SELECTED EFFECTS OF FINANCING OF AGRICULTURAL HOLDINGS IN NEW MEMBER STATES OF THE EUROPEAN UNION

Zofia Kołoszko-Chomentowska*

Abstract In this paper, the effects of financing of agricultural holdings in new member states of the EU and the development of these holdings are assessed. The income of afamily-owned agricultural holding was accepted as the basic measure of aholding's capability for extended reproduction and development. Selected elements of financial analysis were also applied. The level of family farm income and re-investment of fixed assets was varied in EU-10 agricultural holdings over the years 2004-2009. The level of family farm income was mainly dependent on subsidies and subventions. Alow dependence between the value of family farm income and net investment value was observed (R^2=0.243), and ahigh dependence between labour productivity and labour profitability was observed (R^2=0.734).Positive changes took place in the equipping of agricultural holdings with fixed assets. Growth of capital saturation of land was observed in all countries. Holdings taking advantage of external sources of financing had greater developmental capabilities. The net investment value was positively correlated with the debt ratio, although this dependence was low.

JEL Classification: 013, Q12
Keywords: agricultural holding, financing, public funds, farm income

Received: 10.07.2014 Accepted: 11.11.2014

Introduction

Agriculture in EU member states is supported and protected within the framework of the Common Agricultural Policy (CAP). One of the more important goals of this policy is to ensure rational development of agricultural production and full utilization of production factors, particularly the labour force, as well as to ensure appropriate living standards for the agricultural population by increasing the income of persons employed in the agricultural sector. Utilization of CAP instruments is a great opportunity for agriculture and rural areas in new member states. The underdevelopment of agriculture in these countries is high, and thus, the needs are enormous.
Encompassing agriculture with the mechanisms of the Common Agricultural Policy means supporting both commercial farms with strong market ties and farms that perform new, often non-commercial, functions, seeking their opportunities in multi-functionality as well as alternative sources of income. Some economic instruments do not stimulate growth of agricultural production by assumption, but since they have the form of transfers to agricultural holdings, they have an impact on agricultural income as a result.
The results of studies conducted until now prove that utilization of Common Agricultural Policy instruments has improved the production and economic results of the agricultural holdings of new member states (Poczta, 2008; Poczta, et al., 2012; Bojnec & Latruffe, 2013; Overmars et al., 2013; Smutka & Selby, 2013; Spicka, 2013). Above all, the role of direct subsidies in the growth of the level of agricultural income is emphasized. Funds from the Rural Development Program have also proven to be helpful to the development of agricultural holdings. Farmers have obtained the capability to invest in their holdings and adapt them to the requirements of a competitive market, particularly considering that the neglect in this scope is very extensive. However,

* Ph. D. Zofia Kołoszko-Chomentowska, Bialystok University of Technology, Department of Management, Ojca Tarasiuka Street 2, Kleosin 16-001, e-mail: z.koloszko@pb.edu.pl.

eFinanse
financial internet quarterly

the fact that the economic conditions in Europe and around the world have worsened, starting from 2008, must be taken into account, and this has had an impact on the situation of agricultural holdings. This justifies the need to conduct systematic studies and assess the functioning of agricultural holdings in a long-term perspective. Supporting holdings with public funds is to contribute to the permanent improvement of the economic situation of agricultural holdings and of the reproduction of production assets, not only to satisfy current needs. Determining a tendency requires a sufficiently long period of time, but it seems that after several years over which the Common Agricultural Policy has been in force, such an assessment is possible.

The goal of this paper is to assess the effects of financing of the agricultural holdings of new member states of the European Union (EU-10) and the developmental capabilities of these entities.

Material and methods

The research problem was elaborated based on data from the FADN system (Farm …, 2010). The scope of analysis stretches between two moments in time: the years 2004 and 2009. Data is currently available for this period (European …, 2013). Such an approach has made it possible to determine changes to the production and economic situation of agricultural holdings over time. Bulgaria and Romania were excluded from the analysis due to a lack of data in the FADN database in 2004.

