FACTOR MARKETS

Comparative Analysis of Factor Markets for Agriculture across the Member States

245123-FP7-KBBE-2009-3

WORKING PAPER

No. 9, October 2011

Biljana Angelova & Štefan Bojnec

Developments in the Agricultural and Rural Capital Market of the Former Yugoslav Republic of Macedonia

ABSTRACT

The undeveloped rural capital market in the Former Yugoslav Republic of Macedonia is constrained by an urban–rural development gap, with limited capacities for rural development and imperfections in the rural capital market. Among the most striking hindrances are the illegal status of a large share of agricultural buildings and other real estate in rural areas, particularly on the individual family farms that prevail in the country, and the insufficient knowledge and abilities of individual farmers in applying for credit. National, EU and other donor funds are being used to improve knowledge, skills and other human resources, and to address the illegal status of buildings and facilities. During the most recent years, government support for agricultural, rural and regional development has been introduced to promote good agricultural practices, production and economic activity in rural areas. The elimination of imperfections and improvements to the functioning of the capital market – making access to credit and funds easier, especially for small-scale family farms and for rural development – are seen as measures contributing to agriculture and more balanced rural and regional development.

Keywords: Capital market, farm income, subsidies, loans, agricultural and rural development, Former Yugoslav Republic of Macedonia

Available for free downloading from the Factor Markets (www.factormarkets.eu) and CEPS (www.ceps.eu) websites

ISBN 978-94-6138-141-5

FACTOR MARKETS Coordination: Centre for European Policy Studies (CEPS), 1 Place du Congrès, 1000 Brussels, Belgium Tel: +32 (0)2 229 3911 • Fax: +32 (0)2 229 4151 • E-mail: info@factormarkets.eu • **web:** www.factormarkets.eu

Contents

List of Figure and Tables

Developments in the Agricultural and Rural Capital Market of the Former Yugoslav Republic of Macedonia

Biljana Angelova and Štefan Bojnec*

Factor Markets Working Paper No. 9/October 2011

1. Introduction

The transition process to a market economy and adjustments to EU membership have shaped rural capital markets in the Former Yugoslav Republic of Macedonia (FYROM).[1] The internationalisation of rural capital markets from local to national and international financial markets has occurred with the participation of foreign banks, flows of remittances from the diaspora and workers abroad, and from EU and other donors' funds.

Pietola et al. (2011) identify three possible kinds of models with supply side or demand side imperfections (or both) in rural capital markets. First are transaction cost models with moral hazard and hidden actions (e.g. Boot et al., 1991; Boucher et al., 2005). Second are liquidity constraint models with tighter constraints in rural credit markets (Färe et al., 1990; Benjamin and Phimister, 2002). Less constraints in rural credit markets are also indentified for some new EU member states (Bakucs at al., 2009; Bojnec and Latruffe, 2011). Third are informational imperfection models of credit constraint with adverse selection owing to hidden information (e.g. Stiglitz and Weiss, 1981; Carter, 1988), costly contract enforcement and *ex-post* asymmetric information (e.g. Bester, 1994). This literature forms a starting point for our investigation.

The main objectives of this paper are to provide qualitative and quantitative analyses of the capital market for agriculture in the FYROM, and of the impact of national, EU and other programmes on the functioning of the capital market. It provides a descriptive overview, followed by an analysis to facilitate understanding of the functioning and factors driving the capital market in the FYROM. Despite the importance of this subject, there is no comprehensive study analysing the rural capital market in the FYROM. Structural adjustment, credit and investment programmes have been implemented with the aim of increasing the availability of low cost capital and farm access to credit. Investment in more competitive forms of agricultural production, such as fruit and vegetables, might be promoted through financial aid programmes and credit subsidies to stimulate the necessary investment and enhance productivity and efficiency.

The principle contribution of this paper is a rarely presented analysis of developments in the rural capital market in the FYROM. The key macroeconomic indicators are taken from statistical sources. Empirical evidence on the agricultural and rural capital market is not available in financial or any other publically accessible statistics, but is obtained from local

* Biljana Angelova is Director of the Institute of Economics at Ss Cyril and Methodius University, Skopje, Republic of Macedonia (email: angelova@ek-inst.ukim.edu.mk). Štefan Bojnec is Professor of Economics at the Faculty of Management, University of Primorska, Koper, Slovenia (e-mail: stefan.bojnec@siol.net).

[1] The Republic of Macedonia is one of the five successor states of the former Yugoslavia, from which it declared independence in 1991. It became a member of the United Nations in 1993 but, as a result of a dispute with Greece over its name, it was admitted under the provisional reference of the Former Yugoslav Republic of Macedonia, sometimes abbreviated as FYROM.

experts and data sources. Comparisons are made of the macroeconomic indicators, overall capital markets and rural capital markets.

This paper is organised as follows. In section 2, the macroeconomic indicators and major trends in the role of agriculture in the economy and in households are presented. In section 3, farm income and investment in agriculture are analysed. The allocation of budgetary financial support for agriculture and rural development is outlined in section 4. In section 5, developments in the rural capital market are discussed, taking into account the institutional framework for the capital market and the impact of national and international programmes, as well as the effect of the capital market on agricultural investment decisions. The use of information and monitoring systems for agriculture is presented in section 6, with analyses of the structural changes in agriculture and the rural economy. Finally, section 7 derives the main findings and conclusions.

2. Macroeconomic settings and the agricultural sector

The FYROM is a central Balkan country in south-eastern Europe, covering an area of 25,713 km^2. It is a landlocked country and is bordered by four countries: Bulgaria in the east, Serbia in the north, and Albania and Greece in the west and south, respectively. The total length of the borders is 850 km. The country is a sovereign parliamentary democracy whose independence from the former Yugoslavia was declared in a referendum held on 8 September 1991.

The FYROM has been a member of the World Trade Organization since 2003 and has signed numerous free trade agreements with various countries in the region. In 2005, it became a candidate country for EU membership. The date for starting negotiations has not yet been determined.

