is still no extensive comparison of the results with other models. The results of these papers might be distorted, moreover, as they have used a specific type of RPM, namely the model originally developed by ALVAREZ et al., 2004. This model might not yield consistent estimates, however, because the basic assumption of the independence of inefficiency ( $u$ ) and explanatory variables (factors of production), does not necessarily hold true.

We therefore propose a reformulated version of the original model developed by ALVAREZ et al. (2004), which provides more consistent estimates. Allowing for heterogeneous technologies is much closer to the situation in the real world, and thus such comparisons have

important policy implications because they allow public policies designed to improve agricultural productivity to be targeted at different elements of productivity. Efficient policy requires careful and realistic estimates.

### Modelling technologies with unobserved heterogeneity

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In order to model technological differences we are using a modified version of the fixed-management model, originally proposed by ALVAREZ et al. (2004):

$$y_{it} = f(x_{it}, t, m_i^*) + v_{it} - u_{it},$$

where  $m_i^*$  is a fixed specific latent variable and  $t$  represents an index of technical progress, while  $x$  and  $y$  denote inputs and output respectively.

We are using this approach in a translog stochastic frontier model framework. A key feature of the model is the interaction of  $m_i^*$  with the input variables. This approach allows not only the constant to change, but also the structural parameters (or first order parameters of the translog function). Such specification can therefore be used to model the heterogeneity of the production structure. Without this interaction the model does not differ from standard variable intercept models. Here we will not explain the model in detail, but make a few necessary remarks about the particularities of the model.

In principle the model can be estimated using the conventional stochastic frontier approach. Some modifications have to be noted, however. First, since the  $m_i^*$  are not observable, simulations are necessary to account for this influence. The resulting estimator is a maximum simulated likelihood approach (ALVAREZ et al., 2004). The estimator of the conditional mean of the distribution of  $m_i^*$  – based on the farm specific data – and the actual parameters can be constructed via appropriate methods. Second, since the translog function does not necessarily fulfil the requirements of theoretical consistency, we apply several linear (for monotonicity) and nonlinear (for curvature requirements) constraints to ensure that the estimated function is consistent with a neoclassical technology. Third, the original version of the Alvarez model suffers from the fact that the efficiency term and input variables might be correlated and thus possibly distorted. In order to avoid this, we reformulate the model so that the independence of the efficiency term and exogenous variables is guaranteed.

## Data

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For the empirical analysis we are using Hungarian FADN Data. We selected data on specialised crop farms over the 2004-09 periods. Our primary goal is to examine technological differences between farms. This question can be better analysed if every year the same

farms are in the sample, so we used a balanced panel. Our sample contains 3,984 observations, corresponding to 664 farms for each year. The data were provided by the Research Institute for Agricultural Economics.

We estimated the model with one output ( $Y$  – total agricultural production in constant EUR) and four inputs: (1) labour ( $A$ ) in Annual Work Units, (2) utilised agricultural area (UAA) in hectares ( $L$ ), (3) capital input (as a sum of depreciation and services,  $K$ ) in constant EUR and (4) variable input (intermediate consumption,  $V$ ) in constant EUR. The variables expressed in nominal prices were deflated to 2005 prices with the use of the appropriate deflators; the output ( $Y$ ) was deflated by the agricultural output price index, the total specific costs ( $V$ ) by the price index of purchased goods and services, and the corresponding values of total fixed assets ( $K$ ) by the price index of agricultural investments. Some descriptive statistics are presented in Table 1.

The high variance of the individual variables is evident. For example, the labour input had a minimum value of 0.01 AWU and a maximum of 100 AWU, and the values for (UAA) ranged from 8.5 to 3,787 hectares. These large differences suggest that heterogeneity plays an important role in Hungarian agriculture. The huge differences between the minimum and maximum values also imply that the marginal products of these inputs are different between farms. It therefore seems to be reasonable to assume that farms with such a heterogeneous input endowment use different technologies

**Table 1:**     *Descriptive statistics*

	Symbol	Mean	Standard deviation	Minimum	Maximum
Output (EUR)	Y	40,097.80	84,487.80	128.51	931,774.00
Labour (AWU)	A	3.73	8.30	0.01	100.09
Land (ha)	L	237.41	428.57	3.68	3,787.00
Capital (EUR)	K	17,309.60	42,077.10	5.53	339,055.00
Variable Inputs (EUR)	V	28,224.60	60,186.50	323.26	657,902.00

Source:       *Authors' calculations based on Hungarian FADN data.*

and it is important to account for these differences in the production model.

## Results

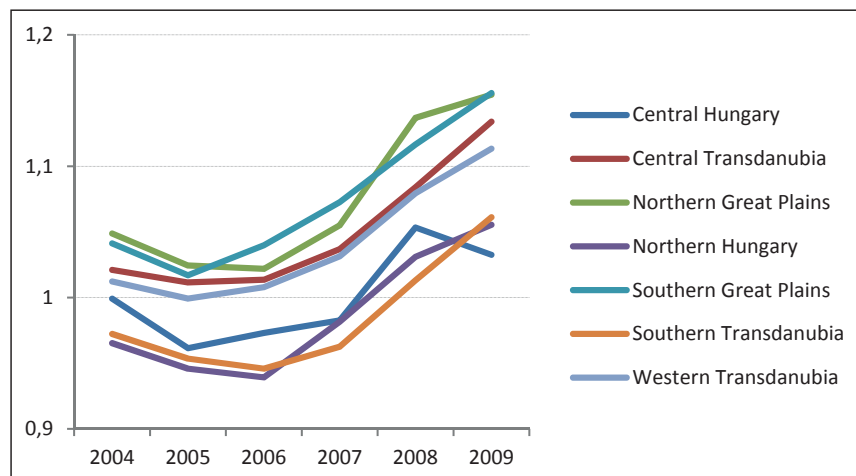
The results of the estimation were very satisfactory from a statistical point of view. They have a high explanatory power (about 0.96), the parameters of the production function and the variances of the error terms are highly significant and have sound economic meaning (often at a higher than 1 % level of significance). Rather than discuss the estimated results in detail, we will now consider the determinants of total factor productivity (TFP), e.g. the scale (SCL), technical efficiency (EFF), the technical change (TCH) and the heterogeneity effect (HET).

## TFP development

TFP increased almost steadily over the whole period. The growth rates in the region were very similar, at about 2 %, except in Central Hungary where TFP annual growth was only about 0.5 %. Moreover, the TFP differences among regions were quite stable. Figure 1 shows that we can separate Hungarian regions into three categories. The lowest TFP levels are found in Central and Northern Hungary and in Southern Transdanubia. Central and Western Transdanubia form the second group. The highest TFP levels are found in the two Great Plains regions.

Below we will identify the factors responsible for the differentiation of TFP levels. We start with a discussion of economies of scale.

**Figure 1: Index of TFP development in Hungarian regions, 2004-2009**



Source: Own estimates.

## Scale effect

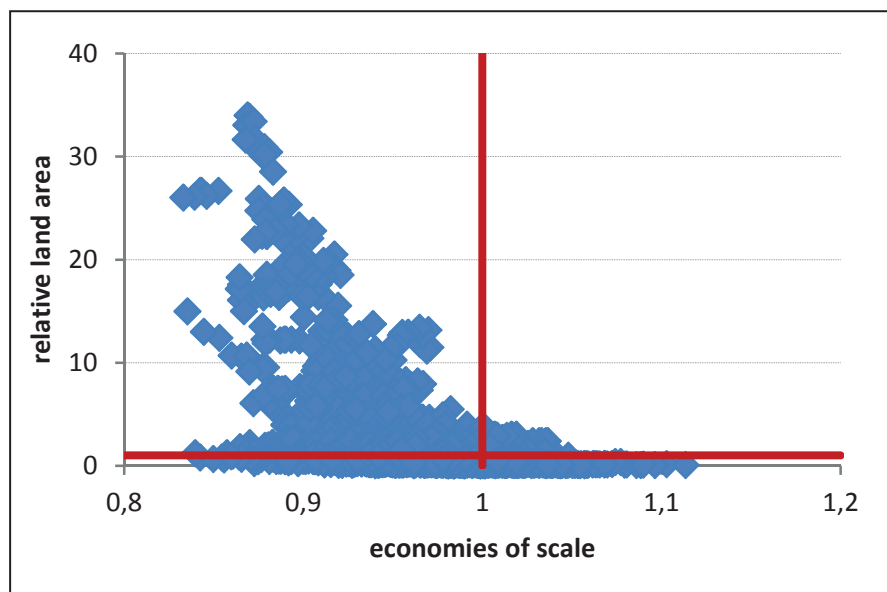
As the impact of the scale effect on TFP was only marginal (on average less than 2.5 %) we will not discuss it in detail here. Instead we will focus on the variation of economies of scale by farm size.

The sum of the non-normalised value shares of the production factors are the economies of scale. In Figure 2 they are depicted against farm size measured in relative land area. It can be seen that economies of scale and farm size are negatively correlated. On the one hand, positive economies of scale are present for small farms only. They have not reached their optimal farm

size and are expected to grow. This is a development which can actually be seen in Hungarian statistics. On the other hand, large agricultural enterprises appear to be too large and thus they realise diseconomies of scale. As Hungarian statistics show, these farms tend to decrease in size until they reach the stage where they operate with constant economies of scale. However, a larger number of small farms also exhibit decreasing economies of scale. Their option is to decrease farm size, e.g. become even smaller, and eventually quit agricultural production. Farms, both large and small, with decreasing economies of scale will free up additional land that can be used by small farms with increasing economies of scale to grow.



**Figure 2: Economies of scale by farm size in hectare**



Source: Own estimates.

### Inefficiency and technical change

The graphs show that inefficiency increased over time in all regions. Moreover, the difference in inefficiency between regions was marginal (Figure 3). In this period, however, Hungarian farms in fact achieved a comparatively high level of efficiency, ranging from 98 % in 2004 to 92 % in 2009. The increase of inefficiency can be seen as a result of severe climate conditions. Especially in 2007 and 2009, Hungarian grain production suffered from bad weather conditions. However, this effect can only

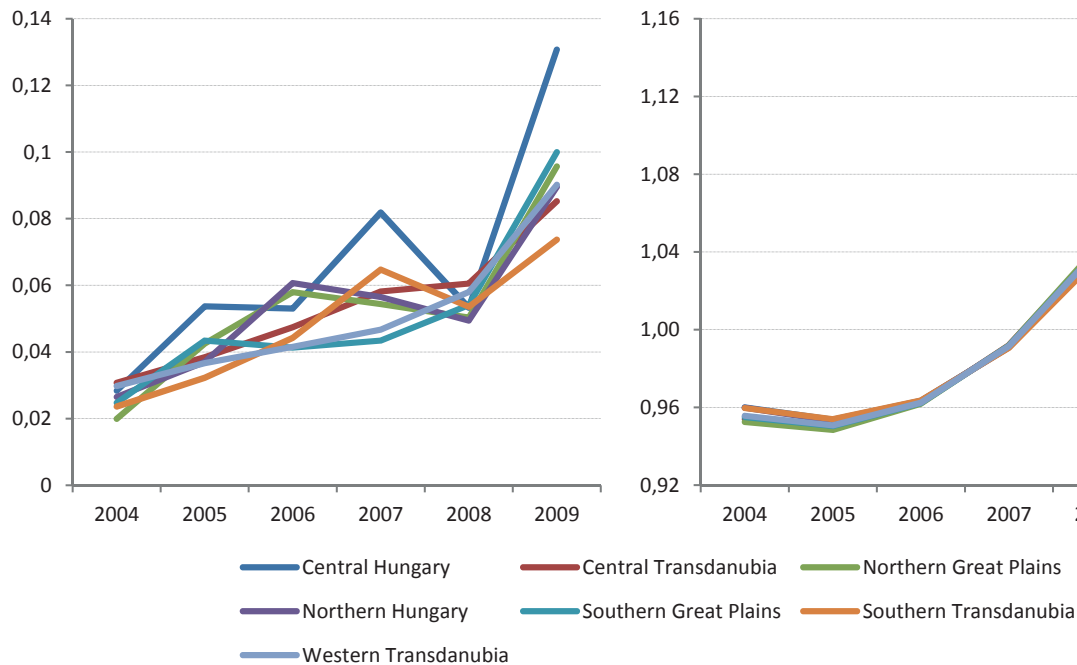
partially explain the increase in inefficiency. Another reason is the increasing impact of technical change in grain production (Figure 4). Over the entire period technical change affected all regions similarly. The positive trend of technical change is consistent with the negative trend in efficiency over time. The frontier is determined by the farms which apply the most modern technology. Farmers who hesitate to adopt these risk falling further and further behind, or exhibit greater inefficiencies. The increasing impact of technical change can be regarded as a source of growing TFP, but it cannot explain the regional TFP differences shown in Figure 1.

Inefficiency and heterogeneity

The results confirm that heterogeneity is much more important than inefficiency (Figure 5). The latter is only responsible for 5-20 % of the total variance of these two sources. In addition, Figure 6 demonstrates that heterogeneity is very pronounced regionally.

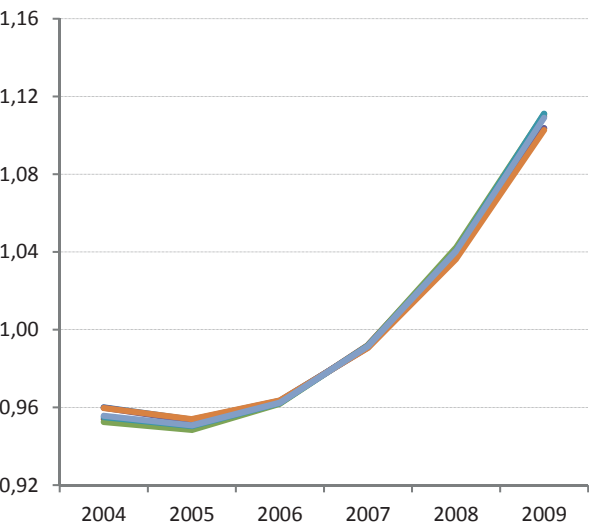
Moreover, we found a great coincidence between the TFP level and the index of regional heterogeneity. Because of the expected overestimation of efficiency when neglecting heterogeneity, policies may not only be misdirected, but the impact of measures to increase efficiency may be overestimated as well. As explained above, the increased impact of inefficiency at the end

Figure 3: Development of inefficiency in Hungarian grain production over time



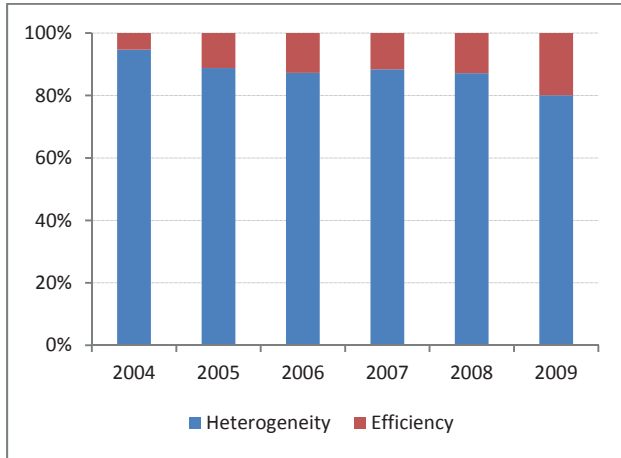
Source: Own estimates.

Figure 4: Development of technical change index Hungarian grain production over time



Source: Own estimates.

**Figure 5: Combined impact of the variance of heterogeneity and efficiency**

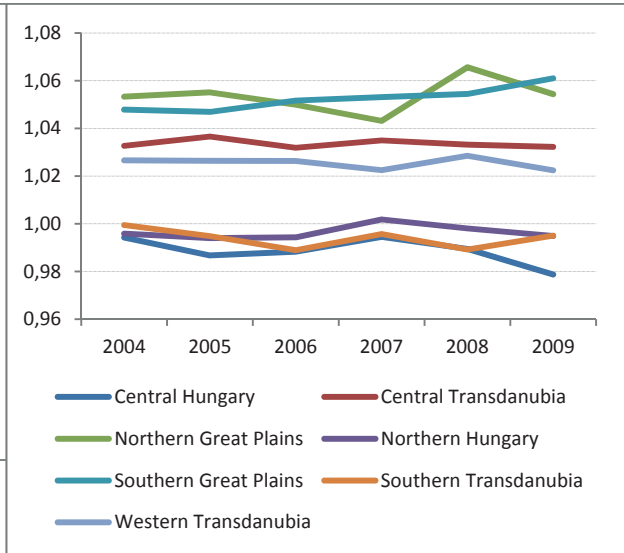


Source: Own estimates.

of the study period can be seen as a consequence of the high rate of technical change in the sector (Figure 4) and/or severe weather conditions at the end of the study period.

Having identified the heterogeneity effect as a major source of productivity difference among regions, we need to examine heterogeneity in greater detail.

**Figure 6: Impact of regional heterogeneity in Hungarian agriculture**



Source: Own estimates

Figure 7 shows how the heterogeneity measurement changes across regions. Regions performing poorly are Central and Northern Hungary and Southern Transdanubia. Favourable conditions for agricultural production were found to exist in the Great Plains and Central and Western Transdanubia.

