IMPACT OF INVESTMENT SUPPORT ON HUNGARIAN AND POLISH AGRICULTURE

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Abstract

The EU accession was for NMS's agriculture a revolution. Among the changes there was an increase in public support, including the one for investment. The objective of this paper is to analyse the impact of the investment support on farm economic situation. The comparative analysis is based on 2006-2012 FADN data. The theoretical framework is given by the theories of market and government failure. The design of support is difficult and instruments are imperfect, inefficient or ineffective, showing allocative inefficiency. The obtained results show that public support is not efficient and effective. The investment projects using public funds seem to be less efficient than the other ones.

Key words: agricultural investment support, farm economic situation, competitiveness.

1. Introduction

Structural changes in agriculture are defined in a very broad way, but most of the definitions relate to the factors of production as the driving force of these changes (Goddard, 1993). The theoretical economic models explaining the behaviour of agricultural producers show that structural changes are the result of the movement of factors of production (i.e., land, labour and capital) from their less to more efficient applications (Lobley et al., 2002).

The neoclassical model of structural changes in agriculture emphasizes the relationship between the size of farms and the scale and efficiency of their production. Only appropriate scale of production can provide high efficiency (Chavas 2001). The increase in the size of households can improve their competitive position on the market, facilitate the use of economies of scale, lead to lowering production costs, strengthen the negotiating position in trade, etc. A larger farm size usually facilitates the implementation of innovations, because some of the new technologies are applicable only in farms with large-scale of production. Although in recent years we have observed an accelerated pace in the increase of farms' area, there are still substantial differences in their size. Part of production costs, regardless of the physical size of a farm, is fixed (Kisley and Peterson 1996). In addition to technology, a significant impact on the pace of structural changes has market imperfection in the mobility of resources, which determines producers' decisions regarding the initiation or cessation of farming (Chavas 2001).

Structural changes taking place in the Polish agriculture are very closely related to the pace of economic development, the financial situation of farms and agricultural policy (Urban, 2009). In Poland in the last decade the trend has been noticed of the peasant type farming and family farms evolving in the direction of the type of commercial farms and farms-enterprises of an agri-business nature (Tomczak 2003). The process of commercialization of farms is highly dependent on the structural changes and the possibility to transfer the labour force to non-agricultural sectors of the economy (Wos 2004). However, commercialization of farms equals the farms' very strong relationship with the market and high sensitivity to policy instruments (Kowalski, Rembisz 2005).

The objective of the paper is analysing the impact of the investment support on economic situation of supported farms. The comparative analysis presented in the paper is based on FADN data for the years 2006-2012. It examines the differences between the levels of the chosen indicators characterising two groups of farms undertaking investment projects: one with exclusively private funds and the other beside private funds using public support for investment. Following research questions are to be answered within the paper:

1. Is there any difference in economic performance between farms investing using public support and the ones using other sources of capital?
2. Can it be stated that there is a deadweight effect within the investment support?

3. Does investment support accelerate the process of production concentration?
4. Does investment support lead to an increase in production efficiency?
5. Does investment support lead to higher competitiveness of the supported farms?
6. Are there any differences between Hungary and Poland in relation to the answers to the above questions? If there are: what are the factors contributing to such differences?

2. Role of agricultural policy in shaping structural changes

Economists with a systemic approach to policy formulation and analysis distinguish three basic and very closely related functions of the state (Buchanan, Musgrave 1999). The first of them is stabilizing function, when the state tries to ensure that the economy is in a state of full employment with stable prices. The second one is the allocative function, i.e. the state interacts directly (creating demand and purchasing certain goods on the market) or indirectly (through the tax system and the system of subsidies) on the allocation of resources in the economy. The third one is the redistributive function, when the state allocates the goods produced by the whole society among its members (which of course always stirs debate concerning the choice between justice and efficiency).

Programmes launched in the pre-accession period and the ones of direct aid and rural development continued during the Polish and the Hungarian EU membership are examples of financial aid instruments to support structural changes in agriculture. At the same time the major objective of these programmes is to implement all three of the above government functions in some extent. As a policy instrument of state intervention they give a chance for stabilizing the agricultural policy over several cycles of production stimulating the desired changes in the area structures of farms, improving the competitiveness of production, environmental protection and multifunctional development of rural areas (Czyżewski 2007). For the most important programmes co-financed from the EU funds and support the above mentioned transformation include:

- SAPARD - Special Pre-Accession Programme for Agriculture and Rural Development;
- SOP "Agriculture" in Poland - Sectoral Operational Programme "Restructuring and Modernisation of the Food Sector and Rural Development 2004-2006" and ARDOP in Hungary – Agricultural and Rural Development Operative Programme;
- RDP 2004-2006 - Rural Development Plan for 2004-2006;
- RDP 2007 - 2013 - Rural Development Programme 2007-2013, which is in the final phase of the implementation process;
- direct payments.