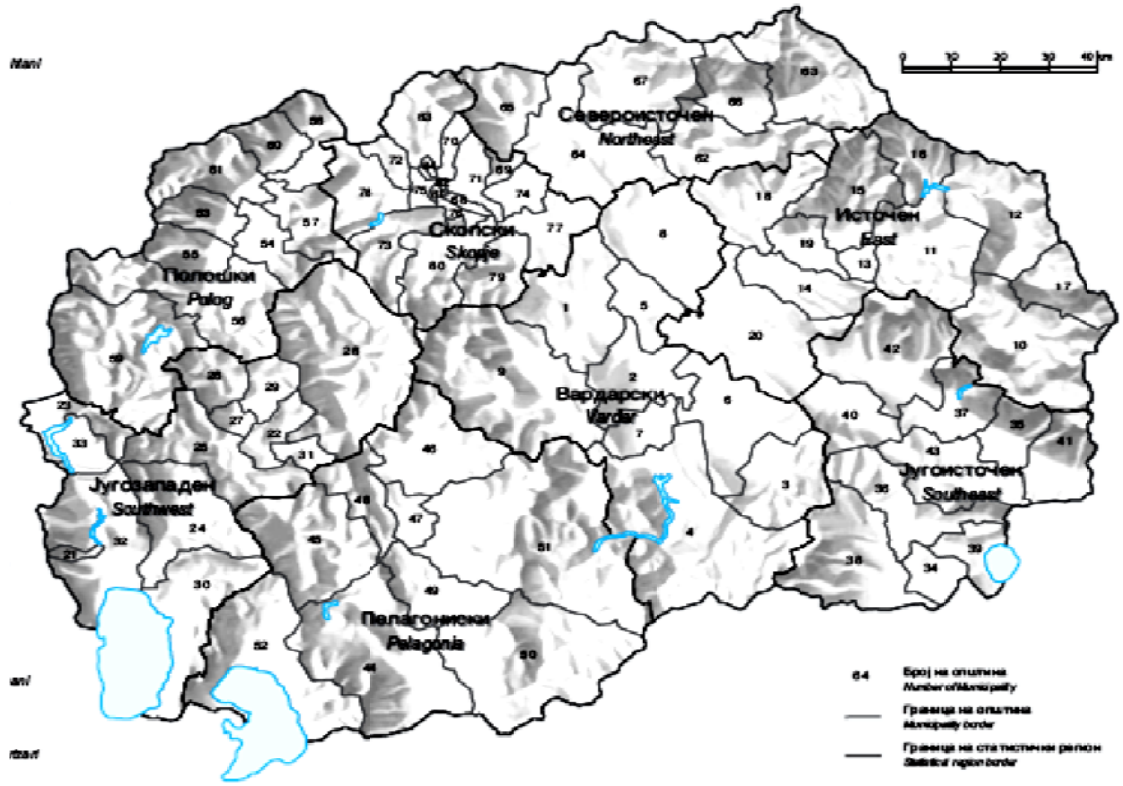
Being geographically located between the latitudes of 40° 51' and 42° 22' north, and between the longitudes of 20° 27' and 23° 02' east, the country is in the southern part of the moderate zone and defined by a sub-tropical climate, which allows the production of many crops.

In terms of administrative division, the municipal subdivision is of the first order at the local level. In 2004, the country was reorganised into 84 municipalities, of which 10 belong to the capital city of Skopje. In 2008, there were 34 cities in the FYROM, and 1,767 settlements. For statistical purposes, the FYROM is divided into eight statistical regions: Skopje, Pelagonia, Polog, East, Southeast, Northeast, Southwest and Vardar (Figure 1).

Considering the size of the territory and the population, the FYROM is a relatively small country. On 30 June 2008, the total population amounted to 2,046,898 persons, and was estimated at 2,053,799 persons in 2009. These figures and Table 1 indicate a slight increase in the population. The population density in 2008 was 82.2 citizens per km^2. According to the latest population census conducted in 2002, the population in the FYROM has the following structure: Macedonians (64.18%), Albanians (25.17%), Turks (3.85%), Roma (2.66%) and minority ethnic groups (4.14%).

The region encompassing the capital city of Skopje is the most densely populated, with a total of 596,447 residents, while the lowest population density is in the Vardar statistical region (38.1 citizens per km^2), with a total of 153,902 residents. The share of the rural population in the country is 43%, with the rest (57%) consisting of the urban population.

Figure 1. Statistical regions as determined by the State Statistical Office (SSO) in the FYROM



Source: SSO (2011) (www.stat.gov.mk).

The relatively small economy is sensitive to external and internal factors. The dependence of the economy on international developments in particular is expressed through economic effects and trade flows with major trading partners, notably with neighbouring countries. Except for 2009, over recent years there have been positive changes in GDP. GDP at market prices in 2008 amounted to 411,728 million in Macedonian denars (MKD), which is equivalent to €6,720 million, with a real growth rate of 5% compared with the previous year (Table 1). But in 2009 there was a decline in GDP of -0.9% as a consequence of the global financial crisis and the recession in the national economy. The first effects of the global crisis were manifested in the economy through a fall in export demand, the deteriorating expectations of economic agents and a reduction of capital inflows. All this had an impact on reducing GDP, which in 2009 amounted to 409,100 million MKD (or €6,677 million). The unemployment rate for 2009 was 32.3% (registered – or by the definition of the International Labour Organisation). Since 2009, there has been a steady economic recovery with a slight decline in the rate of unemployment.

Average annual borrowing or lending interest rates are relatively high, which may likewise be affected by possible country and project risks. Yet, the main reason for the high cost of capital remains the low level of competition in the capital market, where three big banks affect (high) interest rate developments. All other banks are small or medium sized and have not had a significant influence on the capital market and consequently on interest rates. Interest rates for primary agricultural production are a slightly lower, although not significantly so (on average 1% less than the regular rate), but for food processing (secondary production, machinery and tractors) they are same as the interest rates for the rest of the economy.

Table 1. Macroeconomic indicators for the FYROM, 2003–11

Indicators	Unit	2003	2004	2005	2006	2007	2008	2009	2010	2011
Population	'000	2,027	2,032	2,037	2,042	2,045	2,047	2,054	2,057	2,060
GDP [a)]	million €	4,105	4,324	4,676	5,231	5,965	6,720	6,677	6,890	7,345
GDP per capita	€	2,025	2,128	2,295	2,564	2,919	3,283	3,253	3,350	3,565
Agricultural sector in total GDP	%	13.3	13.2	12.8	10.5	9.1	10.0	9.7	9.9	–
Rate of economic growth (changes in GDP)	%	2.8	4.1	4.0	4.0	6.1	5.0	-0.9	0.7	3.5
Unemployment rate	%	36.7	37.2	37.3	36.0	34.9	33.8	32.2	32.0	29.6
Inflation (end of the year, on annual base)	%	2.6	-1.9	1.2	2.9	6.1	4.1	-0.8	1.6	3.0
Interest rate for lending (for MKD credit) [b)]	%	12.5	12.0	12.0	10.7	9.9	9.8	10.3	9.9	8.8 [c)]
Interest rate for lending (for credit approved in a foreign currency) [b)]	%	–	7.8	7.8	8.5	8.5	7.2	7.6	7.4	7.4 [d)]
Interest rate for borrowing (in MKD) [b)]	%	–	4.9	5.6	4.4	5.3	6.5	7.5	6.7	5.9 [e)]
Interest rate for borrowing (in a foreign currency) [b)]	%	–	1.3	1.4	1.8	2.0	3.0	3.4	3.0	2.8 [f)]
Average exchange rate [b)]	MKD-€	61.26	61.34	61.30	61.19	61.18	61.27	61.27	61.51	61.51
Participation of food, beverages and tobacco in total consumption expenditures by households	%	47.0	45.4	43.8	43.4	42.5	43.3	40.7	–	–

[a)] SSO (2009–10).