**The interpretation of m\***

Figure 8 gives more details about the technologies used in Hungarian grain production. It correlates the three indicators of labour productivity (Y/A), land productivity (Y/B) and land-man ratio (B/A) for all regions over time according to:

$$\frac{Y}{A} = \frac{Y}{B} * \frac{B}{A}$$

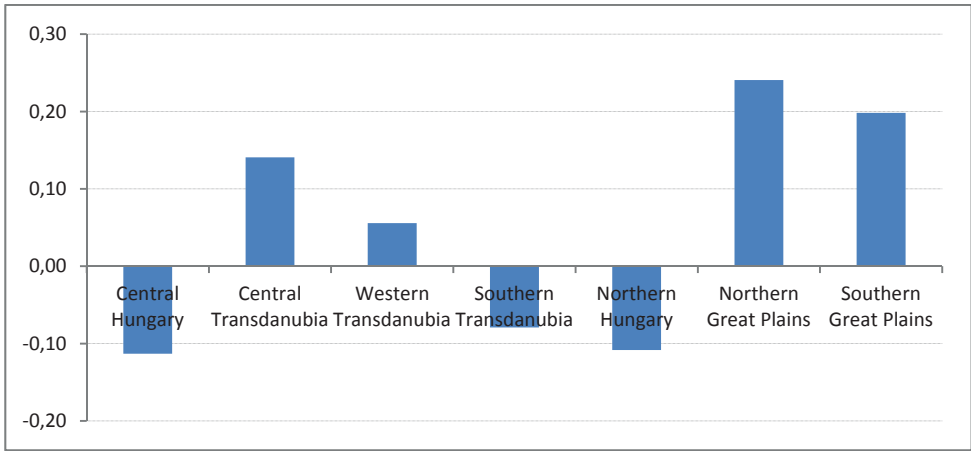
or in log terms:

$$\log\left(\frac{Y}{A}\right) = \log\left(\frac{Y}{B}\right) + \log\left(\frac{B}{A}\right)$$

Land productivity can be seen as an indicator of the natural conditions of a location. This indicator basically reflects soil conditions, sufficient water or rain, sunshine

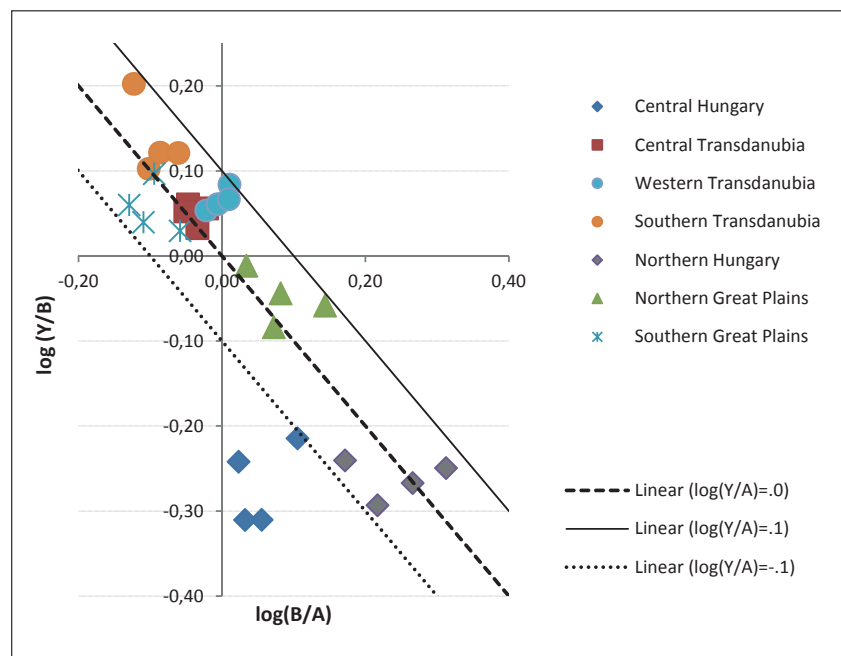
etc. Land productivity is also influenced by the level of economic development through the availability of sufficient production enhancing inputs like fertiliser or pesticide. Given the homogeneous institutional conditions in Hungary, however, it can be assumed that this impact is of minor importance for land productivity differences across regions. On the other hand, differences in labour productivity should be regarded more as a consequence of the economic conditions of location. The opportunity costs of labour determine how much labour will be allocated to this sector. Moreover, in combination with factor prices, the land-man ratio determines the capital to labour ratio in the sector, which depends not least on the economic infrastructure in the region. It should be noted, however, that the

**Figure 7: Estimates of regional heterogeneity in Hungarian agriculture**



Source: Own estimates.

**Figure 8: Partial productivities and man-land ratio in Hungarian grain production 2005-08 by region**



Source: Own calculations.

Note:  $Y/A$  labour productivity;  $Y/B$  land productivity;  $B/A$  land-man ratio. All variables are normalised by the geometric average of the total sample.

relation between the economic conditions of a location and labour productivity is much weaker than that between natural conditions and land productivity. Differences in labour productivity can also be the consequence of different farm structures; usually, large-scale agriculture is less labour intensive than small-scale agriculture, but much more mechanised. The dual agricultural structure in Hungary provides some support

for this interpretation. Given the lack of data, unfortunately we are not able to dig deeper into this problem. But irrespective of whether the high land-man ratio is the result of economic forces or whether the farm structures are due to political (institutional) decisions, higher labour productivity can be viewed as an indicator of better performance.

The numbers in Figure 8 represent three-year averages. This calculation was done to eliminate outliers. All numbers are in relation to the sample average. On the horizontal axis, therefore, numbers larger than zero indicate above-average land-man ratios. A similar interpretation holds for the vertical axes for land productivity. The dashed line represents average labour productivity. Above this line are regions with higher labour productivity.

Land productivity in Central Hungary and Northern Hungary is worse than in the other regions. In Central Hungary, however, the land-man ratio is lower than in Northern Hungary. As a result, labour productivity in this region is the lowest of all Hungarian regions. Poor

labour productivity can also be seen in the Southern Great Plains. Together with a low land ratio, however, this nevertheless allows for an above-average land productivity. The region with relatively high land and labour productivity and a high land-man ratio is the Northern Great Plains. The high land-man ratio suggests that agriculture or grain production is much more labour extensive than in other regions, especially the Southern Great Plains. The same is true of grain production in Northern Hungary.

Central Hungary is the region where land and labour productivity were the lowest in our sample. This is reflected by the highest negative heterogeneity values

**Table 2:     Significance of regional differences**

	Heterogeneity index		Number of enterprises in the region						
	Regional mean of the heterogeneity value	Standard deviation of heterogeneity in the region		Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia.	Northern Hungary	Northern Great Plains
Central Hungary	-0.1353	0.4841	43						
Central Transdanubia	0.0887	0.6282	68	**					
Western Transdanubia	0.0386	0.8283	79						
Southern Transdanubia	-0.1185	0.6252	99		**				
Northern Hungary	-0.0804	0.7823	54						
Northern Great Plains	0.2056	0.7440	102	***			***	**	
Southern Great Plains	0.1524	0.7420	164	***			***	*	

Source:        Own calculations.  
Note:         The significance of the difference was tested with a Welch t-test.

among Hungarian regions. Northern Hungary is similar. However, labour productivity here is higher than in Central Hungary. Accordingly, the heterogeneity index in this region is also negative, albeit slightly higher than in Central Hungary. The highest heterogeneity values were found in the two Great Plains regions. In the northern part we have high labour productivity, but low land productivity. The partial productivities in the southern part are completely opposite to the northern part: high land productivity and low labour productivity. In this region we found the highest value for heterogeneity. Another region with an above-average heterogeneity index is Central Transdanubia. This region is characterised by above-average land productivity and average labour productivity. Western Transdanubia does not fit this pattern. Labour and soil productivity are both relatively high, but the mean value of heterogeneity is only at an average level.



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# Cooperating with consumers: Community supported agriculture in Central and Eastern Europe

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JUDITH MÖLLERS, AXEL WOLZ

## Introduction

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Small farms and those geared towards self-sufficiency are prone to poverty. They are often excluded from participation in the modern, global food market. At the same time – and not only in the leading industrialised nations – consumers are increasingly losing direct contact with the origins and production methods of the produce they eat. While their unease with established forms of food production grows, they are, however, reliant on processed and pre-packaged foods in supermarkets. One alternative approach that could promote both food sovereignty and rural development in an increasingly globalised world is the model of community supported agriculture (CSA). Innovative partnerships such as this aim at developing feasible, direct cooperation between producers and consumers. CSA can help small and semi-subsistence farms overcome the problem of a lack of market access as well as giving city-dwellers the opportunity to buy healthy,

organically grown food, while allowing them to show solidarity with the rural population.

Our paper will begin with an overview of current developments of CSA initiatives in Central and Eastern Europe, a region which has been the subject of virtually no research in this area. Then we will present a case study, which examines the pioneering CSA partnerships in Romania, and discuss the factors that promote the development and implementation of CSA partnerships.

## CSA – Has the idea taken root in Central and Eastern Europe?

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The CSA approach emerged in the 1970s in Japan, but has since become a global movement with more than a million consumers participating worldwide. In Central and Eastern Europe this development is still only in its infancy. CSA can be defined as a form of face-to-face partnership between a farmer and their customers,



which is based on a mutual commitment like advance payment, product delivery and various forms of cooperation, such as consumers helping out on the farm. Typically the farmer is supported throughout a season



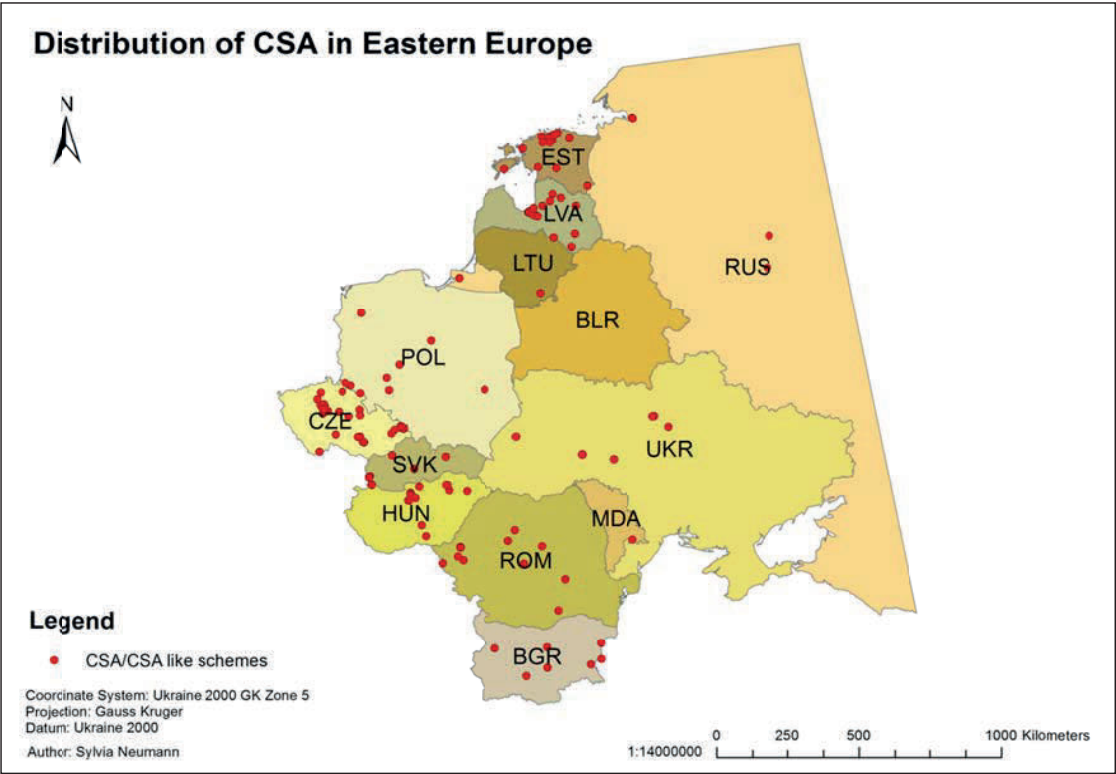
*Interviews with CSA farmers in Romania*

by a group of consumers, to whom he regularly delivers fresh products in return. Both parties enjoy a certain level of planning security. In this way the production risks and profits are shared between farmers and CSA members.

Important factors for CSA are local production, the environment and organic farming methods, as well as certain values such as cooperation and fairness. Sustainable farming methods and consumers interested in organic food production are thus at the heart of the CSA idea. Other key aims of CSA are to forge a community identity, create jobs and promote entrepreneurship.

Whereas the CSA movement has been active in Western Europe since the late 1970s, beginnings of the movement in Central and Eastern Europe have only been visible since about 2010. A number of non-governmental organisations and CSA activists have disseminated the model in the region and are offering help to develop it. As Figure 1 shows, there is at least one CSA initiative (or a similar form of cooperation) in almost every country of the region (with the exception of Belarus). The graphic also shows that CSA is spreading particularly quickly in the new EU Member States, primarily in the Czech Republic, Hungary and Romania. In these countries the model is now well established and supported by an umbrella organisation. But in Bulgaria, Poland, Latvia and Estonia too, CSA is gaining in importance, while only individual initiatives can be seen in Russia, Moldova and Lithuania (GEYER, 2016).

Figure 1: Distribution of community supported agriculture (CSA) in Central and Eastern Europe



Source: GEYER, 2016, (as of 4/10/2016).

### A case study from Romania

As in other countries of the region, in Romania there are essentially two push factors that favour a successful rollout of CSA initiatives. First, a large number of small

farms with restricted income opportunities and which live at subsistence level because of the lack of social safety nets. These farms are excluded from the most important sales channels, as retail businesses with market influence, such as supermarket chains, only work

with large agricultural enterprises. Second, the market for organic foods is underdeveloped, especially for fresh products. The limited supply of organic products is usually imported and focused on the large supermarket chains. For this reason, city-dwellers interested in healthy, fresh, organically grown food have big problems finding the corresponding produce. This shortage opens up a market niche in which CSA can be an economically attractive option.

In a case study in and around the third-largest Romanian city of Timișoara, with a population of 300,000, we examined the key characteristics of CSA initiatives. The data was collected in 2011. Currently data from a follow-up study in 2016 is being analysed. The 2011 study looked at here is based on a detailed investigation of two groups: three local farmers on the one hand, and consumers associated with them on the other. The three CSA groups were established in 2009 and 2010. A survey given to all 163 consumers involved in the initiatives was answered fully by 40 of them. Three farmers' interviews as well as three expert interviews were conducted in a semi-structured manner.

### **The CSA farmers**

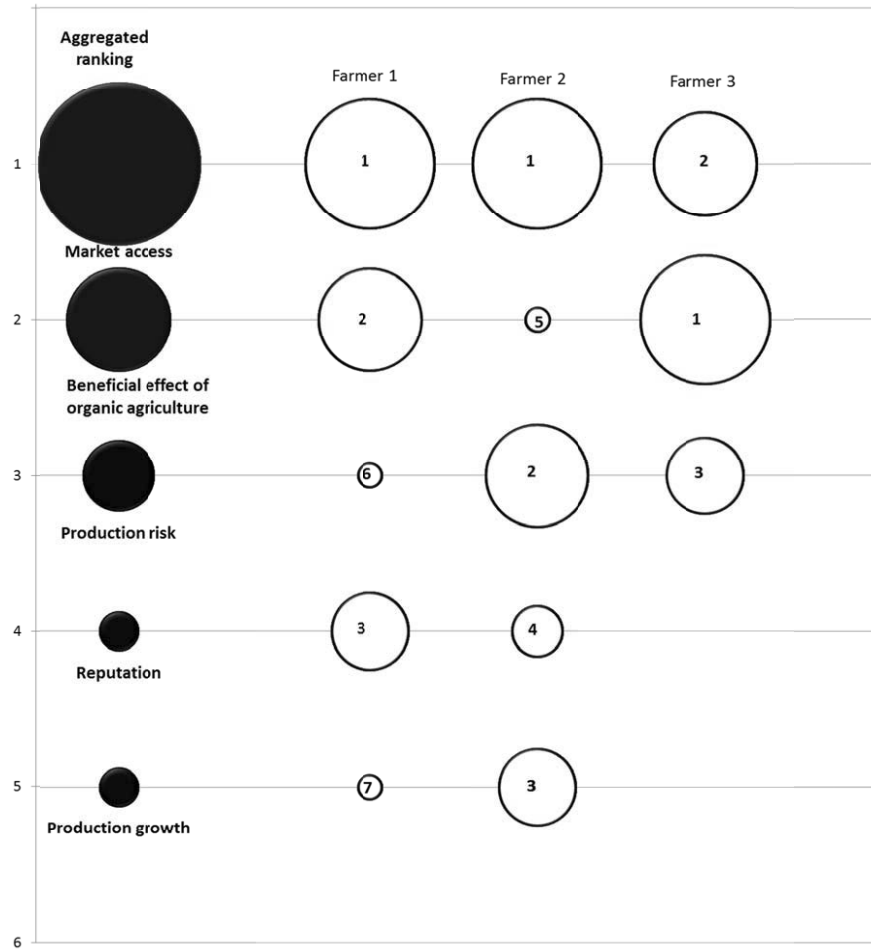
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The interviews revealed that the farmers in question became involved with the CSA initiatives chiefly as a way of compensating for the lack of market access of their semi-subsistence farms (Figure 2). This suggests

that a direct partnership with consumers is an answer to the widespread exclusion of small farms from markets. Usually, therefore, it was economic reasons that were critical for a farmer's decision to participate in a CSA initiative. Two of the three farmers interviewed cited the reduction of production risks as important. By contrast, expanding production was of low importance. This underlines that CSA is a suitable strategy (especially) for smaller farms.

However, the motivation for participating in a CSA partnership also came from personally held values or aims. All three farmers were very worried about soil pollution from the excessive use of synthetic fertilisers as practised by conventional agriculture. The second most important reason for becoming involved in a CSA initiative were the positive consequences expected from farming organically or traditionally. Another key factor was a strengthening of their personal reputation. For two farmers this was the second of the five most important motivational factors (Figure 2). The costs of CSA were estimated to be relatively low; two of the three farmers said they hadn't made any significant investment. The largest additional cost factor was the increased use of family labour needed to convert to organic cultivation. The marketing costs as well as the extra time spent with consumers were judged to be low, partly because the partnerships were supported by a local NGO that promoted the CSA idea and brought interested consumers together with the farmers.

**Figure 2:    Ranking of the most important reasons given by farmers surveyed for taking part in a CSA initiative**



Source:        Own data, 2011.

Note:         The farmers were asked to rank by importance 12 possible reasons for participation in a CSA initiative. The graphic shows the most important of these, with the rankings given by the individual farmers. The circles in left-hand column show the combined results from all three farmers. To gain our overall Figures we gave ten points to the most important reason, five to the second and third most important, and one to all other reasons.