The concepts of income and net value added were utilized in the analysis in compliance with FADN nomenclature. The family farm income (SE420) constitutes the charge for involvement of own production factors in the operational activity of the agricultural holding as well as the charge for the risk taken by the head of the agricultural holding. The family farm income is used to assess the charge of agricultural production factors, including the efficiency of work at an agricultural holding in the context of both its capability of extended reproduction, and thus, its capability for development, and its capability to support an agricultural family (Zegar, 2008). However,net added value (SE415) is the payment for permanent involvement of production factors without regard to their status of ownership (own or foreign) and constitutes a useful measure of income obtained by all owners of production factors involved in farm activity (Goraj et al., 2004).

Selected methods of financial analysis were also applied (Gabrusewicz, 2002). The capability of holdings to pay current liabilities was assessed on the basis of the current liquidity ratio according to the formula: current assets/current liabilities, which, takes on the following form in calculations with the application of FADN data: SE465/ SE495.

In order to determine the perspectives of agricultural holding functioning in the future, the rate of fixed asset reproduction was calculated. This is one of the methods of assessing the reproduction of fixed assets and development of holdings. This index was calculated according to the formula: (net investments/ fixed assets)x100%, which takes on the following form according to FADN: (SE521/SE441)x100%. It informs of the type of reproduction occurring in a holding (extended, simple, or narrowed). The dependence between the growth of the value of fixed assets and the value of family farm income, as well as the dependence between the net investment value and level of debt, were also studied. This dependence was determined based on the coefficient of determination. The level of foreign capital was characterized by the liabilities ratio (LR=SE485x100%/SE436).

Results

The equipment of the analyzed agricultural holdings with production factors indicates that changes in the resources of these factors occurred in the years 2004-2009 (Tab. 1). Data on land resources confirms the occurrence of land concentration processes, which have the impact of improving the agrarian structure. An increase of land resources took place in 6 countries (Cyprus, Estonia, Latvia, Malta, Poland, and Slovakia), and in four countries (Czech Republic, Lithuania, Slovenia, and Hungary), the mean surface of agricultural land was reduced by 1.2-8.5%. This is probably more the result of the method of selection of agricultural holdings for studies than actual changes in this scope. An increase of capital saturation of land can also be observed, as indicated by the growth of the value of fixed assets and current assets per 1 ha of agricultural land. In most countries (with the exception of Slovakia) agricultural holdings increased their fixed asset resources, albeit in differing degrees. In the case of agricultural holdings in Slovenia and Hungary, this growth was less than 10%, the increase was 24% in Malta, growth was within the range of 30-50% in Cypriot, Czech, and Estonian holdings, and growth of the value of fixed assets that was

greater than 50% took place in Lithuanian, Latvian, and Polish agricultural holdings. From an absolute perspective, greater increases were observed in Cypriot and Polish holdings. These changes indicate an increase of the equipment of the studied holdings with technical production resources. Growth of saturation of land with own equity was observed in all cases.

Table 1: Production potential of agricultural holdings in EU-10 in 2004 and 2009

Country	*Utilised agricultural area (ha)*	*Total labour input (AWU[1])*	*Unpaid labour input (FWU[2])*	*Fixed assets (EUR/ha)*	*Current assets (EUR/ha)*	*Equity (EUR/ha)*
2004 y						
Cyprus	5.96	1.24	0.96	14050	2954	15847
Czech Republic	250.07	9.24	1.36	1955	659	1969
Estonia	124.12	3.24	1.41	903	292	924
Lithuania	52.13	2.12	1.58	816	461	1134
Latvia	63.65	2.66	1.61	612	230	759
Malta	3.17	1.80	1.39	67000	9189	74373
Poland	15.14	1.76	1.53	3700	681	3930
Slovakia	527.74	19.27	1.16	2194	448	2559
Slovenia	12.39	1.96	1.85	15474	544	15635
Hungary	53.69	1.89	0.67	1736	787	1818
2009 y.						
Cyprus	7.17	1.23	0.96	20369	3457	23292
Czech Republic	231.80	7.28	1.36	2566	853	2631
Estonia	131.14	2.46	1.20	1330	325	1157
Lithuania	50.52	1.85	1.44	1474	672	1826
Latvia	65.14	2.14	1.38	1382	532	1084
Malta	3.52	1.89	1.56	83126	7378	85326
Poland	18.41	1.75	1.52	6445	767	6753
Slovakia	574.64	15.47	1.26	822	621	1162
Slovenia	11.34	1.65	1.60	16178	1064	16966
Hungary	53.02	1.77	0.73	1784	950	2078