In the period from July 2002 to the end of December 2013 the cumulative value of financial assistance for the agri-food sector and rural development financed with the above mentioned programmes exceeded 42.8 billion euro (Fig. 1). These include: SAPARD payments – about1.1 billion euro, SOP "Agriculture" - about 1.6 billion euro, RDP 2004-2006 - about 2.7 billion euro, RDP 2007-2013 – 13.2 billion euro and more than 23.3 billion euro of direct payments (Figure 1).

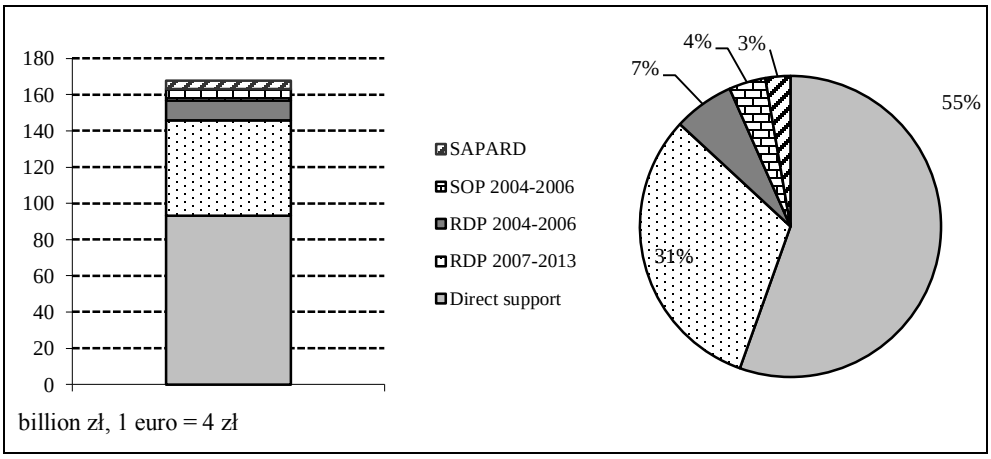


Figure 1: Expenditure on projects CAP in the period 07.2002 -12.2013 (billion zł and %)
Source: own study based on data from ARMA. Omitted are programs: SOP " Fish " and OP " Fish " whose participation in the value of the aid amounts to approximately 2%.

Direct payments are the most important source of income support and investment in agricultural holdings from a financial point of view. The share of these expenditures in the overall spending envelope for the implementation of the CAP in Poland exceeded 54%. Second in terms of resources involved in the programme supporting transformation of agriculture and rural areas is the RDP 2007-2013, its share in the CAP's expenditure is about 31%. About 4.3 billion euro remains to be spent by the end of its implementation period but 90% of its total budget has already been transferred to the beneficiaries of the programmes. It should also be emphasized that the remaining programmes the implementation of which was completed in previous years, despite the modest budget had a strong impact on investment and a demonstrative effect on farms and rural areas. Public support has become a stimulus for investment activities.

In case of Hungary the structure of the transfers from the CAP was similar as in Poland. Yet, considering the value of financial flows allocated between 2002 and 2010 to the Polish and Hungarian agri-food economy and to rural areas, it can be concluded that most public funds (ca. 70 per cent in Poland and ca. 50 per cent in Hungary) were used to co-finance actions related to developing the industrial sector (Figure 2).