[b)] National Bank of the FYROM (2011).

[c)] The 2011 figure is the average lending rate for the first six months, for credit approved in MKD.

[d)] The 2011 figure is the average lending rate for the first six months, for credit approved in a foreign currency (€).

[e)] This figure is the average borrowing rate for MKD deposits for the first six months of 2011.

[f)] This figure is the average borrowing rate for foreign currency deposits for the first six months of 2011.

Note: Data for 2011 are projected macroeconomic data, except for the notations [c)] to [f)] above.

Source: Ministry of Finance of the FYROM (2011), database (www.finance.gov.mk).

Agriculture, along with hunting, forestry and fisheries, is the third largest sector contributing to GDP (in 2009 it accounted for 9.7% of total GDP), coming immediately after the services and industrial sectors. Food, beverages and tobacco accounted for 40.7% of total consumption expenditure by households. This indicates the important role that agriculture plays in the economy and in the well being and food safety net of households.

3. Farm income and investment in agriculture

During the years 2000–08, farm income grew in both nominal and real terms: farm income experienced nominal growth of 45%, but taking into account inflationary tendencies, the real increase was by 30% (Table 2). An increase in nominal values was also reported in the structure of farm income – in the consumption of inputs, gross and net value added at basic prices, depreciation of fixed assets and income from production factors.

The total labour force in agriculture in annual working units (AWUs) has oscillated over the years. The approximate ratio of paid and unpaid labour is 50:50. Besides registered agricultural workers, there is a unregistered workforce, especially in seasonal agricultural production. The workforce in the agricultural sector for the entire period analysed shows variations, but has generally decreased. This trend has not contributed to the reduction of income per AWU in agriculture, but has rather been accompanied by growth in real terms. Agriculture, along with the food industry, employs about 20% of the total workforce in the country.

Table 2. Agricultural income, 2000–08 (in million €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Basic agricultural products by basic production prices	788.2	783.8	788.5	915.4	972.3	987.8	1,037.9	1,031.0	1,225.7
Consumption of inputs	406.4	405.4	390.4	486.6	491.1	489.5	505.7	504.7	605.8
Gross value added at basic prices	381.8	378.4	398.1	428.7	481.2	498.2	532.3	526.3	619.9
Depreciation of fixed assets	35.3	35.2	35.5	42.9	42.3	42.5	44.4	44.3	52.8
Net value added at basic prices	346.5	343.2	362.6	385.8	438.9	455.7	487.9	482.1	567.0
Income from production factors	349.8	346.4	365.5	388.3	438.6	455.0	486.9	482.2	569.0
Total labour force in agriculture ('000 AWU)	137.0	198.0	138.0	126.0	107.0	123.0	112.0	119.0	130.0
Income from production factors/AWU (in €)	2,553.2	1,749.6	2,648.3	3,082.0	4,099.3	3,699.3	4,347.3	4,052.5	4,376.6

Source: SSO (1998–2003; 2005–09).

In the years 2005–09, agricultural investment in fixed assets grew. In 2009, it reached 3,116 million MKD. The number of tractors was relatively stable at 68,779 in 2009, while the use of fertilizers and agrochemical products by agricultural enterprises and service cooperatives tended to decline (Table 3). This decline might be seen as a reaction to price increases in fertilizers and other agrochemical products. On the other hand, it might also indicate a switch towards agricultural production that is more environmentally friendly. It should be underlined that agricultural enterprises and service cooperatives represent a smaller share of farm production in the FYROM vis-à-vis individual family farms.

Table 3. Investment in agriculture, 2005–09

	Investments in fixed assets (in million MKD)*	Number of tractors	Use of fertilizers (tons)**	Use of agrochemical products (tons)**
2005	1,603	67,349	9,900	156
2006	2,030	66,179	9,746	336
2007	1,937	67,520	7,569	122
2008	2,493	67,962	7,790	89
2009	3,116	68,779	–	–

* Farming, hunting and forestry

** Agricultural enterprises and cooperatives

Source: SSO (2005–09).

4. Budgetary financial support for agriculture and rural development

Financial support for agriculture and rural development is received from the national government, the EU and other donors. As can be seen in Table 4, policies to develop agriculture and rural areas are supported by appropriate, national budgetary funds and measures that should provide for the realisation of the activities envisaged by 2013. Budgetary support for agriculture and rural development has been provided by the Ministry of Agriculture, Forestry and Water Economy (MAFWE). The MAFWE support for agriculture and rural development increased continually over the period 2005–09. There was a significant rise in both nominal and real absolute funding. The proportion of the MAFWE in overall subsidies for the agricultural sector through the central budget also increased, especially during the years 2007–09. This tendency has continued in 2010 and 2011, despite cuts owing to the financial crisis. In addition, despite the financial crisis, the MAFWE policy is to continue with subsidies in appropriate portions.

Table 4. Budgetary support for agricultural and rural development, 2005–09 (in '000 MKD)

	2005	2006	2007	2008	2009
Government budget	66,538,469	88,576,000	79,552,497	89,397,520	153,215,000
MAFWE	1,459,518	1,453,972	2,002,140	4,257,000	6,152,875
MAFWE proportion of the total government budget (%)	2.19	1.64	2.52	4.80	4.02

Source: MAFWE (2009–10).

The policy for supporting agriculture is an essential tool to sustain agricultural production. It is implemented through the following measures: first, direct payments (subsidies) per hectare in the production of crops (mainly for wheat) and direct payments per head of livestock (mainly for sheep). Subsidies for farming (crops and livestock) were the most important part of the MAFWE's financial support in 2009 (Table 5). Second, rural development and the regeneration of villages have also gained importance in MAFWE's financial support. Finally, the MAFWE budget covers the provision of public services and other programmes in the areas of forestry, animal health, veterinary and plant health services, seeds and seedlings.

Table 5. Overview of approved financial support to agriculture in 2009, by sector measure

Programmes	Amount (million MKD)	Amount (million €)
Farming (crop and livestock)	3,925.0	64.061
Reproduction of forests	160.0	2.611
Animal health	253.0	4.129
Veterinary public health	20.0	0.326
Plant health	12.0	0.196
Seeds and seedlings	0.6	0.010
Regeneration of villages	15.0	0.245
Rural development	422.0	6,888
Total	4,807.6	78.466

Source: MAFWE (2011).