1 – Annual Work Unit, 2 – Family Work Unit

Source: own calculations based on FADN data

At the same time, a tendency of reduction of employment in agriculture is to be noted, which pertains to all new EU member states. In the case of most countries, holdings were mainly based on the labour resources of its own family, and hired labour constituted only a slight supplement to these resources. Czech and Slovakian holdings were an exception, where the total annual work (AWU) was greatest and hired labour is dominant, which is linked to the existence of large-area holdings that significantly exceed the mean surface of agricultural land in other countries.

An increase of work productivity, measured as the value of production per full-time employee, took place in all countries, and it was the greatest in Slovenian agricultural holdings, where this growth amounted to 83% (Tab. 2). The group of countries in which the increase of this index was lowest includes: Hungary (3%), Poland (9%), and Malta (11%). Holdings in the Czech Republic, Malta, and Hungary exhibited the greatest work productivity.

eFinanse
financial internet quarterly

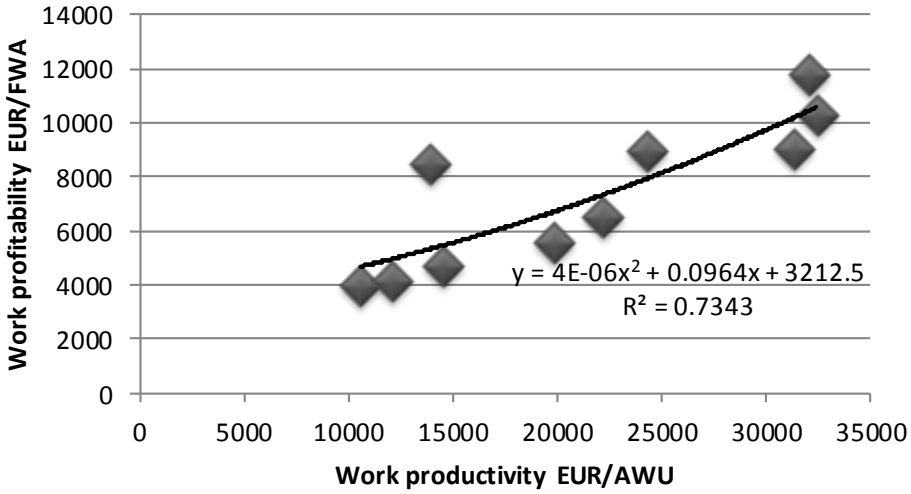
Table 2: Economic and production results in agricultural holdings in EU-10

Country	*Total output (EUR/AWU)*		*Family farm income (EUR/ farm)*		*Farm net value added (EUR/AWU)*		*Family farm income (EUR/FWU)*		*Share of subsidies in family farm income (%)*	
	2004	*2009*	*2004*	*2009*	*2004*	*2009*	*2004*	*2009*	*2004*	*2009*
Cyprus	16957	22732	3195	7360	5371	8174	3340	7819	97.2	46.3
Czech Republic	29785	35115	26601	9941	9614	10999	10209	10397	141.0	177.2
Estonia	19805	28891	19248	11458	7420	8360	8394	9557	63.6	179.9
Lithuania	11794	16037	12313	14747	6233	6634	7224	9798	47.7	63.3
Latvia	11690	17313	9580	7285	4404	5799	4888	4624	80.5	182.3
Malta	30344	33809	22115	14343	14685	10323	13806	9795	42.5	61.7
Poland	11558	12604	6072	6703	4097	4836	3939	4329	32.3	76.8
Slovakia	18907	25336	9167	1125	3518	1639	7902	5241	57.4	160.1
Slovenia	7436	13649	5735	7814	2410	4679	3093	4899	94.5	109.3
Hungary	30937	31836	6881	7870	10068	10479	7790	10277	140.5	178.4

Source: own calculations based on FADN data

It is worth noting the Cypriot and Maltese holdings are characterized by the lowest agricultural land and labour resources, but thanks to relatively beneficial relations between capital resources and other production factors, work productivity is comparable to countries with greater resources of these factors. A high dependence between work productivity and work profitability, measured as the family farm income per working person in the family (unpaid labour input) was also present, with coefficient R^2=73.4% (Fig. 1). However, this dependence is not always obvious due to the convolution of various economic factors, and it may happen that high profitability does not always accompany high productivity.

