



New Opportunities and Old Constraints

*The Context for Agriculture
Sector Development in Serbia*

GARRY CHRISTENSEN

SECTOR STUDY

Agriculture Global Practice

Europe and Central Asia Region

New Opportunities and Old Constraints

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Development in Serbia*

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Executive Summary

This report reviews the context for agricultural sector development in Serbia and identifies the immediate priorities to prepare for membership of the European Union (EU). The analysis and recommendations are intended as an input to discussion between the World Bank and the Government of Serbia on ways to support agricultural development and EU accession.

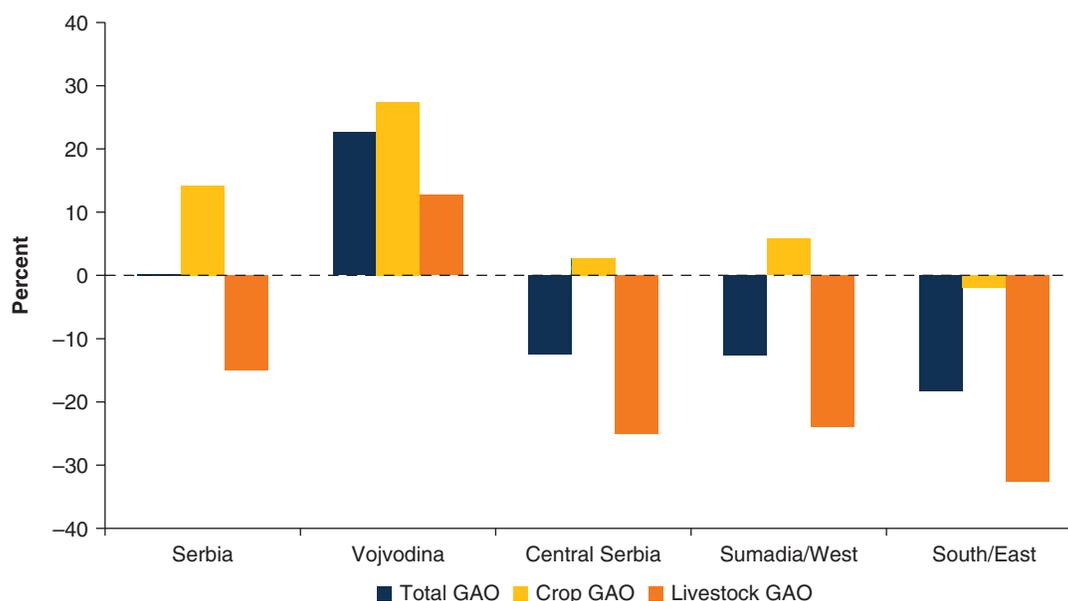
Stagnant Sector Growth—Causes and Implications

Agriculture sector performance in Serbia is characterized by both stagnant sector growth and a substantial increase in agricultural exports. This paradox reflects both the opportunities and constraints the sector faces as it prepares for EU accession. Analysis shows that the observed export growth is narrowly based, despite Serbia's diverse agricultural resource base and the potential to produce and export a wide range of crop and livestock products. Cereals, vegetable oils and edible fruit products have led the boom in agricultural exports, which has increased agricultural export earnings by more than US\$1.5 billion since 2006. But most of the earnings from this export boom have probably gone to a limited number of large-scale cereal and oilseed farmers in Vojvodina and to commercial fruit and berry producers in Sumadija and Western Serbia. Livestock production, which accounts for approximately 40% of total sector output, has contracted during the same period and imports of livestock products have increased. The substantial contraction of livestock output has offset the growth of crop production and exports, resulting in zero growth for the sector in aggregate (figure ES.1).

Wide regional differences in the potential for agriculture and the predominance of small-scale farmers emerge as key determinants of this narrow base for growth and the disparate trends in sector performance (table ES.1). Vojvodina has experienced strong sector growth as it has the best agro-climatic conditions for crop production and the highest proportion of larger farms. The 18% of farmers with more than 10 ha of land account for more than 80% of land use, facilitating a more broad-based impact from the growth of crop exports. Despite this growth, agriculture accounts for only 20% of rural household incomes. This suggests that, for many farmers, the non-farm opportunities for raising household income in Vojvodina are better than the on-farm opportunities.

Conditions are also favorable for mixed crop, fruit and livestock production in much of Sumadija and Western Serbia. But small farms predominate and own most of the agricultural land. The 6% of farmers with more than 10 ha account for only 30% of land use. Livestock is also more important in this region, with 48% of total output, but most herds are small (< 10 livestock units). Fruit export growth benefitted a small proportion of

FIGURE ES.1 Growth of Real Gross Agricultural Output (2003–13)



Sources: Republic of Serbia Statistical Office; World Bank calculations.

TABLE ES.1 A Simple Taxonomy of Farm Structure in Serbia

Category	Farm size	Characteristics ^a	Comments
Non-agricultural holdings	< 2 ha < EUR2,000	280,000–308,000 farms < 10% of land and livestock 15% sector output	Most household income from non-farm earnings
Mixed income holdings	2–10 ha EUR2,000–8,000	252,500–271,500 farms 30% of land, 40% livestock 35% sector output	Rely on farm and non-farm income, especially farms of 2–5 ha
Medium-sized agricultural holdings	10–20 ha EUR8,000–15,000	32,300–52,700 farms 15% land and livestock 15% sector output	Adequate livelihood from farm but may also have non-farm income
Commercial farms	> 20 ha > EUR15,000	19,274–35,800 farms 45% land, 35% livestock 35% sector output	Agriculture is major source of income and major determinant of decisions on investment

Sources: Agricultural Census 2012; World Bank calculations.

a. Number varies according to the measure of farm size used (area or standardized output).

farmers in this region but the limited benefits of this growth were swamped by a much larger contraction of livestock output. Total real household incomes have fallen, with an increase in employment earnings and pensions offset by a significant fall in agricultural income—from 31% in 2006 to 13% in 2013. Rural households have thus become even more dependent on non-farm income.

Southern and Eastern Serbia is doubly constrained, with less favorable conditions for agriculture in addition to a predominance of small farms. The agriculture sector contracted most in this region, led by a 33% fall in livestock

gross agricultural output (GAO) for the period 2003–13. Fewer than 5% of farmers own more than 10 ha, and their land accounts for only 35% of land use. Livestock production is small-scale, with 75% of livestock farmers owning less than 10 livestock units. Rural households also appear to be more subsistence oriented, with agricultural sales accounting for less than 5% of total household income.

Current agricultural policy is not conducive to broad based sector growth. Indeed, through its disproportionate support for cereal and industrial crop production, particularly in Vojvodina, it may have exacerbated the disparate regional and sub-sector trends in performance. Vojvodina received the bulk of budget support until 2010, mostly in the form of area payments and input subsidies for cereal and industrial crops. Area payments also provide little incentive to increase farm output and freeze farm structure. The other major area of support, price subsidies for milk production, has failed to stem a prolonged decline in cattle numbers and milk production. Leased land is also ineligible for budget support—further discouraging farm expansion.

Broadening the Policy Focus to Include Medium-Size Farms

The challenge for agriculture is to broaden the basis for sector growth, to include more farmers, more land and more commodities. Analysis of farm structure shows that there are strong grounds to extend the current narrow focus of agricultural policy on larger, commercial farms (> 20 ha) to include measures to strengthen medium sized farms (5–20 ha or EUR5,000–15,000 measured in standardized output).

Sector growth is currently driven by the commercial farms that account for 45% of land, 35% of livestock and 35% of sector output; with a lesser contribution from the medium-sized farms that account for similar levels of resource use and sector output. Provided they have the incentive and the resources to invest, these medium size farms offer considerable potential for growth. Most are mixed income farms, however, with opportunities for both farm and non-farm investment. Future policies must thus be designed to encourage farm rather than non-farm investment—a weakness of current policies, as noted earlier. A graduated system of area and animal headage payments, which encourages farms to expand, will be critical to this focus on medium sized farms, and leased land will need to be eligible for budget support.

Increased Opportunities for Agricultural Trade, but Can Serbia Compete?

A succession of new trade agreements has increased the opportunities for both agricultural exports and imports. The EU has become Serbia's major trading partner for agricultural products, displacing trade with its traditional partners in the Central European Free Trade Agreement (CEFTA) region.

Agricultural exports to the EU accounted for 48% of total exports in 2013, versus 39% to CEFTA countries. Free trade with the EU has had an even bigger impact on agricultural imports, which more than doubled from 2009 to 2013. EU agricultural imports now account for 54% of the total, versus 19% for CEFTA countries. Processed goods have driven this increase in EU imports, particularly for dairy and meat products.

These changes have exposed the sector to much higher levels of competition from EU products, on both domestic and regional markets, raising questions as to its ability to compete. A recent study of export competitiveness concludes that while agriculture and agri-business exhibit the highest revealed comparative advantage of Serbia's industries; most agriculture and agri-business industries are struggling to maintain their export position in foreign markets. These conclusions, which are summarized by agricultural industry below, show that while the export competitiveness of numerous agricultural products is inherently high, the industry performance of the firms producing and selling these commodities is in most cases very low (table ES.2).

The combination of high export competitiveness and high industry performance for perennial crops is consistent with the strong export performance of these commodities. For oilseed crops the analysis shows the potential problem created by reliance on an industry dominated by a small number of large firms, rather than a broader, industry-wide base of viable enterprises. Further insight comes from the classification of traditional non-perennial exports (e.g., cereals, oilseeds) and sugar and confectionary as *high performance ↔ low competitiveness* industries. These are low value commodities being sold in competitive export markets, and may be losing their competitive edge.

The analysis also provides useful insight into the capacity of agricultural industries to compete with imports. Many of the firms in the agricultural industries in the *high performance ↔ low competitiveness* cluster have traditionally relied on a dominant position in a protected domestic market to survive. This is particularly true for dairy processing and fruit and vegetable

TABLE ES.2 Performance-Competition Matrix for Agriculture Industries in Serbia

		Industry performance	
		High	Low
<i>Export competitiveness</i>			
High	<ul style="list-style-type: none"> - Perennial crops (fruits, berries, grapes) - Prepared meals, animal feed - Beverages 	<ul style="list-style-type: none"> - Vegetable and animal oils 	
Low	<ul style="list-style-type: none"> - Non-perennial crops (raw commodities—cereals, oilseeds, vegetables) - Dairy products - Processing of fruits and vegetables - Sugar and confectionary - Bakery products - Grain mill products 	<ul style="list-style-type: none"> - Live animal production - Processing of meat and fish - Forestry and logging - Tobacco processing - Fresh fishing 	

Source: Adapted from CEVES (2014).

processing, which have also been helped by continued access to their traditional markets in the former Yugoslavia. Their long-term sustainability is now in doubt, as they no longer operate in a protected domestic market and must face competition from more advanced firms in EU countries.

Opportunities and Constraints to Sector Growth

With its favorable and highly diverse resource base the agriculture sector has the potential to achieve much stronger and more broadly based growth. A wider range of commodities should be competitive on European markets and more producers and agro-processors should be selling into these markets. The sector also benefits from Serbia's favorable location and well-developed links with western, central and Eastern Europe. Hence, in principle, the sector is well placed to benefit from the opportunities created by Serbia's increasing integration with the EU and other parts of Europe.

Three deep-seated constraints limit the sector's capacity to benefit from these opportunities, as summarized below:

- *A farm structure dominated by small to medium sized, mixed income farms.* A high proportion of Serbia's farms are too small to be competitive, either for direct sale into European markets or as a source of raw material for agro-processors. The dairy sector epitomizes this constraint. Non-farm activities also provide better income opportunities for many of these farms, limiting their incentive to modernize and expand.
- *A policy framework that does not adequately respond to the constraints imposed by farm structure.* The current emphasis on support for area and animal headage payments not only transfers most of the benefits of budget support to larger, commercial farmers, but also freezes the current farm structure by reducing the incentives of smaller farmers to modernize and increase farm size. This policy weakness is exacerbated by excluding leased land from budget support; and by reducing the allocation of budget support for rural development.
- *While the export competitiveness of many agricultural commodities is inherently high, the industry performance of the firms producing and selling these commodities is in many cases very low.* Some agricultural industries have been built on highly protected domestic markets, which are now fully open to competition. Others are dependent on the success of a small number of enterprises, rather than a broader, industry-wide base of successful firms. With EU trade now fully open, this low industry performance will become an increasing constraint to sector performance.

Priorities for Sector Development

Without a significant restructuring of agriculture, the benefits of EU integration for agriculture will remain narrowly based. Larger, commercial farms in areas well suited to agriculture will benefit from expanded markets, but the smaller

farms that currently dominate agriculture will struggle to compete. This will restrict not only the future incomes of these households, but also the land base for expanding viable, commercial production.

A significant policy shift is needed to address this issue, based on measures to increase support for medium-sized farms of 5–20 ha (or standardized output of EUR5,000–15,000). The aim should be to provide these farms with the incentive and the means to increase farm size, modernize production systems and contribute to competitive supply chains. An appropriate support system will be critical to this policy shift, in order to distinguish between those agricultural holdings with an interest in investing in agriculture and increasing farm size, and those who prefer to remain with their current mix of farm and non-farm income. Leased state land should also be eligible for budget support. Traditional patterns of land ownership and use will change as a result of this restructuring, as will the composition and location of production.

Restructuring also means that the contraction of output for some commodities and some areas will continue. A clearer distinction will thus be needed between the role of agricultural policy and the role of broader economic policies for employment, social services and social assistance. Agricultural policy should prioritize those agricultural holdings with a demonstrated interest in modernizing production systems and increasing farm size. Responsibility for the smaller, mixed income holdings unwilling or unable to engage in these activities should reside with the ministries responsible for employment, health, education and social assistance, and with local government. Their role will be to improve: the opportunities for non-farm income, access to social services and the provision of social safety nets. Local government will also need increased access to resources for rural development if they are to respond to the needs of the rural households that lie outside the remit of agricultural policy.

Greater clarity and stability in agricultural policy is also essential for the development of agricultural processing. Both domestic and foreign investors will be more willing to commit to these industries if there is a longer-term view of sector priorities and greater assurance that the production base for the raw materials they need will be expanded and strengthened through farm restructuring. Policy signals of this nature will be far more critical in the future, as support for industry will no longer be driven by trade policy.

Abbreviations

AH	agricultural holding
CAP	Common Agricultural Policy
CEFTA	Central European Free Trade Agreement
CEVES	Center for Advanced Economic Studies
ESU	Economic Size Unit
EU	European Union
EUROSTAT	The Statistical Office of the European Union
FAO	Food and Agricultural Organization
FPA	Farm Payment Agency
GAO	gross value of agricultural output
GDP	gross domestic product
IMF	International Monetary Fund
IPARD	Instrument for Pre-Accession Assistance in Rural Development
LU	livestock unit
MAEP	Ministry of Agriculture and Environmental Protection
SO	standardized output
SAA	Stabilization and Association Agreement
SES	Southern and Eastern Serbia
SWS	Sumadija and Western Serbia
UAA	utilizable agricultural area
UN	United Nations

Chapter 1

Introduction

Serbia's economy is increasingly integrating with the economies of other countries in central and Western Europe—a change that brings many challenges and opportunities. A succession of new trade agreements has increased the opportunities for both exports and imports, with a consequent need to increase competitiveness. The launch of European Union (EU) accession negotiations will further this integration by aligning Serbia's laws, policies and institutions with those of the EU. Introduction of the new laws and policies required for accession will entail deep-seated reform, however, and the creation of new institutions will require major investments in people and institutional structures. Hence, while there are huge potential benefits from these changes, they will entail difficult choices and incur significant costs. Decisions on how best to prioritize and manage change will thus be critical to success.

The agriculture sector faces all of these challenges—the need to increase competitiveness in response to wider opportunities for trade and to align laws, policies and institutions with those of the EU. Given that agriculture accounts for 10% of gross domestic product (GDP), 23% of exports and 21% of the workforce a successful response to these challenges is critical for Serbia's economy. Thus far, the sector's response to this set of challenges has been very uneven. Some regions and commodity groups have embraced the new opportunities created by increased integration with western and central Europe, and have grown strongly. Other regions and commodity groups have contracted. Overall sector growth has stagnated as a result. A farm structure dominated by small and medium-sized farms, and deep-seated regional disparities partly explain this response. An erratic policy framework has also contributed to stagnation and unbalanced growth, and hampered resolution of underlying structural constraints. As with many former socialist countries, public and private institutions have also been slow to change.

There is a growing urgency to address these issues. Free trade with the EU has already begun, as the first step towards EU accession, changing Serbia's traditional domestic and international markets for agricultural commodities and increasing competition. Government is also cutting public expenditure to redress serious fiscal imbalances, reducing the level of public support for agriculture at a time when considerable public and private investment is required. The agricultural sector is also under pressure to quicken its use of a EUR175 million EU support program to assist with the transition to EU membership.

The ensuing study reviews these challenges and identifies priorities for action. It is intended as a platform for discussion with government, however, rather than a framework for agriculture sector development. This report builds on a number of background studies and discussion papers on

the topics of agriculture growth decomposition, farm structure analysis, international trade and agriculture expenditure analyses which were prepared under the World Bank Technical Assistance Program “Agriculture Sector Dialogue.”

The analysis is focused on the Republic of Serbia for the period 2003–13. Most of the data on production, prices and agriculture sector trends were drawn from the Republic of Serbia Statistical Office, supplemented where necessary with data from FAOSTAT, the World Bank Development Indicators and United Nations (UN) Comtrade. The analysis of agriculture budget support was based on data provided by the Ministry of Agriculture and Environmental Protection (MAEP). Although incomplete, it is the best compilation of budget data available and allows a reasonable review of the relevant issues.