Rural development policy is the other major financial instrument for the economic and social development of rural areas in the FYROM, for both mitigating the process of depopulation and highlighting the country's natural and inherited endowments as part of its cultural heritage. As shown in Table 6, a programme providing financial support for rural development in 2009, funded by the Agency for Financial Support to Agriculture and Rural Development (AFSARD), entailed investment to improve competitiveness and modernising of agricultural holdings (including aquaculture), investment in rural infrastructure and in the processing, storing, sorting, packing and marketing of agricultural products. Some smaller amounts were also allocated to promotional activities for stimulating rural tourism, enhancing advisory services and farmers' education, organising the joint production of agricultural activities on farms, investing in production and the use of renewable energy in rural areas, and implementing the programme.

Table 6. Programme for financial support of rural development in 2009

Measures/groups of investment	Amount (million MKD)	Amount (million €)
Investment to improve competitiveness and modernise agricultural holdings, including aquaculture	192.0	1.0466
Investment in processing, storing, sorting, packing and marketing agricultural products	80.0	0.0426
Investment in rural infrastructure	110.0	0.0674
Financial support for promotional activities to develop rural tourism	6.0	0.0053
Investment to enhance the knowledge and develop the human potential of farmers by maintaining the advisory services and education on managing the agricultural sector	8.0	0.0032
Support for organising the joint production of agricultural activities on farms	6.0	0.0002
Investment in production and use of renewable energy in rural areas	18.0	0.0040
Expenses for programme implementation	2.0	0.1124
Total	422.0	1.2807

Source: MAFWE (2011).

As can be seen from comparisons of Tables 4, 5 and 7, there are some differences between the adopted programme measures and the budgetary support actually given to agricultural and rural development. The difference between the greater amounts specified for the adopted measures (Table 5) and the amounts spent (Table 7) indicates possible budgetary and other difficulties in implementing the programme and subsidy payments for agricultural and rural development in the FYROM. Table 7 gives an overview of the financial support expended on this area in 2009, by agricultural measure. As can be seen, more than half of all expenditures on agricultural subsidies were on plant production. Animal husbandry was in second place. Smaller amounts were spent on organic agricultural production, fisheries and aquaculture, and implementation of quality standards and food safety. The total expenditures also included the recorded expenditures for unfulfilled obligations from the previous year (2008).

Table 7. Overview of government financial support in 2009, by agricultural measure

Type of measure	**Amount in (million MKD)**	**Amount in (million €)**
Plant production	2,298.50	37.5143
Animal husbandry	1,432.74	23.3840
Implementation of quality standards and food safety	15.56	0.2540
Organic agricultural production	50.10	0.8177
Fisheries and aquaculture	25.00	0.4080
General measures	63.10	1.0299
Unfulfilled obligations from 2008	40.00	0.6528
Total	3,925.00	64.0607

Source: MAFWE (2011).

In 2009, the AFSARD implemented national programmes providing budgetary support for agriculture and for rural development (Table 8). Most of expenditures were on the programme for the financial support of agriculture. The amount actually spent exceeded the forecast, and vice versa for the programme allocating funds for rural development, for which the applications used in requesting financial support are more sophisticated than in the case of the programme assisting agriculture. This discrepancy between the forecasted amount and the actual expenditures is equalised over budget rebalancing. In most cases, the differences stem from the weak implementation capacity of farmers who apply for financial support from government programmes.

Table 8. Overview of national support mechanisms in 2009 (in €)

Type of programme	**Forecasted amount**	**Amount paid**	**% of realisation**
Programme for financial support in agriculture	61,464,401	66,334,077	108
Programme for financial support for rural development	7,000,000	4,168,028	60

Source: MAFWE (2011).

Despite the FYROM being a relatively small country, it still has a comparatively large number of farms, particularly small-scale farms. For this reason and because the national measures for budgetary support differ, some farmers have applied for budgetary subsidies from national support mechanisms for agriculture as well as for rural development. Table 9 shows the number of applicants who sought financial means from these mechanisms for

support in agriculture and rural development. The percentage of funded requests is slightly greater for the programme assisting agriculture than that for rural development.

Table 9. Overview of the number of applicants for national programmes supporting agriculture and rural development in 2009

Type of programme	Submitted requests	Number of claims paid	% of funded requests	Concluded contracts
Programme for financial support of agriculture	101,680	93,619	92	–
Programme for financial support for rural development	2,333	690	80	870

Source: MAFWE (2011).

While the amount of the subsidies for agriculture has risen from year to year, the effects of the subsidies have been less clearly documented. The amount of subsidies for agriculture has more than doubled since 2007. In a fact, in 2010, €100 million was allocated from the government budget to subsidise agricultural production. This is a considerable increase, given that in 2008 around €45 million was allocated for similar purposes, and around €75 million in 2009. An increase in government support for agriculture was also scheduled for 2011. It is envisaged that around €115 million will be spent for that purpose, or €15 million more than in 2010. Yet in 2012, it is expected that this figure will further increase by an additional €15 million. The MAFWE distributes the funds across existing programmes or allocates additional funds for projected subsidy increases, or launches new financial measures for agricultural and rural development.

In spite of the increasing government support for agriculture, agro-food production remains at similar levels, while the FYROM's dependence on imported food is significant. Notwithstanding the government's subsidisation of agriculture, in some agricultural sectors the adverse effects of output declines and reductions in the agricultural land utilised have been observed. Table 10 shows the dynamics in the value of farm output by farm size in European size units (ESU) for the period 2005–09. According to the methodology of the Farm Accountancy Data Network (FADN), one ESU is equivalent to a gross margin of €1,200. The economic size of the farms is calculated in line with the FADN's methodology. Farms in the FYROM are relatively small. The average size of the individual farms ranged from 1.7 to 2.8 hectares in the 1994 census (SSO, 1994). According to the 2007 agricultural census, the average size was even smaller, at 1.37 hectares (SSO, 2007). This implies that further farm fragmentation occurred during the transition period, in an adverse macroeconomic environment with relatively high rates of unemployment.

Similar to EU countries, farms in the FYROM are now classified, according to FADN methodology, into economic farm-size groups by ESU. In each farm size group, farm output declined between 2005 and 2009. A particularly sharp decline was experienced in 2007 (Table 10).