Figure 1: Dependence between work productivity and work profitability (average in 2004-2009)



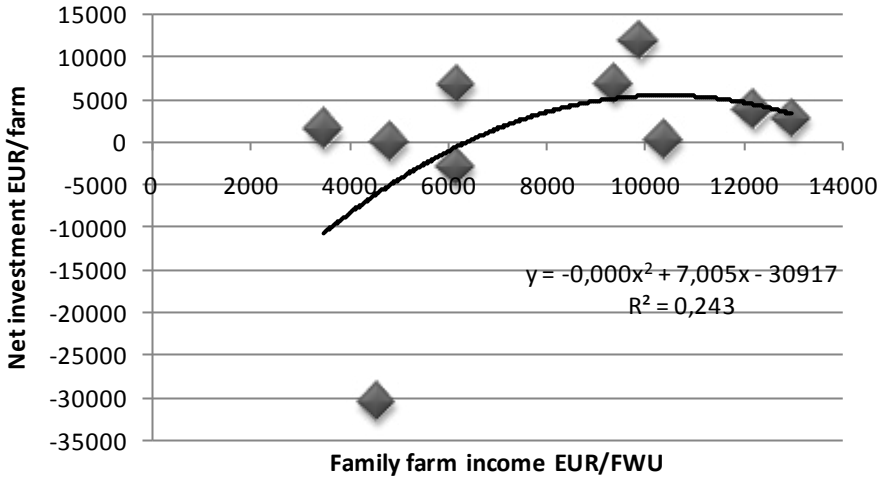
Source: Own calculations based on FADN data

In 2009, growth of the family farm income per working person in the family was observed in most countries, with the exception of Latvia, Malta, and Slovakia. However, if this index was

to be corrected by the value of subsidies, the result would be significantly lower in all countries. This suggests the conclusion that work profitability is not always related to improvement of the utilization of production factors and is often the result of effective absorption of subsidies. In the agricultural holdings of all countries, work profitability was shaped under the strong influence of budget transfers. In the case of the Czech Republic, Estonia, Latvia, Slovakia, Slovenia, and Hungary, the value of subsidies was significantly greater than the income of the holding that was worked. Cypriot holdings are the exception here, where growth of income per working person in the family took place by 134%, at a 46.3% share of subsidies, which may suggest that the growth of income also took place through improvement of work efficiency. In many EU-12 countries with holdings characterized by high technical efficiency, the value of subsidies is significantly greater than the level of income from an agricultural holding, and without subsidies, these holdings would suffer a loss (Sobczyński, 2011; Babuchowska & Marks-Bielska, 2011).

The statistical dependence between values of the family farm income and the net investment value was also low, the determination coefficient was equal to 0.243 (fig. 2). It is difficult to give an unambiguous interpretation in this case, because various factors play a role in investment activity. Investments serve, above all, as a substitute of labour input that is effected by capital. Techniques and technologies reducing the demand for labour, but also requiring large capital expenditures, are the consequence of this process. It may be that the low tendency to execute investments results from a lack of workforce drainage from agriculture. In this situation, holdings are not interested in using capital-consuming technologies.

Figure 2: Dependence between family farm income and net investment (average of the 2004-2009)