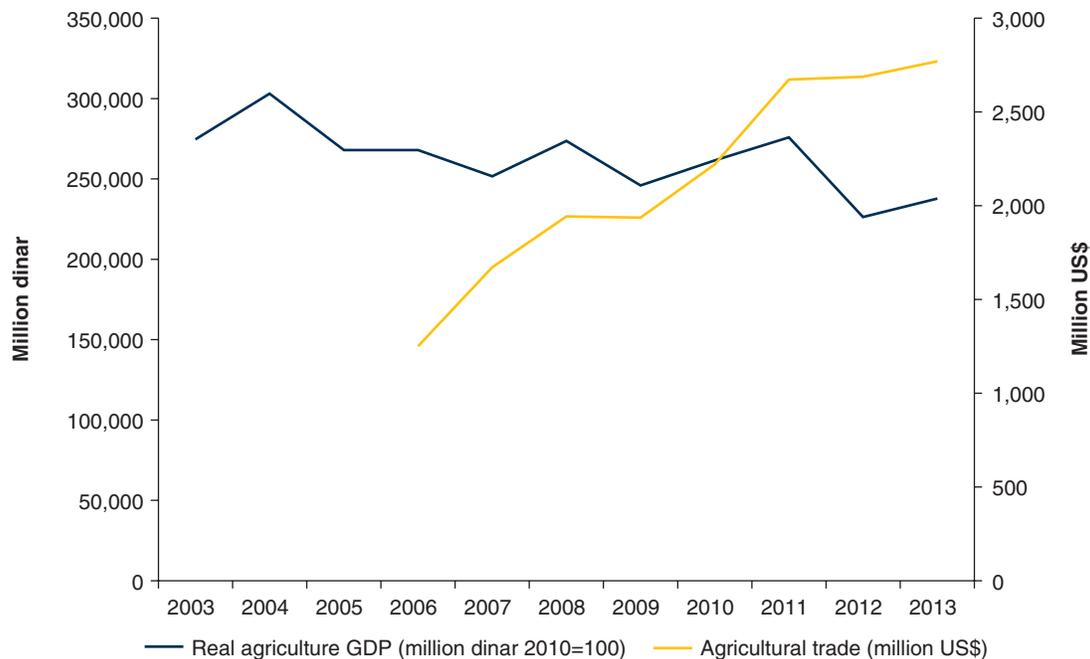
Chapter 2

Stagnant Sector Output— Causes and Implications

Discussion of Serbia's agriculture sector performance currently focuses on the impressive growth of agricultural exports. The 121% increase in exports since 2006 is indeed impressive, as shown in figure 2.1. Less attention is given to the parallel stagnation of real sector output. Notwithstanding the impact of adverse climatic conditions in 2009 and 2012, real agricultural GDP has been largely stagnant since 2003. Significantly, this stagnation has occurred during periods of both rapid economic growth (2001–07) and economy-wide stagnation (post 2008), which suggests that deep-seated structural constraints are impeding sector performance.

The combination of increasing agricultural exports and stagnant sector output suggests that some parts of agriculture are growing strongly but that this growth has been offset by parallel contraction elsewhere. It is thus useful to look at where growth has occurred and where it has not. A gross agricultural output (GAO) variable was constructed to facilitate this analysis, which measures trends in the value of output at national, regional, sub-region and commodity level.¹ The two main regions, Vojvodina and Central Serbia provide the basis for regional comparison, with Central Serbia further

FIGURE 2.1 Trends in Real Agricultural GDP and Agricultural Exports (2003–13)



Sources: Statistical Office of the Republic of Serbia; UN Comtrade.

disaggregated into Sumadija and Western Serbia (SWS) and Southern and Eastern Serbia (SES). The GAO measure includes all of the major crop and livestock commodities and represents more than 90% of total agricultural output for the period 2003–13.²

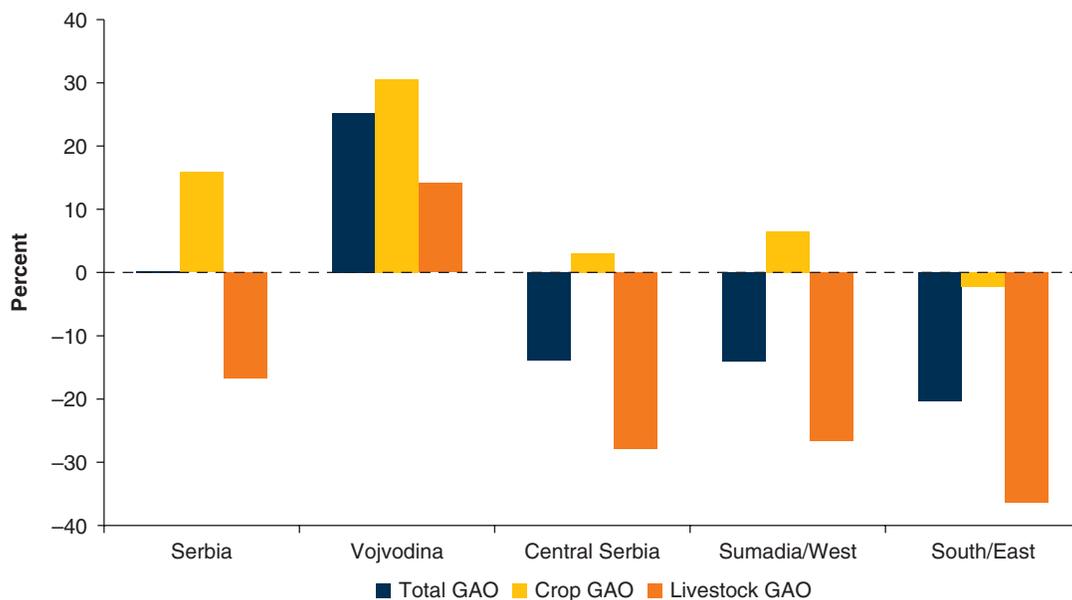
Expansion and Contraction—Decomposing Sector Performance

Analysis of real GAO growth by region, further disaggregated by crop and livestock sectors (figure 2.2) shows that there are marked disparities in growth between regions and between crop and livestock sub-sectors (growth is measured as the difference between average GAO for 2010–13 and average GAO for 2003–05).

Although this analysis is indicative, the following trends are apparent:

- The stagnation of real GAO (0.2% growth) at aggregate level is the result of offsetting trends in crop and livestock production. Real GAO for crop output grew by 14%, while the real value of livestock output fell by 15%. Crop output accounted for approximately 60% of total GAO in 2011–13, and livestock output for 40%.
- Strong growth in Vojvodina (23%) has been offset by a 13% fall in real GAO in Central Serbia. Vojvodina accounted for 45% of total GAO in 2011–13 and Central Serbia for 54%.
- Both crop and livestock GAO grew strongly in Vojvodina. The stagnation of crop output in Central Serbia (2.7% growth) is the result of a slight

FIGURE 2.2 Growth of Real Gross Agricultural Output (2003–13)



Sources: Republic of Serbia Statistical Office; World Bank calculations.

increase in SWS and a slight decrease in SES. The value of livestock production fell throughout Central Serbia.

- The pattern of growth in SWS mirrors that for Central Serbia, with a 13% fall in Total GAO. The 6% expansion of crop GAO was offset by a 24% contraction of livestock GAO.
- The strongest contraction of Total GAO occurred in SES. Crop GAO fell slightly, by 2%, while livestock GAO fell by 33%.
- The expansion of crop output was driven largely by increased production in Vojvodina. The contraction of overall livestock output reflects the pronounced fall in livestock numbers and production in Central Serbia, particularly in SES. This contraction in Central Serbia offset the 13% increase of livestock GAO in Vojvodina where livestock accounts for only 30% of total GAO.

Closer analysis by commodity group provides further insight into regional and commodity trends in production and GAO (tables 2.1 and 2.2).

TABLE 2.1 Growth of Crop Production and Crop GAO (2003–13)^a

	Serbia	Vojvodina	Central Serbia	Sumadija and West Serbia	South and East Serbia
<i>Growth in crop GAO (%)</i>					
Total crop GAO	14.2	27.4	2.7	5.8	-2.0
Region as % of total	100.0	45.0	54.0	n/a*	n/a*
Grain ^b	11.0	24.2	-6.3	-5.9	-6.3
Oilseed ^c	70.3	67.6	110.8	101.3	98.2
Sugar beet	15.2	16.5	-12.7	-70.8	-86.4
Vegetables ^d	14.3	1.4	20.8	12.5	0.3
Grapes	-36.2	-33.0	-37.0	-25.3	-38.2
Fruit ^e	52.6	45.6	54.6	46.9	69.5
Berry fruit ^f	9.8	204.9	7.7	7.5	31.6
<i>Growth in crop production (%)</i>					
Grain ^b	-4.4	7.0	-19.4	-18.5	-20.1
Oilseed ^c	21.5	19.7	47.7	34.0	46.5
Sugar beet	6.3	7.5	-20.2	-72.9	-87.3
Vegetables ^d	1.9	-6.2	5.3	12.2	-10.1
Grapes	-18.5	-14.2	-19.6	-5.1	-21.0
Fruit ^e	18.3	32.8	15.0	7.5	28.3
Berry fruit ^f	-8.9	129.3	-10.6	-7.7	-4.2
<i>Growth in area cropped (%)</i>					
Area	-2.7	1.6	-6.9	-3.6	-10.0

Source: Republic of Serbia Statistical Office.

a. Measured as the percentage difference between average GAO/production/area for 2011–13 and the average for 2003–05.

b. Wheat, maize, barley.

c. Sunflower, soybean, oilseed rape.

d. Tomatoes, peppers, cabbage and kale, beans.

e. Apples, sour cherries, plums.

f. Raspberries, strawberries.

*Disaggregated data for Sumadija and West Serbia and South and Eastern Serbia were not uniformly available, and in some cases they were not considered sufficiently reliable to use.

Negative growth is highlighted to emphasize general trends by commodity and by region.

These results are indicative of a crop sub-sector in the process of change, with a changing composition of crop production both within and between regions. The most pertinent of these changes are outlined below:

- Grain production, which accounts for 40% of crop GAO, is expanding in Vojvodina and contracting in Central Serbia. Within Vojvodina there is also a shift from wheat to maize production.
- Oilseed production, which accounts for 12% of crop GAO, is expanding strongly in all regions although the expansion in Central Serbia is from a very small base.
- Vegetable production, which accounts for 14% of GAO, is expanding in the traditional producing areas of SWS where growing conditions and access to labor are favorable. It is stagnant in Vojvodina and SES.
- The value of fruit production, which accounts for 18% of crop GAO, is growing strongly in all regions.
- Sugar beet production, which accounts for 6% of crop GAO, is expanding in Vojvodina and falling in Central Serbia although the area in Central Serbia is small.
- There are contrasting trends for berry fruit and grapes; with berry fruit output increasing in all areas and grape output contracting in all areas.

Contraction rather than change appears to be the dominant force in the livestock sub-sector (table 2.2). Livestock numbers and production are falling, as is livestock GAO. With the exception of broiler, sheep meat and honey production this contraction is occurring across livestock products and across regions. Its sector-wide impact is strongest in Central Serbia where livestock output accounts for 50% of Total GAO.

The main commodity specific changes are as follows:

- Milk GAO, which accounts for approximately 21% of livestock GAO, is stagnant with falling production offset by rising real prices. The fall in production is due to declining cattle numbers in general and cow numbers in particular. GAO and production is rising in Vojvodina, due to the growth of dairy processing, and stagnant in Central Serbia. But most output (75%) still comes from Central Serbia.
- Beef GAO, which accounts for 19% of livestock GAO, is also falling—in line with the decline in cattle numbers. This decline in output and cattle numbers is highest in Central Serbia.
- Pork GAO, which accounts for 45% of livestock GAO, is falling in aggregate. This contraction is strongest in Central Serbia, which accounts for approximately two-thirds of total pork GAO.
- The poultry industry, which accounts for 12% of livestock GAO, is restructuring. Egg production is declining in all regions, but is being offset by an increase in broiler production in Vojvodina.
- Although it accounts for only 1% of livestock GAO, honey production is increasing strongly in all regions.

TABLE 2.2 Growth of Livestock Production and Livestock GAO (2003–13)^a

	Serbia	Vojvodina	Central Serbia	Sumadija and West Serbia	South and East Serbia
<i>Growth in livestock GAO (%)</i>					
Total livestock GAO	-15.0	12.7	-25.0	-23.9	-32.6
<i>Region as % of total</i>	100.0	32.0	67.0	<i>n/a*</i>	<i>n/a*</i>
Cow's milk ^b	5.0	22.4	-3.3	-2.7	1.6
Beef ^c	-40.5	-1.1	-46.8	-44.4	-50.1
Pork ^c	-13.2	16.3	-24.6	-19.7	-33.7
Poultry meat ^c	15.0	18.5	-17.1	-5.4	-45.9
Sheep meat ^c	-5.0	14.6	1.3	7.1	-7.7
Eggs	-18.1	-18.2	-20.5	-22.0	-28.9
Honey	94.5	234.8	63.3	117.2	19.1
<i>Growth in livestock production (%)</i>					
Cow's milk ^b	-9.8	5.2	-16.9	-15.4	-11.7
Beef ^c	-39.3	0.8	-45.7	-43.2	-50.2
Pork ^c	-21.2	5.0	-31.3	-26.6	-38.0
Poultry meat ^c	70.3	77.3	28.2	46.5	-3.8
Sheep meat ^c	14.8	36.6	23.0	30.2	4.4
Eggs	-1.6	-2.0	-4.4	-1.7	-10.6
Honey	87.9	233.3	57.0	88.1	2.4
<i>Growth in livestock numbers (%)</i>					
Livestock units ^d	-7.5	7.2	-11.5	-5.3	-21.7
Cattle	-15.9	11.5	-22.5	-18.4	-30.0
Cows and heifers in calf	-28.0	-4.7	-36.3	-29.7	-38.0
Pigs	-6.5	-1.6	-9.5	3.8	-16.1
Poultry	31.9	78.8	-10.6	26.2	-13.3
Sheep	0.7	33.8	-3.7	1.3	-20.1
Beehives	118.8	207.4	103.7	122.5	51.0

Source: Republic of Serbia Statistical Office.

a. Measured as the percentage difference between average GAO/production/area for 2011–13 and the average for 2003–05.

b. Total cow milk produced.

c. Liveweight production, based on number slaughtered and average gross weight at slaughter.

d. Livestock Unit conversions: Cattle = 1.0, Sheep = 0.1, Pigs = 0.45, Poultry = 0.01 (Eurostat).

*Disaggregated data for Sumadija and West Serbia and South and Eastern Serbia were not uniformly available, and in some cases they were not considered sufficiently reliable to use.

Agricultural Growth—Before and after the Global Financial Crisis

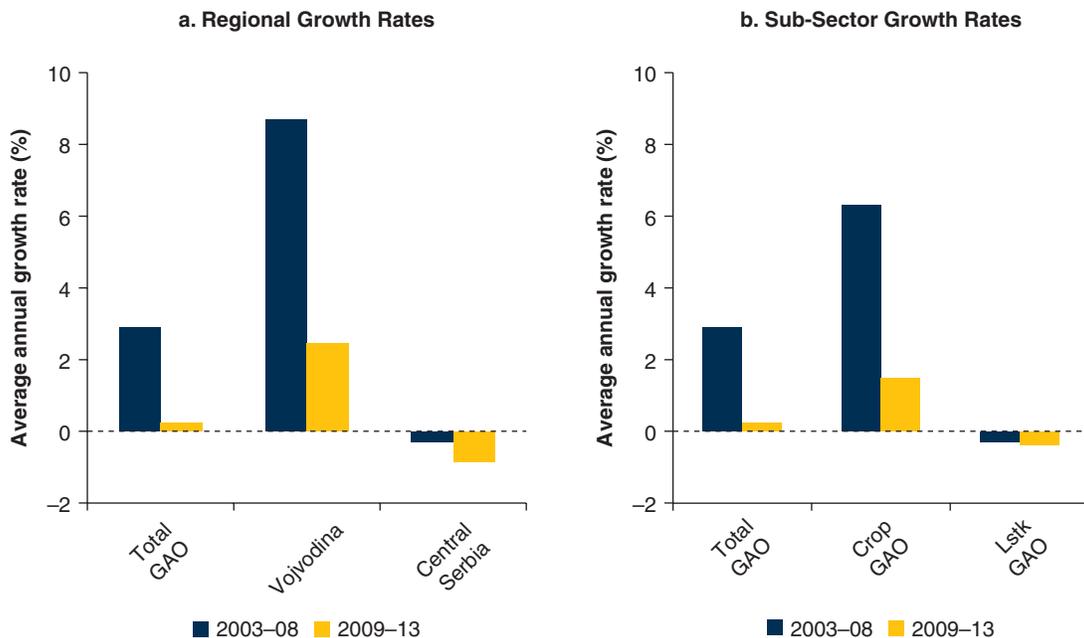
The global financial crisis of 2008–09 exposed Serbia's unsustainable growth model, with its excessive internal borrowing and undue reliance on non-tradable sector growth (IMF 2011). The strong annual growth rates of 5% from 2000 to 2008 were driven by domestic consumption, fueled by large capital inflows and a credit boom (World Bank 2012). Non-tradable sectors (communication, services, construction, retail) accounted for 80% of this

growth (CEVES 2014), with a limited allocation of resources towards building a competitive, export oriented economy (World Bank 2012). These drivers of growth dissipated after the global financial crisis, as capital flows ceased and credit dried up (*ibid.*). Lacking a competitive base, the economy has struggled to recover since 2009—with recovery further constrained by political instability and the prolonged economic downturn in Europe.

To what extent have these factors influenced concurrent patterns of agriculture sector growth? At regional level the greater export orientation of Vojvodina resulted in strong real growth rates before 2009 and lower but still positive growth rates after 2009 (figure 2.3). Central Serbia exhibited minimal growth before 2009 and negative growth afterwards. Comparison by sub-sector shows high pre-crisis growth rates for crop production, consistent with its stronger export orientation, and lower growth rates after 2009. The livestock sector exhibited minimal growth, both before and after 2009.

Two conclusions emerge from these observations. First, where export oriented production and marketing systems were established prior to the global financial crisis—as for cereal and industrial crops at commodity level and Vojvodina at regional level—the impact of the crisis has been less severe. This bodes well for future growth. The observed growth patterns for Central Serbia and for livestock are more disconcerting, in that neither benefitted substantially from economy-wide pre-crisis growth. This minimal response, together with the limited subsequent impact of the financial crisis, suggests that deep-seated structural constraints are major impediments to growth in both cases. The prospects for future growth rely on resolution of these underlying constraints.