There are more reasons for the less profound effects of the government's subsidisation of agriculture. First, subsidies are likely to reduce incentives to improve efficiency. Second, as argued by farmers and agricultural producers, the subsidy of €100 per hectare is not sufficient to cover the increasing costs of agricultural producers in some sectors, notably of those producing tobacco, grapes, fruit, horticultural crops and milk. Therefore, farmers and agricultural producers are demanding even higher subsidies for agriculture. So far, there is no specific study investigating the efficiency of agricultural subsidies in the FYROM.

Table 10. Farm output value by economic farm size (ESU groups)

Farm size groups	2005	2007	2009	2007/05 ratio	2009/07 ratio
Very small farm 1 (VSF1): < 2 ESU	256	107	242	0.42	2.26
Very small farm 2 (VSF2): 2 to < 4 ESU	503	270	466	0.54	1.72
Small farm (SF): 4 to <8 ESU	785	513	749	0.65	1.46
Medium low farm 1 (MLF1): 8 to <12 ESU	1,744	830	238	0.48	1.49
Medium low farm 2 (MLF2): 12 to <16 ESU	3,087	1,214	1,555	0.39	1.28
Medium high farm (MHF): >16 ESU	3,584	2,157	3,347	0.60	1.55
Average farm size	635	445	565	0.70	1.27

ESU = European size unit, equivalent to gross margin of €1,200.

Source: Martinovska-Stojčeska and Dimitrievski (2011).

Like other candidate countries for EU membership (Bojnec, 2011), during the last 12 years the arable agricultural land in the FYROM has decreased by 122,000 hectares or 19%, while pastures have diminished to 156,000 hectares or 24%. This downward trend was particularly pronounced during the years 2007–09, when the country experienced increases in government financial support for agriculture. Still, some agricultural sectors – such as the production of vegetables, corn, alfalfa, rice, grapes and honey – experienced a positive trend during the period of increased financial aid from the government. In addition, the SSO (2011) reports growth in agro-food exports over more recent years, while in the past agro-food imports prevailed. In 2005, when subsidies were symbolic, imports totalled €278 million. In 2007, agro-food imports amounted to €346 million, rising to €357 million in 2009. Yet by November 2010, agro-food exports totalled €384 million. There are, however, fluctuations in some markets, such as for grape and apple growers.

5. Rural capital markets and rural credit

This section focuses on changes in the institutional framework for the rural capital market and their impact on agricultural and rural development (MAFWE, 2007). The agriculture credit discount fund (ACDF) in the FYROM was formed in 2002 as part of financial services in agriculture provided by the international fund for agricultural development (IFAD 1 and IFAD 2), and additional resources for lending through credit lines of the World Bank. The initial value of approved loans was €47.5 million.

Loans consisted of 80% funding from the ACDF and 20% from the financial institutions (commercial banks and savings institutions), while the credit user was requested to participate at the level of 20%. The ACDF is intended to provide credit for small and medium-sized enterprises, for amounts up to €100,000 for those engaged in primary agricultural production and up to €200,000 for those involved in processing agricultural products or dealing with the export of agricultural produce.

Interest rates on loans range from 4-5% at banks to 6-6.5% at savings institutions annually for up to seven years and with a grace period of up to two years maximum. In 2009, 514 credit lines were granted, totalling €13.2 million, of which €10.5 million was funding from the ACDF (Table 11). There were 4,442 approved loan requests, amounting to €44.8 million, mainly for raising crops, procuring agricultural equipment, facilitating agricultural mechanisation and building projects (wineries, farm renovation and food processing facilities).

Table 11. Dynamics in ACDF grants of credit lines

	2005	2006	2007	2008	2009	Cumulative 2005–09
Number of approved credit lines	761	1,131	435	1,183	514	4,442
Amount of approved refinancing (in '000 €)	2,649	4,486	1,954	12,137	13,200	44,800

Source: MAFWE (2011).

While in 2009 the number of outstanding loans approved was smaller than in 2008 (669 fewer credit requirements), the amount of refinancing approved was greater, at €1,062,530 or 3.2%. Table 12 presents the loans granted by credit category for the agro-food sector in 2009. The analysis of loans by category shows that the largest number of approved applications was for primary agricultural production. The amount of approved loans for this category was almost equal to that for processing agricultural products. The main providers of credit to farm operations (for primary agricultural production) are commercial banks. They also provide credit and other means of financing (leasing) to sellers of agricultural inputs – seeds, fertilizers and other inputs.

Table 12. Loans granted for different credit categories in 2009

Loan category	Number of approved credit lines	Total amount of approved credit (€)	Total amount of approved refinancing (€)	Total amount of approved credit (%)
Primary production	4,183	25,598,586	19,235,455	57
Processing agricultural goods	221	17,007,474	13,260,175	38
Trade of agricultural goods	38	2,227,652	1,700,656	5
Total	4,442	44,833,713	34,196,287	100

Source: MAFWE (2011).

From the viewpoint of commercial banks, a similar tendency can be seen in the increased requirements for agricultural credit. During the last decade, the agricultural sector has been reformed and large majority of all cultivated land is owned and operated by the private sector. In addition to the prevailing individual farms are the transformed agricultural enterprises. The question of land ownership, as a potential asset for mortgages/collateral is an important issue for banks, which intend to launch initiatives expanding the credit available to agriculture. Table 13 reveals an increase in the credit offered by commercial banks to the agricultural sector. The extent of credit approved by commercial banks grew by around 2.7 billion MKD in 2010 and by 2.8 billion MKD in the first half of 2011. These nominal increases by 267.3% in 2010 and by 271.2% in the first half of 2011 in comparison with 2004 show the continual expansion of credit activity in this sector. The figures in Table 13 solely comprise commercial credit granted to agricultural enterprises, but the amount of credit approved for individual farmers is still low owing to problems with mortgages. Recently, the government has taken major steps in the legalisation of illegal buildings, houses and other real estate to resolve the problems associated with a great number of illegal buildings among individual farm households, which have been a serious hindrance in obtaining credit. Commercial bank credit as well as other financial support intended to flow into the agricultural sector has been constrained by this problem. Over the next few years, it is expected that this obstacle will be overcome. In the meantime, the agricultural sector –

particularly individual farm households – will continue to face credit constraints that will also restrict the amount of approved credit to the agricultural sector.

Table 13. Approved credit to agricultural enterprises, 2004–11

End year	Amount of approved credit for the agricultural sector (billion MKD)	Annual rates of nominal increases in credit approved to the agricultural sector (%)
Mid-2011 (6 months)	4.39	1.014
2010	4.33	1.049
2009	4.13	1.071
2008	3.85	1.159
2007	3.32	1.167
2006	2.84	1.381
2005	2.06	1.271
2004	1.62	–

Source: National Bank of the Republic of Macedonia (2011).