Not every small farmer is suited to a CSA initiative, however. Our analysis showed that all three farmers were linked by some prominent characteristics. Not only were they entrepreneurial personalities with plenty of experience of the urban way of life, they did not have any problems with welcoming urban consumers onto their farms. All three were active in their communities, moreover, whether as members of the church community, associations or a political party. All three ran typical small farms between two and almost six hectares and they had specialised in vegetable cultivation which is typical for CSA.

### The CSA consumers

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Like the farmers, the CSA consumers were also linked by certain characteristics. In line with earlier studies from other cultural contexts, the Romanian CSA consumers had a relatively high level of education and were not price sensitive with regard to their food purchases, but showed a marked interest in health issues and organic farming. More than half the households had children under the age of 15 and more than a quarter of those surveyed had spent their childhood in the countryside. Unlike the farmers involved in the initiatives, the consumers are not so concerned about the economic advantages of CSA but are keen on having direct access to produce of the quality they desire.

CSA consumers show a clear interest – some a very high level of interest – in the origin of the food they buy. For

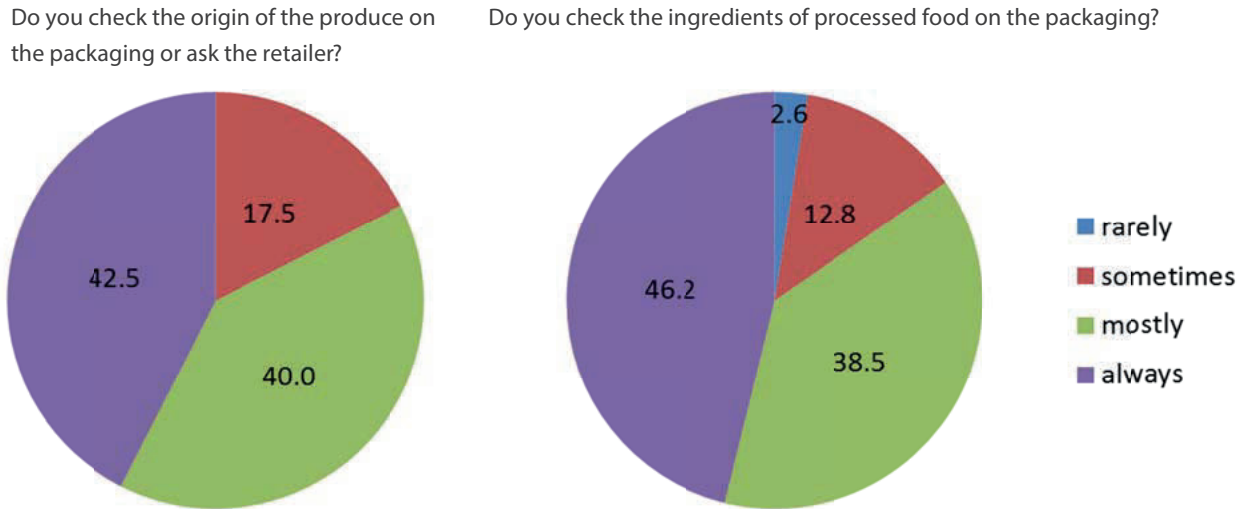
example, they will check the ingredients of processed food (Figure 3). Once they had joined the CSA initiative, their purchases at the places where they usually shopped fell (supermarkets and weekly markets). Only a small proportion of consumers had never brought



*CSA customers in Romania*

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**Figure 3: Food purchasing behaviour of CSA consumers (answers in %)**



Source: Own data, 2011.

vegetables in supermarkets before CSA membership. After joining, 74 % of those surveyed said they would not buy vegetables in supermarkets any longer. Joining a CSA initiative also changed their personal criteria when it came to choosing food produce. While considerations of freshness and healthiness as well as the composition of ingredients retained their importance when it came to choice, the seasonality of produce as well as whether it was organic were valued more highly than before membership. The price factor, on the other hand, became less important.

When questioned about the reasons for joining a CSA initiative, the desire for healthy, organically farmed produce was a priority. A third of those surveyed cited access to healthy produce as the most important reason, a further third access to organically farmed food. Other reasons cited were the positive environmental effects of organic agriculture and a reduced impact on climate. These reasons, however, were never decisive factors for joining, which differentiates our survey from the findings of similar studies in Western countries. The desire to make a positive contribution to regional development by supporting local farmers was



also seen as very important. In our survey this was the third most important reason for taking part in a CSA initiative. Moreover, CSA initiatives create a direct link to the producer and their farm. For around ten per cent of those surveyed the knowledge of where their food came from was the most important reason for joining. In spite of this the integration of consumers into the farm's operations was low.

Cost played little role in deciding whether consumers joined a CSA. This was true both of the joining fee and the time needed for regular meetings, picking up the vegetable boxes and for voluntary work on the farm. Nor did consumers have a problem with the limited range of goods or the lack of standardised produce.

## Conclusion and outlook

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The success of a CSA partnership is dependent on the existence of a certain type of consumer, that is to say an educated urban population for whom price is not the chief criterion when it comes to food shopping. Such consumers are convinced of the value of healthy food and the damaging effects of synthetic pesticides and fertilisers in agriculture. For this reason they are prepared to forgo the convenience of modern supermarkets and instead obtain fresh produce directly from a farm. However, in every region, this group of (potential) CSA members is limited in number and it determines the size of the market for CSA cooperation. For small farmers

a CSA partnership is attractive if the market prices are high enough to secure the family income and if the production and marketing risks are lower than with other sales channels. Unlike with traditional sales channels, CSA partnerships reward traditional, chemical-free farming methods without the need for formal certification. Our Romanian case study highlights certain personal characteristics of the participating farmers which make them suitable CSA farmers: they should be entrepreneurial, have a certain experience and understanding of city life, and a high degree of commitment as well as a willingness for intensive social interaction.

CSA could in fact be an interesting solution for small farmers, applicable to other regions in Central and Eastern Europe, where agriculture is characterised by small farms with poor market access. The expansion of CSA initiative over the past few years substantiates this hypothesis. As we have shown, however, certain restrictive conditions must be fulfilled for a CSA initiative to be worthwhile. For this reason, CSA initiatives will only be able to cover a niche market in the future as well. For the vast majority of farmers, therefore, it is of great importance to find other forms of cooperation. This is the only way of overcoming the market exclusion of small farmers at a nationwide level and integrating them into the existing marketing systems. We at IAMO will also continue to conduct research into these forms of producer-consumer cooperation in our partner countries, which uniquely unite environmental, social and agricultural concerns.



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*The provision of public goods in European landscapes: Recreational activities in rural areas*

## The preservation of biodiversity in modern agriculture. What effect are the greening measures of the EU's Common Agricultural Policy (CAP) having?

AMANDA SAHRBACHER, JORDAN HRISTOV, MARK BRADY, CHRISTOPH SAHRBACHER<sup>1</sup>

### Biodiversity in danger: How can agriculture help?

For some time we have been witnessing a decrease in biodiversity. This is partly down to land-use change in cultural landscapes by agriculture. Economic imperatives have dramatically transformed farming structures. Areas where livestock farming is disappearing, such as Eastern Germany, are focusing more strongly on field crop farming, which is competitive because of the historically large structures in that region. The concentration of unique types of production in certain locations leads to a change in land use, however. Greater regional specialisation in agricultural production leads to an intensification of farmland use and also impoverishes the landscape, ultimately resulting in a fall in biodiversity in cultural landscapes. In specialised and highly-productive farming regions intensive

agriculture takes place on large fields linked to one another. In Scania (South-West Sweden) for example, the elimination of field boundaries and other obstacles has led to a simpler structured landscape. Here, both the intensity and the extent of agricultural production have kept rising over time. This has been accompanied by an increased use in fertilisers and chemicals, by simplified farming cycles and a lack of supply of organic material, which has further damaged the environment. As in Germany, this development has led to the leaching of nitrogen, soil erosion, a drop in biodiversity as well as an impoverishment of the landscape.

On the other hand, however, society is demanding greater consideration of nature protection. This was addressed by the European Union in the reform of the Common Agricultural Policy (CAP) for the period 2014-20, which introduced additional environmental

<sup>1</sup> This study was carried out as part of the MULTAGRI project ([www.cec.lu.se/research/multagri](http://www.cec.lu.se/research/multagri)), one of five projects chosen by the ERA-NET RURAGRI Call of the European Commission (7<sup>th</sup> Framework Programme) in 2012. The authors thank the Federal Ministry of Education and Research (BMBF) for their financial assistance.

requirements ("greening"). The result of the greening of the CAP is that farmers only receive 30 per cent of their direct payments – the so-called greening premium – if they perform additional, concrete services to benefit the environment. Greening is thus obligatory for all farmers who apply for direct payments. Greening includes the preservation of permanent pastures, crop diversification and the provision of so-called "Environmental Focus Areas" (EFAs) on 5 per cent of arable farmland. For EFAs farms can choose between a variety of measures with different weighting factors. The weighting factor of individual measures are usually between 0.3 and 2. The smaller the factor of a measure, the more land must be covered by it to attain the 5 per cent of EFA.

**MULTAGRI: An inter- and transdisciplinary project to obtain a better understanding of the environmental, ecological and economic effects of the CAP's environmental measures on agriculture and biodiversity**

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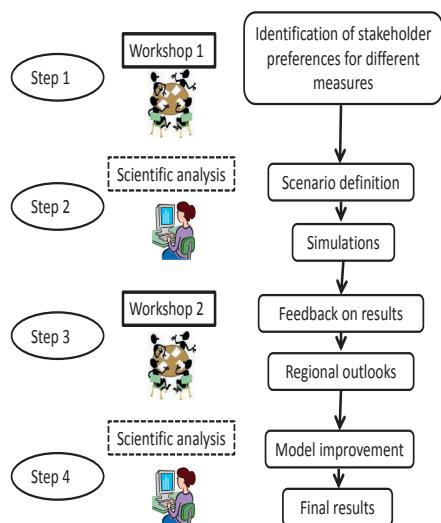
As part of the interdisciplinary and international research project MULTAGRI – Rural development through the governance of multifunctional agricultural land use – an investigation was undertaken into how an increase in biological and agricultural diversity can also benefit both rural development and agricultural production. The project placed special focus on ecosystem services. Ecosystem services denote any form of utility that can be gained from ecosystems. This is

based on the assumption that by promoting ecosystem services, ecological functions can be linked to the agricultural output of landscapes. This means that landscapes used for agricultural purposes can support the economically sustainable production of food and raw materials as well as preserve or improve the environment in the long term.

Together with researchers from the Centre for Environmental and Climate Research (CEC) at Lund University in Sweden and from the Department of Economics of the Swedish University of Agricultural Sciences in Uppsala, IAMO has been investigating in work package 4 – "Land-use conflicts and impacts on agricultural development trajectories in different rural areas" – how greening measures impact on farm income and development prospects. To determine this, an agent-based model was used in combination with stakeholder workshops for two regions – "Scania" in Sweden (Götalands södra slättbygder) and "Saxony" in Germany (Central Saxon plateau) – possible land-use conflicts were identified and the effects of EFAs on farm structures, rental prices, income and land-use evaluated. There were also intensive discussions with stakeholders about future prospects (Figure 1).

In a first series of workshops held in November 2014 (Step 1 in Figure 1) in Nossen (Saxony, Germany) and Höör (Scania, Sweden) stakeholders from the agricultural sector ("Farmers"), from public authorities ("Administrative officials") and from environmental

**Figure 1: Overview of the process to gauge the effects of the introduction of Environmental Focus Areas (EFAs) as part of the greening of the CAP**



Source: Own depiction.

organisations ("Environmentalists") were asked which of the greening measures were most suitable for combining ecological and economic goals (for more information see SAHRBACHER et al., 2016a). All participants discussed in detail possible alternatives to each measure as well as obstacles to implementation.

In Scania five EFA measures were identified as relevant: fallow, field margins, short-rotation coppice, leguminous crops and undersown crops. When selecting measures, factors such as situation, farm-specific conditions and cost efficiency were the decisive aspects

for the members of the "Farmers" group. Together with fallow, however, field margins were viewed by all groups as very positive for biodiversity. The group of "Environmentalists" regarded the connection between these measures and water protection as important. The measures that the "Administrative officials" found important were those which created natural pathways for the animal world as well as contributing to the recreational value of rural areas. "Farmers" joined forces with "Environmentalists", however, to criticise the limited implementation of such measures which, like fallow, could make a more extensive contribution to biodiversity.

In Saxony, fallow, undersown crops, leguminous crops and flower strips were the preferred options. As in Scania, economic factors were most important for the "Farmers" group when it came to choosing EFA measures. Undersown crops and leguminous crops, however, were seen more as a way of maintaining soil fertility, fixing nitrogen and combating erosion rather than preserving biodiversity, which they considered doubtful. The members of the "Farmers" group also criticised fallow and flower strips. The former due to the "decommissioning" aspect, because fallowing would neglect the central function of agriculture: to produce food, feed and fibre. Flower strips, on the other hand, would entail higher costs for re-cultivation and lead to pest infestations on neighbouring fields. "Environmentalists" emphasised, however, that flower strips would put a brake on species decline in birds, insects and pollinators.





*Two different possibilities for designating uncultivated field margins as EFA: Bare earth with a rather dubious impact on the environment and biodiversity or...*

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... a field margin sown with *Phacelia* (Picture 2). *Phacelia* helps apiculture, soil improvement and combating pests.



At the end of every workshop the following question was asked: ideally, what proportion of each EFA measure should be implemented on the farmer's own land as well as at a regional level? Eighteen answers from Sweden and twenty from Germany were used to define scenarios for various measures for both study regions (Table 1). The agent-based model AgriPoliS (HAPPE, 2004; HAPPE et al., 2006; KELLERMANN et al., 2008) developed at IAMO, was used for the simulations. It was adjusted for the two study regions and expanded (SAHRBACHER et al., 2016b) so it could undertake simulations for selected scenarios (marked in bold in Table 1; Step 2 in Figure 1).

In a second series of workshops in February and March 2016 (Step 3 in Figure 1) the initial simulation results were presented and discussed. The feedback, especially from non-academic participants, was important and enormously rewarding for everybody for the following reasons:

- Those taking part in the workshops had valuable knowledge and information about their region, which the researchers were not yet fully aware of. For this reason the workshops served as a plausibility check for our research findings and allowed us to improve the modelling to ensure more realistic final simulations.
- Using official statistics for the actual implementation of EFAs at a regional level, there was discussion

of opinions and suggestions relating to future ways of better harmonising economic and ecological factors.

### **Effects on farm structures and profits: The introduction of EFAs plays only a marginal role**

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In the last step (Step 4 in Figure 1) the modelled regions were recalibrated and the simulations carried out again. One key finding is that the introduction of EFAs on 5 per cent of arable farmland at a regional level will only have a minimal impact on the number of farms and average farm size (Figure 2). The reason for this is the high level of adaptability of farms, meaning that the introduction of the greening measures should not generate substantial structural changes because farms would dynamically optimise their own capacity and production processes. The high number of farms quitting agriculture suggested by the simulation results for the Swedish region is more a consequence of reduced direct payments. Over the course of the simulation period 2014-19 these will fall in Scania by €137/ha., although coupled payments for beef cows (€91 per animal per year) will continue to favour livestock farming in the region (Figure 2b). In Saxony, because of internal and external convergence,<sup>2</sup> the reduction in direct payments will not be

<sup>2</sup> The process of so-called "external convergence" means a gradual adjustment of national direct payments so that in all EU Member States there will be a uniform minimum euro payment per hectare by 2019. A similar process is taking place simultaneously in Germany between the Länder, which is known as "inner convergence".



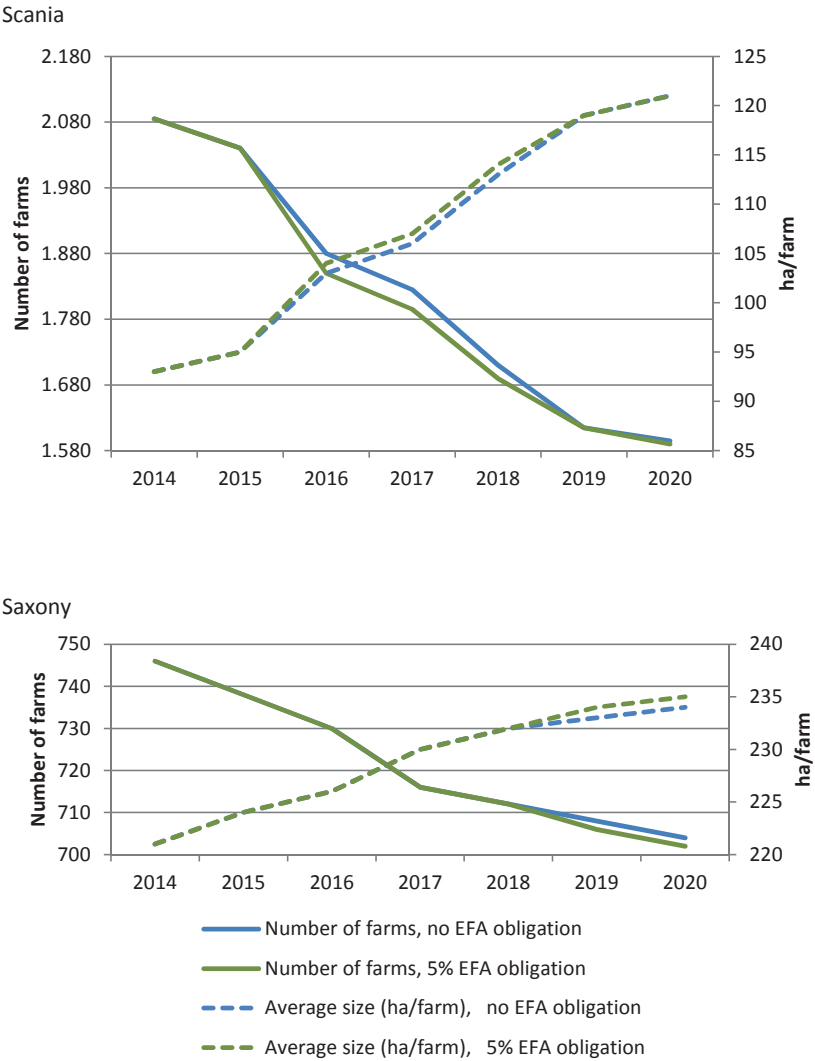
so severe – only €38/ha. between 2014 and 2019. Only agriculture between 2014 and 2020 and then lease just under 6 per cent of farms in Saxony should quit out their land (Figure 2a).