FIGURE 2.3 Agricultural Sector Growth Rates—Pre- and Post-Financial Crisis



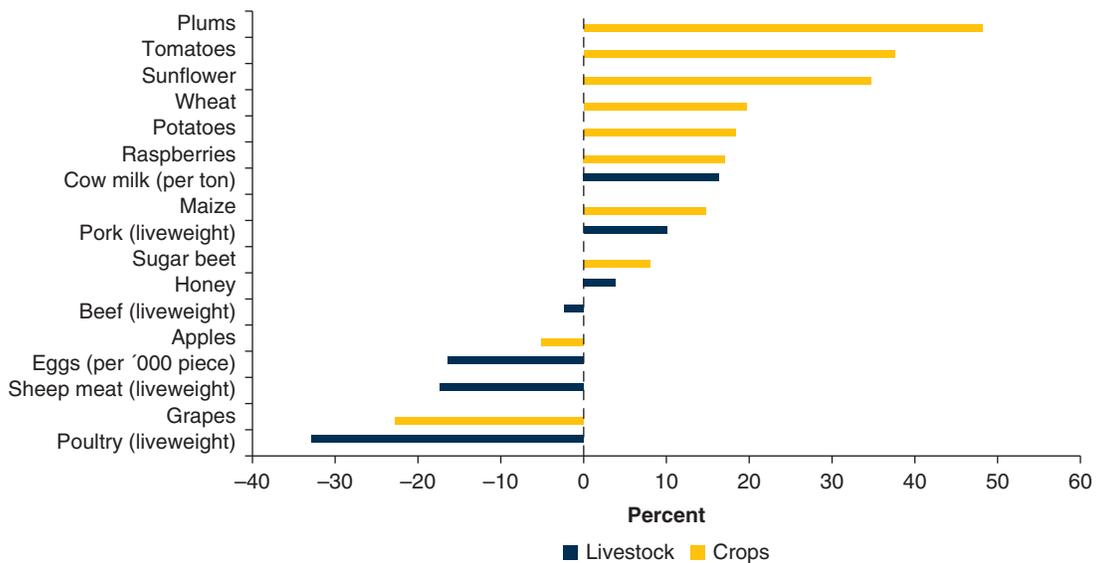
Source: Republic of Serbia Statistical Office.

Trends in Producer Prices

Trends in real producer prices are broadly consistent with trends in GAO (figure 2.4). Real prices for most crops have increased, while those for most livestock commodities have decreased.

However, price increases do not always drive production, as production incentives are driven by overall profitability rather than output prices alone. The production of milk and pork has fallen for instance, despite an increase in producer prices. Conversely, the production of sheep meat and poultry meat has increased, despite falling real prices. More importantly, these trends show that support policies based on boosting producer prices do not necessarily address the underlying constraints to increased production. High and increasing producer prices for milk have not stemmed the long-term decline of cattle numbers and milk production.

FIGURE 2.4 Percent Change in Real Crop Prices (2003–13)



Source: Republic of Serbia Statistical Office.

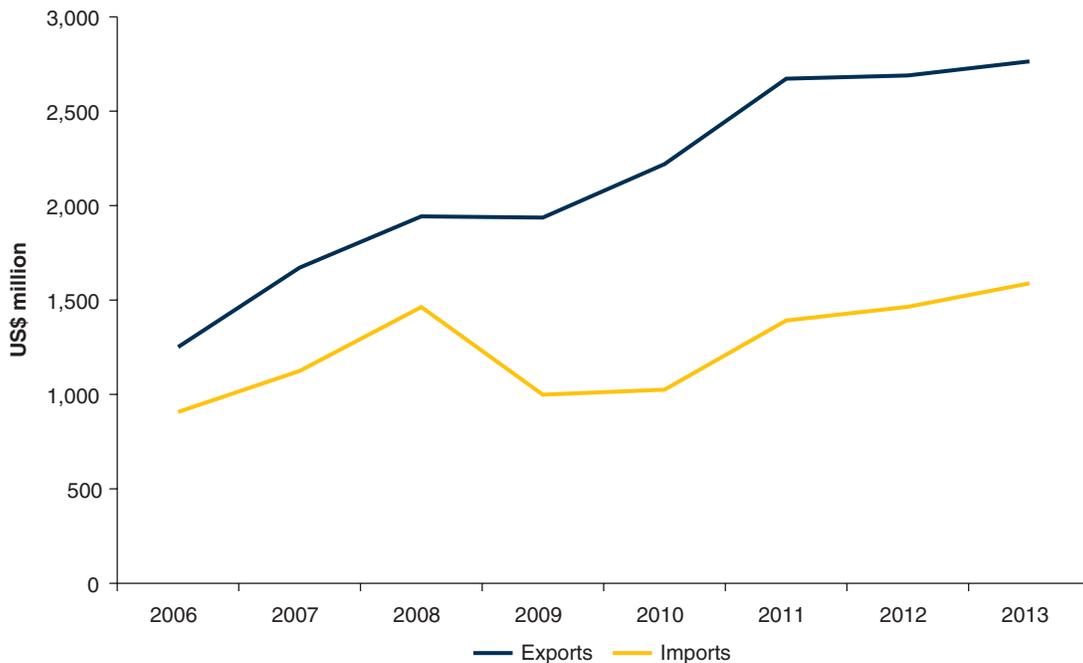
Note: Measured as the percentage difference between average real price for 2011–13 and the average for 2003–05.

The Impact of Agricultural Trade³

Agricultural exports grew by 121% from 2006 to 2013,⁴ in parallel with a 75% increase in agricultural imports (figure 2.5). As exports significantly exceeded imports during this period, the agricultural trade surplus grew by 243%. In principle, such impressive export growth should drive concomitant growth in agricultural GDP. This section looks more closely at underlying trends and characteristics of agricultural trade to better understand why growth in exports has not translated into sector growth.

The total value of agricultural exports increased from US\$1.25 billion in 2006 to US\$2.76 billion in 2013—an increase of more than US\$1.5 billion.

FIGURE 2.5 Agricultural Trade (2006–13)



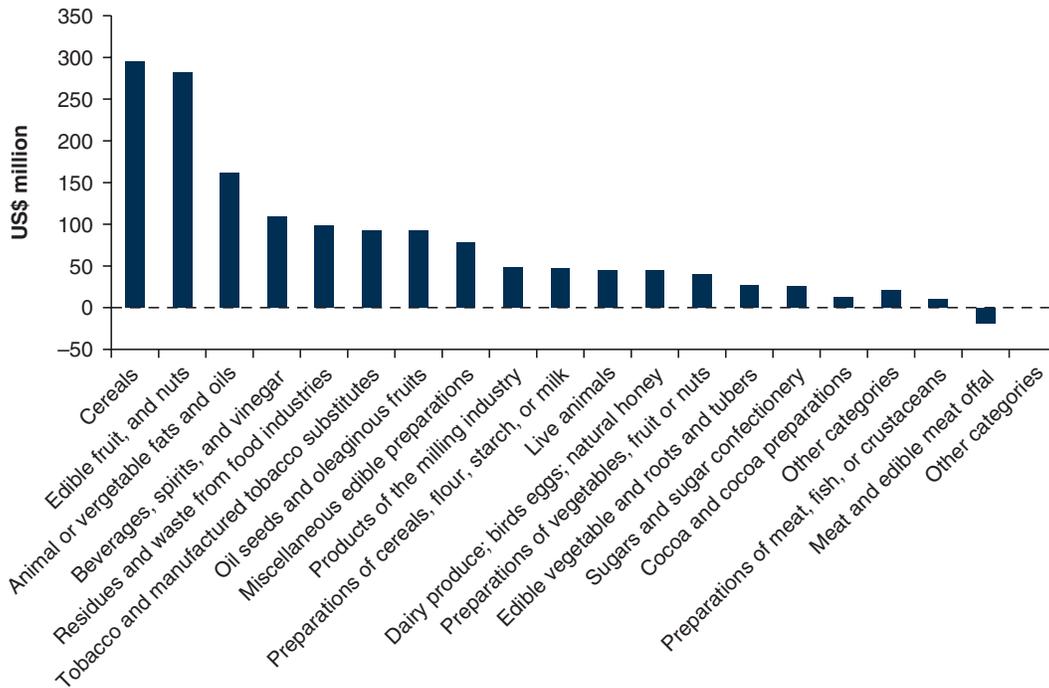
Source: UN Comtrade.

Although Serbia has a broad-based capacity for agricultural exports, with exports in all of the 24 agricultural trade categories reported under the harmonized system, more than half of the increased value of exports came from five commodity groups (figure 2.6). Maize, wheat, fruit and vegetable oils were the largest contributors, accounting for 40% of the growth in agricultural exports. Other growth export categories such as beverages and tobacco products reflect the growth of non-agricultural products (e.g., water, beer, cigarettes). Live animals and dairy products accounted for only 6% of export growth and the export of meat products declined by 10% from 2006 to 2013.

Hence, while the export base for Serbia's agricultural products is broad most of the observed growth in agricultural exports derives from a relatively small group of commodities—cereals, edible fruit and vegetable oils. This export base is even narrower in that cereal exports derive from two commodities (maize and wheat), the export of edible fruit and vegetables derives largely from raspberries, and sunflower oil accounts for most vegetable oil exports.

Furthermore, while these commodities are produced widely and account for approximately 40% of total GAO, the benefits of export growth have accrued to the more commercially oriented farmers who actively participate in the relevant markets. These factors are reflected in regional differences in sector performance. Vojvodina, which accounts for more than 50% of production and 80% of the marketed surplus of cereals and oilseeds, has benefited most from cereal and vegetable oil exports. And as livestock is only 25% of Vojvodina's sector output, falling livestock production has been less of a drag

FIGURE 2.6 Sources of Agricultural Export Growth (2006–13)



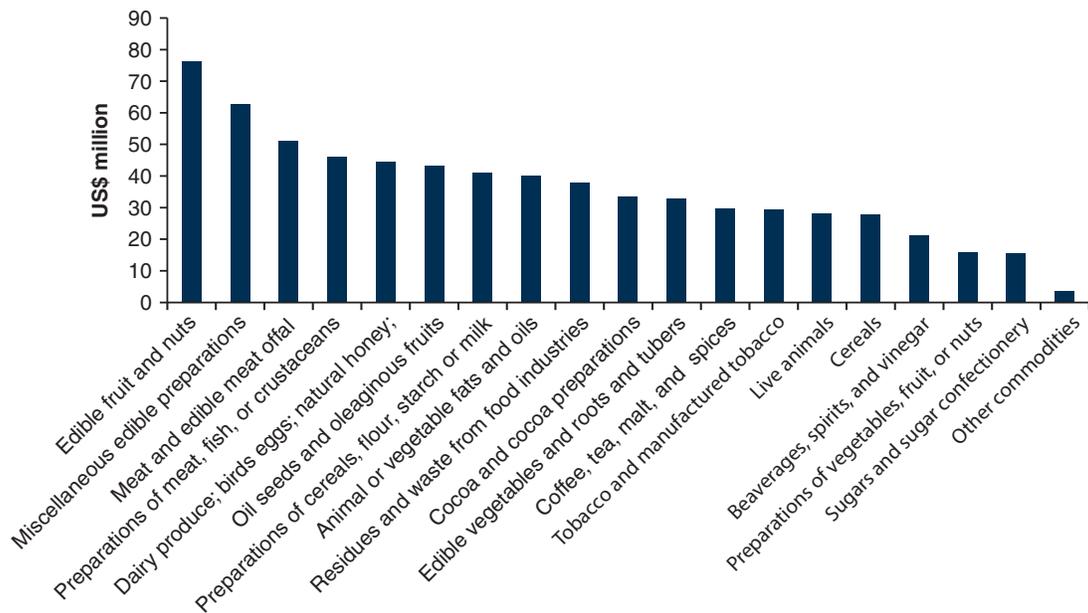
Source: UN Comtrade.

on overall regional GAO. In Central Serbia, which accounts for the majority of fruit and berry production and marketed surplus, regional crop GAO has benefitted from the strong growth of edible fruit exports. But as livestock output accounts for approximately 50% of sector output, the benefit of this growth has been offset by the fall in livestock output and livestock GAO.

Agricultural imports grew steadily after 2003, until the global financial crisis in 2008–09 depressed domestic demand. They recovered to 2008 levels in 2011 and have been relatively stable since (figure 2.5). Closer analysis of the components of this growth provides useful information on the sources of import growth and the ability of Serbia’s agricultural products to compete on domestic markets and respond to growing domestic demand. Figure 2.7 shows the respective contributions of the various commodity groups to the US\$680.9 million increase in agricultural imports from 2006 to 2013.

Much of the observed growth in agricultural imports reflects increased demand for food and agricultural commodities not produced in Serbia. This is true for the two largest components of increased demand—edible fruit (citrus, bananas, tropical fruit etc.) and miscellaneous edible preparations—and for commodity groups such as cocoa, coffee, fish, tobacco and cigarettes. Together, these commodities account for approximately 40% of imports and a similar proportion of the observed growth in imports. Among the other commodities, the growth of imports of meat and dairy products is of greater significance for agriculture sector performance. The import of meat and meat

FIGURE 2.7 Sources of Agricultural Import Growth (2006–13)



Source: UN Comtrade.

products—particularly frozen pork and beef—grew more than eight-fold and the import of dairy products grew more than five-fold from 2006 to 2013. This suggests that the observed decline in domestic meat and dairy production and the associated decline in pork, beef and dairy GAO is due to an inability to compete with imports rather than any decline in domestic demand.

Implications for Sector Policy

This paradox of Serbia’s agriculture sector—stagnant sector growth despite a substantial increase in agricultural exports—reflects both the opportunities and constraints the sector faces as it prepares for EU accession. Export growth is narrowly based, despite Serbia’s diverse agricultural resource base and the potential to produce and export a wide range of crop and livestock products. Cereals, vegetable oils and edible fruit products have led the boom in agricultural exports, which has increased agricultural export earnings by more than US\$1.5 billion since 2006. Clearly, Serbia has the ability to compete on European and international markets for these commodities.

However, most of the earnings from this export boom have probably gone to a limited number of large-scale cereal and oilseed farmers in Vojvodina and to commercial fruit and berry producers in SWS. Livestock production, which accounts for approximately 40% of total sector output, has contracted during the same period and imports of livestock products have increased. The substantial contraction of livestock output has offset the growth of crop production and exports, resulting in zero growth for the sector in aggregate.

The challenge for agriculture is to broaden the basis for sector growth, to include more farmers, more land and more commodities. Farm structure and land use are analyzed in the next chapter to discern where this broadening of the base for growth is most likely to be effective.

Notes

1. Appendix A provides the methodological explanation of how the GAO was calculated.
2. All data are for the Republic of Serbia, excluding Autonomous Province Kosovo and Metohija.
3. Agricultural trade includes all commodities covered by HS codes 01-24.
4. Prior to 2006, UN Comtrade data refers to the country of Serbia and Montenegro.

Chapter 3

Rural Incomes and Farm Structure

The small family holdings that dominate Serbia's agriculture have a major influence on rural livelihoods, the incentives to modernize and invest in agriculture and agriculture sector growth. Most are too small to provide an adequate living, obliging rural households to rely on a mix of farm and non-farm income for their livelihoods. Of the 631,552 agricultural holdings (AHs) recorded in the Agricultural Census of 2012, 78% had less than 5 ha of land. Only 5% of livestock holdings owned more than 10 livestock units (LUs).

This mixed-income base has major implications. First, decisions by rural households on resource allocation and investment are not innately driven by returns to agriculture. Opportunities for urban employment and/or income generation may offer more attractive returns. Second, while small farm size is a constraint to agricultural sector growth and modernization, rural households may prefer to keep their farm small and maintain a mixed-income base rather than expand and specialize in agriculture. The relative importance of farm versus non-farm income will change as farm size grows, however, with farm income predominating on larger farms.

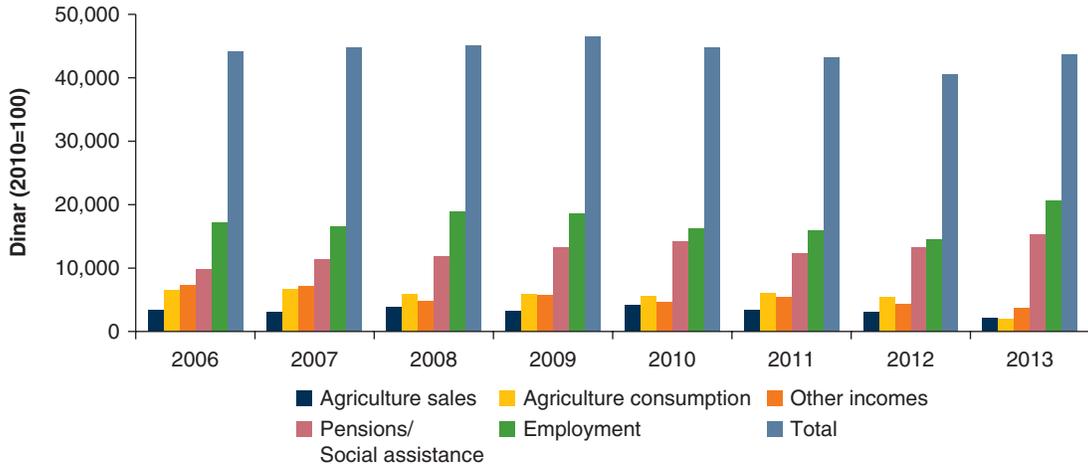
This chapter examines the relationship between farm size and rural incomes, including analysis of regional differences. A simple taxonomy of farm size is developed for non-farm rural households, mixed income AH and larger, commercial farms as the basis for targeting different forms and levels of agricultural support.

The Level and Composition of Rural Household Incomes

The relative importance of different types of farm and non-farm income is shown in figure 3.1 for all rural households in Serbia, for the period 2006–13. Wages are the most important source of income, followed by pensions and social assistance. Farm income from sales of agricultural products and the imputed value of agricultural products consumed by the household provide around 20% of overall household income.