6. Development of information and monitoring systems for agriculture

6.1 Data collection

Institutional and policy changes can have important impacts on the structural adjustments taking place in agriculture and in rural economies. We first discuss the establishment of the Integrated Administrative Control System (IACS), and then present available FADN data to illustrate the most recent financial developments in the agricultural sector in the FYROM, with the possible structural implications.

The establishment of the IACS has been one of the priorities of institutional development in the agricultural sector in the FYROM. To support the preparation of samples as a basis for formulating, implementing, overseeing and monitoring the effects of agricultural and rural development policies, the Agricultural Information System (AIS) was established at the MAFWE. It is considered one of the most important, short-term priorities of the process of EU integration in terms of horizontal issues. The activities envisaged relate to the following administrative, management and information aspects of an integrated system:

- a single register of agricultural holdings (SRAH),
- a system for the identification of land parcels (SILP),
- the Agricultural Market Information System (AMIS) and agricultural statistics, and
- FADN.

The FADN is a central component of the AIS, coming under the *acquis communautaire* of the EU. The classification of farms in the EU by the FADN is principally according to two major criteria: the economic size of the agricultural holding and the type of farming. Until 2009, the economic size of the farm was determined as the value of its total farm standard gross margin (SGM), expressed as a Community unit of measurement, the ESU, estimated at €1,200. The SGM is the balance between the standard value of the output and the standard value of certain direct specific costs, calculated on average for a period of three to five years. The SGM is an economic criterion expressed in monetary terms, either per hectare of utilised agricultural area in the case of crop enterprises or per head of livestock in the case of livestock farming. The standard output measure was introduced in FADN in 2009 as the basis for determining the farm economic size, replacing the previously used SGM and ESU. Standard output refers to the standard value of gross production.

The Farm Monitoring System (FMS) in the FYROM has been implemented as an annual survey conducted in line with FADN methodology (Kamphuis and Dimitrov, 2002; NEA, 2007 and 2009; Martinovska-Stojčeska and Dimitrievski, 2009). The previous research conducted by national experts gives realistic figures on the financial situations of farms in the FYROM, based on a sample of about 300 farms in six statistical regions (Bitola, Tetovo, Stip, Skopje, Kumanovo and Strumica). For the FADN data, agricultural holdings are selected to participate in the research based on choice. Similar to EU countries (e.g. Slovenia), a representative survey is used, which does not cover all agricultural holdings in the FYROM, but only those that are more viable and whose future prospects in terms of their size, growth and survival potential enable them to be considered commercial farms. The FADN methodology applied aims at gathering representative data at the following three levels: region, farm economic size and type of farming.

The basis for the establishment and functioning of the FADN in the FYROM, in accordance with the regulations of the EU, was made possible by the adoption in 2007 of the Law to establish a network for collecting accounting data from farms (*Official Gazette*, No. 110, 2007). The Law defines the types of data to be collected, the share of agricultural holdings and institutions involved in the FADN system, and the method of collecting, processing and using FADN data. The legal framework for FADN will be fully completed with the adoption of the Regulation 79/65/EEC on the scope and manner of collecting FADN data, and the content of the questionnaire to gather structural data on agricultural holdings. In keeping with the Law, the National FADN Committee for the accounting data network was formed, with the structure approved by the government at the end of November 2009.

6.2 FADN indicators of farm efficiency

Data gathered for the FADN reveal that the SGM value has changed significantly, as shown in Tables 14 and 15,. In 2001, only 16% of farms had less than 100,000 MKD (€1,630) of total SGM per farm. This proportion increased to around 36% in the period 2005–09, meaning that a considerably larger share of farms had a lower farm SGM value. This indicates that farm SGM decreased for a large number of FADN farms in the FYROM during the last decade. It is important to note that no minimum threshold was set for the inclusion of farms in the FMS survey. In addition, holders of very small farms are often engaged in agriculture on a part-time basis. The share of farms with a higher SGM, i.e. over 1 million MKD (€16,300), was 10% in 2001, compared with the relatively low share of 5% in the years 2005–09. This again confirms the fragmentation of both individual family farms in general and larger farms in the FMS survey for FADN.

Table 14. Number of Farm Monitoring System farms in terms of the SGM per farm

Farm SGM (in MKD)	2001	2005	2006	2007	2008	2009
< 100,000	67	124	110	77	79	152
< 200,000	81	61	38	58	50	100
< 300,000	50	45	23	32	42	43
< 400,000	48	34	22	21	24	41
< 500,000	45	18	13	16	14	23
< 600,000	33	11	10	11	11	16
< 700,000	23	5	8	8	3	13
< 800,000	13	6	5	4	6	9
< 900,000	9	2	7	3	3	3
< 1,000,000	7	7	1	2	2	10
> 1,000,000	40	9	9	8	10	9
Total number of farms	416	322	246	240	244	419

Source: Martinovska-Stojčeska and Dimitrievski (2011, p. 25).

Table 15. Trends in farm size in the total value of farm SGM, 2001–09 (in %)

Farm SGM (in MKD)	2001	2005	2006	2007	2008	2009
< 100,000	16.11	38.51	44.72	32.08	32.38	36.28
< 200,000	19.47	18.94	15.45	24.17	20.49	23.87
< 300,000	12.02	13.98	9.35	13.33	17.21	10.26
< 400,000	11.54	10.56	8.94	8.75	9.84	9.79
< 500,000	10.82	5.59	5.28	6.67	5.74	5.49
< 600,000	7.93	3.42	4.07	4.58	4.51	3.82
< 700,000	5.53	1.55	3.25	3.33	1.23	3.10
< 800,000	3.13	1.86	2.03	1.67	2.46	2.15
< 900,000	2.16	0.62	2.85	1.25	1.23	0.72
< 1,000,000	1.68	2.17	0.41	0.83	0.82	2.39
> 1,000,000	9.62	2.80	3.66	3.33	4.10	2.15
Total number of farms	100.00	100.00	100.00	100.00	100.00	100.00

Source: Martinovska-Stojčeska and Dimitrievski (2011).

In terms of the type of farming, the SGM of cattle farms and cereal farms has declined substantially over the years analysed. An increase in the farm SGM was noted for grape, sheep, vegetable and fruit farms (Table 16).

Table 16. Standard gross margin by type of farming (in '000 MKD)

Type of farming	2001	2005	2009	2001–05	2001–09
Cattle	594	277	117	0.47	0.20
Cereals	190	67	58	0.35	0.31
Fruit	250	328	305	1.31	1.22
Grapes	-66	177	120	2.68	1.81
Mixed farm	480	334	440	0.70	0.92
Mixed crop	215	193	177	0.90	0.82
Sheep	352	352	605	1.00	1.72
Vegetables	214	328	305	1.53	1.42
Mixed livestock	621	–	323	–	0.52
Average farm	282	259	260	0.92	0.92

Source: Martinovska-Stojčeska and Dimitrievski (2011, p. 29).