**Table 1:**     *Selected scenarios of the implementation of EFAs (share of measures to reach 5 % EFA)*

Scania region					
Scenario	Share of total EFA (%)				
	Fallow	field margins	short-rotation coppice	leguminous crops	undersown crops
Environment	0	100			
Environment	20	40			40
Environmentally friendly farmers	70	30			
Balanced	20	35	10	20	15
Administration		55	10	30	5
Production		10		35	55
Saxony region					
Scenario	Share of total EFA (%)				
	Fallow	Flower strips	Undersown crops	Leguminous crops	
Production	0	0	80	20	
Environment	40	40	10	10	
Compromise I	10	25	45	20	
Compromise II	0	45	40	15	

Source:     *Results of questionnaires to participants.*

**Figure 2: Number of farms and average farm size (in ha.) between 2014 and 2020 in the MULTAGRI study regions (simulation results)**



Source: Own calculations.

In Saxony the profit decrease with an introduction of 5 % EFA is only just under 2 per cent, compared with a scenario with no EFA (Figure 3a, "5 % EFA" column). In the hypothetical scenario of Saxon farms implementing 15 % EFA, profits would fall by less than 8 per cent (Figure 3a, "15 % EFA" column). This can be explained by the flexibility provided to farmers with selecting preferred EFA measures, which leads to farmers implementing cost-effective and somewhat meaningful measures from an agronomical point of view, such as increased cultivation of undersown crops and leguminous crops, both of which can also be used to feed beef cows. Almost the same is true of the Scania region (Figure 3b, "5 % EFA" and "15 % EFA" columns), albeit with the difference that, according to additional findings, only less productive or even marginal land will be used for implementing EFA. Highly productive land may continue to be used for similarly intensive or more intensive farming. This will limit the economic disadvantages linked to EFA, but not without a negative impact on the environment and biodiversity in such regions.

In the "Environment" and "Production" scenarios farms in both modelled regions are forced to implement a precisely defined package of EFA measures on 5 per cent of arable land (see Table 1). As the farms do not have the possibility to choose cost-effective variants of EFA measures, in both regions there are significant decreases in profits per hectare compared to the "5 % EFA" scenario (free choice of EFA measures). The obligatory introduction of flower strips in Saxony and of field

margins in Scania in the "Environment" scenario leads to further decreases in profits and, in Scania, even to some land being set aside. In the "Production" scenario, because farms are allowed to cultivate larger areas of leguminous crops, which can also be fed on-farm to beef cows, and undersown crops, the per-hectare profit decreases may be mitigated compared with the "Environment" scenario.

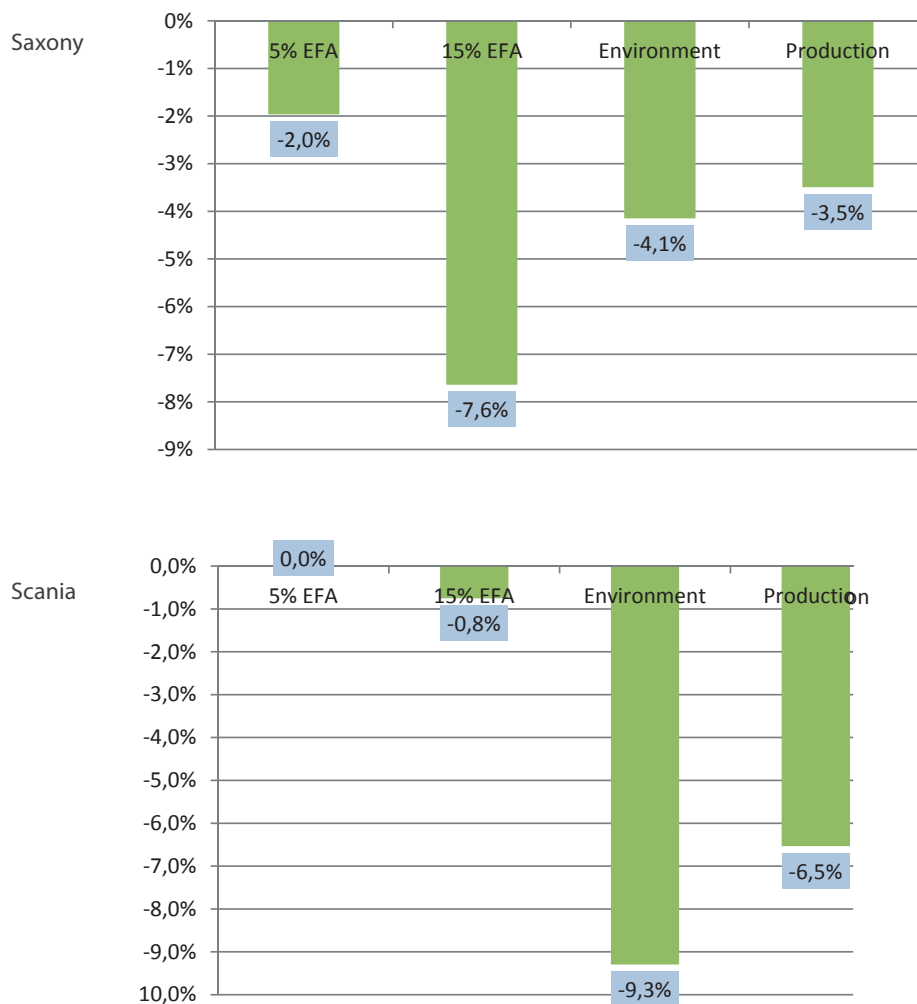
### **What will be the impact of environmental focus areas? Prospects until 2020 and policy recommendations**

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According to Figure 4 farms will opt for cost-effective EFA measures such as leguminous crops and undersown crops because they are easy to integrate into the farm's business routine. In truth, options such as flower strips in Saxony and short-rotation coppice and field margins in Scania will never – or only rarely – be chosen. The choice of fallow in both regions as well as its increase by 2020 could represent a good compromise between economic and ecological imperatives. However, the highly advantageous weighting factor for field margins (weighting factor 9) in Scania as well as the identification of certain crops already grown in both regions as EFA will mitigate the actual impacts of the greening policy.

Our research findings show that, at farm level, cost-effective EFA measures will in future continue to have

**Figure 3: Development of average profit per hectare until 2020 in Saxony and Scania in selected scenarios compared to a scenario without obligatory implementation of EFA on arable land**

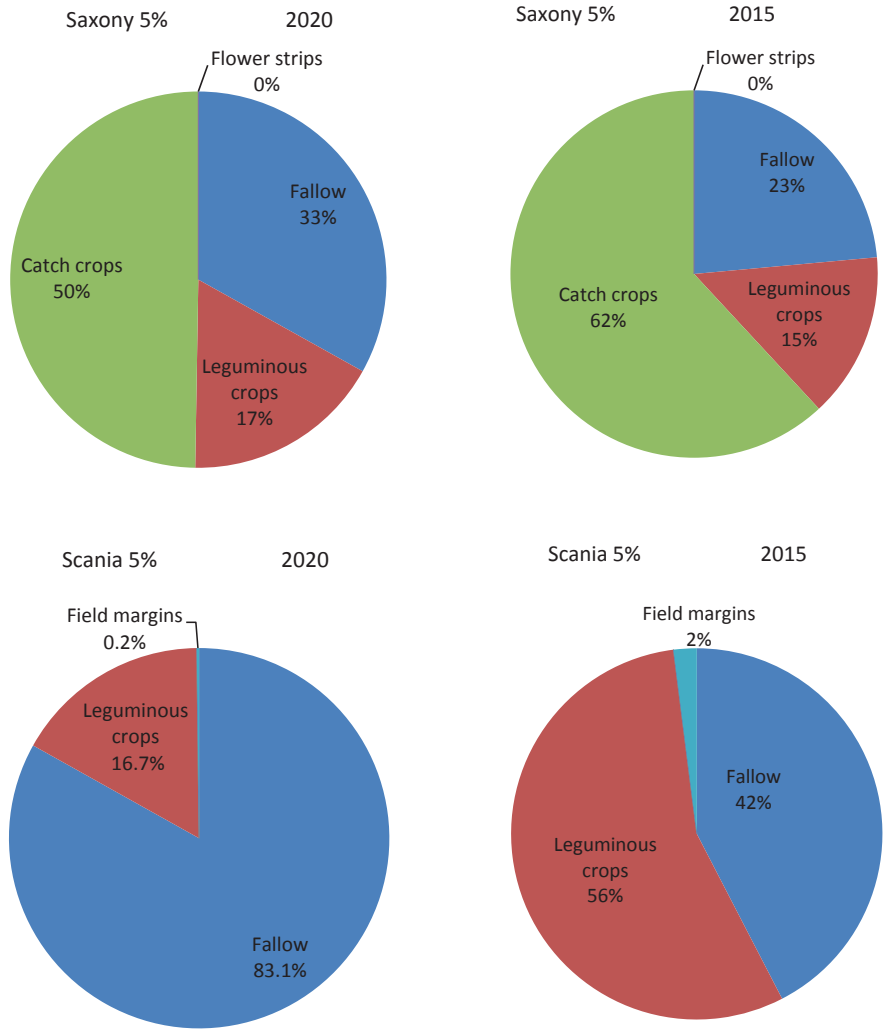


Source: Own calculations.

priority over other more environmentally friendly and labour-intensive ones. The results also show that this may lead to a further intensification on arable land that is already being intensively farmed. Because of the many exceptions and rather flexible regulations, such as the low proportion of obligatory EFA on arable land, in all probability the introduction of EFA will have no significant influence on the preservation of biodiversity. To counter this sobering conclusion, some recommendations were discussed with European stakeholders at a transdisciplinary workshop in Brussels on 12 October 2016. For there is great potential to shape the greening policy with regard to EFA more effectively. For example, ineffective measures aimed at benefiting the environment and biodiversity should be abandoned from the list of EFA measures. Alternatively the greening payment could be linked to the choice of certain EFA measures to prevent windfall

gains. A simplification of some technical requirements that can lead to miscalculations (e.g. for field margins and flower strips) would also be desirable. The administrative resources this would free up could be used to support locally coordinated initiatives. Geographical aspects of EFA measures should receive greater consideration, because in many cultural landscapes natural connecting paths between "islands of nature" play an important role in the preservation of species diversity. For this purpose, incentives for coordinated initiatives should be created that, at a local or sub-regional level, could support coordinated action by neighbouring farmers. Initiatives to benefit biodiversity should, therefore, be carried out across an entire area or cultural landscape rather than narrowly, just on one field or farm. At all events, in its current form greening is not the best instrument to provide a sufficient level of ecosystem services.

**Figure 4:** Selection of EFA measures at 5 percent of arable farmland in Saxony and Scania for 2015 and 2020



Source: Own calculations.

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*Professor Oded Stark at the IAMO Forum 2016*



# IAMO Forum 2016 "Rural Labor in Transition: Structural Change, Migration and Governance"

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THOMAS HERZFELD, VASYL KVARTIUK, DIANA TRAIKOVA, BRITTA PAASCHE

From 22 to 24 June 2016, 119 international experts from 26 countries attended the IAMO Forum 2016 in Halle (Saale). Focus of the conference was the change in employment in rural areas. The presentations and discussions in the four plenary sessions, 18 parallel sessions and one panel discussion examined the threats and challenges to rural labour markets. In their presentations and lectures, academics gave recommendations on how to reduce informal employment and highlighted the factors that would improve wages and income in agriculture. Participants of the IAMO Forum 2016 particularly debated the effects of structural change on employment in agriculture and the many different effects of internal and international migration on rural labour markets and rural development. On the last day of the conference, representatives from international organisations discussed the role of state regulation in securing active and decent, i.e. socially responsible, rural labour markets from different perspectives.

The IAMO Forum 2016 was organised in cooperation

with the Institute of Labor Economics (IZA) and supported by the German Research Foundation (DFG), the Edmund Rehwinkel-Stiftung, the *Land* of Saxony-Anhalt and the city of Halle (Saale).

## Conference opening

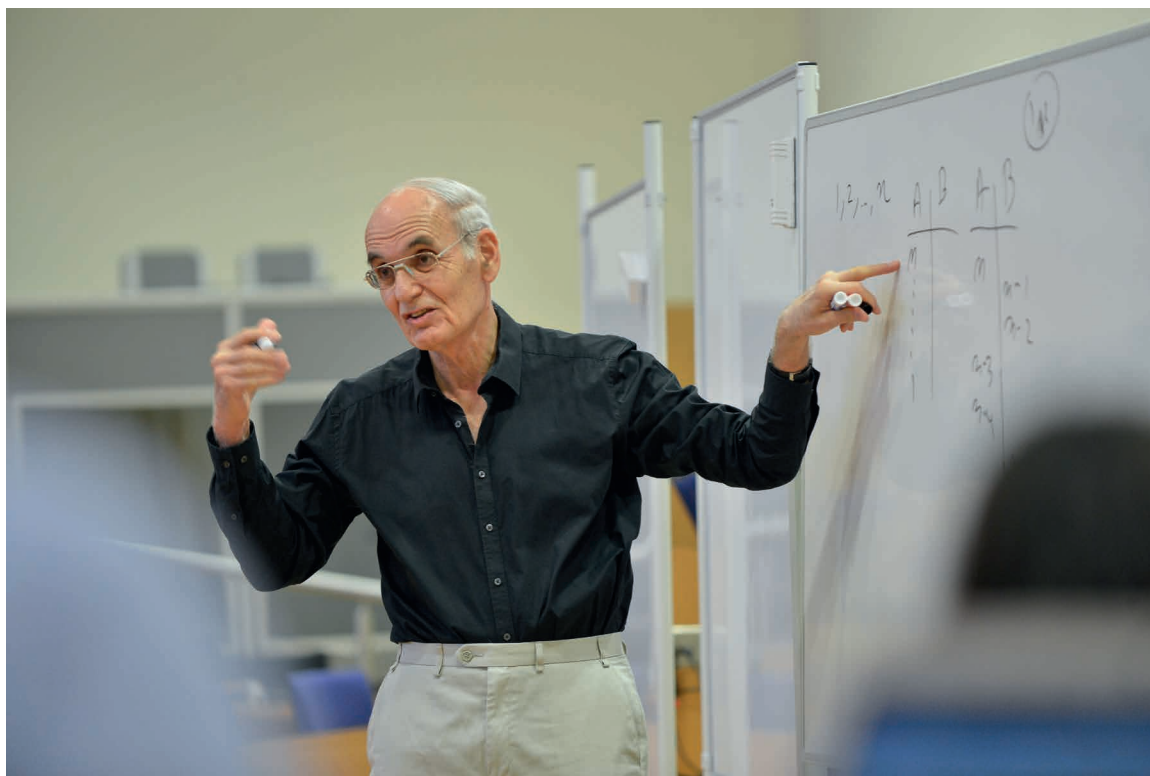
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The IAMO Forum 2016 was opened by IAMO Director Professor Thomas Herzfeld, who welcomed the guests on behalf of the conference organisers. He accounted for the choice of the theme of the conference by highlighting three development processes in the agricultural sector and rural areas in transition countries. First, structural change, measured by the drop in agricultural employment over the course of economic development, is very different in transition countries. Second, whereas for a long time transition countries were recipients of transfers from migrants, over the last 10-15 years transfers from transition countries have greatly increased. Finally, a third trend is the increasing complexity of activities in modern, collaborative

agricultural production together with an increasingly aging population or even the lack of an adequately qualified workforce.

Professor Hartmut Lehmann from the University of Bologna, Italy, gave the first plenary lecture on the topic "Risk attitudes, informal employment and wages: Evidence from a transition country". On the basis of

an empirical analysis of data from the Ukrainian Longitudinal Monitoring Survey (ULMS) Lehmann entered the current debate about informal employment. He showed that an individual's attitude towards risk is a decisive factor in whether they will or will not take up informal employment. In his plenary lecture, "Social preferences and market outcomes", Professor Oded



*Professor Oded Stark at IAMO Forum 2016*

Stark from the University of Bonn discussed the question of how the relative ranking of households influences migration decisions. He presented an array of theoretical theses and discussed their effects on migration movements between two regions.

### **Rural labour markets in transition economies**

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A highlight of the second day of the conference was the plenary session on the topic "Rural labour markets in transition economies". Dr Corrado Giuletta from the University of Southampton, Great Britain, presented his research into rural-to-urban migration in China. The focus of his study was the role of weak and strong relationship networks of rural households, defined in this study as inhabitants of the same village or close family members. The findings show that both relationship networks influence the decision of individuals to migrate to urban areas and that there is an interplay between the two; strong relationship networks are necessary to activate weak ones.

Professor Alexander Danzer from the Catholic University of Eichstätt-Ingolstadt presented research findings on forced labour in the cotton sector, using the example of Tajikistan. The sector is characterised by a dual business structure. Besides small private farms there are large semi-state farms. They compete on local labour markets for seasonal workers for the cotton

harvest. The empirical results of the work by Danzer and his co-authors are supporting the hypothesis that farm managers are passing on additional income from higher cotton prices to regular workers, but not to those in forced labour. We can assume, therefore, that privatisation and a competitive labour market would lead to rising global market prices being passed on to employees. Poor households in particular would benefit from this.