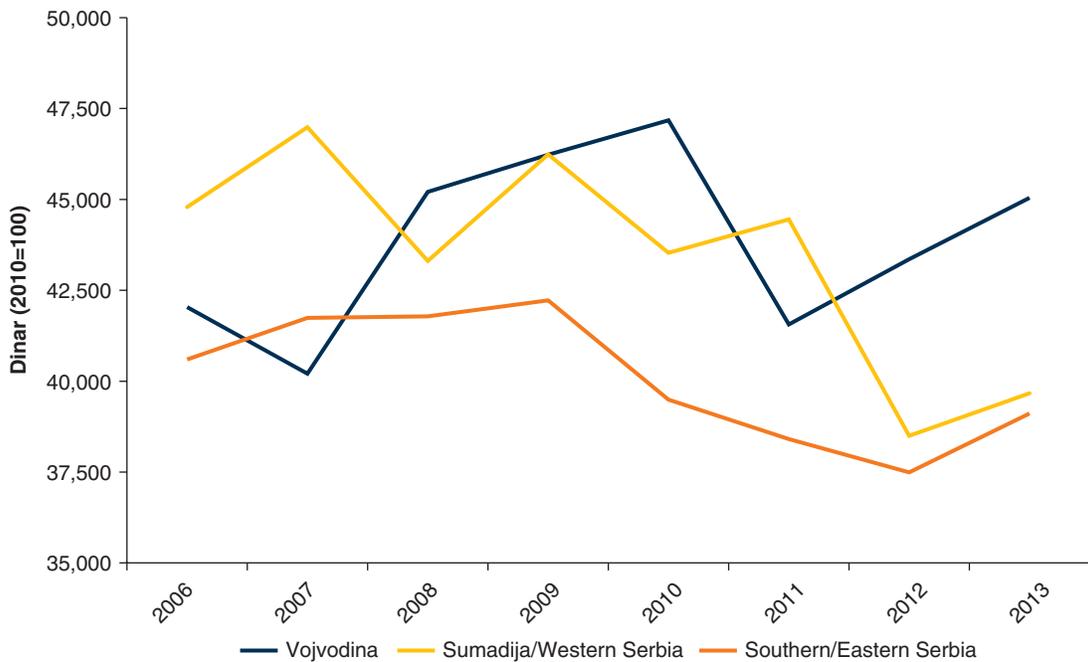
This heavy reliance on non-farm income means that economy-wide trends in employment and public expenditure are major determinants of rural income. While total real incomes for rural households were more or less stagnant during 2006–13; this was the result of a substantial increase in wages (+20%) and pensions/social assistance (+57%), which was offset by a marked decline in agricultural sales (–37%) and the value of agricultural consumption (–70%).

FIGURE 3.1 Trends in Real Rural Household Income (2006–13)



Source: Republic of Serbia Statistical Office.

FIGURE 3.2 Regional Trends in Rural Household Income (2006–13)



Source: Republic of Serbia Statistical Office.

Between regions, rural household incomes are generally higher in Vojvodina (figure 3.2), as there are better opportunities for both farm and non-farm income; and lowest in Southern and Eastern Serbia (SES) where the opportunities for both farm and non-farm income are most limited. In all regions, the marked increase in incomes from 2012 to 2013 was driven by an increase in wage earnings from employment.

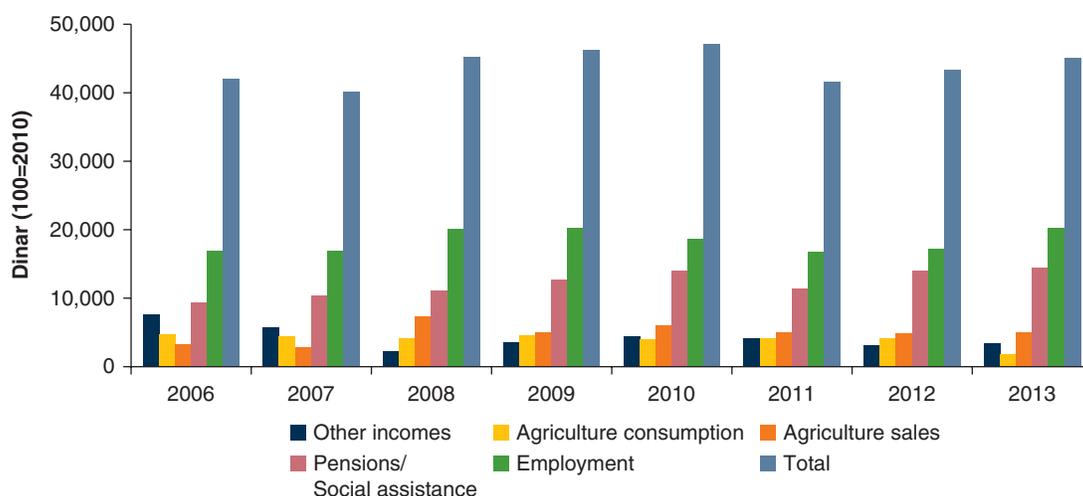
Vojvodina

Rural household incomes in Vojvodina increased by 7% in real terms from 2006 to 2013 (figure 3.3), consistent with the region's growing prosperity. Growth in wage income from employment (+20%) and pensions/social assistance (+53%) drove this increase, with the contribution of employment and pensions/social assistance to total income rising from 62% in 2006 to 77% in 2013. Income growth was further augmented by a 53% increase in agricultural sales. But even in Vojvodina, with its strong agricultural potential and demonstrated agriculture sector growth, the combined earnings from agriculture (sales plus consumption) stayed at around 20% of household income. This suggests that for many rural households in Vojvodina's expanding regional economy, the non-farm opportunities for raising household income are as good, or better than the on-farm opportunities.

A closer examination of farm structure and the composition of production provides further insights into the relationship between farm size and the nature of agriculture's contribution to rural household income in Vojvodina (table 3.1):

- Even in a progressive agricultural region such as Vojvodina, more than 70% of AH have less than 5 ha, and so are likely to rely on both farm and non-farm income. The remaining 30% of AHs use more than 90% of agricultural land, creating a strong base of larger farms to drive sector growth.
- Cereals and industrial crops (oilseeds, sugar beet, etc.) account for 75–85% of total land use, even on the smallest AHs, suggesting that all farms derive some benefit from the strong demand for these crops on export markets. But for most farmers, the impact of these benefits on household income is restricted by small farm size.

FIGURE 3.3 Vojvodina—Trends in Real Rural Household Income (2006–13)



Source: Republic of Serbia Statistical Office.

TABLE 3.1 Voivodina—Farm Structure, Land Use, and Livestock Ownership (2012)

	Farm size distribution					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Number farms	74,737	28,269	18,959	20,116	5,543	147,624
Percent of Total	50.6	19.1	12.8	13.6	3.8	100
Utilized agriculture area (ha)	48,430	92,689	134,766	426,802	906,209	1,608,896
Percent of Total	3.0	5.8	8.4	26.5	56.3	100
	Crop composition by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cereals	63.8	70.6	68.4	66.9	55.4	60.7
Industrial crops and sugar beet	10.9	17.1	19.7	25.2	28.3	25.7
Vegetables	2.0	1.2	1.1	1.1	0.8	0.9
Fruit and berries	6.3	2.6	1.8	1.0	0.5	1.0
Vineyards	0.9	0.5	0.4	0.3	0.2	0.3
Fodder crops	4.5	4.5	5.2	4.0	1.7	2.9
Pastures	1.0	0.8	0.8	0.8	12.0	7.1
Other	10.6	2.7	2.6	0.7	1.1	1.4
Total	100	100	100	100	100	100
	Distribution of livestock ownership by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cattle	10.3	9.1	14.9	37.3	28.4	100
Dairy cows	10.5	10.4	15.8	36.9	26.4	100
Pigs	24.9	10.3	11.0	20.2	33.6	100
Broilers	57.4	4.5	3.0	7.7	27.4	100
Lay hens	54.9	11.3	8.4	11.5	13.9	100
Sheep	22.1	14.8	16.7	31.9	14.5	100
	Livestock ownership by number LSU ^a per farm (%)			Total		
	1–9 LSU	9–20 LSU	> 20 LSU			
Number farms	68.5	4.1	2.9	75.4 ^b		
Cattle	23.3	21.4	55.3	100		
Dairy cows	24.3	20.9	54.8	100		
Pigs	36.8	8.6	54.6	100		
Broilers	9.0	2.5	88.5	100		
Lay hens	36.8	4.0	59.2	100		
Sheep	40.4	20.6	39.0	100		

Source: Agricultural Census 2012.

a. Livestock units: Cattle = 1.0, Sheep = 0.1, Pigs = 0.45, Poultry = 0.01 (Eurostat).

b. Remaining farms own no livestock.

- Vegetables and fruit and berries account for less than 10% of land use on the smallest AHs and 1–2% of land use on the larger holdings. This suggests that rural households with smaller farms perceive non-farm income as a more effective means to raise household income rather than the intensification of agricultural production.
- Most livestock production occurs on farms greater than 10 ha, but even on these farms the limited land area means that the average livestock

complement is small. Less than 3% of farms own more than 20 LUs. The exception is poultry production where land area is not a constraint to the scale of production.

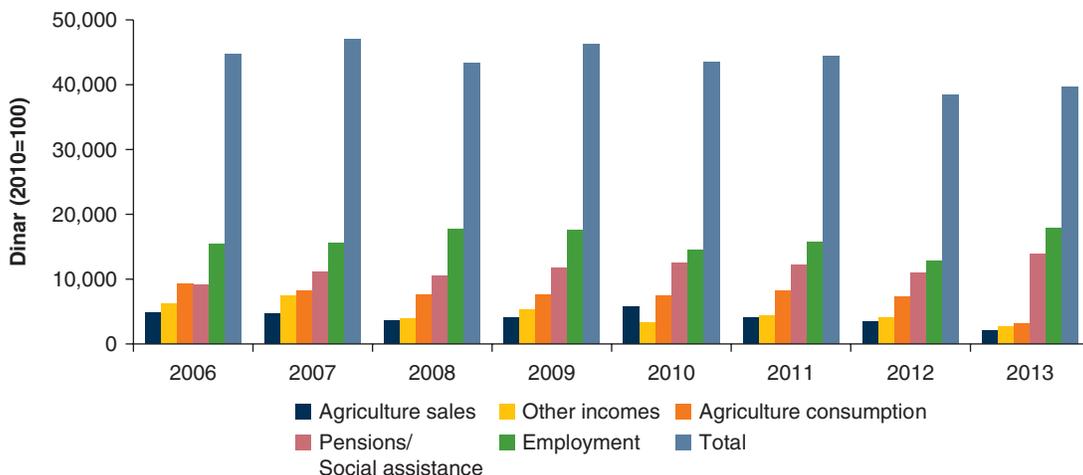
Sumadija and Western Serbia

Rural household incomes fell by 11% from 2006 to 2013 in Sumadija and Western Serbia (figure 3.4). Incomes from employment and pensions/social assistance grew (by 16% and 52% respectively), but this increase was offset by a substantial decline in all other sources of household income. The income from agricultural sales fell by 57% and from the imputed value of agricultural consumption by 66%. Agriculture's share of rural household income thus fell from 31% in 2006 to 13% in 2013. Hence, despite the considerable potential for agriculture in this region, rural households have become increasingly dependent on non-farm income. The pronounced fall in the value of agricultural sales is of particular concern. By 2013 it was the smallest component of rural household income.

Related review of farm structure, crop composition and livestock ownership (table 3.2) leads to the following observations:

- Small AHs are even more prevalent than in Vojvodina, with a much higher proportion of AHs with 2–10 ha and a much lower proportion (6%) with more than 10 ha. As a consequence, AHs with less than 10 ha account for approximately 70% of total land area.
- Crop composition shows the mixed crop and livestock systems that predominate in Sumadija and Western Serbia (SWS). Cereals, pastures and fodder crops dominate land use with 70–80% of agricultural land. Grape production is important on small-medium sized farms, although it

FIGURE 3.4 Sumadija and Western Serbia—Trends in Real Rural Household Income (2006–13)



Source: Republic of Serbia Statistical Office.

TABLE 3.2 Sumadija and Western Serbia—Farm Structure, Land Use, and Livestock Ownership (2012)

	Farm size distribution (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Number farms	118,188	86,441	42,565	15,471	275	262,940
Percent of total	44.9	32.9	16.2	5.9	0.1	100
UAA (ha)	115,254	285,569	294,269	239,976	79,141	1,014,209
Percent of total	11.4	28.2	29.0	23.7	7.8	100
	Crop composition by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cereals	34.0	38.0	38.1	40.5	10.6	36.0
Industrial crops and sugar beet	0.4	0.8	1.2	0.0	0.0	0.0
Vegetables	1.5	1.1	0.8	0.6	0.3	0.9
Fruit and berries	1.0	0.9	0.7	0.5	2.0	0.9
Vineyards	16.0	10.9	9.4	5.3	0.6	8.9
Fodder crops	6.5	10.0	12.7	13.8	2.3	10.7
Pastures	30.8	34.4	34.9	34.8	81.8	37.9
Other	9.8	3.9	2.2	4.5	2.4	4.7
Total	100	100	100	100	100	100
	Distribution of livestock ownership by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cattle	8.6	24.1	32.2	33.6	1.4	100
Dairy cows	9.7	28.4	33.5	27.3	1.1	100
Pigs	19.7	31.9	28.4	19.3	0.7	100
Broilers	38.3	21.4	12.0	20.6	7.7	100
Lay hens	47.5	24.0	19.2	8.9	0.4	100
Sheep	16.9	33.9	30.6	17.9	0.7	100
	Livestock ownership by number LSU ^a per farm (%)			Total		
	1–9 LSU	9–20 LSU	> 20 LSU			
Number farms	73.3	4.2	1.2	78.7 ^b		
Cattle	58.1	23.2	18.7	100		
Dairy cows	69.4	20.6	10.0	100		
Pigs	69.8	15.0	15.1	100		
Broilers	12.3	3.1	84.5	100		
Lay hens	47.9	5.3	46.7	100		
Sheep	81.8	12.5	5.6	100		

Source: Agricultural Census 2012.

a. Livestock units: Cattle = 1.0, Sheep = 0.1, Pigs = 0.45, Poultry = 0.01 (Eurostat).

b. Remaining farms own no livestock.

is not clear how much of this production is for household consumption versus sale.

- Most livestock production occurs on smaller AHs of 2–10 ha. The average livestock complement is also small, with less than 10 LUs on 73% of the farms with livestock.

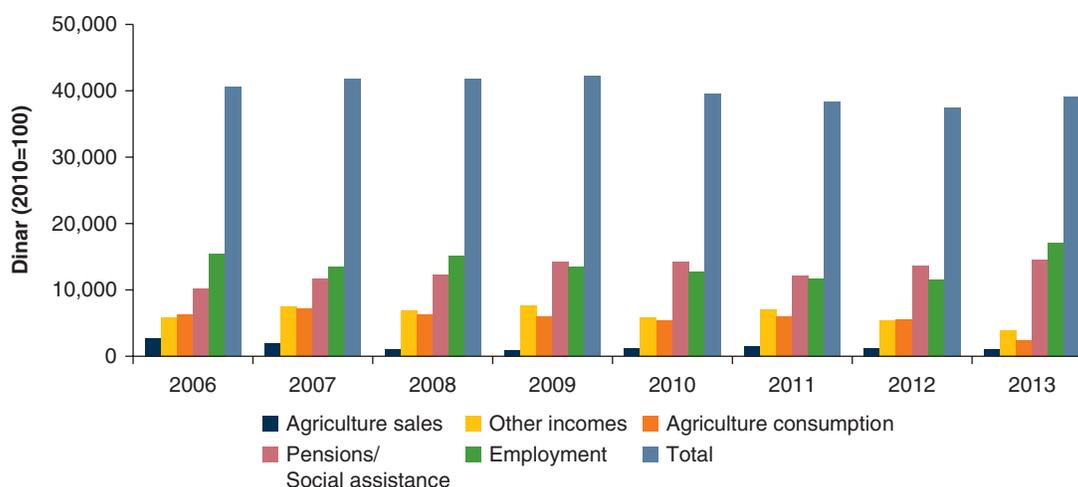
Southern and Eastern Serbia

With its rugged terrain, less favorable climate and relative isolation, SES is less suited to agriculture than the other regions. Rural household incomes are lower as a result, although they fell by only 4% from 2006 to 2013 (figure 3.5). As for SWS, income from wage employment and pensions/social assistance rose while the income from agricultural sales and the value of agricultural consumption fell. The main difference between the two regions is that the income from agricultural sales in SES is extremely low at 2–4% of total household income. Most of the income from “agriculture” comes from the imputed value of agricultural consumption. This suggests that rural households in SES engage peripherally in commercial agriculture, with the emphasis on producing for household needs.

Review of farm structure, crop composition and livestock ownership in SES (table 3.3) supports this view, based on the following observations:

- Small AHs are even more prevalent than in SWS, with more than 80% of AHs owning less than 5 ha of agricultural land. These smaller AHs also use most of the agricultural land. AHs of less than 5 ha account for 40% of agricultural land and farms less than 10 ha for 80%.
- Cereals, pastures and fodder crops account for the majority of land use, consistent with the region’s emphasis on mixed crop and livestock farming. Vineyards are the only significant form of intensive crop production, with 6% of land use.
- With the exception of poultry production, most of the livestock is on farms of 2–50 ha, suggesting the presence of some larger livestock operations. The average livestock holding appears to be very small,

FIGURE 3.5 Southern and Eastern Serbia—Trends in Real Rural Household Income (2006–13)



Source: Republic of Serbia Statistical Office.