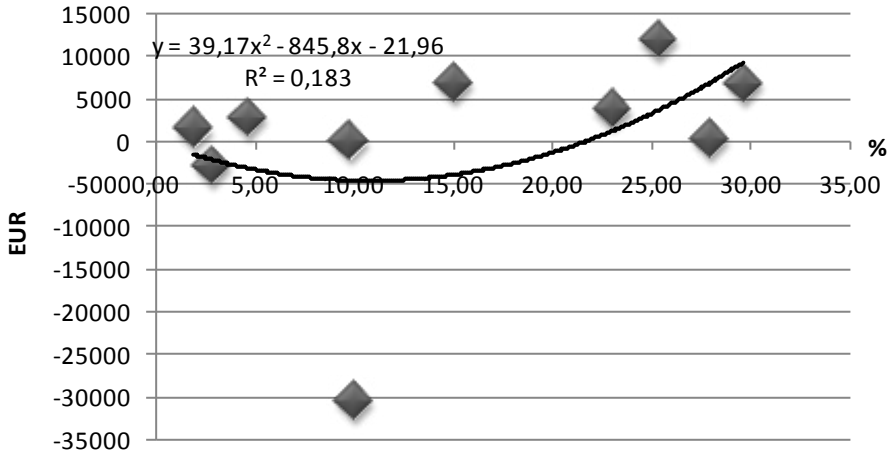


Source: Own calculations based on FADN data

The data presented in Table 3 indicates a very diverse asset situation and diverse capabilities of its reproduction. The net investment value (corrected by the depreciation value) informs of fixed asset renewal processes. Only Lithuanian holdings had extended reproduction capabilities in both research periods (rate of fixed asset re-investment>1). Slovakian holdings were in the most difficult situation – the net investment value and rate of asset re-investment were negative in both research periods, and this means that systematic decapitalization of fixed assets is occurring in these holdings. In the case of Polish agricultural holdings, the situation has worsened. Although they had property reproduction capabilities in 2004, the rate of fixed asset re-investment was negative in 2009.

eFinanse
financial internet quarterly

Figure 3: The share of foreign funds and the net investment value (average of the 2004-2009)



Source: Own calculations based on FADN data

Cypriot, Maltese, Solvakian and Slovenian holdings are characterized by an extreme liquidity ratio compared to other countries. This ratio took on a double-digit value in both research periods. The cause of such a state can be sought in the fact that the holdings of these countries have the lowest debt, amounting to 3.4% in 2004 on average and slightly more in 2009 (4.8%).These holdings distrust external sources of financing, which are laden with high risk. This also corresponds to the very high share of own equity in the value of assets, which is above 90%. A high share of own equity is indicative of strong financial foundations of a holding and of lower risk of conducting activity, but on the other hand, it limits the developmental capabilities of these entities. This is also confirmed by statistical analysis – the dependence between the share of foreign funds and the net investment value was very low, with determination coefficient R^2 equal to 0.183 (fig. 3). The presented data shows that the share of external financing sources was very diverse, however, in general, as the share of foreign funds increased, so too did the intensity of investment. A similar phenomenon occurred in EU-12 countries (Sobczyński, 2011). Among the countries subject to analysis, Slovakia is the most distinct in this respect. The negative net investment value in the holdings of this country (although it is being reduced), at a relatively large share of foreign funds in assets (nearly 20% in 2009), may be the result of the low profitability of property in agriculture.

Table 3: Characteristic of the investment in agricultural holdings in EU-10 (per farm)

Country	*Gross investment (EUR)*		*Net investment (EUR)*		*Current ratio*		*Liabilities ratio (%)*		*Rate of fixed assets re-investment (%)*	
	2004	*2009*	*2004*	*2009*	*2004*	*2009*	*2004*	*2009*	*2004*	*2009*
Cyprus	-43	5162	-4349	2542	25.77	11.14	5.81	2.24	-5.19	1.74
Czech Republic	21994	33080	42	572	2.57	1.44	24.01	23.05	0.00	0.09
Estonia	20472	12670	13611	539	2.38	1.80	22.73	30.1	12.14	0.31
Lithuania	5863	11488	3698	5957	5.37	4.52	11.18	14.80	8.69	8.01
Latvia	8915	5611	5452	-1607	4.58	3.85	23.25	32.39	14.00	-2.30
Malta	2154	9548	-868	5836	19.47	14.03	2.38	5.72	-0.41	1.99
Poland	4505	3201	1647	-535	5.31	5.50	10.23	6.36	2.94	-0.45
Slovakia	35039	101509	-32599	-4363	13.79	11.48	3.11	19.51	-2.82	-0.92
Slovenia	7507	9252	1889	2728	11.63	11.83	2.39	1.60	0.98	1.49
Hungary	6734	10032	-398	3669	2.91	2.74	27.98	23.98	-0.43	3.88

Source: Own calculationbased on FADN data

Conclusion

Agriculture in new EU countries is very diverse. It often has significant production potential at its disposal, but due to unfavourable relations between production factors, the effectiveness of their utilization is low. Entities that are better equipped with these factors are less susceptible to unfavourable economic conditions or are better at adapting to variable conditions in the market environment.