Professor Hartmut Lehmann outlined further aspects and findings from his study on the effects of personality traits on rural-to-urban migration in Ukraine based on the UMLS. Besides attitude towards risk, characteristics such as cosmopolitanism and conscientiousness play a key role in deciding for or against migration. In addition, Dr Norberto Pignatti from the International School of Economics at Tbilisi State University (ISET), Georgia, presented statistics on labour market opportunities in rural Georgia. Past measures taken by the Georgian government, such as the encouragement of privatisation of previously leased agricultural land in state ownership, programmes for agricultural development or the setting up of advice centres, have not yet led to a thoroughgoing modernisation of Georgian agriculture. Instead there is a lack of non-agricultural employment opportunities for young people on local labour markets. According to Norberto Pignatti, new stimuli are needed for structural change in Georgia.

## Patterns of employment in rural areas

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The third day of the conference opened with two plenary lectures. First, Dr Johannes Koettl, Senior Economist at the World Bank in the field of Social Protection and Labor Global Practice (GSPDR), gave an insight into patterns of informal employment in the new Member States and Candidate Countries of the European Union. We can see that it is men who tend to opt to work on the side, especially in the transitions from training/education to a career, and from a career into retirement, and that informal employment is reduced with better education. In countries such as Bulgaria and Romania, moving from work on the side to regular employment has comparatively high levels of financial losses for the workers concerned. The causes for this are the taxes that must be paid and the loss of social support payments. In many transition countries the "formalisation tax rate" is relatively high, especially in the low-wage sector. This means that only a small proportion of the working population pays income tax and contributions to social insurance. Koettl advised that structural reforms were necessary, but that on their own they would not be sufficient to make formal employment profitable. The effectiveness of the government and the trust that citizens showed to their government were key factors for tax morality.

Next, Dr Cheng Fang from the Food and Agriculture Organization of the United Nations (FAO) outlined

FAO demands for decent employment in rural areas. Besides a prohibition on child labour as well as on excessively long working hours, this meant respecting so-called core labour standards, ensuring appropriate living conditions and an appropriate degree of job security and stability, and guaranteeing technical and vocational training. Fang explained that the employment of young people and the participation of women were core areas of the FAO strategy to create decent rural employment opportunities.

## Threats and challenges of rural labour markets

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Another highlight of the conference, which completed the IAMO Forum 2016, was the panel discussion "Threats and challenges of rural labour markets", chaired by IAMO staff member Martin Petrick. Besides Koettl and Fang, the panel consisted of Dr Abel Polese from Dublin City University, Ireland, Dr Willi Schulz-Greve from the European Commission, as well as Taras Vysotski from the Ukrainian Agribusiness Club (UCAB). Schulz-Greve explained that a broad spectrum of bottom-up strategies for the promotion and development of rural employment were at the top of the agenda of the European Commission. Examples of suitable measures are investment in health care provision and education opportunities in rural areas. Polese emphasised that eliminating corruption was one of the most important measures for developing regular employment opportunities in rural areas. For this existing informal

structures must be transferred into formal ones. For Ukraine, Vysotski outlined the necessity of an education system that takes the needs of employers into account. Moreover, state support for rural areas must focus on creating decent living conditions in the countryside. Koettl argued that demographic change and economic challenges were having the greatest impact

on the development of rural labour. For many Chinese people, rural-to-urban migration would open up new sources of income, Fang added. All panellists agreed that employment in rural areas was facing big challenges. Here it should be up to governments to provide a broad spectrum of services to create more formal employment and safeguard existing jobs.



*IAMO building*

## IAMO – A brief portrait

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### Aims and tasks

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The Leibniz Institute of Agricultural Development in Transition Economies (IAMO) focuses on the far-reaching economic, social and political processes of change in the agricultural and food sector, and in the rural areas of its geographical area of research. This extends across Central, Eastern and South-Eastern Europe, the transition countries of Central and Eastern Asia and China. Particular research into Central Asia has been intensified over the past couple of years. Despite great efforts and high success rates, the development of the agricultural and food sector in many of these regions is still far behind that of Western industrial nations. Some of them are following their own, very specific development paths. Furthermore, a huge gulf is emerging between successful and stagnating regions within individual countries, as well as between states themselves.

Large emerging nations such as Russia and China have risen to become "global players" on world agricultural markets. Given the potentially threatening food crises, we need to determine what must happen in these key economies to promote environmentally sustainable

economic growth in agriculture and the food sector, and ensure long-term national and global food security despite growing demands on agricultural resources. At the same time, the adaption of agriculture and land use to climate change is a major challenge in our target countries and beyond, under the conditions of a globalising economy. In this perspective, not only thematically, IAMO has a wide range of research which needs to be done on a regional basis.

With its thematic and geographical focus, IAMO is a unique global research institution. Since its establishment in 1994 it has been a member of 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 address current problems of national interest ([www.leibniz-gemeinschaft.de](http://www.leibniz-gemeinschaft.de)).

The aim of IAMO's work is not just to help understand, but also 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 academics.

The Institute sees itself as a driving force of international research into agricultural economics. With outstanding research as the engine of development 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 cross-linking of German research and dialogue between decision makers from the academic, political and business communities. In view of the unprecedented major challenges, delivering scientifically based policy advice is becoming an increasingly important part of IAMO's work. The Institute also uses its expertise and capacities to help academic scholars become fully qualified. A special focus is put 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 at

the Faculty of Natural Sciences III, and with the Economic Sciences Department at the Faculty of Law and Economic Sciences, are important contributions.

### **Academic departments, research fields and key topic areas**

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IAMO's threefold research structure with the departments *Agricultural Policy*, *Agricultural Markets* and *Structural Development* (these are abbreviated 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 individual farm level and in rural areas, the creation of functioning agricultural markets, and the shaping of agricultural policy are all closely interlinked. Decisions relating to farm development and agricultural policy, as well as market processes also have an impact on human-environment interaction in rural areas with an additional effect on the two key issues of the future: food security and food safety.

IAMO's academic work is organised interdepartmentally into five research domains which are focusing on the major problem areas of agricultural development in Eurasian transition countries and emerging nations. The more intensive level of communication in research domains groups counteracts any possible



fragmentation of research. Besides positive bundling effects, greater individual responsibility of the research domains groups allows efficient, result-oriented research management. The new research domains are:

- I. Policies and institutions
- II. Natural resource use
- III. Livelihoods in rural areas
- IV. Organization of agriculture
- V. Agricultural value chains

The new medium-term concept for 2016-2022, which took effect on 1 January 2016, has also led to changes in the composition and adaptation of the research areas to the changing problems in the investigation rooms of IAMO. Compared to the 2008-2015 Medium-Term Approach, the following aspects will be considered more closely:

- The impact of global processes on the economy and environment of the study region
- Developments in Central Asia, the Caucasus region, Russia and Ukraine
- Comparative analyses between countries
- Interdisciplinarity of research
- Dialogue with society, politics and business

## **Institutional structure**

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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 Professor Thomas Herzfeld
- Agricultural Markets, Marketing and World Agricultural Trade;  
head of department is Professor Thomas Glauben
- Structural Development of Farms and Rural Areas;  
head of department is Professor Alfons Balmann

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

- Administration and Central Services,  
Dr Stephanie Garling

are forming the Directorate of the Institute. Since January 2013, all four directors of the Institute have been on an equal footing as managing directors with collective responsibility.

In coordination with the Board of Trustees, this collegiate body manages the Institute's business and directs the long-term research and development planning at the IAMO. The Scientific Advisory Board advises

the Directorate and the Board of Trustees on academic matters and carries out regular evaluations of the Institute's work.

As of 1 January 2017 the members of the Board of Trustees were: Head of section (MinDirig.) Friedrich Wacker (Chairman; German Federal Ministry of Food and Agriculture), Undersecretary (MinR.) Thomas Reitmann (Deputy chairman; Ministry of Economic Affairs, Science and Digitalisation of Saxony-Anhalt), Undersecretary (MinR.) Jobst Jungehülsing (German Federal Ministry of Food and Agriculture), State-Secretary Ralf-Peter Weber (Ministry of the Environment, Agriculture and Energy of Saxony-Anhalt), Professor Michael Bron (Martin Luther University, Halle-Wittenberg), Dr Lothar Hövelmann (Manager of the DLG centre of expertise for agriculture and food), Professor Sebastian Lentz, (Leibniz Institute for Regional Geography, Leipzig), and Professor Martin Odening (Humboldt University, Berlin).

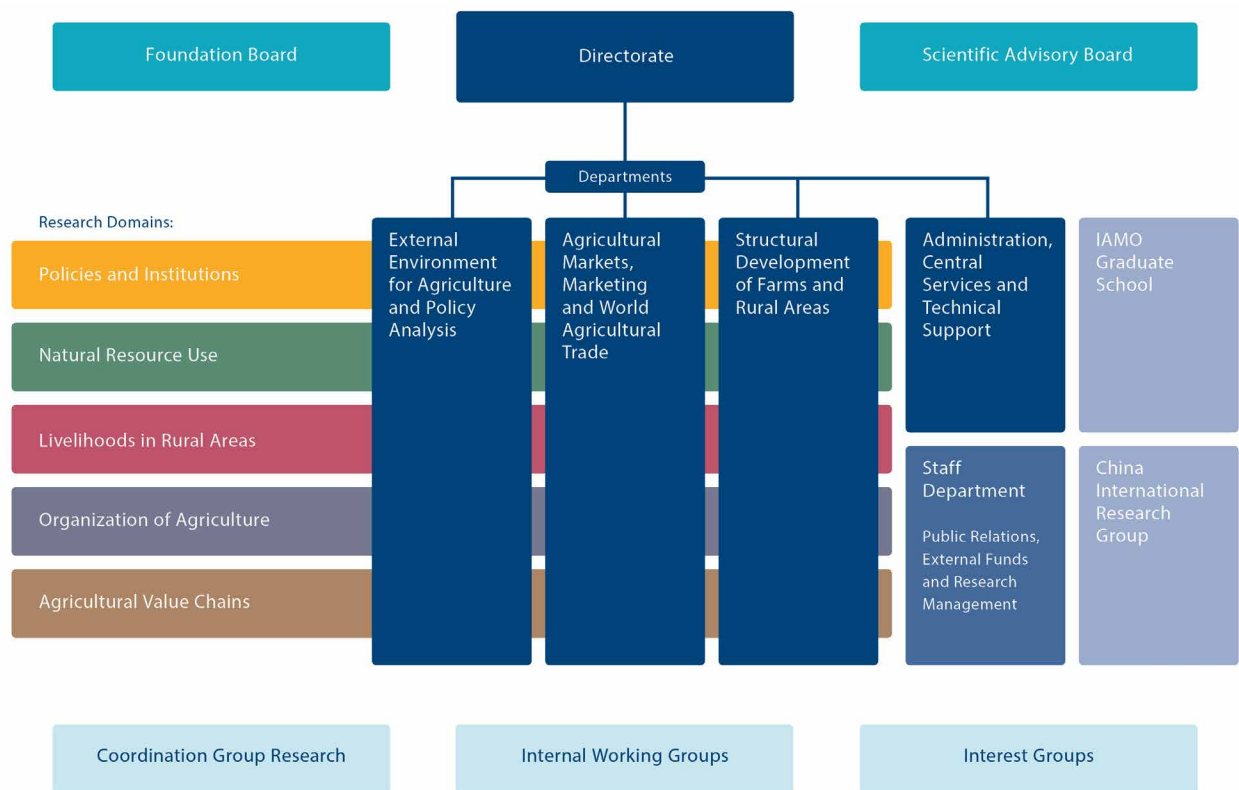
Also as of 1 January 2017, the members of the Scientific Advisory Board were: Professor Bernhard Brümmer (Chairman; Georg August University, Göttingen), Professor Hermann Lotze-Campen (Deputy Chairman; Potsdam Institute for Climate Impact Research (PIK)), Professor Martina Brockmeier (University of Hohenheim), Professor Silke Hüttel (University of Rostock), Dr Ekaterina Krivonos (FAO, Trade and Markets Division), Professor Laure Latruffe (French Institute for Research in Agriculture (INRA) – Rennes), Prof. Ada Wossink (University of Manchester), Dr Martin Banse (Johann

Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries (TI)), Professor Olaf Christen (Martin Luther University, Halle-Wittenberg (MLU)), Professor Emil Erjavec (University of Ljubljana), Professor Imre Fertő (Corvinus University of Budapest) and Professor William H. Meyers (University of Missouri).

### **IAMO evaluated very positively**

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Leibniz Institutes are evaluated at regular intervals, at least every seven years, to evaluate the academic and structural developments they have made in recent years as well as their future planning. On 31 July 2016 the Leibniz Association Senate issued the results of IAMO's third evaluation, based on a two-day inspection of the Institute by an independent expert commission in November 2015. In its report, the Senate recommended, that given its national academic interest and supra-regional importance, IAMO should continue to be supported jointly by the federal government and the *Länder*. The report affirmed that IAMO was performing very well in both: its research mandates and its tasks to act as a forum of dialogue between the academic, business and political communities, and to support young academics. Particularly, the Senate praised the "remarkable and important thematic and methodological breadth" of the Institute's research, which is also "highly acknowledged in the target countries". More information on these results are in the introduction.



*Organigram of IAMO*

## Change in the directorate

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On 30 April 2016, after 21 years of service at IAMO, Hannelore Zerjeski, Director and Head of Administration retired. As a graduate economist, she was one of the founding directors of IAMO in 1994 and throughout her time here she played a key role in the Institute's successes. Being a member of the Directorate and in charge of the budget, together with the academic directors, Hannelore Zerjeski was responsible of running the Institute as well as its strategic and operative management. To mark the handover, on 26 April 2016 IAMO Directors Alfons Balmann, Thomas Glauben and Thomas Herzfeld praised her commitment and dedication during a ceremony. Besides IAMO staff, the ceremony was attended by long-time associates of the Institute from the worlds of academia, politics and business. Gisela Liepelt from the Ministry of Economic Affairs, Science and Digitalisation of Saxony-Anhalt delivered a message from Undersecretary (MinDirig.) Thomas Reitmann, who expressed his particular thanks for her work and for the excellent, dependable relationship with the ministry. Hannelore Zerjeski handed over her duties to her successor, Dr Stephanie Garling on 1 May 2016. Dr Garling was previously administrative head of the Biotechnology Centre of Dresden Technical University (BIOTEC) and prior to that temporary academic director of the doctoral programme at GIGA – the German Institute of Global and Area Studies. She studied political science and public administration at

the University of Leipzig, where she also gained her doctorate.

## Cooperation with university institutions

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Since February 1998 IAMO and MLU have been working together under a comprehensive cooperation agreement, which includes joint appointments. IAMO's work is especially closely linked with the Institute of Agricultural and Food Sciences, which is part of the Faculty of Natural Sciences III at MLU, and the Economic Sciences Department at the Faculty of Law



*Dr Stephanie Garling*

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*Handover of role of Administrative Director*

*Professor Alfons Balmann, Professor Thomas Herzfeld, Dr Stephanie Garling, Hannelore Zerjeski, Professor Thomas Glauben (l. to r.)*

and Economic Sciences. The heads of IAMO's academic departments take part in MLU teachings and committee work. Many academic members of staff from IAMO with post-doctoral and doctoral qualifications are also involved in university teaching, and in the running of a nationwide PhD student programme. Staff links between MLU and IAMO are also strengthened by the fact that MLU Prorector of Research and Student Education, Professor Michael Bron, sits in the IAMO Board of Trustees. Cooperation between MLU and IAMO assumed a new dimension when the ScienceCampus – Plant-based bioeconomy (WCH) – was opened in Halle in June 2012. The ScienceCampus aims to strengthen the interdisciplinary collaboration between the Halle-based Leibniz Institutes and the corresponding academic departments at Martin Luther University Halle-Wittenberg in the sphere of plant-based bioeconomy. It will also advance higher education in the Halle (Saale) region, as well as supporting knowledge and technology transfer in politics, business and public life.

IAMO is also staying in close contact with many other universities, especially with faculties of agriculture and economics. Depending on the requirements, other fields of social sciences and humanities, such as, for example, interdisciplinary research, Humanity or histories are getting added. As far as our partners in Germany are concerned, we have strong links with Berlin, Bonn, Göttingen, Hohenheim, Kiel, Munich and Münster.

Since 2010 IAMO had a cooperation agreement with the Humboldt University in Berlin. In addition, there are close relationships with chairs of agricultural economics and institutes at agricultural and economic colleges and universities in our partner countries.

Amongst all our partner universities abroad we would like to highlight the following: in China, Peking University, Sichuan Agricultural University, the Chinese Agricultural University – Peking and Lanzhou University; in Russia, the Higher School of Economics in Moscow (HSE); in Ukraine, the National University of Life and Environmental Sciences of Ukraine – Kiev and Zhytomyr National Agro-ecological University; in Uzbekistan, the Samarkand Agricultural Institute (SamAI); in Kazakhstan, the Kazakh National Agrarian University (KazNAU) and Nazarbayev University – Astana; in Slovenia, the University of Ljubljana; in Serbia, the University of Belgrade; in Bulgaria, the University for National and World Economy – Sofia; in Romania, the University of Agronomic Sciences and Veterinary Medicine of Bucharest (UASMV); in the Czech Republic, the Czech University of Life Sciences – Prague. In addition, IAMO maintains a wide range of scientific exchange with Wageningen University in the Netherlands; in Denmark, the University of Copenhagen; in Sweden, the Swedish University of Agricultural Sciences (SLU) in Uppsala and the Centre for Environmental and Climate Research (CEC) in Lund; and in Austria with the University of Natural Resources and Life Sciences – Vienna.



Other partners are the Catholic University in Leuven, Belgium, and the University of Kent in Canterbury, Great Britain. In the USA we have close contacts with Stanford University, the University of California, Davis, and North Carolina State University.

### **Cooperation with non-university institutions**

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Numerous contacts with non-university institutions are very important for IAMOs work. We are collaborating with the Johann Heinrich von Thünen Institutes of Farm Economics, Rural Studies, and Market Analysis and Agricultural Trade Policy in Brunswick-Völkenrode (TI); the Leipzig-based Leibniz Institute for Regional Geography (IfL); the Centre for the History and Culture of East-Central Europe (GWZO); the Institute for the World Economy (IfW) in Kiel; the Institute for Economic Research (IWH) in Halle; the Potsdam Institute for Climate Impact Research (PIK) and the German Committee on Eastern European Economic Relations.