TABLE 3.3 Southern and Eastern Serbia—Farm Structure, Land Use, and Livestock Ownership (2012)

	Farm size distribution (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Number farms	97,063	58,297	23,760	8,298	326	187,744
Percent of total	51.7	31.1	12.7	4.4	0.2	100
UAA (ha)	94,384	187,225	162,342	133,391	100,588	677,930
Percent of total	13.9	27.6	23.9	19.7	14.8	100
	Crop composition by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cereals	49.1	50.1	47.2	49.2	18.6	44.4
Industrial crops and sugar beet	0.3	0.0	0.0	0.0	0.0	0.0
Vegetables	2.3	1.6	0.9	0.7	0.1	1.1
Fruit and berries	2.7	1.4	1.0	0.6	0.1	1.1
Vineyards	11.8	8.5	6.3	3.8	1.1	6.4
Fodder crops	7.0	12.2	16.1	17.2	4.0	12.2
Pastures	16.8	21.9	25.5	24.3	68.6	29.4
Other	10.0	4.3	3.0	4.2	7.5	5.4
Total	100	100	100	100	100	100
	Distribution of livestock ownership by farm size (%)					Total
	< 2 ha	2–5 ha	5–10 ha	10–50 ha	> 50 ha	
Cattle	11.7	29.3	28.6	25.8	4.6	100
Dairy cows	13.8	32.4	28.6	23.3	2.0	100
Pigs	22.4	30.4	24.4	13.7	9.2	100
Broilers	46.6	21.7	14.8	10.0	7.0	100
Lay hens	50.7	26.4	14.1	7.0	1.9	100
Sheep	15.3	30.7	30.4	22.2	1.3	100
	Livestock ownership by number LSU ^a per farm (%)			Total		
	1–9 LSU	9–20 LSU	> 20 LSU			
Number farms	75.1	2.1	0.5	77.8 ^b		
Cattle	69.4	17.4	13.2	100		
Dairy cows	77.2	15.0	7.9	100		
Pigs	74.0	8.4	17.5	100		
Broilers	52.8	6.0	41.2	100		
Lay hens	60.7	4.1	35.3	100		
Sheep	77.5	15.1	7.4	100		

Source: Agricultural Census 2012.

a. Livestock units: Cattle = 1.0, Sheep = 0.1, Pigs = 0.45, Poultry = 0.01 (Eurostat).

b. Remaining farms own no livestock.

however, with less than 10 LUs on more than 70% of livestock farms. This indicates that large-scale livestock operations are few in number.

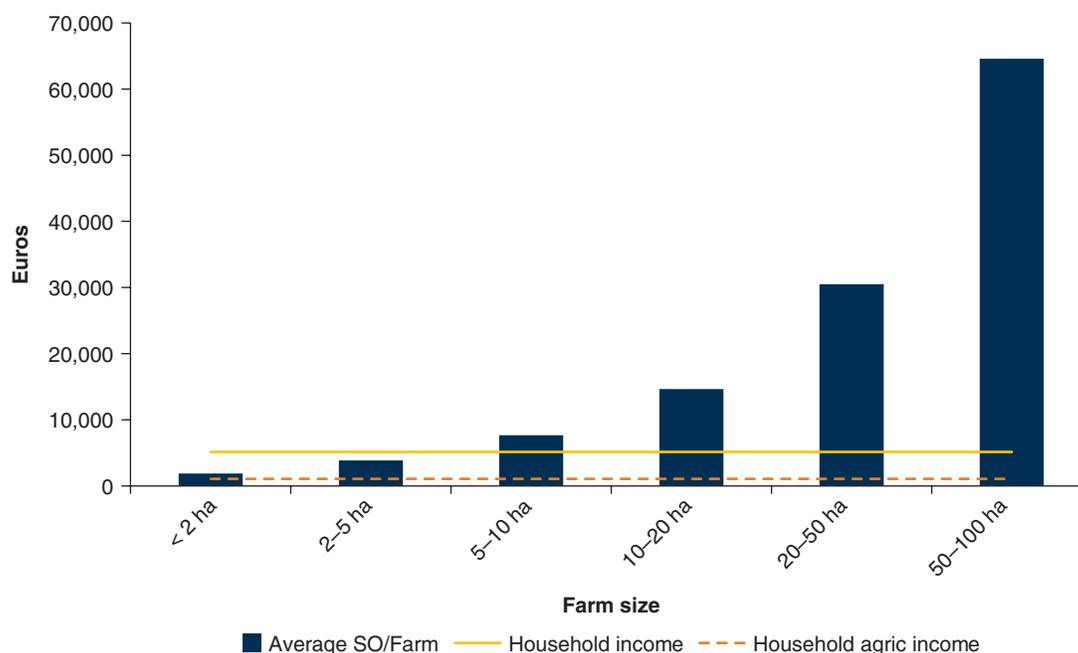
- Most poultry is produced on small AHs (< 5 ha) as land is not a limiting constraint to poultry production.

The predominance of small farms, small livestock herds, cereal and pasture based cropping systems; and the less favorable agro-climatic conditions of SES are consistent with semi-subsistence farming and a limited engagement in agricultural markets. Where they exist, non-farm income opportunities are likely to offer more effective ways to increase household income. Broader, rural development policies to boost employment and improve access to health, education and social welfare are more likely to raise household incomes under these conditions. For rural households with limited opportunities to raise farm or non-farm income, the emphasis should be on ensuring access to pensions and social assistance.

Rural Household Income and Farm Size

Lack of suitable data made it difficult to rigorously examine the impact of farm size on the level and composition of household income. Data on average rural household income and the agricultural component of this income are available at regional level from the annual Household Budget Survey, but are not disaggregated by income quintile or farm size. The 2012 Agricultural Census calculates Standardized Output¹ (SO) for the farms surveyed, to measure farm “economic size.” This variable was used to derive the average SO/farm for different farm size categories, as a proxy for household agricultural income from sales and own consumption. A mapping of these two data sources for 2012 provides useful insight, as depicted in figure 3.6.

FIGURE 3.6 Serbia—Household Income versus Farm Size (2012)



Sources: Agricultural Census 2012; Household Budget Survey 2012; World Bank calculations.

Average SO/farm is below household income for AHs with less than 5 ha, consistent with the low observed contribution of agriculture to average household income in the Household Budget Survey and the high consequent reliance on non-farm income. This is particularly evident for AHs with less than 2 ha. Note that as AHs with less than 2 ha account for 48% of all AHs, and AHs with 2–5 ha for a further 29% of all AHs—these two farm size categories have a major influence on the low observed contribution of agriculture to the average income of rural households.

Comparison of household income and SO/farm for AHs with more than 5 ha shows that agriculture has the potential to be the dominant source of household income as farm size grows—particularly for farms of 10 ha or more. A mixed income base is still likely for farms of 5–20 ha, however, particularly for households with labor resources in excess of farm labor requirements. For farms of 20 ha or more, SO/farm far exceeds average household income and agriculture is likely to be the main source of household income. On these larger farms, agriculture will probably have priority for decisions on resource allocation and investment. Further analysis (not shown) shows that the pattern of results observed in figure 3.6 holds for all regions.

While far from definitive, this analysis indicates that farm income is likely to be of limited importance for farms of less than 2 ha. A mix of farm and non-farm incomes appears to prevail for farms of 2–10 ha. Non-farm activities may also contribute to household income for farms of 10–20 ha, but farm income is likely to be the major income source for 20 ha farms or above.

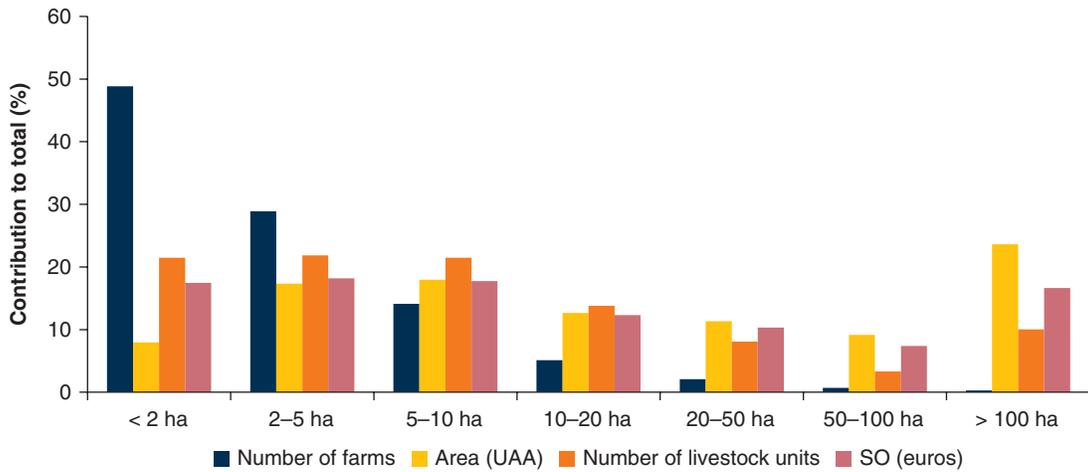
Farm Size, Agricultural Resource Use, and Sector Output

Additional perspective is provided by analysis of the extent to which farm size influences land use, livestock ownership and agricultural sector output. This analysis uses both area and income based measures of farm size to capture the role of intensive farming systems (horticulture, poultry, pigs) that use limited land. Some 10,000 AHs report owning no land in the Agricultural Census, for instance, yet these farms report an average SO/farm of EUR10,994 on rented land.

At national level (figure 3.7), AHs of 2 ha or less account for 49% of total AH numbers but only 8% of land use, 21% of livestock and 17% of the estimated value of sector output (as measured by SO). Mixed income farms of 2–10 ha account for 43% of the number of farms, 35% of the area farmed, 43% of livestock and 36% of sector output. The larger, more commercially oriented farms of 10 ha or more account for only 8% of total farms, but 57% of total land use, 35% of livestock and 46% of sector output.

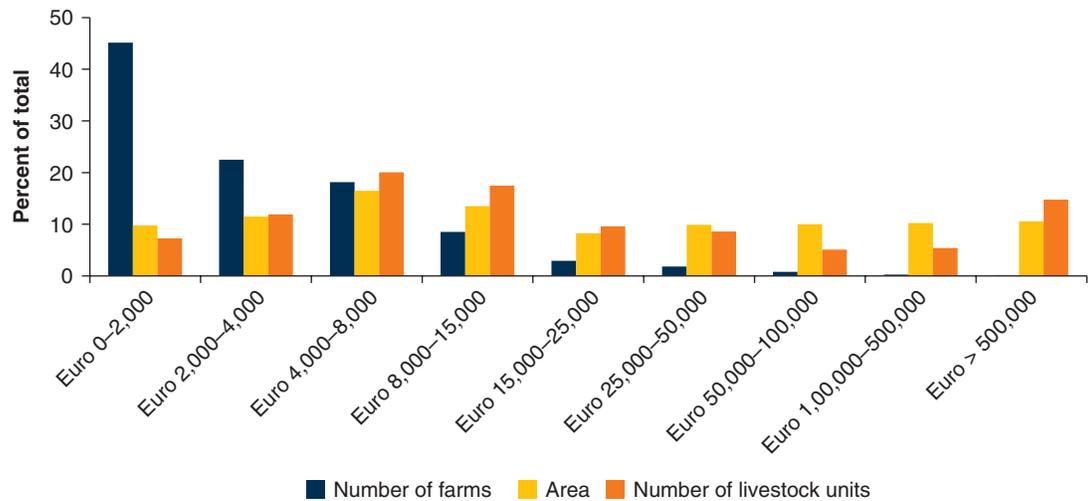
Further analysis by Economic Size Unit (ESU) shows that the smallest size category (EUR0–2,000) accounts for only 7% of total livestock (figure 3.8), unlike the results in figure 3.7 above. This is a more accurate depiction of the characteristics of very small farms however, as it excludes intensive livestock production systems that use little land but generate high incomes.

FIGURE 3.7 Serbia—Farm Size, Resource Use, and Sector Output (2012)



Sources: Agricultural Census 2012; World Bank calculations.

FIGURE 3.8 Serbia—Economic Farm Size versus Land and Livestock Use (2012)



Sources: Agricultural Census 2012; World Bank calculations.

As for figure 3.8, small to medium sized farms (EUR2,000–15,000) account for a large share of land and livestock ownership with 41% and 49% of the total, respectively. This component of the distribution also corresponds to the mixed income category of farms observed in figure 3.6. Larger farms, above EUR15,000, account for 49% of land use and 44% of livestock ownership. Data on the relationship between farm size and sector output were not available by ESU. The underlying pattern of results for the contribution to sector output by farm size is probably similar to that in figure 3.7, however, as average SO/ha is close to EUR1,000/ha for most farm size groups above 2 ha or EUR2,000.

Regional Differences

Strong regional differences are apparent between Vojvodina and Central Serbia. Farm structure is skewed towards small AHs (less than 2 ha or EUR2,000) in both regions, although they do not dominate resource use or sector output. The characteristics of farms greater than 2 ha or EUR2,000 differ markedly, however, as discussed below.

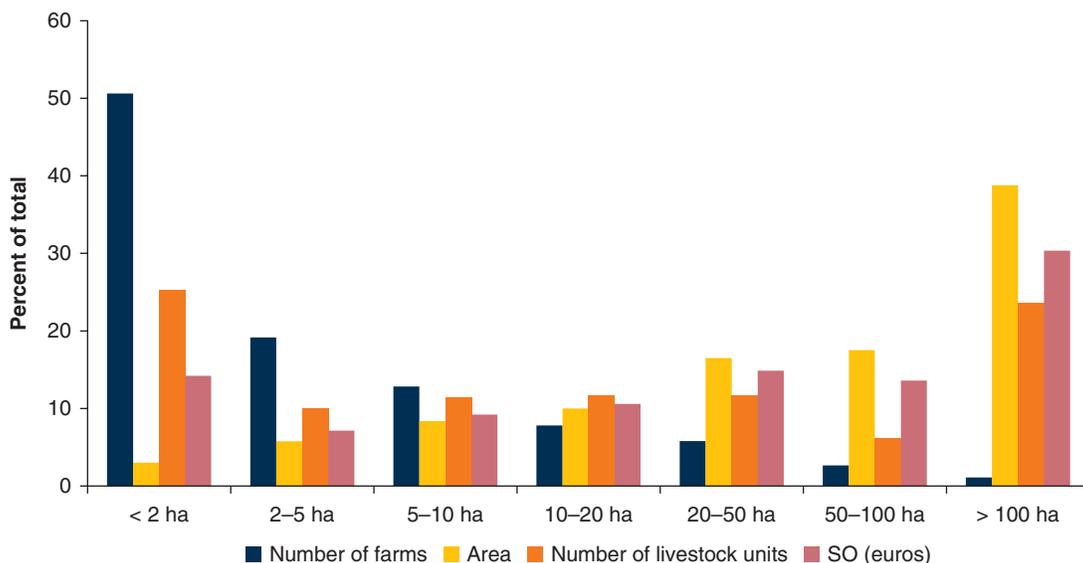
For AHs of more than 2 ha or EUR2,000 in Vojvodina, medium to large farms dominate land use, livestock ownership and sector output. Measured in terms of land area, small to medium size farms of 2–20 ha account for 24% of land use, 33% of livestock and 28% of sector output (figure 3.9). Larger farms (> 20 ha) account for 74% of land use, 42% of livestock and 59% of sector output.

The dominant influence of medium to large farms in Vojvodina is even more apparent when farm size is measured in ESU (figure 3.10). Small to medium sized, mixed income holdings (SO EUR2,000–15,000), account for only 20% of land use and 25% of livestock. Farms with an SO of EUR15,000–100,000 account for 42% of land use and 30% of livestock. The largest farms (SO > EUR100,000) account for 35% of land use and 40% of livestock.

The predominance of small to medium-sized farms in Central Serbia is highly apparent, whether farm size is measured in area or economic terms. Small to medium-size, mixed income farms of 2–20 ha account for 70% of land use, 72% of livestock and 70% of sector output (figure 3.11). Larger farms (> 20 ha) account for only 18% of land use, 9% of livestock and 10% of sector output.

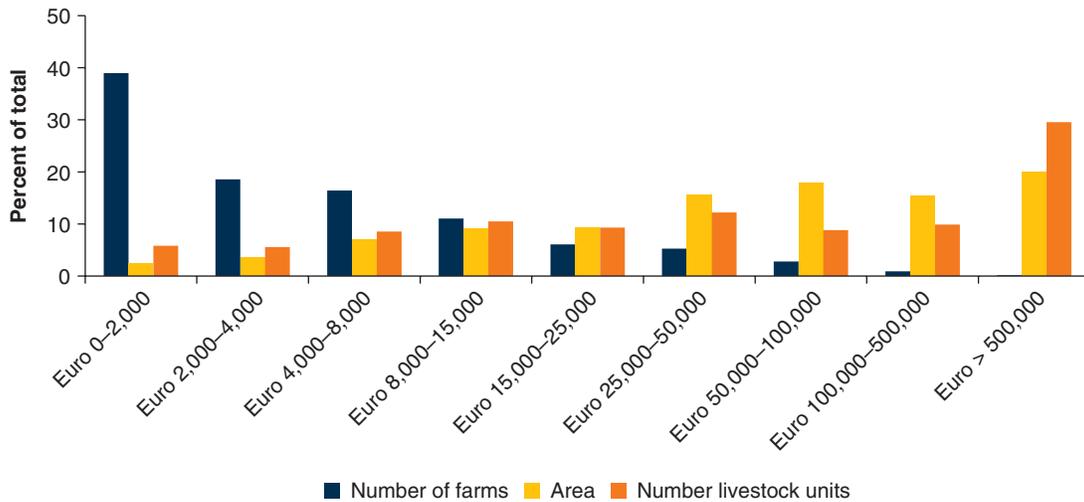
Measured in terms of economic size, small to medium size farms with an SO of EUR2,000–15,000 account for 62% of land use and 65% of livestock

FIGURE 3.9 Vojvodina—Farm Size, Resource Use, and Sector Output (2012)



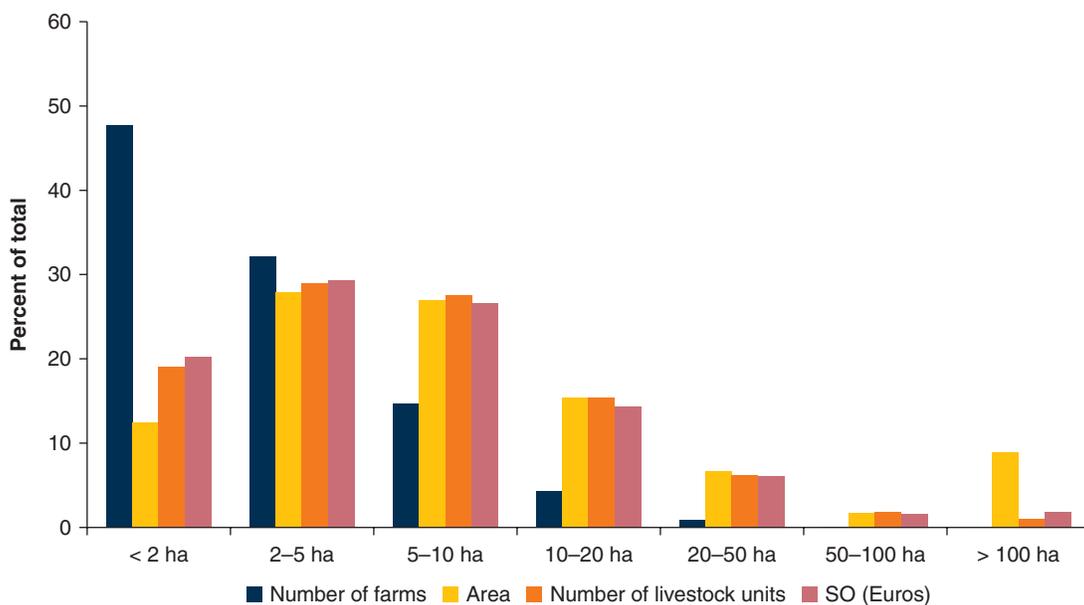
Sources: Agricultural Census 2012; World Bank calculations.