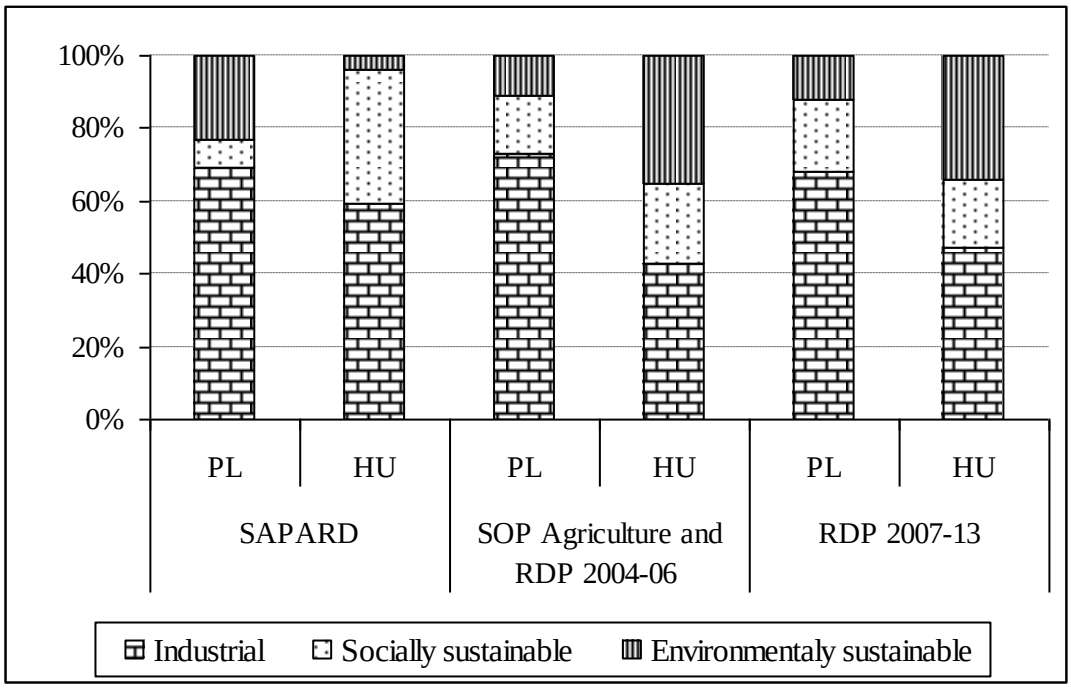


Figure 2. The structure of subsidies for food economy and rural development
Source: Fogarasi J., Wieliczko B., Wigier M., Tóth K., 2014, Figure 3.

3. Structural changes in agriculture and their relationship with the public support programmes

During the Polish membership in the EU there occurred noticeable changes concerning some factors of production. The most important changes appeared in the land structure. In the years 2002-2012 the number of farms with an area of more than 1 ha decreased to approximately 1.5 million (i.e. almost ¼) while the total area of arable land decreased by only 4.5%. The outflow of agricultural land outside farming sector concerned mainly the land already not used for agricultural and grazing activities. Structural changes were different for each group of farms depending on their land size (Figure 3). In general cessation of agricultural production related to these farms, which did not achieve the parity income and had no possibility of development and growth, whereas the increase appeared in farms whose income ensures fulfilment of the function of production and consumption.

The employment in the period 2002-2012 decreased by about 7% in annual work unit (AWU). In 2012, employment in the agricultural sector was still about 14.6% of the total workforce, and the total amount of work amounted to approximately 2,101 thousand AWU. Per 100 ha of agricultural land there were about 12 people employed. The high number of people employed in agriculture indicates a negative relationship between labour resources, land and capital, which in turn results in low labour productivity (Poczta, 2012).

Figure 3. Change in the number of farms and agricultural area by area groups of farms in the period 2002-2012

Source: Own calculations based on data from 2013 Annals of agricultural statistics and statistical Annals of agriculture and rural areas in 2007, CSO, Warsaw.

Inflow of funds from the EU budget and the improvement of the economic situation in agriculture and the consequent increase in revenue contributed to the rise in value of investments (Wieliczko 2013). Since 2006 investment expenditures (in current prices) in agriculture and hunting ranged from 0.75 to 1.15 billion euro per year, being almost twice higher than in the pre-accession period. The real value of the investments in 2012, expressed in constant 2002 year prices was lower by about 0.15 billion euro. The investment was followed by a slow process of growth in the value of fixed assets. The share of investment in the net value of fixed assets increased from 8 to about 16%. At the same time, it accounted for only 2-4% of the gross value of fixed assets. In this situation the recapitalization of assets continued. The degree of consumption of fixed capital increased from approximately 69% to nearly 77%. Most of the investment was carried out by a group of about 200 thousand commercial farms. The increase in investment expenditures was particularly evident in the years 2005-2008 and 2010-2012, these were the periods of an increased inflow of funds from investment programmes co-financed from the EU budget. The renewal of fixed assets related mainly to machinery and equipment, while depreciation concerned buildings and vehicles.

Attempt to assess the effects of investment and its impact on structural changes in agriculture was based on the analysis of the Polish and Hungarian FADN data for years 2006-2012 (Figure 4 and 5). For this purpose from the FADN database farms were selected using and not using capital grants and the value of their assets, sales, value-added and income per farm, hectares of farmland and employed on a full unit were compared. Farms selected for the analysis were similar in terms of resources and production lines. The years 2004-2005 were omitted from the study due to the small number of subjects meeting the established criteria.