Close relations with many non-university research institutions abroad include Central and Eastern Europe, Southeast Europe and Eastern Asia. We have excellent and regular professional contact with institutes in academies of sciences or agricultural sciences, regional research institutes and advisory boards, as well as agricultural economics research institutes that are subordinate to the corresponding ministries of agriculture. Of

note here are: in China, the Center for Chinese Agricultural Policy (CCAP) in Beijing at the Chinese Academy of Sciences; in Ukraine, the Ukrainian Agribusiness Club (UCAB) and the Institute for Economic Research and Policy Consulting (IER), both in Kiev; in Russia, the Russian Grain Union in Moscow; in Kazakhstan, the Analytical Center of Economic Policy in the Agricultural Sector (ACEPAS) and the Joint-Stock Company National Center of Space Research and Technology; the Central Asia Regional Economic Cooperation Institute (CAREC), whose partners are several international development banks and organisations as well as Central Asian countries and China; in Kyrgyzstan, the National Statistical Committee of the Republic of Kyrgyzstan; in Armenia, the International Center for Agribusiness Research and Education (ICARE); in Georgia, the Georgian Center for Agribusiness Development (GCAD); in Azerbaijan, the Agro Information Center of Azerbaijan; and in Kosovo, the Ministry of Agriculture, Forestry and Rural Development.

Foreign partners of IAMO in Western and Northern Europe are: in Austria, the International Institute for Applied Systems Analysis (IIASA) in Laxenberg; and the French consulting company Euroquality, based in Paris. Our partners amongst international organisations are the Food and Agriculture Organization of the United Nations (FAO), the World Bank, the International Food Policy Research Institute (IFPRI) and the International Water Management (IMWI-CGIAR).

## **New Leibniz ScienceCampus**

### **"Eastern Europe – Global Area"**

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The Leibniz ScienceCampuses offer completely new opportunities for academic cooperation with university and non-university research institutes. In Central Germany a currently newly established Leibniz ScienceCampus will be ground-breaking in the context of global challenges for research in and into the countries of Eastern Europe. In cooperation with universities and non-university institutes in Leipzig, Halle (Saale) and Jena, IAMO will investigate the globalisation of Eastern European and Central Asian regions through economic ties, geopolitical changes, cultural exchange and migration movements. The ScienceCampus "Eastern Europe – Global Area" offers all participating institutions excellent interdisciplinary cooperation possibilities for their research and transfer activities as well as in further academic education and training with particular focus on communication of research results to the media and wider public. Starting in July 2016, over the next 4 years, the ScienceCampus 'Eastern Europe – Global Area' will be supported by the Leibniz Association. The Leibniz Institute for Regional Geography (IfL), the IAMO, the Universities of Leipzig, Halle-Wittenberg and Jena, the Max Planck Institute for Social Anthropology in Halle, the Fraunhofer Center for International Management and Knowledge Economy (MOEZ), and

the Centre for the History and Culture of East-Central Europe (GWZO) are all involved in the development of the ScienceCampus.

## **Supporting young academics**

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One of IAMO's three core tasks is to help developing the next generation of researchers, the Institute therefore supports the implementation of doctoral and habilitation projects. A large number of dissertation topics are also assigned for master's, diploma and bachelor degrees. At the end of 2016, 40 theses, 22 of them written by women, got supervised at IAMO.

From October 2015 to September 2016, 8 long-term IAMO staff members submitted their theses to the Martin Luther University and successfully defended:

- "Worst-case optimal investment and consumption – A study with stochastic interest rates" (Tina Engler);
- "Russian demand for dietary quality: Nutrition transition, diet quality measurement and health investment theory" (Christine Burggraf);
- "Market uncertainty, project specificity and policy effects on bioenergy investments: A real options approach" (Lioudmila Chatalova);



- "Essays on consumers' perceptions and valuation of health-enhancing attributes in food products"  
(Irina Dolgopolova);
- "Understanding forest-cover change in Yunnan with a combination of quantitative and qualitative methods"  
(Jens Frayer);
- "Too much but not enough: Issues of water management in Albania in light of climate change"  
(Klodjan Rama);
- "Structural change in rural Europe: Land-use and labour behaviour – Case studies with application to drivers of participation to agri-environmental measures and labour force transitions"  
(Ilkay Unay Gailhard);
- "Labour rationing of different farm types in Kazakhstan: A shadow price analysis"  
(Katharina Vantomme).
- "Institutional analysis of black earth soil degradation and conservation in Ukraine"  
(Nataliya Stupak, Humboldt University, Berlin).

### Equal opportunities at IAMO

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In 2016 IAMO received the TOTAL E-QUALITY award for equal opportunities a second time after successfully obtaining it in 2013. The award stands for TOTAL QUALITY MANAGEMENT (TQM) and acknowledged the distinction of a successful, long-term commitment to equal opportunities for men and women and the Institute's successful equal opportunities policy. Besides equal career opportunities based on talent, potential and skills, the Institute places great importance on guaranteeing and enhancing the compatibility of family and career, establishing equal opportunities as well as nurturing this compatibility in everyday work. This is the result of a proactive personnel management, career support and support for young academics and involvement with the Dual-Career Network of Central Germany. The award is given in a 3 years cycle and IAMO has officially received a certificate on 9 November 2016 in Nuremberg. With retaining this predicate, the Institute enters into an individual self-obligation to continually monitor its equal opportunities and ensure they are permanently anchored.

Three external theses which have been partly supervised by IAMO staff were also successfully defended:

- "Mapping patterns of agricultural land-use intensity across Europe"  
(Stephan Estel, Humboldt University, Berlin);
- "Environmental Efficiency Measurement of grassland grazing using stochastic distance function on the Qinghai-Tibetan plateau of China"  
(Wei Huang, Georg August University, Göttingen);

## Prizes and awards

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The IAMO academic PD Dr Vladislav Valentinov was awarded the AGI's international research prize for "academic contributions to the institutional economics of organisations in the Third Sector and of co-operative self-help organisations" on 14 September 2016, at the 18th International Co-operative Research Conference (IGT/ICCS) in Lucerne. The Working Group of Institutes for Co-operative Studies (AGI) serves as a communication platform for scientific institutions in Germany, Austria and Switzerland which guides research into co-operatives. Within the framework of the regular



*PD Dr Vladislav Valentinov*

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International Co-operative Research Conference, special achievements are awarded in the areas of research covered by members of the Working Group.

The prize is awarded for special services to the development of scientific results in international co-operative and co-operation theory and for propagating the co-operative idea in theory and practice, with particular regard to developing, emerging and Eastern European countries. The distinction comes with a financial award, which was provided by the DZ BANK foundation in between 2008 and 2012.

In July 2016 Dr Christine Burggraf received the Luther Certificate by the Martin Luther University Halle-Wittenberg for her outstanding PhD thesis "Russian Demand for Dietary Quality: Nutrition Transition, Diet Quality Measurement, and Health Investment Theory". In her work the IAMO academic describes the development of Russian nutrition patterns during the post-socialist transformation, investigates the reasons for a choice of healthier nutrition with newly developed methods, and offers recommendations to improve food quality.

For his paper "CIS market integration and price transmission along the supply chains – What are the main driving forces and challenges?" the IAMO academic Dr Ivan Duric won one of four Best Paper Awards at the annual conference of the Armenian Economic Association (AEA) in Yerevan.

## Training for doctoral students: IAMO Graduate School, seminars and Doctoral Certificate Programme

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As part of the "Pact for Innovation and Development", which corresponds to the excellence initiative of the German government and the *Länder* to promote science and research at German universities, the Institute established the IAMO Graduate School in 2007. Starting out for four years as a pilot measure, since 2011 the Graduate School has become a fixed and permanent component of PhD training at IAMO. All doctoral students at IAMO are automatically members of the Graduate School, which is also IAMO's contribution to Doctoral Certificate Programme in Agricultural Economics.

The Doctoral Certificate Programme in Agricultural Economics was established in 2005 by IAMO, the Johann Heinrich von Thünen Institute (TI) and institutes of agricultural economics at several German universities ([www.agraroeconomik.de](http://www.agraroeconomik.de)). The "Doctoral Certificate Programme" offers the first structured training in Germany, and now in Austria too, for doctoral students in the areas of agricultural and food economics and rural development. The systematic teaching of essential theory and method aims to increase the quality of students' education and improve efficiency when working on dissertation topics. Doctoral study is the third stage of a consecutive study programme,



*Dr Ivan Djuric*

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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 at Christian Albrecht University in Kiel, the Faculty of Agriculture at the Rhine Friedrich Wilhelm University of Bonn, the Albrecht Daniel Thaer Institute of Agriculture and Horticulture at the Humboldt University in Berlin, the departments of Agricultural Sciences, Ecotrophology and Environmental Management at Justus Liebig University Giessen, IAMO, the Faculty of Agricultural Sciences at Hohenheim University, the Institute of Agricultural and Food Sciences at Martin Luther University Halle-Wittenberg, the department of Ecological Agricultural Sciences at Kassel University,

the Faculty of Agricultural Sciences at Georg August University in Göttingen, the Faculty of Economic Sciences and Center of Life and Food Sciences Weihenstephan at Munich Technical University, the Faculty of Agricultural and Environmental Sciences at the University of Rostock, the University of Natural Resources and Life Sciences in Vienna and the Thünen Institute, Brunswick. The PhD course is based on a modular system. From October 2015 to September 2016 IAMO professors and staff helped organise academic events relating to the following modules:

- "The Political Economy of Agriculture in High-Income Countries";
- "Efficiency and Productivity Analysis I – Deterministic Approaches";
- "Agent-Based Modelling in Agricultural and Resource Economics";
- "Foundations of Agricultural Economics: Selected Topics";
- "Introduction to Geographic Information Systems and Spatial Data Analysis".

In close cooperation with the PhD students, the IAMO Graduate School also offers specific further education seminars at the Institute, for which IAMO invites outside speakers.

Besides structured training for doctoral students, the IAMO Graduate School specifically involves IAMO academics who already have PhDs, giving them the opportunity to develop further their fields of research and

gain experience in research management. The IAMO Graduate School also serves as a point of contact for all PhD students. Since March 2010 the IAMO Graduate School has been a full member of the International Graduate Academy (InGrA) of Martin Luther University Halle-Wittenberg. InGrA supports the setting up of all forms of structured doctoral programmes, coordinates the existing programmes and helps create a productive research environment, while taking into account the university's internationalisation and equal opportunities strategies [www.ingra.uni-halle.de](http://www.ingra.uni-halle.de).

Jointly with the agricultural economics professors of business, agricultural market theory, agricultural business management, and agricultural, food and environmental policy at MLU's Institute of Agricultural and Food Sciences, IAMO also runs a PhD student seminar. This seminar acts as a forum for scientific exchange about research questions, methodological approaches and results.

### **International China Research Group at IAMO**

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In 2008 the International China Research Group was set up at IAMO on a fixed-term basis to work on the topic "Economic Growth and Social Equilibrium in Rural China". The international research group works towards the structural and sustained international cross-linking of IAMO's research activities into economic and social processes in rural areas of the People's Republic of China.

In the beginning the group consisted of IAMO staff only and was later joined by academic colleagues from Göttingen, Wageningen and Beijing. In 2011 the Centre's future was secured by a permanent partial funding from the Pact for Research and Innovation.

In 2016 the research group was working on fourteen projects. The thematic spectrum runs from the effects of liberalising the land market, questions of social, health and education policy, to the impact of Chinese environmental programmes on ecological circumstances and rural living conditions. The individual projects are helping to identify approaches by addressing the sharp increase in social and environmental problems in rural China. The main issues here are targeted policy measures and the shaping of a growth-inducing economic environment. As of 30 September 2016, four internal and two external PhD projects on China were ongoing. Two PhDs within the China Group were successfully completed in 2016.

The following are some examples of research results. An evaluation of wide-ranging household surveys showed that in a social transfer programme to combat poverty in rural China, only a small proportion of needy households actually received transfer payments, whereas a large proportion of the funds went to households with incomes above the poverty threshold. Interviews with households and with representatives of the various levels of administration involved gave an insight into why the programme is so inaccurate and suggested possible ways of improving it. Research in

another project showed that reforms introduced in the province of Sichuan since 2008, including a reform of land law, have actually advanced the trade in land-use rights and improved the agricultural structure as well as farming productivity.

Repeated visits by IAMO researchers to China have proven to be essential to their successful research work. Likewise, guest visits to IAMO by foreign colleagues, especially Chinese, are important for orienting research adequately to current developments. For example, the group is working jointly with colleagues from Sichuan Agricultural University in Chengdu, whom, together with the Center of Chinese Agricultural Policy in Beijing and the IAMO China Group, held a symposium on their campus in September 2016, at which more than 40 German and Chinese academics discussed their research into the transition of rural areas in China. More information can be found on our website: <https://www.iamo.de/en/research/china-international-research-group/>.

### **Guests and fellowships at IAMO**

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The further training and education of academic scholars is one of IAMO's core tasks. As mentioned above, IAMO focuses mainly on supporting young academics from its partner countries. In this regard a great importance lies on study visits by researchers, which usually range from a few weeks up to two years. Besides being involved in joint publications, those who come for long-term visits also concentrate on their doctoral

studies, financed by external and IAMO grants, and third-party funded projects. From October 2015 to September 2016, 20 fellows worked at IAMO, concentrating mostly on their theses. Over the same period of time 52 predominantly young visiting academics from 30 different countries carried out research here, at IAMO. By working together closely on international, third-party funded research projects, young researchers from partner countries integrated 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.

## Development of third-party funding

### Project funding 2016 (Oct 2016 - Sept 2016)

#### I. Newly approved research projects with third-party funding

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- Project title: The role and functions of bio-clusters in the transition to a bioeconomy – **TRAFOBIT**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Political economy of agricultural

policies in federal systems – **FEDAGRIPOL**

Funding source: Leibniz-Gemeinschaft (Leibniz-Wettbewerb)

- Project title: Building an excellency network for heightening agricultural economic research and education in Romania – **ENHANCE**

Funding source: EU Horizon 2020

- Project title: Chinesisch-deutsches Symposium über "Explaining Transition of Chinese Rural Areas: A system Perspective", Chengdu, China – **Symposium Chengdu 2016**

Funding source: Chinesisch-Deutsches Zentrum für Wissenschaftsförderung

- Project title: Analysis of the strategy of the Russian Federation for the expansion of agricultural production – **STARLAP**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Deutsch-Kasachischer Agrarpolitischer Dialog – **APD Kasachstan**

Funding source: Bundesministerium für Ernährung und Landwirtschaft (BMEL)

- Project title: Regional Conference: Regional and international integration in Caucasus and Central Asia: The recent changes in trade policies' – **RIITP\_FAO und RIITP\_DAAD**

Funding source: Food and Agriculture Organization of the United Nations (FAO) und Deutscher Akademischer Austauschdienst (DAAD)

- Project title: Expert Round Table: Best practices in export promotion: Experiences in Latin America, Eastern Europe and Central Asia – **Round Table FAO**

Funding source: Food and Agriculture Organization of the United Nations (FAO)

- Project title: Zuschuss zur Silk Road Conference, Almaty, Kasachstan – **IAAE\_Silk Road Conference 2016**

Funding source: International Organization of Agricultural Economists (IAAE)

- Project title: ERA Fellowship für Frau S. Cisma – **ERA Fellowship Cisma**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Globale Handelsumlenkung – Handelsschranken zwischen Ost und West: Folgenabschätzung für den serbischen Agrar- und Lebensmittelhandel – **PPP Serbien**

Funding source: Deutscher Akademischer Austauschdienst (DAAD)

- Project title: Legal and economic challenges for sustainable food security in the 21<sup>st</sup> Century – **Internationale Summer School für Alumni**

Funding source: Deutscher Akademischer Austauschdienst (DAAD)

- Project title: The evolution of agriculture in East Germany and Eastern European Countries during transition and implications for North Korea – **KREI\_2016**

Funding source: Korea Rural Economic Institute

## II. Ongoing projects with third-party funding

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- Project title: Ein räumlich-dynamischer Ansatz zu Landpachtmärkten – **LandPM\_MG und LandPM\_AB**

Funding source: DFG Sachbeihilfe (Deutsche Forschungsgemeinschaft)

- Project title: Soziologischer Neoinstitutionalismus und Bayessche Netze: Ein Analyserahmen zur Modellierung von Migrationsentscheidungen im ländlichen Kasachstan – **SoNeoBaN I+II**

Funding source: DFG Sachbeihilfe (Deutsche Forschungsgemeinschaft)

- Project title: The global food crisis – Impact on wheat markets and trade in the Caucasus and Central Asia and the role of Kazakhstan, Russia and Ukraine – **VW MATRACC**

Funding source: Volkswagen Stiftung

- Project title: Balancing trade-offs between agriculture and biodiversity in the steppes of Kazakhstan – **VW BALTRAK**

Funding source: Volkswagen Stiftung



- Project title: Institutional change in land and labour relations of Central Asia's irrigated agriculture – **VW AGRICHANGE**

Funding source: Volkswagen Stiftung

- Project title: Exploring the potential for agricultural and biomass trade in the Commonwealth of Independent States – **AGRICISTRAD**

Funding source: 7. Forschungsrahmenprogramm der EU

- Project title: Globale Ernährungssicherung und die Getreidemärkte Russlands, der Ukraine und Kasachstans – **GERUKA**

Funding source: Bundesanstalt für Landwirtschaft und Ernährung (BLE)

- Project title: Deutsch-Ukrainischer Agrarpolitischer Dialog – **APD Ukraine**

Funding source: Bundesministerium für Ernährung und Landwirtschaft (BMEL)