FIGURE 3.10 Vojvodina—Economic Farm Size versus Land and Livestock Use (2012)



Sources: Agricultural Census 2012; World Bank calculations.

FIGURE 3.11 Central Serbia—Farm Size, Resource Use, and Sector Output (2012)



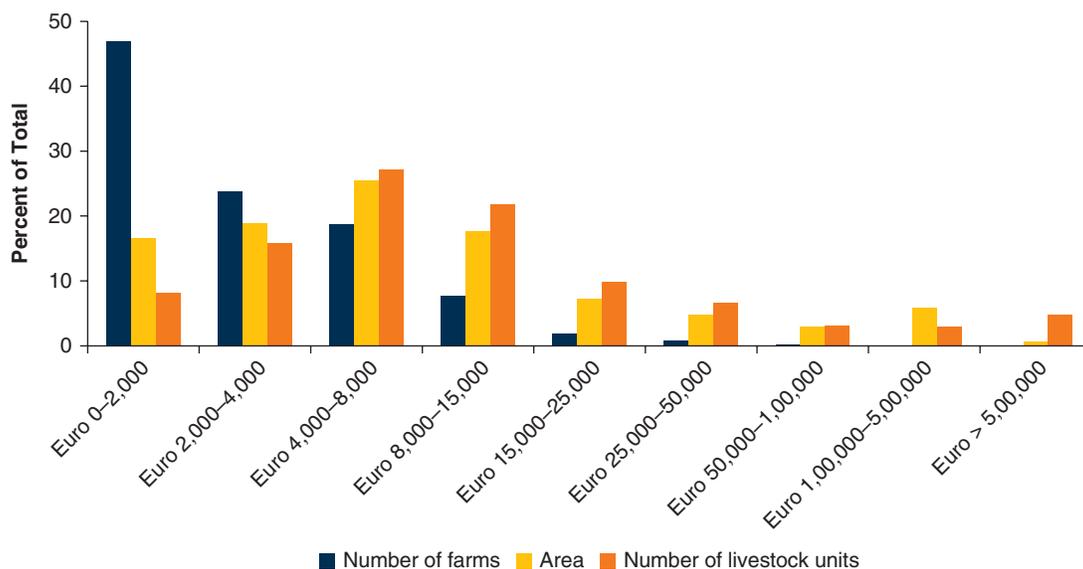
Sources: Agricultural Census 2012; World Bank calculations.

(figure 3.12). Larger farms (SO > EUR15,000) account for only 22% of land use and 28% of livestock.

Targeting Agricultural Support

As with all production sectors of the economy, government has a responsibility to formulate public policies for agriculture that encourage investment, enhance the sector’s ability to compete on international markets and promote

FIGURE 3.12 Central Serbia—Economic Farm Size versus Land and Livestock Use (2012)



Sources: Agricultural Census 2012; World Bank calculations.

sustainable growth. As a result, public policy seeks appropriate balance between public support for essential public services such as research and extension, regulatory activity and direct support (subsidies), and measures to promote private sector investment. For agriculture a clear distinction is also needed between the role of agricultural policy and the role of broader economic and social policies for rural households not dependent on agriculture or those below the poverty line. This distinction is critical in Serbia where a high proportion of rural households rely on non-farm income for their livelihoods. Employment, health, education and social assistance policies should be the focus of measures to improve the livelihoods of these rural households and protect against rural poverty.

Analysis of rural households and the relationship between farm size and farm income informs these policy decisions in the following ways. First, it helps to discern a threshold for distinguishing between rural households likely to benefit from agricultural policy and agriculture budget support, and those with a limited involvement in agriculture. This threshold should be set at either 2 ha of Utilized Agricultural Area (land owned and/or rented in) or at a SO above EUR2,000. Farms below this threshold would fall outside the remit of agricultural policy, unless they leased or bought enough land to reach the threshold. Although low, this threshold ensures that the many small farms that form an important part of agriculture in Central Serbia would be eligible for agricultural budget support. Of the 631,552 AHs recorded in the Agricultural Census, some 323,000 holdings farm at least 2 ha and 341,000 have a SO of EUR2,000 or more.

A better understanding of farm structure also informs debate on which elements of Serbia's agriculture sector above the threshold should receive

TABLE 3.4 A Simple Taxonomy of Farm Structure

Category	Farm size	Characteristics ^a	Comments
Non-agricultural holdings	< 2 ha < EUR2,000	280,000–308,000 farms < 10% of land and livestock 15% sector output	Most household income from non-farm earnings
Mixed income holdings	2–10 ha EUR2,000–8,000	252,500–271,500 farms 30% of land, 40% livestock 35% sector output	Rely on a mix of farm and non-farm income, especially farms of 2–5 ha
Medium-sized agricultural holdings	10–20 ha EUR8,000–15,000	32,300–52,700 farms 15% land and livestock 15% sector output	Adequate livelihood from farm but may also have non-farm income
Commercial farms	> 20 ha > EUR15,000	19,274–35,800 farms 45% land, 35% livestock 35% sector output	Agriculture is major source of income and major determinant of decisions on investment

Sources: Agricultural Census 2012; World Bank calculations.

a. Number varies according to the measure of farm size used (area or standardized output).

priority for policy formulation and budget support. The preceding analysis suggests the following simple taxonomy of AHs as the basis for consideration of this issue—as described in table 3.4. While this taxonomy can and should be deepened to reflect the complexity of farm structure in Serbia, it provides an adequate point of departure for policy analysis.

Mixed income holdings account for approximately one third of land use, livestock and sector output. They are particularly important in Central Serbia where they account for 45–50% of land use, livestock and sector output. Although much smaller in number, medium-sized holdings account for a further 15% of land use, livestock and sector output. The larger, commercial farms account for approximately 45% of land, 30% of livestock and 35% of sector output. This taxonomy is consistent with the widely held view that small to medium-sized, mixed income farmers are the largest component of Serbian agriculture—in terms of farm numbers, land and livestock ownership and contribution to sector output.

The taxonomy also shows that there are strong grounds to extend the current narrow focus of agricultural policy on larger, commercial farms (> 20 ha) to include measures to strengthen medium sized farms (5–10 ha or EUR5,000–15,000). Sector growth is currently driven by the commercial farms that account for 45% of land, 35% of livestock and 35% of sector output; with a lesser contribution from the medium sized farms that account for similar levels of resource use and sector output. Provided they have the incentives and resources to expand, these medium sized farms offer considerable potential for growth. As discussed later in Part 5 this will require a greater emphasis on measures that encourage them to invest and increase output and farm size. And as not all mixed income farms will choose to increase their involvement in agriculture, future policy will need to encourage land rentals more actively in order to support farmers seeking to increase farm size. The current approach to area and animal payments will also need to be modified to facilitate change in farm structure.

Note

1. The Standard Output of an agricultural product is the average monetary value of the agricultural output per unit at farm gate prices. SO coefficients for each product are calculated as average values over a reference period to reduce the impact of price fluctuations.

Chapter 4

Competitiveness and Trade

Serbia began a new era of trade relationships when it signed the Interim Agreement on trade and trade related issues with the European Union (EU) on February 1st, 2009. This agreement, which initiated the progressive removal of tariff-based trade barriers between the two partners, was completed on September 1st, 2013. Trade with the EU is now completely open, substantially increasing both the opportunities for Serbian agricultural exports and the competition on Serbia's domestic market from EU agricultural imports. The sector's ability to compete under this new trade regime is reviewed in this chapter, together with an analysis of regional agricultural trade.

The Competitiveness and Performance of Agricultural Industries

The capacity of agricultural enterprises to respond to the challenge of new market opportunities and new sources of competition depends on the competitiveness of their products in export markets and their performance as commercial entities. A recent study of Serbia's real sector by the Center for Advanced Economic Studies (CEVES) analyses these two parameters for all sectors—agriculture included (CEVES 2014). Both parameters are viewed as essential for growth. While an enterprise needs an inherently competitive product to sell, sales are driven by viable enterprises with the ability to innovate and respond to changing market conditions.

The study defines export competitiveness as the ability of an industry to produce and export a commodity, relative to other competitors, and to improve its position in foreign markets. It is measured using four indicators: the volume and growth of exports, which capture the extent of exports; and the diversification and complexity of exports, which capture the quality of exports. Industry performance was defined as the extent to which the firms within an industry are capable of achieving sustainable, dynamic growth. At firm level, this reflects the capacity to operate efficiently, expand, add value for owners and increase the welfare of stakeholders—particularly employees. At industry level it reflects the structure of the industry, including the degree of concentration and the proportion of firms that are successful. Higher levels of performance are associated with lower levels of concentration and a high proportion of successful firms. Strong growth can also be achieved in a highly concentrated industry, but is less sustainable in that the failure of a small number of leading firms can prejudice the whole industry.

Analysis of export competitiveness for the period 2009–13 elicited the following critical conclusions for agriculture:

- Agriculture and agri-business exhibit the highest revealed comparative advantage among Serbia’s industries.
- But most agriculture and agri-business industries were unable to maintain their export position in foreign markets.

The analysis of industrial performance provides further insight and helps to clarify the preceding results. Of the 35 top-ranked industries in terms of performance, only four were from agriculture or agri-business (processing of fruits and vegetables; sugar, confectionary, etc.; prepared meals and animal feed; dairy products). But only one-third of the firms in these four industries were successful during the period of analysis, and these firms accounted for a high proportion of total industry revenues. The remaining firms were not successful.

These results show that while the export competitiveness of numerous agricultural commodities is inherently high, the industry performance of the firms producing and selling agricultural commodities is in most cases very low. Table 4.1 shows the combined influence of these two parameters on the main agricultural industries.

The combination of high export competitiveness and high industry performance for perennial crops is consistent with the strong export performance of these commodities. For oilseed crops the analysis shows the potential problem created by reliance on an industry dominated by a small number of large firms, rather than a broader, industry-wide base of viable enterprises. Further insight comes from the classification of traditional non-perennial exports (e.g., cereals, oilseeds) and sugar and confectionary as high performance-low competitiveness industries. These are low value

TABLE 4.1 Performance-Competition Matrix for Agriculture Industries in Serbia

		Industry performance	
		High	Low
<i>Export competitiveness</i>			
High	– Perennial crops (fruits, berries, grapes) – Prepared meals, animal feed – Beverages		– Vegetable and animal oils
Low	– Non-perennial crops (raw commodities— cereals, oilseeds, vegetables) – Dairy products – Processing of fruits and vegetables – Sugar and confectionary – Bakery products – Grain mill products		– Live animal production – Processing of meat and fish – Forestry and logging – Tobacco processing – Fresh fishing

Source: Adapted from CEVES (2014).

commodities being sold in very competitive export markets, which may be losing their competitive edge.

The analysis also provides useful insight into the capacity of agricultural industries to compete with imports. Many of the firms in the agricultural industries in the high performance-low competitiveness cluster have traditionally relied on a dominant position in a protected domestic market to survive. This is particularly true for dairy processing and fruit and vegetable processing, which have also been helped by continued access to their traditional markets in the former Yugoslavia. Their long-term sustainability is now in doubt, however, as they no longer operate in a protected domestic market. With the opening of trade with the EU they now face competition from more advanced firms in other EU countries.

The next section discusses the implications of this analysis for agricultural exports and imports with Serbia's main trading partners.

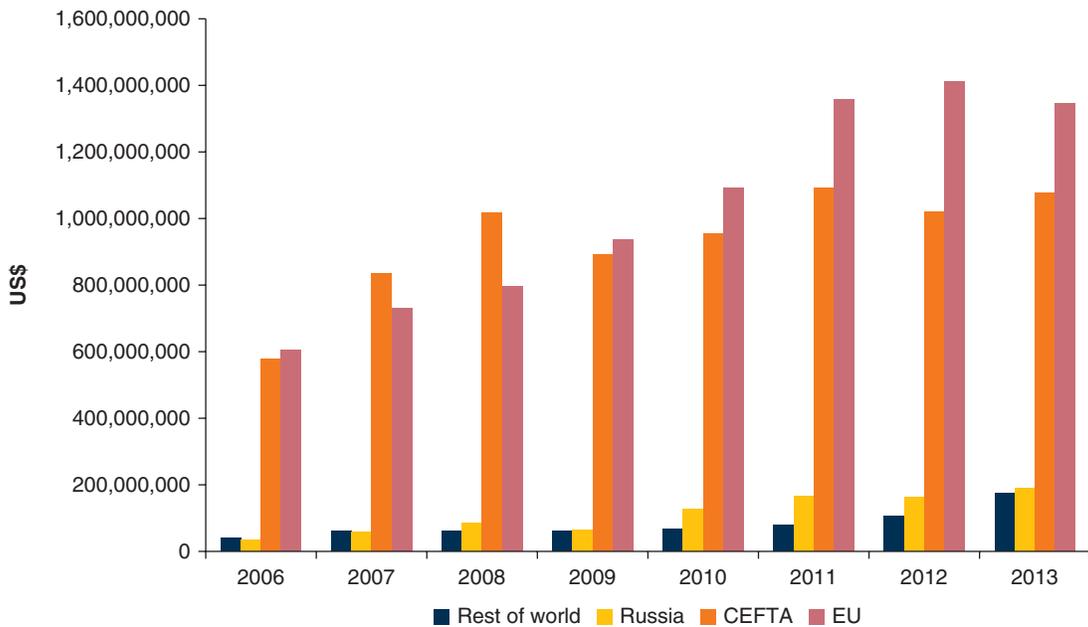
Changing Patterns of Agricultural Exports

Europe is the major destination of Serbia's agricultural exports, with 85–90% of the total. The EU is the major trading partner, with 48% of agricultural exports in 2013, followed by Serbia's traditional trading partners in the Central European Free Trade Agreement countries¹ (CEFTA), which account for 39%. These countries are the major buyers of cereals, edible fruits (berry fruits) and vegetable oils (sunflower oil); with Romania, Germany and Italy as Serbia's main export destinations in the EU; and Bosnia and Herzegovina and Montenegro as the main export destinations in the CEFTA region.

Figure 4.1 shows that Serbia has increased its agricultural exports to the EU in response to more open trade, although this expansion halted in 2011 due to the economic downturn in Europe. The EU has become Serbia's main export destination, nevertheless. Croatia's accession to the EU in July 2013 (and consequent departure from CEFTA) will result in a further re-balancing of trade towards the EU in the future. Future exports to the main CEFTA trading partners (Bosnia and Herzegovina and Montenegro) will probably remain fairly stable as neither country is likely to significantly reduce their structural deficit in agricultural commodities. The ability to expand agricultural exports will thus depend heavily on Serbia's capacity to broaden its export base in the EU, with a shift from the current reliance on a small group of unprocessed or semi-processed commodities to a wider range of higher value added, processed commodities.

A significant increase in the value of agricultural exports to the Russian Federation (by 440% from 2006 to 2013), is the only indication of any diversification of Serbia's export base, beyond the EU and CEFTA trade blocs. Most of this increase occurred from 2009 to 2011, followed by a stabilization of export values from 2012 to 2013. Currently, these exports are dominated by edible fruit (berries), but also include limited volumes of dairy products,

FIGURE 4.1 Serbia's Agricultural Exports by Main Trade Partners (2006–12)



Source: UN Comtrade.

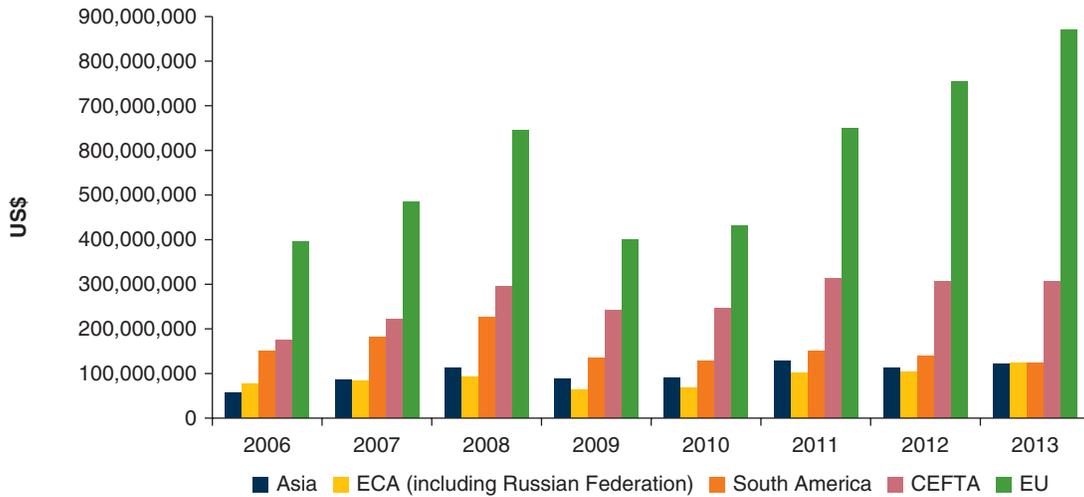
fresh and processed vegetables, beverages, cereals and edible preparations. The extent to which agricultural exports to Russia can be increased further, has been complicated by Russia's relations with the EU and its deepening economic recession.