The SGM by farm size (in hectares of agricultural land) shows that on average larger farms with more hectares of agricultural land experienced a decrease in their SGM (Table 17). In a challenging environment characterised by underdeveloped market institutions and credit constraints for individual family farms, as well as increasing competitive pressures, the FADN farm economic efficiency in terms of the SGM per farm decreased. This declining FADN farm performance has further limited the investment abilities of individual family farms, which are needed for technological improvements, and for the survival and growth of more viable individual family farms.

Table 17. Standard gross margin by farm size (hectare groups)

Farm size	2001	2005	2009	2001–05	2001–09
< 2 ha	169	247	262	1.14	1.55
2-5 ha	68	81	84	1.19	1.24
5-10 ha	82	56	42	0.68	0.52
10-15 ha	61	68	43	1.12	0.71
>15 ha	33	56	15	1.70	0.46
Average farm	78	86	80	1.11	1.02

Source: Martinovska-Stojčeska and Dimitrievski (2011, p. 30).

Considering farm output value by type of farming, the farm output value was highest for sheep, mixed farms and cattle farms (Table 18). During the years 2001–09, the output value for cattle, cereals, sheep and mixed farms declined considerably, while there were some increases for fruit and specifically grape farms.

Table 18. Farm output value by type of farming activity (in '000 MKD)

Type of farming	2001	2005	2009	2001–05	2001–09
Cattle	1,467	859	674	0.59	0.46
Cereals	399	162	201	0.41	0.51
Fruit	436	743	554	1.7	1.27
Grapes	197	237	235	1.2	1.2
Mixed farm	741	734	849	0.99	1.15
Mixed crop	444	423	324	0.95	0.73
Sheep	1,832	1,381	1,315	0.75	0.72
Vegetables	499	602	513	1.21	1.03
Mixed livestock	1,141	–	800	–	0.70
Average farm	649	635	565	0.98	0.87

Source: Martinovska-Stojčeska and Dimitrievski (2011, p. 27).

7. Findings, conclusions and implications

The agricultural sector in the FYROM is still very important for both the overall structure of the economy and household food consumption. With variations in agricultural income, there are also variations in gross farm investment, which indicate an absence of soft budget constraints for farms in the FYROM, particularly individual family farms.

A relatively low level of government support was available to Macedonian farmers until 2004. Thus, up to that time Macedonian farm income and the SGM for FADN farms almost did not include subsidies, in contrast to EU farms. More recently, the budgetary subsidisation of agriculture and rural development has increased, and different credit lines have been introduced by domestic banks and financial institutions, as well as international ones. Individual family farms in the FYROM are small, in terms of both their economic size and their physical size (the agricultural land they own or operate). In 2005, the farm size in the FYROM in economic terms was around five times smaller (5.9 ESU) than the EU-25 average (32.7 ESU). The gross farm income of the FADN sample of farms in the FYROM was €5,500 per farm, representing about 15% of the EU-25 average. The income of individual family farms reached of €4,100, which was four times less than the EU-25 average. Because of the substantially lower overall and farm income in the FYROM, EU accession will pose

major challenges for Macedonian farmers, but it is also expected to bring improvements in the income situation of commercially oriented farms.

FADN data at the farm micro-level provides information on farm income, which is an important tool for policy analysis and evaluating agricultural support, including the national support schemes recently launched and the imminent pre-accession funds (Martinovska-Stojčeska et al., 2008, p. 41). In this respect, the FMS of the National Extension Agency in the framework of the MAFWE provides valuable evidence for determining the economic and technical performance of farms in the FYROM. The FMS is now officially providing data to the network collecting FADN information from farms to determine annual farm income, assessing conditions in the agricultural sector and the markets for agricultural products. Finally, it is worth mentioning that similar to some EU countries, the FADN sample farms are larger than the average of all farms in the FYROM. The average farm size in terms of the number of hectares per FMS farm is around 3-3.5 hectares, which is higher than the statistical average of 1.37 hectares generated by the 2007 census data for all farms (SSO, 2007). Most of the farms included in the FMS survey of 2005–09 belong to the category of very small farms with respect to their economic size. The largest proportion of farms consists of those with farm SGM of less than 2 ESU (VSF1). This structure has remained stable throughout the years and thus no significant changes have occurred. Yet, the SGMs for the most important crops in the country have generally declined over the years. Overall, this situation has occurred mainly as a result of increasing input costs and decreasing agricultural producer prices.

To sum up, the rural capital market in the FYROM continues to function at a low level, owing to relatively pronounced inequalities in regional development, which generate great divergences between regions and municipalities. Among the most striking constraints in the rural capital market are the unresolved issues associated with mortgages and collateral for loans, stemming from the widespread illegal status of buildings and other real estate in rural regions, where most of the agricultural facilities, land, livestock and agro-food equipment are situated. The limited capacities and knowledge of applicants for agricultural credit, mostly individual family farmers, also represent significant constraints in obtaining credit from commercial banks or accessing EU funds for rural development. In the period 2010 to September 2011, the government of the FYROM took crucial steps towards solving the problem of illegal buildings by legalisation, and facilitating access to the capital market for individual family farmers, agricultural firms and all other owners of land, buildings and other facilities in agricultural and rural areas. In parallel, farmers were also assisted through a series of educational programmes intended to improve their abilities to prepare business plans and other documentation for project investment, in order to apply for credit and other financial aid through EU funds for rural development.

In 2008, the FYROM launched a national strategy for balanced regional development. For this purpose, the bureau for the regional development of economically underdeveloped areas was transformed into a central body, tasked with implementing central budget funds and EU funds intended to support rural regions and municipalities in attracting more finance to their territories for more rapid economic growth. It is expected that around 1% of GDP will be devoted to regional development, as stated in the constitution of the FYROM. All these financial inflows are expected to improve the rural capital market and to contribute to faster development in less developed statistical regions and rural areas.

References

Bakucs, L.Z., I. Fertő and J. Fogarasi (2009), "Investment and Financial Constraints in Hungarian Agriculture", *Economics Letters*, Vol. 104, No. 3, pp. 122-124.

Benjamin, C. and E. Phimister (2002), "Does Capital Market Structure affect Farm Investment? A Comparison using French and British Farm-Level Panel Data", *American Journal of Agricultural Economics*, Vol. 84, No. 4, pp. 1115-1129.

Bester, H. (1994), "The Role of Collateral in a Model of Debt Renegotiation", *Journal of Money, Credit and Banking*, Vol. 26, No. 1, pp. 72-86.