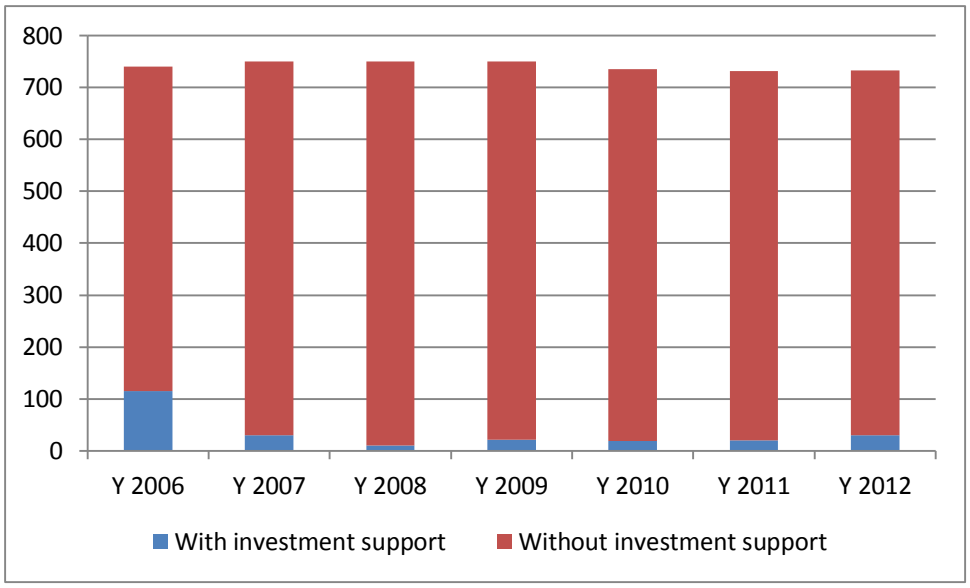


Figure 4. Number of farms within the Polish FADN's field of observation with and without investment support in the years 2006-2012 (in '000)
Source: Prepared by Dr D. Osuch (IAFE-NRI) based on FADN data, Warsaw 2013.