The Growth of EU Agricultural Imports

The EU and CEFTA countries are also the major sources of agricultural imports to Serbia, with 54% and 19% of the total in 2013, respectively. Free trade with the EU has had a much bigger impact on agricultural imports than exports, however, with imports more than doubling since 2009 (figure 4.2). In contrast, agricultural imports from the CEFTA countries have increased little since 2009.

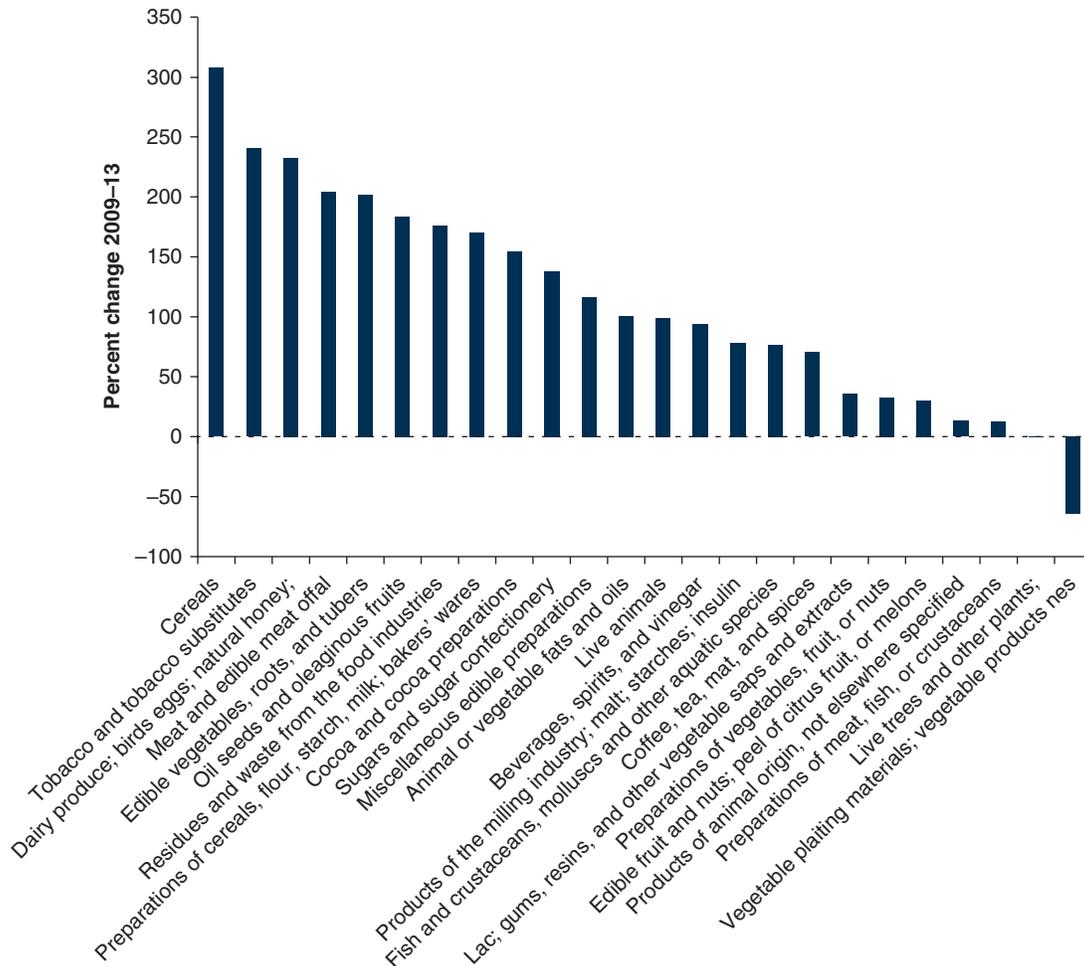
Commodity-wise, the increase in imports from the EU since 2009 has been broad-based (figure 4.3). Processed agricultural goods have driven this increase, however, increasing the competition faced by Serbian agro-processors. As suggested by the CEVES analysis of industry competitiveness and performance (table 4.1), weaker industries such as dairy and meat processing have faced some of the highest increases in imports, together with the imports of non-perennial crops (cereals, vegetables) and bakery products. Open trade with the EU has thus exposed these industries to much higher levels of competition, compromising their medium-term viability.

FIGURE 4.2 Serbia's Agricultural Imports by Main Trade Partners (2006–13)



Source: UN Comtrade.

FIGURE 4.3 Percent Increase in Imports from the EU (2009–13)



Source: UN Comtrade.

Note

1. Current members: Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Moldova, Montenegro, Kosovo, Serbia. The membership of Bulgaria, Romania and Croatia ended when they joined the EU.

Chapter 5

The Effectiveness of Budget Support for Agriculture

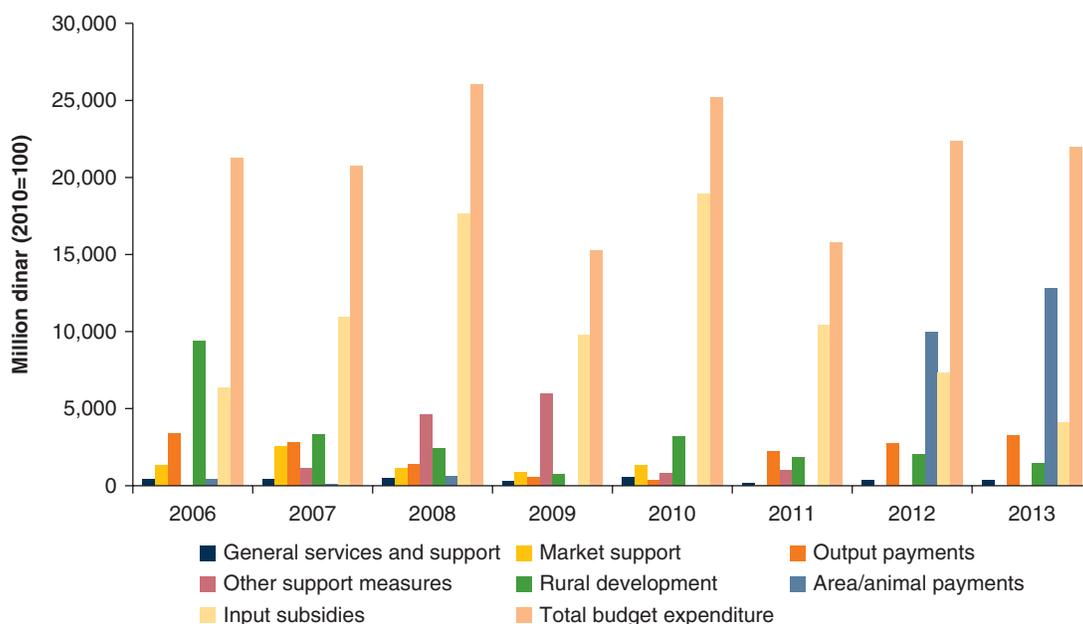
Budget support for agriculture was 4–5% of total public expenditure for the period 2004–08, but has since fallen slightly to around 4% of total expenditure. Much is made of how low this level of support is relative to neighboring countries, but at approximately 15% of agricultural gross domestic product it is reasonable for a middle-income country. Given the questionable impact of past and current budget support, the real challenge is to ensure that this resource is used effectively. This chapter discusses the factors that reduce the effectiveness of budget expenditure on agriculture, including: (a) the year-to-year volatility of program expenditure; (b) the allocation of resources between programs; and (c) the allocation of resources between commodities, farm types and regions. It also considers the impact of current budget support programs on underlying constraints such as farm structure, and the extent to which alignment with the European Union's Common Agricultural Policy (CAP) should be viewed as a goal for the design of budget support.

The Instability of Budget Support

The instability of budget support for agriculture, and the disincentives this creates for long-term planning and investment in farms and agro-processing are major concerns. This volatility is partly the result of year-to-year changes in the overall level of budget support, particularly in 2009 when the budget allocation was cut by 50%, as shown in figure 5.1.¹ Continual changes to the form of government support and consequent changes to the level of expenditure on different support programs are further, major sources of instability. Even within programs, the eligibility criteria and level of support can change more than once in a single season. Frequent changes of government explain part of this volatility, but the real problem is a lack of clarity on the most appropriate policy framework for the sector.

The characteristics of the main support programs are summarized in box 5.1. Most of the agricultural budget is allocated to direct support for producers, rising from 48% in 2006 to 92% in 2013. Until 2011, most direct payments to producers were in the form of input subsidies for diesel fuel and fertilizer, with the balance as price subsidies for cereals and oilseeds. Payments for input subsidies were then scaled down in 2012, following the re-introduction of area and animal payments. During 2013–14, the area and animal payments accounted for 60% of all direct payments, input subsidies for 20% and producer subsidies for 15%. The budget allocation for general services and support is only 1–2% of expenditure, which severely limits the capacity to provide essential public services such as extension,

FIGURE 5.1 Budget Expenditure on Agriculture (2006–13, real prices)



Source: Ministry of Agriculture and Environmental Protection.

BOX 5.1 The Main Budget Support Programs for Agriculture

- *Market Support* includes export refunds, intervention buying and the costs of holding public reserves. In most years these measures accounted for less than 5% of total expenditure, and were phased out in 2011.
- *Input Subsidies* are paid mainly for diesel fuel and mineral fertilizer, with the inclusion of breeding animals in 2011. Interest subsidies on short-term loans were also paid until 2008.
- *Price Subsidies or Output Payments* have mostly been used to support milk production. Wheat, sunflower and soybean prices were subsidized from 2004 to 2006 and tobacco subsidies were paid until 2010.
- *Area and Animal Payments* were first made from 2004 to 2008, and then re-introduced in 2012. The recent payments support crop production (except vegetables and fodder crops) and dairy cattle.
- *Rural Development* measures emphasize support for investment by rural households in the renovation and construction of buildings, purchase of equipment and machinery and the renovation and planting of perennial crops. Priority is given to people in mountain areas, and younger farmers (under 40 years old). Programs to diversify rural incomes, support farm enlargement and land consolidation were tried, but abandoned. Support for environmental protection is minimal and limited to the preservation of genetic resources and the development of organic farming.

research, animal breeding, plant and animal health, soil fertility control and border control.

The increasing emphasis on direct payments to farmers has resulted in a sharp fall in support for rural development, from 6.8 billion dinars in 2006 (44% of expenditure) to 1.9 billion dinars in 2013 (7% of expenditure).

Producer subsidies (including area, output and animal payments and input subsidies) are now the priority, rather than measures to promote investment by farmers and agro-processors, and programs to support farm restructuring. Some additional support for rural development comes from the Vojvodina regional government and local municipalities. Of the Vojvodina government's agricultural budget of 7.15 billion dinars for 2015, 680 million dinars is allocated for investment and rural development—up from 203 million dinars in 2013. For the period 2013–14 some 1,700 Vojvodina farms were provided with grants, low interest loans and loan guarantees to support investment in greenhouses, hail nets, irrigation, animal production and household agro-processing. A further program provides annual payments of 8,000–11,000 dinars/ha to farmers older than 65 years as an incentive to lease their land to younger farmers. Local municipalities also finance a range of rural development activities, funded by grants from government ministries. Some 64 municipalities requested funds of 1.5 billion dinars for rural development in 2013. Total public expenditure on rural development for 2013 (all sources combined) thus amounted to 3.6 billion dinars. This is still low relative to total public expenditure on agriculture however, and the needs for rural development.

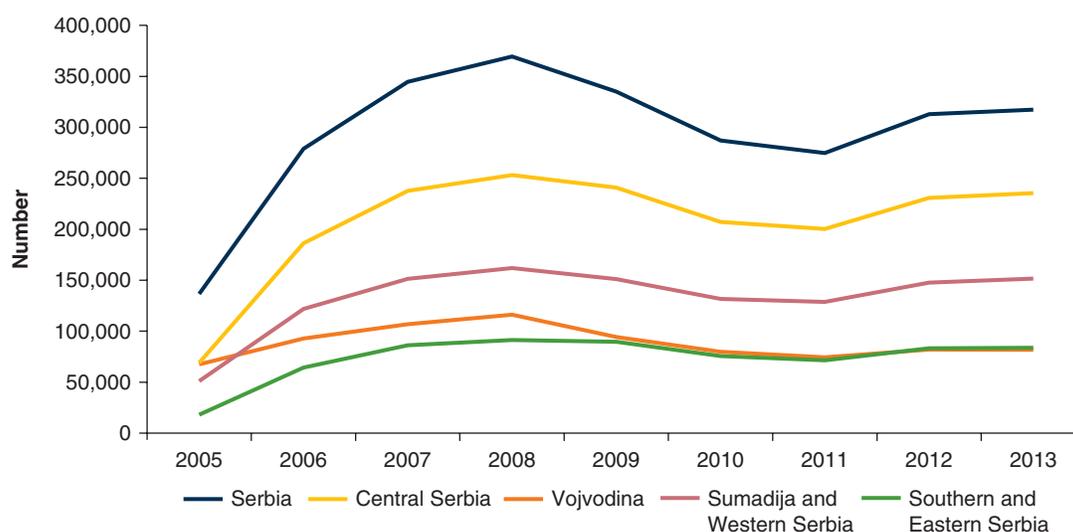
Access to the Ministry of Agriculture's support programs is also problematic. The eligibility requirements for registration with the Farm Payment Agency (FPA) have been changed several times and the institutional base for registration and payments still lacks the capacity to cater for hundreds of thousands of small farmers. Eligibility was further limited in 2009 by restricting access to rural households with fully paid contributions to the Farmers Pension Fund. As rural people use other retirement insurance schemes, this requirement excluded many potentially suitable beneficiaries. Further, recently introduced restrictions include a provision for reduced support levels for older farmers (over 65 years old).

The Beneficiaries of Budget Support

The number of beneficiaries of budget support is indicated by the number of active farmers registered with the FPA. Trends since 2005 follow trends in the overall level of budget support, rising until 2008 then falling after the budget cuts in 2009 and recovering slightly since 2011 (figure 5.2). Central Serbia has the highest number of beneficiaries, consistent with the high number of farmers in Sumadija and Western Serbia. Vojvodina and Southern and Eastern Serbia have a similar, but much lower number of farmer beneficiaries. Note also that the number of beneficiaries in 2013 (317,200) corresponds closely to the number of agricultural holdings above the 2 ha/EUR2,000 threshold posited as the target group for agricultural support earlier in Part 3 of this report. This co-relation also holds at regional level, further confirming the suitability of this threshold.

Vojvodina farmers receive the largest allocation of budget support, despite the lower number of active farmers, due to the larger average size of farms

FIGURE 5.2 Number of Active Farmers—Farm Payment Agency (2005–13)



Source: Farm Payment Agency.

TABLE 5.1 Regional Allocation of Budget Support for Crops, Fuel, and Insurance (2013)

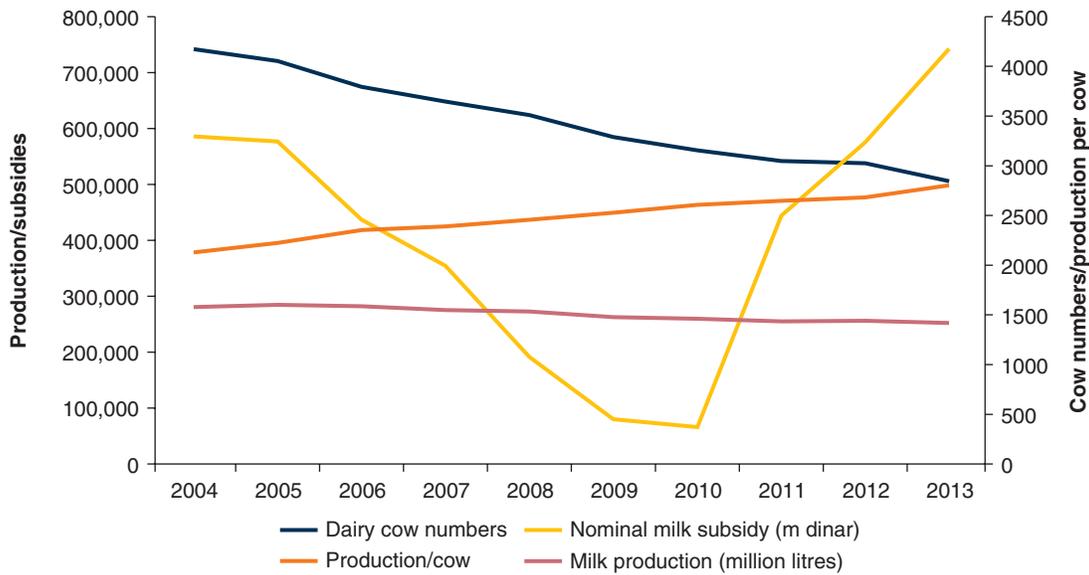
	Expenditure ('000 dinars)	Percent of total	Number active farmers	Average payment/ active farmer (dinars)
Vojvodina	10,220,218.4	59.4	81,847	124,870
Central Serbia	6,383,288.3	37.1	235,353	27,122
Sumadija and Western Serbia	4,069,764.7	23.7	151,569	26,851
Southern and Eastern Serbia	1,463,739.1	8.5	83,874	17,452
Other areas	587,997.1	3.4	n/a	n/a
Total	17,191,503.7	100.0	317,200	54,198

Sources: Ministry of Finance; Farm Payment Agency; World Bank calculations.

in this region. Analysis of FPA payments for 2013 for crop production, fuel subsidies and crop and animal insurance shows that 60% of these payments went to Vojvodina, 24% to Sumadija and Western Serbia and 9% to farmers in Southern and Eastern Serbia (table 5.1). These payments accounted for two-thirds of the total budget support for agriculture for 2013. Note also the high average payments per active farm in Vojvodina and the low average payments per active farm in Southern and Eastern Serbia. There were no equivalent data available for livestock payments, but the regional allocation is likely to be similar to that for crops, as discussed below.