- Project title: Schritte zu einer nachhaltigen Landnutzung in Nordargentinien – **PASANO**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: RURAGRI: MULTAGRI – Governance ländlicher Entwicklung durch Maßnahmen zur multifunktionalen Nutzung landwirtschaftlicher Flächen Teilprojekt: Landnutzungskonflikte und Auswirkungen landwirtschaftlicher Entwicklungspfade in unterschiedlichen ländlichen Gebieten – **MULTAGRI**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Pilotmaßnahme Agrarreformen, Wasserknappheit und die Anpassung an den Klimawandel in Zentralasien: Eine Fünf-Länder-Studie – **AGRIWANET**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Verbundvorhaben KULUNDA: Wie verhindert man die nächste "Global Dust Bowl"? – Ökologische und Ökonomische Strategien zur nachhaltigen Landnutzung in Russischen Steppen – **KULUNDA**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Ausschreibung: Betriebliches Kompetenzmanagement im demografischen Wandel Vorhaben: Betriebliches Kompetenzmanagement zur Integration ausländischer Fachkräfte in der Landwirtschaft – **Alfa Agrar**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Determinants of diet and physical activity; knowledge hub to integrate and develop infrastructure for research across Europe – **DEDIPAC KH**

Funding source: Bundesministerium für Bildung und Forschung (BMBF)

- Project title: Economics of Climate Change Research in Dry Areas – **ICARDA**

Funding source: International Center for Agricultural Research in the Dry Areas (ICARDA)

- Project title: Chefredakteurtätigkeit von PD Dr. Daniel Müller für das Journal of Land Use Science – **Journal Müller**

Funding source: Journal of Land Use Science

- Project title: Research on the influence of ethnic migration on the development of agriculture – **Ethnic Migration**

Funding source: Ministerium für Wissenschaft und Bildung der Republik Kasachstan

### III. Projects with third-party funding that finished in 2016

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- Project title: Economic and natural potentials of agricultural production and carbon trade-offs in Kazakhstan, Ukraine, and Russia – **EPIKUR**

Funding source: Leibniz-Gemeinschaft (Leibniz-Wettbewerb)

- Project title: Schumpeter Fellowship, Zusätzliche Mittel für das Teilprojekt "Agricultural cooperatives as economic crisis-absorbers: The role of cooperative ownership and governance" – **VW Schumpeter II**

Funding source: Volkswagen Stiftung

- Project title: International comparisons of product supply chains in the agri-food sectors: Determinants of their competitiveness and performance on EU and international markets – **COMPETE**

Funding source: 7. Forschungsrahmenprogramm der EU (IAMO ist Koordinator)

- Project title: The role of environmental, socioeconomic, institutional, and land-cover/land-use change factors to explain the pattern and drivers of anthropogenic fires in post-Soviet Eastern Europe: A case study comparison of Belarus, European, Russia, and Lithuania. Drivers of Anthropogenic Fires due to LCLUC in Post-Soviet Eastern Europe to NASA-ROSES. A.2-Land-Cover/Land-Use Change For Early Career Scientists – **NASA Fires**

Funding source: Michigan Technological University

- Project title: Moldova Poverty Assessment – **Moldova Small Farms**

Funding source: Weltbank

- Project title: Wissenschaftscampus Halle/Teilprojekt: Sekundäre Inhaltsstoffe in Getreidekaryopsen als Qualitätsmerkmal: Analyse potenzieller gesundheitsfördernder Effekte sowie Verbraucherakzeptanz und Zahlungsbereitschaft – **WiCa Anthocyanin**

Funding source: Land Sachsen-Anhalt

- Project title: Wissenschaftscampus Halle, Teilprojekt: Pflanzenbasierte Innovationen und Klimawandel – Einschätzung und Bewertung risikobedingter unternehmerischer Anpassungsprozesse sowie ihre Wirkungen auf den Märkten – **WiCa Innovationen**

Funding source: Land Sachsen-Anhalt

- Project title: FarmAgriPolis 2.0 – Ein Unternehmensplanspiel zum Erleben des Agrarstrukturwandels – **FarmAgriPolis 2.0**

Funding source: Landwirtschaftliche Rentenbank

### Selected third-party funded projects

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Below is an outline of the most important projects for which new third-party funding has been obtained. It is demonstrated that, with regard to both, its basic research and scientifically based policy advice, IAMO's expertise is highly valued and that the Institute is exploring new ways of research cooperation to permanently establish Halle as a centre of science and research.

### The role and functions of bioclusters in the transition to a bioeconomy (TRAFOBIT)

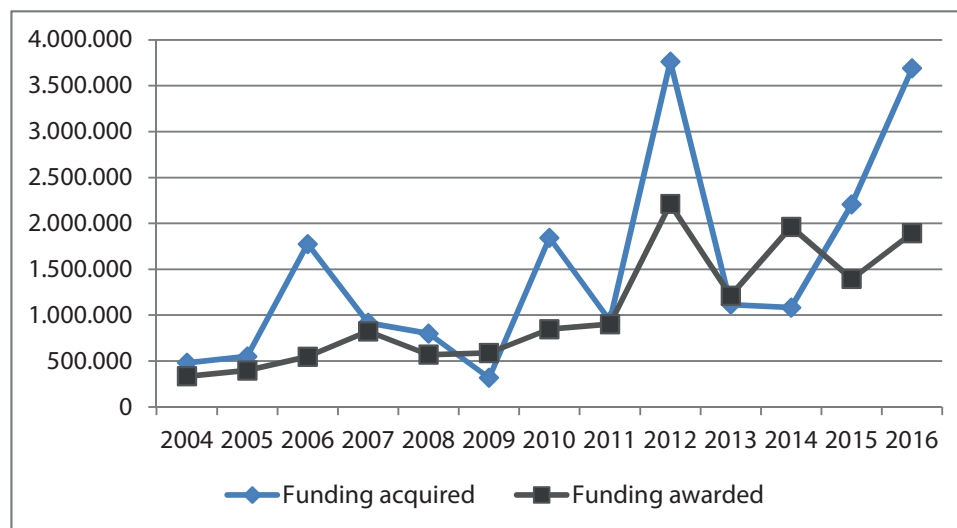
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1 July 2016 marked the start of the TRAFOBIT project, for which IAMO obtained 1.487 million euros of

funding from the German Federal Ministry of Education and Research (BMBF). In this five-year project, led by IAMO academic Frans Hermans, a group of five young researchers from different disciplines, ranging from sociology, innovation science and environmental economics to maths, are examining the role of so-called "bioclusters". These clusters are designed to be state-of-the-art in the world, in order to establish an innovative and employment-oriented bioeconomy as a central future sector. Within these clusters and in a regional radius businesses, government agencies, research institutions and universities are working together to develop the bioeconomy, in order to replace our current fossil energy sources with renewable ones. Drastic changes of existing economic and technological structures are necessary to establish such future-oriented clusters.

The junior research group is researching the innovation processes within bioclusters as well as their interaction within their social environment at a local, regional, national and international level. It is using an interdisciplinary approach by combining theoretical knowledge and methodology from sociology, innovation science, environmental economics and maths. The goal is not only to use already existing methodologies, but to help developing new, innovative research approaches. Social networks and statistical network models play a particularly important role in the analysis of the innovation processes in this investigation. The expected

### Development of third-party funding



*Notes: The 2016 calculations are provisional (as of 31/7/16). In 2006, 1.775 million euros were approved, 601,000 of which went to project partners. In 2012, 3.763 million euros were approved, 2.008 million of which went to project partners. In 2012, 2.221 million euros were given out, 1.104 million of which to project partners.*

results will not only be of use to applied basic research into better scientific understanding of regionally linked innovation processes, but should also provide an insight into the current values. Those values motivate the behaviour of various actors in the bioeconomy, to contribute to deepened knowledge about the process of knowledge generation and explain how local innovation initiatives drive global transition processes. The overall aim is to identify so-called regional innovation systems. Comparative research within the framework

of the project relates to regions from five countries of the European Union: Bulgaria, Germany, France, the Netherlands and Sweden.

### Political Economy of Agricultural Policies in Federal Systems (FEDAGRIPOL)

In the 2016 Leibniz Competition, the Leibniz Association's internal competition in which Leibniz Institutes compete directly for funding, IAMO won

573,000 euros for its FEDAGRIPOL project. The funding time frame spans over a total of three years with the projects kick off on 1 April 2016. Academics from IAMO and the Moscow Higher School of Economics (HSE) are jointly analysing decision making and policymaking in agricultural policy in various federal systems. Specifically, the project is undertaking a comparison between the Russian Federation and the European Union. With one of the key research questions on how regional or national ministries of agriculture select their policy instruments in various institutional contexts to implement an agricultural policy whose guidelines are set at a higher level in Brussels and Moscow. The project results should allow a better understanding of the correlation between developments in agricultural production, structural change in agriculture, individual policy regimes and institutional parameters in the Russian Federation as well as the European Union.

### **Analysis of the Russian Federation's strategy for expanding agricultural production (STARLAP)**

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The STARLAP project is supported by the German Federal Office for Agriculture and Food (BLE) to the tune of 127,500 euros over a period of twelve months from 1 October 2016 to 30 September 2017. In conjunction with the Thünen Institute of Market Analysis and the agriculture working group of the German Committee on Eastern European Economic Relations, IAMO

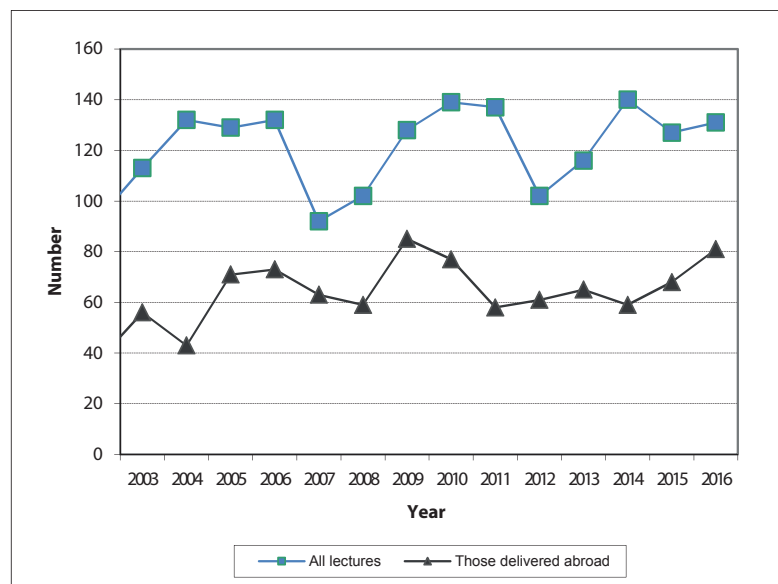
researchers are investigating the effects of a Russian agricultural policy geared towards import substitution on the competitiveness of the Russian agricultural and food sector on its own markets. The project is also considering the impact of this policy on the competitiveness of German as well as other European market players on Russian markets. The purpose of these analyses is to gain additional information and knowledge about current developments in the Russian dairy and meat sectors. The project results will also be used to assess export and investment opportunities for German businesses in the agricultural and food sector in the Russian Federation. The methodological framework of the project is provided by econometrically based market power analyses, non-linear price-transmission analyses, trade models and expert surveys.

### **IAMO lecture activity**

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Besides publishing their work in journals, another important activity of IAMO staff is the presentation and discussion of research results at national and international conferences, forums and workshops. A large proportion of lectures by IAMO staff are delivered at international events. In the period of 1 January 2016 - 30 September 2016 the costs of 82 lectures given were fully covered by the organisers (10), third parties (18), or other sources (10). There was mixed funding for nine lectures, while expenses for 35 lectures were entirely covered by IAMO's budget.

### Development of IAMO lectures



Source: Institute's own statistics.

### Conferences and seminars

Conferences and seminars are essential for IAMO to be able to fulfill its third core task, which is to act as a forum for the exchange of scientific 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. Here we should also highlight the fact that in the field of agricultural economics IAMO makes an important contribution to a so-called scientific "capacity building" in research and teaching in our partner countries, and has a crucial role in developing long-term viable networks. Apart from the IAMO Forum we outline the most important conferences, symposia and workshops held at the Institute from October 2015 to September 2016 inclusive.

## Chinese-German symposium in Chengdu

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From 13-16 September 2016 a scientific symposium was held in Chengdu, the capital of the Chinese province of Sichuan, on the topic "Explaining Transition of Chinese Rural Areas: A System Perspective". The event was jointly organised by IAMO and the Center for Chinese Agricultural Policy at Beijing University (CCAP-PKU) as well as the Sichuan Agricultural University (SAU). It was financed by the Sino-German Center for Research Promotion, an institution of the German Research Foundation (DFG), and the National Natural Science Foundation of China (NSFC). The almost 50 participants, came from Chinese universities and research institutions, Germany, the Netherlands and the USA. The lectures addressed a broad spectrum of questions in five plenary sessions and eight other interdisciplinary sessions from the perspectives of agricultural economics, geography, environmental science and political science. The focus of these lectures included the current challenges facing Chinese agriculture and the development of rural areas in China. In addition the participants dealt extensively with possible collaboration in joint research projects. The plenary sessions were open to all graduate students at Sichuan Agricultural University. At SAU particularly the Economics Faculty and the Centre for Germany Research provided excellent facilities and organisational support, while playing a major part in ensuring that the symposium was successful. The programme was rounded off by two field trips.

## IAAE inter-conference symposium "Agricultural Transitions along the Silk Road"

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The IAAE inter-conference symposium "Agricultural Transitions along the Silk Road" was organised jointly by the International Association of Agricultural Economists (IAAE), the Kazakh National Agrarian University (KazNAU) and IAMO. It was supported financially by the German Federal Ministry of Education and Research, IAAE, the Incubator Accelerator and the Center of Applied Research Talap. The event was held from 4-6 April 2016 at KazNAU in Almaty, Kazakhstan. Around 200 academics from 25 countries and 60 different institutions took part in the conference.

The conference focused on the competitiveness of producers, changes in land use, integration of markets and the role of state agricultural policy. Whereas cotton production and livestock farming have fallen in importance since the end of the Soviet Union, governments are focusing more strongly on diversification in agriculture. Current initiatives to develop infrastructure and trade seem promising, but their implementation faces major challenges. Improved public services in the agricultural sector, the expansion of value chains, easier market access, more transparency and predictability in state action are right at the top of the agenda for reform.

One of the principal speakers, Professor Richard Pomfret from the University of Adelaide, underlined the



positive signals for a reduction in trade barriers in Central Asia thanks to trade agreements and an improved transport infrastructure. Dr David Sedik from the Food and Agriculture Organization (FAO) of the United Nations, on the other hand, emphasised the problems of implementation. The subordination of trade policy to foreign policy and a lack of trust between member states were obstructions to integration, he said.

At the conference IAMO presented interim results from the AGRIWANET project – "Agricultural reforms, water scarcity and adjusting to climate change in Central Asia" – which is supported by the German Federal Ministry of Education and Research. The speakers showed that all five Central Asian countries have expanded their cereal production in the last few years, some of them with considerable increases. These changes are not up to farmers seizing market opportunities or improved trade opportunities in Turkmenistan and Uzbekistan, but rather a result of state targets and delivery obligations to secure the national supply of basic foodstuffs. The leader of the project, IAMO's Professor Martin Petrick, highlighted the big differences between the agricultural policies of the countries in other areas. Kazakhstan, for example, increased ten-fold its expenditure to support agriculture between 2004 and 2014, but many of the measures were poorly targeted or led to deadweight effects, he said. By contrast, the agricultural policies of Kyrgyzstan and Tajikistan were almost exclusively dependent on contributions from international donors, but many of these donor projects fail to attain their goals.

The total of 90 lectures and poster presentations at the conference exhibited a wide thematic diversity. Sessions organised by the International Food Policy Research Institute (IFPRI) focused on the topics of climate change and food security. A workshop on the organisation of value chains and the role of agricultural policy discussed the results of the research project "The Global Food Crisis – Impact on Wheat Markets and Trade in the Caucasus and Central Asia and the Role of Kazakhstan, Russia and Ukraine (MATRACC)". Another focus lies in land-use changes, where clear progress is being made in the dynamic of land use and the understanding of patterns of land-cover change in Central Asia.

#### **IAMO expert panel at Internat. Green Week 2016**

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Collectively with the agriculture working group of the German Committee on Eastern European Economic Relations (OA), IAMO organised an expert panel entitled "Urbanisation, Migration and Structural Change – Challenges and Strategies for Agriculture in Eastern Europe" on 14 January 2016 at the Global Forum for Food and Agriculture (GFFA). At the event around 130 representatives from business, academia and civil society discussed the upcoming challenges facing the provision of food for cities which are growing while also having to cope with migration from rural areas in Eastern Europe. The GFFA is an international conference on food security which is held annually as part of the

Green Week in Berlin, under the aegis of the German Federal Ministry of Food and Agriculture (BMEL).

In view of the great heterogeneity between the booming metropolises and rural areas of Russia, Professor Thomas Glauben opened this year's expert panel. Prosperity in relation to economic power, access to markets, career and income opportunities as well as social infrastructure is concentrated in only a few of the more than 80 regions within the country. Urban centres have a high impact on the population, which is increasingly leading to the migration of young people from rural areas. Underdeveloped regions often enter a vicious circle. They keep becoming more unattractive and therefore lose more and more qualified workers. This development impact is not only seen in individual regions of Russia. It overall obstructs the growth of strategically important sectors of the economy, including food production at a time where demand for high-quality and healthy foodstuffs is growing in cities.

Dr Robert Kloos, State Secretary in the German Federal Ministry of Food and Agriculture (BMEL), highlighted that currently only one in four Russians lives in the country. Whereas in Soviet times, rural depopulation was prevented by state-imposed measures, today the rising migration of well-trained, skilled workers is facing major challenges. The expansion of value chains through the settlement of processing local businesses is a possible solution to new perspectives for the rural regions. But Kloos was critical of protectionist tendencies in Russia:

"The foreclosure will not be permanent. It will then show whether the structures are competitive."

Host Dr Franz-Georg von Busse, Chairman of the agriculture workgroup of the German Committee on Eastern European Economic Relations (OA), led a discussion about the opportunities and challenges which are agriculture and rural areas in times of urbanisation are facing, especially focusing on Russia. The panellists were Dr Raimund Jehle, manager of the field programme of the FAO's regional office for Europe and Central Asia, Dr Oleksandr Perekhozhuk from IAMO, and from the business side, Aleksey Kiryanov, the owner of the Russian food enterprise "IP Kiryanov". Also on the panel were Kerstin Müller, Russia's programme leader for APOLLO e.V. and also responsible for arranging work placements for Russians in German agriculture, and Ivonne Bollow, the Metro Group's head of Eastern Europe as well as international affairs.