Blancard, S., J.P. Boussemart, W. Briec and K. Kerstens (2006), "Short- and Long-Run Credit Constraints in French Agriculture: A Directional Distance Function Framework Using Expenditure-Constrained Profit Functions", *American Journal of Agricultural Economics*, Vol. 88, No. 2, pp. 351-364.

Bojnec, Š. (2011), *Land Markets in the Three Candidate Countries of the EU*, Factor Markets Working Paper No. 1, Centre for European Policy Studies, Brussels.

Bojnec, Š. and L. Latruffe (2011), **"**Financing Availability and Investment Decisions of Slovenian Farms during the Transition to a Market Economy", *Journal of Applied Economics*, forthcoming.

Boot, A.W.A., A.V. Thakor and G.F. Udell (1991), "Secured Lending and Default Risk: Equilibrium Analysis, Policy Implications and Empirical Results", *Economic Journal*, Vol. 101, No. 406, pp. 458-472.

Boucher, S., M.R. Carter and C. Guirkinger (2005), *Risk Rationing and Wealth Effects in Credit Markets*, ARE Working Paper No. 05-010, Department of Agricultural and Resource Economics, University of California, Davis.

Carter, M.R. (1988), "Equilibrium Credit Rationing of Small Farm Agriculture", *Journal of Development Economics*, Vol. 28, pp. 83-103.

Färe, R., S. Grosskopf and H. Lee (1990), "A Nonparametric Approach to Expenditure-Constrained Profit Maximisation", *American Journal of Agricultural Economics*, Vol. 72, No. 3, pp. 574-581.

Kamphuis, B. and L. Dimitrov (2002), *Farm Business Data Macedonia, Provisional Data 2001-2002*, WB Private Farmers Support Project, National Extension Service of Macedonia, Skopje,

Ministry of Agriculture, Forestry and Water Economy (MAFWE) (2007), *The Republic of Macedonia Operational Programme under the EU Instrument for Pre-Accession for Rural Development (IPARD) National Plan For Agriculture and Rural Development 2007-2013, Part IV - Technical Measure Fiches*, MAFWE, Skopje.

——— (2009-2011), *Annual Report for Agriculture and Rural Development for the Republic of Macedonia*, MAFWE, Skopje.

——— (2010), *Agregacija na makedonskite zemjodelski aktivnosti (proizvodi) vo EU aktivnosti koi se spored priracnikot za tiplogija*, Working memorandum, FADN National Committee, MAFWE, Skopje.

Martinovska-Stojčeska, A., N. Georgiev and E. Erjavec (2008), "Farm Income Analysis of Agricultural Holdings in Macedonia using FADN Methodology", *Acta Agriculturae Slovenica*, Vol. 92, No. 1, pp. 41-51.

Martinovska-Stojčeska, A. and D. Dimitrievski (2009), "The Farm Accountancy Data Network in the Republic of Macedonia with Emphasis on Data Quality", Discussion, Third Inter-Departmental Meeting, Ohrid, Republic of Macedonia, 11-12 September

2009, University Ss Cyril and Methodius (UKIM), Faculty of Agricultural Sciences and Food, Skopje.

———— (2011), *Economic and Technical Analysis of Macedonian Farms based on Farm Accountancy Data - 2005-2009 Period*, University Ss Cyril and Methodius, Skopje and Ministry of Agriculture, Forestry and Water Economy, Skopje.

Ministry of Finance of the Republic of Macedonia (2011), Database, Skopje, (http://www.finance.gov.mk).

National Bank of the Republic of Macedonia (2011), Skopje (http://www.nbrm.mk).

NEA (2007), *Farm Monitoring System: Farm Data Collection Manual*, NEA, Bitola.

———— (2009), *Farm Monitoring System: Farm Reporting Manual*, NEA, Bitola.

Pietola, K., S. Myyrä and A.-M. Heikkilä (2011), *The Penetration of Financial Instability in Agricultural Credit and Leveraging*, Factor Markets Working Paper No. 2, Centre for European Policy Studies, Brussels.

State Statistical Office of the Republic of Macedonia (SSO) (1994), *Census of Population*, SSO, Skopje.

———— (1998 to 2010), *Statistical Yearbooks 1997 to 2009*, SSO, Skopje.

———— (2008), *Census of Agriculture 2007, Book I, Basic Statistical Data of Individual Agricultural Holdings and Business Subjects in the Republic of Macedonia, by Regions*, SSO, Skopje.

———— (2011), State Statistical Office of the Republic of Macedonia, Skopje (http://www.stat.gov.mk).

Stiglitz, J.E., and A. Weiss (1981), "Credit Rationing in Markets with Imperfect Information", *American Economic Review*, Vol. 71, No. 3, pp. 393-410.

Legislation

Law on Establishing a Network for Collection of Accounting Data from Farms, *Official Gazette*, No. 110, Skopje, 2007.

Regulation No. 79/65/EEC on Setting up a Network for the Collection of Accountancy Data on the Incomes and Business Operation of Agricultural Holdings in the European Economic Community, OJ L 109, 23.6.1965, pp. 1859–1865.

Comparative Analysis of Factor Markets for Agriculture across the Member States

245123-FP7-KBBE-2009-3

The Factor Markets project in a nutshell

Title	Comparative Analysis of Factor Markets for Agriculture across the Member States
Funding scheme	Collaborative Project (CP) / Small or medium scale focused research project
Coordinator	CEPS, Prof. Johan F.M. Swinnen
Duration	01/09/2010 – 31/08/2013 (36 months)
Short description	Well functioning factor markets are a crucial condition for the competitiveness and growth of agriculture and for rural development. At the same time, the functioning of the factor markets themselves are influenced by changes in agriculture and the rural economy, and in EU policies. Member state regulations and institutions affecting land, labour, and capital markets may cause important heterogeneity in the factor markets, which may have important effects on the functioning of the factor markets and on the interactions between factor markets and EU policies. The general objective of the FACTOR MARKETS project is to analyse the functioning of factor markets for agriculture in the EU-27, including the Candidate Countries. The FACTOR MARKETS project will compare the different markets, their institutional framework and their impact on agricultural development and structural change, as well as their impact on rural economies, for the Member States, Candidate Countries and the EU as a whole. The FACTOR MARKETS project will focus on capital, labour and land markets. The results of this study will contribute to a better understanding of the fundamental economic factors affecting EU agriculture, thus allowing better targeting of policies to improve the competitiveness of the sector.
Contact e-mail	info@factormarkets.eu
Website	www.factormarkets.eu
Partners	17 (13 countries)
EU funding	1,979,023 €
EC Scientific officer	Dr. Hans-Jörg Lutzeyer