At commodity level, cereal and industrial crops and dairy production are the major beneficiaries of budget support. The benefits of input subsidies, the main vehicle for crop support, typically accrue to the major crops. Maize and wheat account for approximately 40% of total cropped area and industrial crops (oilseeds and sugar beet) for a further 10%. This support has coincided

FIGURE 5.3 Trends in Milk Subsidies and Dairy Production (2004–13)



Sources: Ministry of Agriculture; Republic of Serbia Statistical Office.

with growing output and exports of these crops from Vojvodina, which has received the highest proportion of direct payments for crop production.

Very different trends are evident in the dairy sector where milk price subsidies have had no apparent impact on performance (figure 5.3). Neither increasing nor decreasing levels of subsidization have altered underlying trends in cow numbers, milk production or production/cow. The dairy sector has undergone a steady transformation nevertheless, with a marked decline in cow numbers in more marginal areas (particularly in Central Serbia, as shown in table 2.2), an associated increase in average herd size and productivity and substantial recent investment in dairy processing. But private sector investment rather than subsidization has driven this transformation.

In all cases farm structure has conditioned the impact of budget support on production and performance. Vojvodina is in a better position to respond to support for crop production because a much greater proportion of its total area is in the larger farms (> 20 ha) able to benefit from strong demand for Serbia's cereal and oilseed crops. The minimal response to milk subsidies reflects the constraints associated with farm structure. Dairy production is inhibited by the limited capacity or incentives of dairy farmers with less than 10 cows, who account for 87% of dairy farms and 60% of dairy cows, to increase cow numbers in order to reach the production threshold required for milk subsidies.² Although it has a relatively small proportion of total dairy cows, Vojvodina is in the best position to benefit from milk subsidies as it has the highest proportion of larger herds (20 cows or more).

There are no comparable regional data for 2013 budget expenditure on rural development, other than the 203 million dinars spent by the regional government of Vojvodina.

Reforming and Strengthening Budget Support

There is considerable scope to improve the effectiveness of budget support for agriculture. This should begin by extending the policy focus to cover the medium-sized farmers that dominate Serbian agriculture, in order to broaden and deepen the basis for sector growth. A clearer focus would also help to stabilize the often erratic nature of agricultural policy, which is due in part to a lack of clarity on sector priorities. A re-balancing of sector support is also required, with more resources allocated to support for rural development and less to direct budget support. This re-balancing would strengthen government's capacity to respond to the needs of medium-sized farmers for support for investment and to increase farm size.

Policy also needs to focus more directly on measures that facilitate increased farm size. The differing patterns of response to subsidies, by region and by commodity, show that direct subsidies have limited impact on production where farm structure is not conducive to investment. This is particularly apparent for the milk subsidy. Several critical changes are required to the framework for budget support in this context. As a first step, government should recognize the key role that land leasing plays in increasing farm size, by allowing farmers to access budget support for land leased from the state.

Area and Animal Payments

Area and animal headage payments reduce the incentive to raise production as they provide support to farmers' irrespective of their level of output. This is especially true for mixed income farmers. As farm earnings are unlikely to be a major source of household income for these holdings, they are likely to view government support as an income supplement rather than a resource to raise investment and productivity. Area and animal payments thus preserve farm structures dominated by smaller farms, when policy should aim to change this structure by increasing farm size.

IPARD 2014–20

The resources available for government support to agriculture will be boosted substantially by the access to EU Instrument for Pre-Accession Assistance in Rural Development (IPARD) funds (box 5.2). Of the approximately EUR230 million (including national co-financing) foreseen for the period 2014–20, most (around EUR184 million) will be allocated for investment in commercial farming and agro-processing to improve competitiveness. This will be supplemented by smaller programs to support rural development and sustainable land management.

To obtain the full benefit of EU support, it should be linked to the broader focus on medium-size farms and the reforms of budget support described previously. In the absence of these changes to current policy, the investment will benefit a narrow base of commodities and farmers and the sector will remain dependent on this narrow base for sector growth. The current regional and commodity disparities in sector performance will also remain, and

BOX 5.2 IPARD 2014–20

Serbia is currently finalizing the agreement with the EU on the IPARD program for the period 2014–20. IPARD is an EU financial mechanism that supports the preparation of a candidate country's agriculture sector for EU membership. In the case of Serbia, the program will focus on the following objectives:

- Support the competitiveness of the agri-food sector, alignment with EU veterinary, phytosanitary, food safety and environmental standards as well as its restructuring and modernization;
- Contribute to the development of sustainable land management practices by supporting organic farming and other agro-environmental practices;
- Contribute to sustainable rural development by supporting diversification of economic activities and strengthening LEADER approach;
- Support efficient program implementation, monitoring, evaluation and publicity under the Technical assistance measure.

The EU will provide an estimated EUR175 million for the entire 2014–20 period, while Serbia's government will add a further EUR55 million (not included in the table below). The table below shows the provisional allocation of EU provided funds among the major program activities.

The program is expected to begin in 2016.

Activity	EU allocation ('000 euros)	Percent of total
Investment in physical assets of agricultural holdings	76,040	43.5
Investment in physical assets for processing and marketing agriculture and fishery products	62,210	35.5
Measures to support organic farming and agro-environment practices	8,750	5.0
Local development strategies (LEADER approach)	5,250	3.0
Farm diversification and business development	17,500	10.0
Technical assistance	5,250	3.0
Total	175,000	100.0

Source: Ministry of Agriculture and Environmental Protection.

low-performing components of agriculture will become an increasing drag on sector and economy wide growth. Used boldly, in conjunction with sector reform, IPARD offers a powerful means to counterbalance and facilitate some of the controversial policy changes these reforms would entail.

Aligning Budget Support with the Common Agricultural Policy

Serbia began aligning its agricultural support policies with the CAP in 2011 with the introduction of area and animal payments and an associated reduction of input subsidies. As discussed previously, area and animal payments are

now the largest component of agricultural support, followed by input subsidies for fuel and producer subsidies for milk sold to dairy processors. Although easier to administer and to budget for than input and output subsidies, they are an impediment to farm restructuring.

Serbia is not obliged to align its agricultural support policies with the CAP prior to EU accession. And even after accession, member countries have considerable discretion as to the composition of CAP support measures employed and the balance between CAP and national budget support (provided there is no double counting). The support measures used prior to accession should be those that prepare Serbian agriculture to compete in an EU wide market. Priority should thus be accorded to policies that: promote investment, facilitate changes in farm structure and build the institutional structure required by the EU for delivering CAP support programs. The current emphasis on area and animal payments, commodity (milk) subsidies and input (fuel) subsidies preserves current farm structure and reduces the budgetary funds available for investment. By limiting the budget allocation for rural development it also inhibits development of the institutional framework needed to deliver rural development programs, thus restricting access to an increasingly important source of pre- and post-accession support for agriculture.

Notes

1. Excludes additional budget support for Vojvodina from the regional government of Vojvodina.
2. As dairy farmers need at least 5 milking cows to meet the eligibility requirements for milk subsidies (3,000 liters of milk per quarter sold to a commercial dairy processor), a herd of at least 8–10 cows is required.

Chapter 6

Conclusions and Policy Implications

The paradox of Serbia's agriculture sector—stagnant sector growth despite a substantial increase in agricultural exports—reflects both the opportunities and constraints the sector faces as it prepares for European Union (EU) accession. Analysis shows that the export growth is narrowly based, despite Serbia's diverse agricultural resource base and the potential to produce and export a wide range of crop and livestock products. Cereals, vegetable oils, and edible fruit products have led the boom in agricultural exports, showing clearly that Serbia has the ability to compete on European and international markets for these commodities. But most of the benefits from this export boom have probably gone to a limited number of large-scale cereal and oilseed farmers in Vojvodina and to commercial fruit and berry producers in Sumadija and Western Serbia. Livestock production, which accounts for approximately 40% of total sector output, has contracted during the same period and imports of livestock products have increased. The substantial contraction of livestock output has offset the growth of crop production and exports, resulting in zero growth for the sector in aggregate.

The challenge for agriculture is to broaden the basis for sector growth, to include more farmers, more land and more commodities. Wide regional differences in the potential for agriculture and the predominance of small-scale farmers emerge as key determinants of the narrow current base for growth and the disparate trends in sector performance. Vojvodina has experienced strong agricultural sector growth as it has the best agro-climatic conditions for crop production and the highest proportion of larger farms. The 18% of farmers with more than 10 ha of land account for more than 80% of Utilized Agricultural Area (UAA), facilitating a more broad-based impact from the growth of crop exports.

Conditions are also favorable for mixed crop, fruit and livestock production in much of Sumadija and Western Serbia, but small farms predominate and own most of the agricultural land. The 6% of farmers with more than 10 ha account for only 30% of UAA. Livestock is also more important in this region, with 48% of total output. Yet most herds are very small, with 73% of livestock farmers owning less than 10 livestock units (LUs). Fruit export growth benefitted a small proportion of farmers in this region and the limited benefits of this growth were swamped by a much larger contraction of livestock output.

Southern and Eastern Serbia is doubly constrained, with less favorable conditions for agriculture in addition to a predominance of small farms. Fewer than 5% of farmers own more than 10 ha and their land accounts for only 35% of UAA. Livestock production is small-scale, with 75% of livestock farmers owning less than 10 LUs. Rural households in this region also appear to be

more subsistence oriented, with agricultural sales accounting for less than 5% of total household income. The agriculture sector contracted most in Southern and Eastern Serbia, driven by a 33% fall in livestock gross agricultural output during the period 2003–13.

Current agricultural policy is not conducive to broad-based sector growth. Indeed, through its disproportionate support for cereal and industrial crop production, particularly in Vojvodina, it may have exacerbated the disparate regional and sub-sector trends in performance. Vojvodina received the bulk of budget support until 2010, mostly in the form of area payments and input subsidies for cereal and industrial crops. Area payments also freeze farm structure and provide little incentive to increase farm output. The other major area of support, price subsidies for milk production, has failed to stem a prolonged decline in cattle numbers and milk production. Leased land is also ineligible for budget support—further discouraging farm expansion.

With its favorable and highly diverse resource base the agriculture sector has the potential to achieve much stronger and more broadly based growth. A wider range of commodities should be competitive on European markets and more producers and agro-processors should be selling into these markets. The sector also benefits from Serbia's favorable location and well-developed links with western, central and Eastern Europe. Hence, in principle, the sector is well placed to benefit from the opportunities created by Serbia's increasing integration with the EU and other parts of Europe.

Three deep-seated constraints limit the sector's capacity to benefit from these opportunities, as summarized below:

- *A farm structure dominated by small to medium sized, mixed income farms.* A high proportion of Serbia's farms are too small to be competitive, either for direct sale into European markets or as a source of raw material for agro-processors. The dairy sector epitomizes this constraint. Non-farm activities also provide better income opportunities for many of these farms, limiting their incentive to modernize and expand.
- *A policy framework that does not adequately respond to the constraints imposed by farm structure.* The current emphasis on support for area and animal headage payments not only transfers most of the benefits of budget support to larger, commercial farmers, but also freezes the current farm structure by reducing the incentives of smaller farmers to modernize and increase farm size. This policy weakness is exacerbated by excluding leased land from budget support; and by reducing the allocation of budget support for rural development.
- *While the export competitiveness of many agricultural commodities is inherently high, the industry performance of the firms producing and selling these commodities is in many cases very low.* Some agricultural industries have been built on highly protected domestic markets, which are now fully open to competition. Others are dependent on the success of a small number of enterprises, rather than a broader, industry-wide base of successful firms. With EU trade now fully open, this low industry performance will become an increasing constraint to sector performance.

Implications for Future Agriculture Policy

Without a significant restructuring of agriculture, the benefits of EU integration for agriculture will remain narrowly based. Larger, commercial farms in areas well-suited to agriculture will benefit from expanded markets, but the smaller farms that currently dominate agriculture will struggle to compete. This will restrict not only the future incomes of these households, but also the land base for expanding viable, commercial production.

A significant policy shift is needed to address this issue, based on measures to increase support for medium-sized farms of 5–20 ha (or Standardized Output of EUR5,000–20,000). The aim should be to provide these farms with the incentive and the means to increase farm size, modernize production systems and contribute to competitive supply chains.

Restructuring also means that the contraction of output for some commodities and some areas will continue. A clearer distinction will thus be needed between the role of agricultural policy and the role of broader economic policies for employment, social services and social assistance. Agricultural policy should prioritize those agricultural holdings with a demonstrated interest in modernizing production systems and increasing farm size. Responsibility for the smaller, mixed income holdings unwilling or unable to engage in these activities should reside with the ministries responsible for employment, health, education and social assistance, and with local government. Their role will be to improve the opportunities for non-farm income, access to social services and the provision of social safety nets. Local government will also need increased access to resources for rural development if they are to respond to the needs of the rural households that lie outside the remit of agricultural policy.

Greater clarity and stability in agricultural policy is also essential for the development of agricultural processing. Both domestic and foreign investors will be more willing to commit to these industries if there is a longer-term view of sector priorities and greater assurance that the production base for the raw materials they need will be expanded and strengthened through farm restructuring. Policy signals of this nature will be far more critical in the future, as support for industry will no longer be driven by trade policy.

Appendix A

Methodology for Calculation of Gross Agricultural Output

The analysis of trends in regional output was based on the derivation of Gross Agricultural Output (GAO), following the methodology used by FAOSTAT. For each individual commodity, GAO for any given year is calculated as total production multiplied by producer prices. These values are then summed across agricultural products to generate GAO for the agricultural sector as a whole. GAO differs from agricultural gross domestic product (GDP) in that it does not adjust for the value of intermediate inputs (e.g., animal feed), which are subtracted from GAO to give agricultural GDP. The two parameters are closely correlated nevertheless. The advantage of GAO is that it is easily calculated from secondary data, and is readily disaggregated by commodity or by region, thus allowing a more detailed understanding of underlying sector trends.

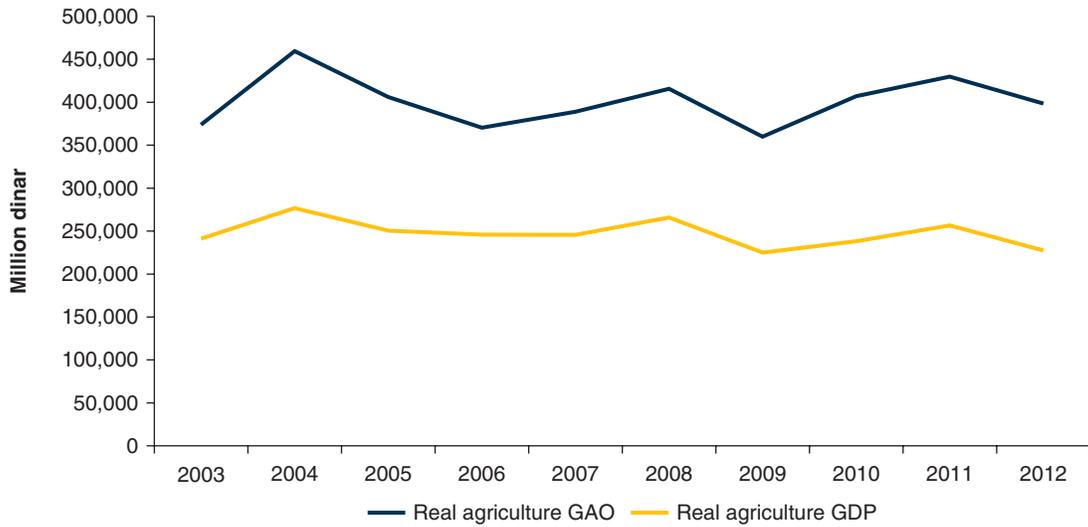
The derivation of GAO was based on data for the Republic of Serbia only, for the period 2003–12. Production and producer price data for the different commodities were drawn largely from the Republic of Serbia Statistical Office. In a few cases FAOSTAT data were used to fill in missing variables or to provide a more tractable basis for analysis. The calculation of crop GAO was based on: wheat, maize, barley, sunflower seed, soybeans, oilseed rape, sugar beet, potatoes, tomatoes, peppers, beans, cabbage and kale, raspberries, strawberries, apples, sour cherries, plums and grapes. Livestock GAO was based on: cow's milk, beef, pork, sheep meat, poultry meat, eggs and honey. Lack of data precluded the inclusion of other commodities. Together, the selected commodities account for more than 90% of the aggregate value of GAO, as reported by FAOSTAT. Nominal producer prices were converted to real prices using the consumer price index.

The resultant derived value of aggregate GAO was compared with agricultural GDP as a check on its suitability as the basis for analysis. Figure A.1 shows that total GAO is consistently higher than agricultural GDP for the 2003–12 period of analysis, as expected, and that it closely tracks all turning points. A statistically significant correlation coefficient of 0.79 further confirms the suitability of derived GAO as the basis for analysis of agricultural sector growth.

The following clarifications describe further, specific elements of the methodology used:

- Regional GAO was calculated for Vojvodina, Central Serbia, Sumadija and Western Serbia and Southern and Eastern Serbia. The GAO for Belgrade District was not calculated. Regional production data were obtained from the Republic of Serbia Statistical Office.

FIGURE A.1 Agriculture GDP versus GAO (2003–12, real prices, 2010=100)



Sources: FAOSTAT; Statistical Office Republic of Serbia; World Bank Development Indicators.

- In the absence of regional data on producer prices, national producer prices were used to derive the value of regional GAO.
- The GAO for cow's milk was based on total milk production, as reported by the Statistical Office, rather than processed milk.

The calculation of GAO for meat was the most problematic component of the analysis. As for agricultural GDP, it was based on reported statistics on: the number of animals slaughtered, the average live weight/animal at slaughter and the relevant live weight producer price. (FAOSTAT producer prices were used for pork as they represent a weighted average of the producer prices for different pork categories). At regional level these statistics are drawn from relatively small samples, which increases the variance and reduces the reliability of the data. To verify the suitability of meat GAO for analysis, the trends in GAO were thus checked against observed trends in associated variables such as producer prices, animals slaughtered and livestock numbers. In all cases the trends were consistent.

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