The level of family farm income (including unpaid labour input) and fixed asset re-investment in new member states were very diverse. Changes of the conditions of functioning of agricultural holdings after entry into the EU had an impact on improving the profitability of these entities, above all. This mainly took place thanks to budgetary subsidies. The family farm income corrected by the balance of subsidies indicates that these entities are susceptible to changing economic conditions. In 2009, this income came exclusively from subsidies in most countries, and without subsidies, the financial result would have been negative. Therefore, the dependence of income from a holding on work efficiency is low.

Favourable changes in the equipment of agricultural holdings with fixed assets were observed relative to the first year of studies. Growth of the production potential took place, as expressed by the growth of saturation of land and labour with capital. This is indicative of adaptive processes in the agricultural holdings of new member states. Holdings that were more in debt had greater fixed asset re-investment capabilities. In 2009, growth of debt and reduction in the rate of fixed asset reproduction took place in most of the studied countries.

Financing of the agricultural holdings of new member states contributed to the improvement of their financial and economic situation and certainly had an impact on the decisions of farmers concerning their perspectives on developing their holdings.

eFinanse
financial internet quarterly

References

Babuchowska K., Marks-Bielska R.(2011). Płatności bezpośrednie w kontekście dochodów polskich rolników. *Zeszyty Naukowe SGGW w Warszawie Problemy Rolnictwa Światowego*, 11(1), 7-15.

Bojnec S., Latruffe L. (2013).Farm size, agricultural subsidies and farm performance in Slovenia. *Land Use Policy*, 32, 207-217.

European Commission Agricultural and Rural Development (2014). *FADN, Standard reports*, *http://ec. europa. eu/agriculture/rica/database/database_en. cfm*

Farm Accountancy Data Network (2010). An A to Z of Methodology, European Commission, *http://ec. europa. eu/agriculture/rica/pdf/site_en. pdf*

Gabrusewicz W. (2002). *Podstawy analizy finansowej*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Goraj L., Mańko S., Sas R., Wyszkowska Z. (2004). *Rachunkowość rolnicza*. Warszawa: Difin.

Overmars K. P., Helming J, von Zeijts H., Jansson T., Teruin I. (2013). A modeling approach for the assessment of the effects of Common Agricultural Policy measures on farmland biodiversity in the EU 27. *Journal of Environmental Management*,126, 132-141.

Poczta W. (2008). Skala korzyści uzyskiwanych przez rolnictwo w wyniku wejścia Polski do UE (analiza uwzględniająca zróżnicowanie regionalne, główne kierunki produkcji rolnej i główne typy gospodarstw rolnych w pierwszym okresie akcesji – lata 2004-2006). (Program Wieloletni, Raport Nr 90). Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, Warszawa.

Poczta W., Średzińska J., Kita K. (2012).Sytuacja ekonomiczna gospodarstw rolnych krajów Unii Europejskiej w zależności od potencjału produkcyjnego. *Zeszyty Naukowe SGGW w Warszawie Ekonomika i Organizacja Gospodarki Żywnościowej*, 97, 205-215.

Smutka L., Selby R. (2013, November).*The relationship between capital stock value development and selected agricultural sector's characteristic in new EU countries*, Proceedings of the 6th International Scientific Conference Rural Development, Kaunas-Akademija Lithuania 6 (1), 615-621.

Sobczyński T. (2011). Wybrane efekty udziału funduszy obcych w finansowaniu gospodarstw rolniczych UE w latach 1989-2008. *Roczniki Nauk Rolniczych Seria G*, 98 (3), 213-229.

Spicka J. (2013, November), *The impact of the Common Agricultural Policy on the farm income and its determinants*, Proceedings of the 6th International Scientific Conference Rural Development, Kaunas-Akademija, Lithuania, 6 (1), 362-366.

Zegar J. S. (2008). *Dochody w rolnictwie* (metodologia, stan i tendencje). Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, Warszawa. Retrieved from file:///D:/Filmy/Top%20gear/S2101/*prof_zegar_k2%20(1).pdf*