## **Important events in 2017**

### **Expert panel on agricultural policy at International Green Week 2017**

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"Agriculture and Water – The Key to Feeding the World" was the topic of the Global Forum for Food and Agriculture (GFFA) at Green Week 2017 in Berlin. The overall organiser of the GFFA is the German Federal Ministry of Food and Agriculture (BMEL). As part of the GFFA an agricultural policy symposium was held, entitled,

"Everything flows? Water as a decisive resource and factor for agriculture in Eastern Europe and Central Asia." It was hosted by IAMO in collaboration with the German Committee on Eastern European Economic Relations. IAMO, in cooperation with the German Agribusiness Alliance at the German Asia-Pacific Business Organisation (OAZ) and the German-Sino Agricultural Centre (DCZ), also organised another panel discussion on the subject "Three sides of a coin: Agriculture and water in China."

Water is the factor that limits the exploitation of the enormous agricultural potential of Central Asia. The same is true for large parts of China, although some of the reasons are different. The following questions were discussed by experts from politics, agricultural technology and farming: How efficiently is water used as a resource? What is threatening the current supply? Which technological possibilities do we have to sustainably exploit the enormous agricultural potential in the future, given its demand for water? Which political requirements, initiatives and water policies are needed to achieve the ambitious goals of developing agriculture? How can the use of new technologies be accelerated?

### **IAMO Forum 2017**

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In cooperation with the Food and Agriculture Organisation of the United Nations (FAO), IAMO is organising

the IAMO Forum 2017, entitled, "Eurasian Food Economy between Globalization and Geopolitics". The conference will take place in Halle (Saale) on 21-23 June 2017. Background of this forum is, that globalisation requires Eurasian transition and emerging countries to create an open and internationally competitive food economy. At the same time many governments in the region are taking measures to increase their control over domestic food production. The aim is to support the own agricultural and nutritional sector and to improve food security. The IAMO Forum 2017 offers a platform for discussion of current research and diverse strategies to guarantee food security and intensify trade in the context of geopolitical tensions, as well as of various attempts at trade integration. You can find more information on the IAMO Forum 2017 on [www.forum2017.iamo.de/about-the-conference](http://www.forum2017.iamo.de/about-the-conference).

### **Publications**

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The scientific staff at IAMO is publishing their research results in academic journals, monographs, anthologies and discussion papers. Increasingly they are also communicating them in Policy Briefs. A complete publication list is available on [www.iamo.de/en](http://www.iamo.de/en).

During the reporting period, the publication activities have developed satisfactorily. This applies in particular to referenced articles with an impact factor, which are listed on the Science Citation Index (SCI) and the Social

Science Citation Index (SSCI). The internal IAMO quality management of publications shows a lasting effect.

### **IAMO Policy Briefs**

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Since 2011, IAMO's socially relevant research results have been published in a loose sequence in our IAMO Policy Briefs, in a short and general manner. They are particularly aimed at politics, business and the media as well as members of the public with an interest in the area. The following IAMO Policy Briefs appeared between October 2015 and December 2016, and can be downloaded free of charge from the IAMO website [www.iamo.de/en/publications/iamo-policy-briefs](http://www.iamo.de/en/publications/iamo-policy-briefs):

BALMANN, A. (2016): Über Bauernhöfe und Agrarfabriken: Kann die Landwirtschaft gesellschaftliche Erwartungen erfüllen? *IAMO Policy Brief No. 30*, Halle (Saale).

KOESTER, U., LOY, J.-P. (2016): Policy evaluation on the basis of the Farm Accountancy Data Network, *IAMO Policy Brief No. 29*, Halle (Saale).

BURGGRAF, C., VOLKHARDT, I., MEIER, T. (2016): Vorteile einer modifizierten Ampelkennzeichnung für Lebensmittel (The advantages of modified traffic light labelling for food), *IAMO Policy Brief No. 28*, Halle (Saale).

BURGGRAF, C., GLAUBEN, T. (2016): Economic transformation, altered nutritional habits and health implications in Russia, *IAMO Policy Brief No. 27*, Halle (Saale).

KOESTER, U., LOY, J.-P. (2016): The methodology of the EU Commission to evaluate the impact of direct payments, *IAMO Policy Brief No. 26*, Halle (Saale).

PETRICK, M., GOTTER, C., KVARTIUK, V., TRAIKOVA, D., WIENER, B., WINGE, S. (2015): Beschäftigung von Migranten in der ost-deutschen Wirtschaft (Employment of migrants in Eastern German agriculture), *IAMO Policy Brief No. 25*, Halle (Saale).

### **IAMO Discussion Papers**

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The series of *IAMO Discussion Papers* continued in 2016 with the following, which can be downloaded as pdf files free of charge on the IAMO website [www.iamo.de/en/publications/iamo-discussion-papers](http://www.iamo.de/en/publications/iamo-discussion-papers):

SCHOTT, J., KATALAS, T., NERCISSIAN, E., BARKMANN, J., SHELIA, V. (2016): The Impact of Protected Areas on Local Livelihoods in the South Caucasus, *IAMO Discussion Paper No. 152*, Halle (Saale).

PETRICK, M., DJANIBEKOV, N. (2016): Obstacles to crop diversification and cotton harvest mechanisation: Farm survey evidence from two contrasting districts in Uzbekistan, *IAMO Discussion Paper No. 153*, Halle (Saale).

GÖTZ, L., DJURIC, I., NIVIEVSKIY, O. (2016): Regional wheat price effects of extreme weather events and wheat export controls in Russia and Ukraine, *IAMO Discussion Paper No. 154*, Halle (Saale).

PETRICK, M., POMFRET, R. (2016): Agricultural Policies in Kazakhstan, *IAMO Discussion Paper No. 155*, Halle (Saale).

SEDIK, D., ULBRICHT, C., DZHAMANKULOV, N. (2016): The

Architecture of Food Safety Control in the European Union and the Eurasian Economic Union, *IAMO Discussion Paper No. 156*, Halle (Saale).

ПУГАЧ, И., ЮСУПОВ, Ю., БЕРДИНАЗАРОВ, З. (2016): Сельскохозяйственная политика в производстве пшеницы и диверсификации производства сельскохозяйственных культур в Узбекистане, *IAMO Discussion Paper No. 157*, Halle (Saale).

АГАНОВ, С., КЕПБАНОВ, Ё., ОВЕЗМУРАДОВ, К. (2016): Опыт сельскохозяйственной реструктуризации в Туркменистане, *Discussion Paper No. 158*, Halle (Saale).

УМАРОВ, Х. (2016): Сельскохозяйственная политика в производстве хлопка и диверсификация агропромышленного комплекса в Таджикистане, *Discussion Paper No. 159*, Halle (Saale).

### **Studies on the Agricultural and Food Sector in Transition Economies**

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In a series of publications *Studies on the Agricultural and Food Sector in Transition Economies*, IAMO has published monographs and conference reports dealing with questions of agricultural economics in the countries of Central and Eastern Europe, as well as other transition countries. All publications from volume 22 onwards can be downloaded as pdf files for free from our website [www.iamo.de/en/publications/iamo-studies](http://www.iamo.de/en/publications/iamo-studies). 35 conference reports or volumes and 49 monographs have appeared in this series from October 2015

to December 2016 which include:

PÁLL, Z. (2015): Three Essays on the Russian wheat export, *Studies on the Agricultural and Food Sector in Transition Economies, Vol. 80*, Halle (Saale).

OSTERMEYER, A. (2015): Milchproduktion zwischen Pfadabhängigkeit und Pfadbrechung – Partizipative Analysen mit Hilfe des agentenbasierten Modells AgriPolis (Dairy production between path dependency and path breaking – A participative analysis using the agent-based model AgriPolis), *Studies on the Agricultural and Food Sector in Transition Economies, Vol. 81*, Halle (Saale).

CHATALOVA, L. (2016): Market uncertainty, project specificity and policy effects on bioenergy investments. A real options approach, *Studies on the Agricultural and Food Sector in Transition Economies, Vol. 83*, Halle (Saale).

RAMA, K. (2016): Too much but not enough: Issues of water management in Albania in light of climate change, *Studies on the Agricultural and Food Sector in Transition Economies, Vol. 84*, Halle (Saale).

### **Research communication**

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The IAMO not only presents its work in the scientific community to discuss, but also informs the general public about research results as well as current trends in the agricultural and food industry. It provides information for policy makers and business decision makers. In addition to the media work, the IAMO press office

carries out the publication of the IAMO Policy Briefs and the newsletter, supervises the Internet presence and the social media channels of the institute and also organizes events.

The IAMO Forum was also the focus of scientific events in 2016. The topic was "Rural Labor in Transition: Structural Change, Migration and Governance." The conference took place from 22 to 24 June 2016 in Halle (Saale) and was organised in cooperation with the Institute of Labor Economics (IZA). You can find a detailed report on the contributions of internationally renowned plenary speakers in this issue.

IAMO organized or participated in further high-ranking events, both - at home and abroad. At the Global Forum for Food and Agriculture (GFFA) during International Green Week in 2016, IAMO organised an agricultural policy expert panel entitled "Urbanisation, Migration

and Structural Change - Challenges and Strategies for the Agricultural Sector of Eastern Europe" in co-operation with the German Committee on Eastern European Economic Relations. In spring 2016 the IAAE Inter-Conference symposium "Agricultural Transitions along the Silk road: Restructuring, Resources and Trade in the Central Asia Region" took place in Almaty, Kazakhstan. IAMO was also actively involved with the "Days of Agricultural Economics in Ukraine" at the VII International Large Farm Management Conference and in the 155<sup>th</sup> EAAE seminar "European Agriculture towards 2030. Perspectives for further East-West Integration" in Kiev, Ukraine. These events brought together top managers of agro-holdings, investors, policymakers, academics and other stakeholders to discuss the latest scientific and practice-related insights regarding the management of large agricultural enterprises. In Samarkand, Uzbekistan, IAMO arranged a conference entitled "Regional and International Cooperation in Central Asia and South Caucasus: Recent Developments in Agricultural Trade". The aim of this event was to facilitate dialogue between regional and international experts as well as policymakers on the developments and effects of agricultural trade in the countries of Central Asia and the Caucasus. At EuroTier 2016 in Hanover, the world's leading trade fair for animal production, the Institute organised a forum event on the topic of "Milk, Market and Power: Who Influences the Milk Price?" On the panel, representatives from individual stages of the value chain – milk production, processing, marketing – discussed the current situation and





*Panel discussion at IAMO Forum 2016*

future developments on the milk market.

Researchers at the IAMO lead bilateral talks with Bundestag representatives on "Promotion of science in Eastern Europe" and "Health-related nutritional methods in comparison between Germany, Russia and China" within the framework of the "Leibniz at the Bundestag"

series of events. For the general public the institute presented itself with publicly active actions at the Long Night of Sciences in Halle and on the Open-House Day at the German Federal Ministry of Food and Agriculture (BMEL) in Berlin.

Besides events, our press releases and publications



in various formats, as well as our website and social media presence are of great importance for research communication.

IAMO press releases from the period covered by this annual have been published in German, English and some in Russian as well. They have been distributed to representatives from the media and to the Science Information Service via IAMO's own mailing list and website. Papers and articles about current research results, events and partnerships at IAMO were published in various print and online media as well as broadcasted over the radio.

Topics that attracted particular attention were Russia's meat import ban, the agricultural speculation, the milk price crises, the high rent prices in German agriculture and the skilled labor shortage in the East German agricultural sector. Under the "IAMO in the Media" section of the Institute's website, selected contributions from the public and industry press can be viewed.

With its series of *IAMO Policy Briefs*, the Institute draws on important agricultural policy questions based on its own research position. Socially relevant topics are presented briefly and in a general manner in the Policy Briefs and made accessible to different target groups such as political decision-makers, media representatives and the interested public. In 2016 the Policy Briefs addressed subjects such as the EU Commission's approach to evaluating direct payments and changes

in Russian nutritional habits and their health consequences. The IAMO Policy Briefs are published in German, English and partly in other languages and can be downloaded free of charge under the heading "Publications" on the institute's website.

The electronic IAMO Newsletter is released quarterly in German and English. Sent by email, it informs almost 2,000 recipients about the Institute's news, covering subjects such as new IAMO research projects, IAMO staff research visits, events, awards and current publications. The Newsletter is available on the German and English versions of our website, and can also be subscribed free of charge.

Our internet presence [www.iamo.de/en/](http://www.iamo.de/en/) provides easy access to information on research and project results, events, support for young academics, job advertisements and IAMO staff members. The content of the website is regularly updated and expanded. In 2016 the IAMO website was adapted to make it compatible with smartphones and tablets. On the mobile version, the content is optimised in screen size on different devices. Since November 2015 latest news from the IAMO is also available via the social media channels Facebook [www.facebook.com/iamoLeibniz](https://www.facebook.com/iamoLeibniz) and Twitter <http://twitter.com/iamoLeibniz>.

For all press and PR related questions please contact Britta Paasche and Daniela Schimming at: [presse@iamo.de](mailto:presse@iamo.de).



*Participants at IAMO Forum 2016*

## 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 along Blücherstraße to its 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 turn over Saalebrücke. Once you have passed this bridge take the first right turn, drive back under the bridge and continue along the riverbank of the Saale. Turn left at the next crossroad 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.

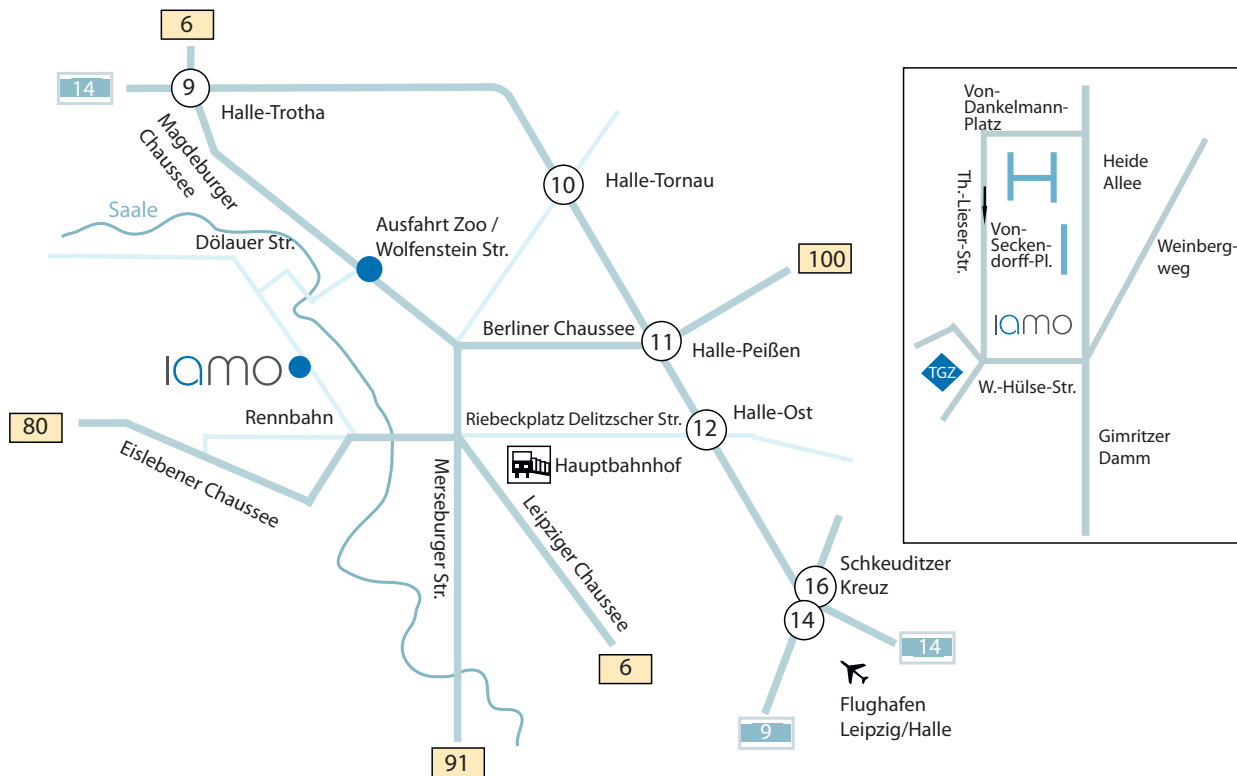
**From the west (on the B80):** Follow the B80 until the Rennbahnkreuz. At the entrance into town get into the left-hand lane and continue along the B80 towards Kröllwitz/Universität. Turn left at the ice-rink and follow Blücherstraße to the end. Then turn right. At the end of the avenue turn left into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



## Imprint

Published by	Leibniz Institute of Agricultural Development in Transition Economies (IAMO) Theodor-Lieser-Str. 2   06120 Halle (Saale)   Germany Tel.: +49 345 2928-0 iamo@iamo.de www.iamo.de/en
Edited by	Professor Michael Kopsidis (IAMO)
Technical editing	Silke Scharf (IAMO)
Print	Druck-Zuck GmbH Seebener Str. 4   06114 Halle (Saale)   Germany info@druck-zuck.net www.druck-zuck.net
Photos	FAO/Giuseppe Carotenuto (Page 3), Markus Scholz (Page 9, 98-127, 135, 137), Amanda Sahrbacher (Page 18), Timea Jung (Page 32, 74), Martin Petrick (Page 34), Johannes Kamp (Page 44), Ivan Djuric (Page 54, 57), Brindusa Birhala (Page 76), Marcel Kalkkuhl (Page 80), Juliana Dänhardt (Page 84-89), Gesine Böttcher (Page 134)

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IAMO 2017 is available as PDF file on the following website: [www.iamo.de/en](http://www.iamo.de/en).

**ISSN 1617-6456**  
**ISBN 978-3-95992-042-1**