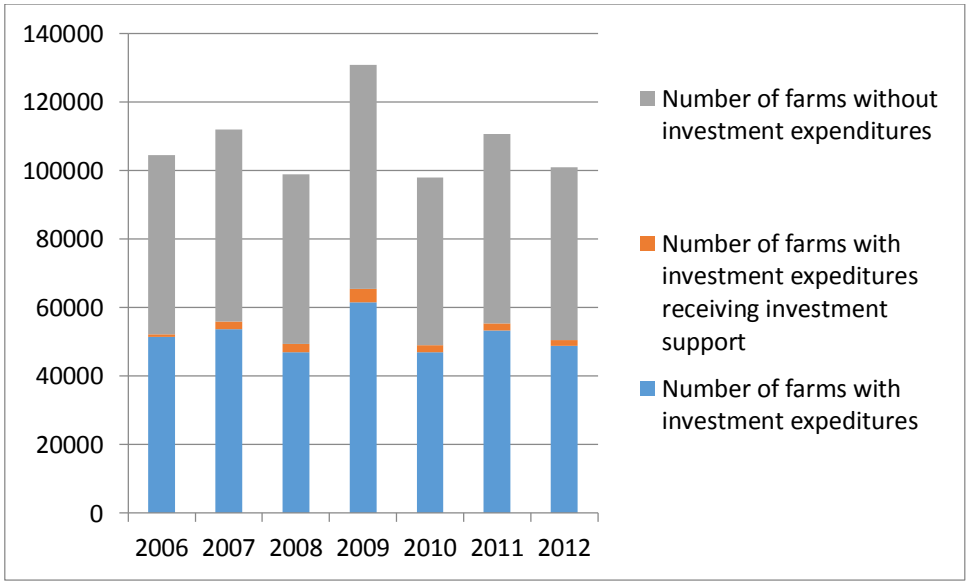
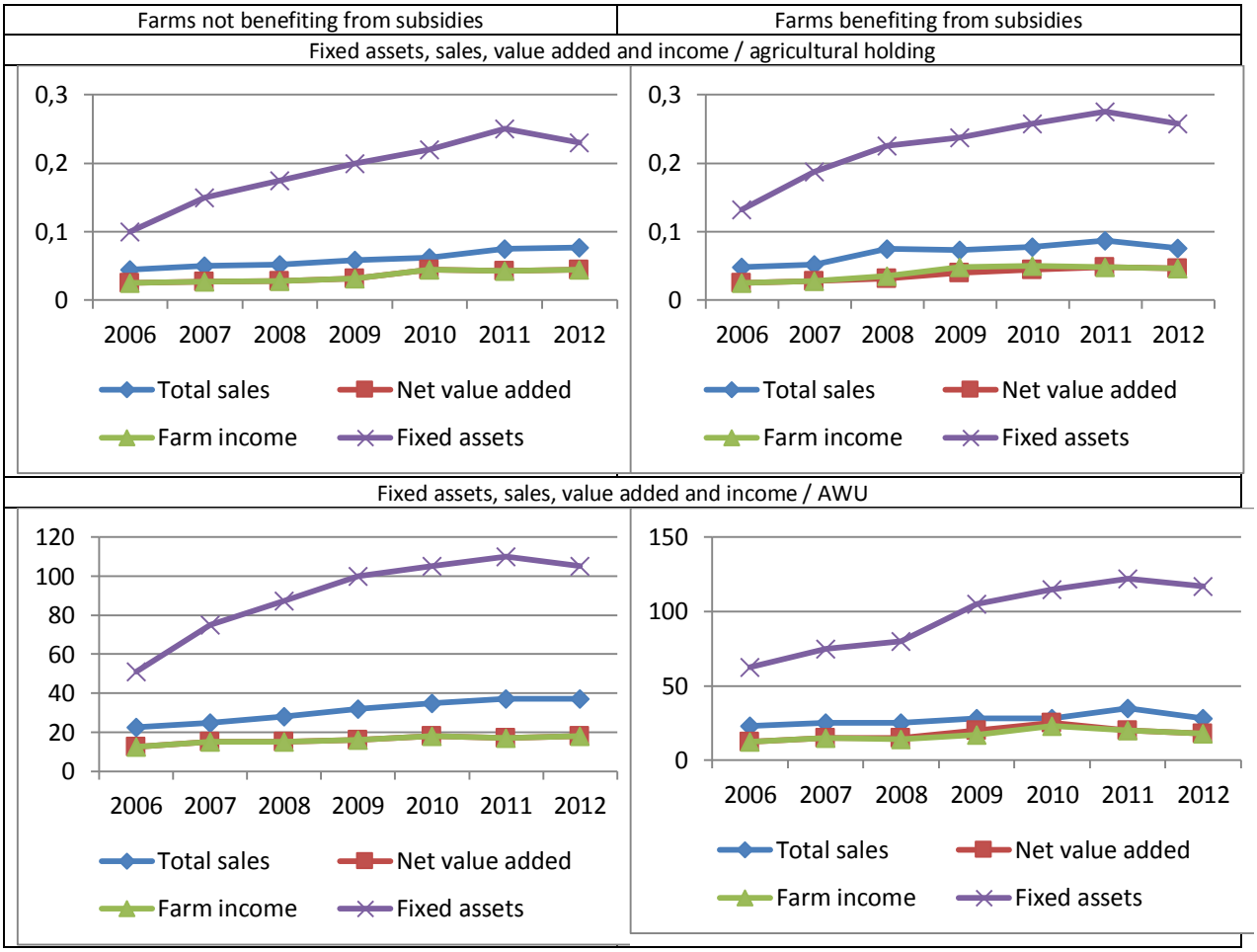


Figure 5. Number of farms within the Hungarian FADN's field of observation with and without investment support in the years 2006-2012
Source: Own elaboration based on Hungarian FADN data.

The analysis carried out on the basis of FADN data showed a rather large similarity of economic performance by farms in both groups. Although in the case of farms benefiting from investment grants the value of total sales per unit of assets was slightly higher than in farms without such grants, however, these farms had a slightly higher income from the family farm in the other group (Figure 6). Public support, however, played an important role in the realization of the investment (it was a kind of leverage) in the group of farms focused on the use of public aid. These farms adjusted the range of investment to the opportunities offered to them by the aid programmes,

which resulted in cyclical fluctuations in the investment process. This observation relates mainly to 2008, when the implementation of programmes from budgetary perspective 2004-2006 ended and the implementation of the new RDP 2007-2013 was only in the initial phase.

The farms benefiting from grants faster (than the control group) increased the value of fixed assets and generally it was higher per farm and per hectare of arable land. Also, the net value added per farm was slightly higher in this group of farms. But the value of total sales or income from the family farm per hectares of agricultural land were almost identical. It was also characteristic of the farms benefiting from investment subsidies that the value of fixed assets per a fully employed unit was slightly higher (than in farms not benefiting from such assistance). However, the value of sales, value added and income were similar.



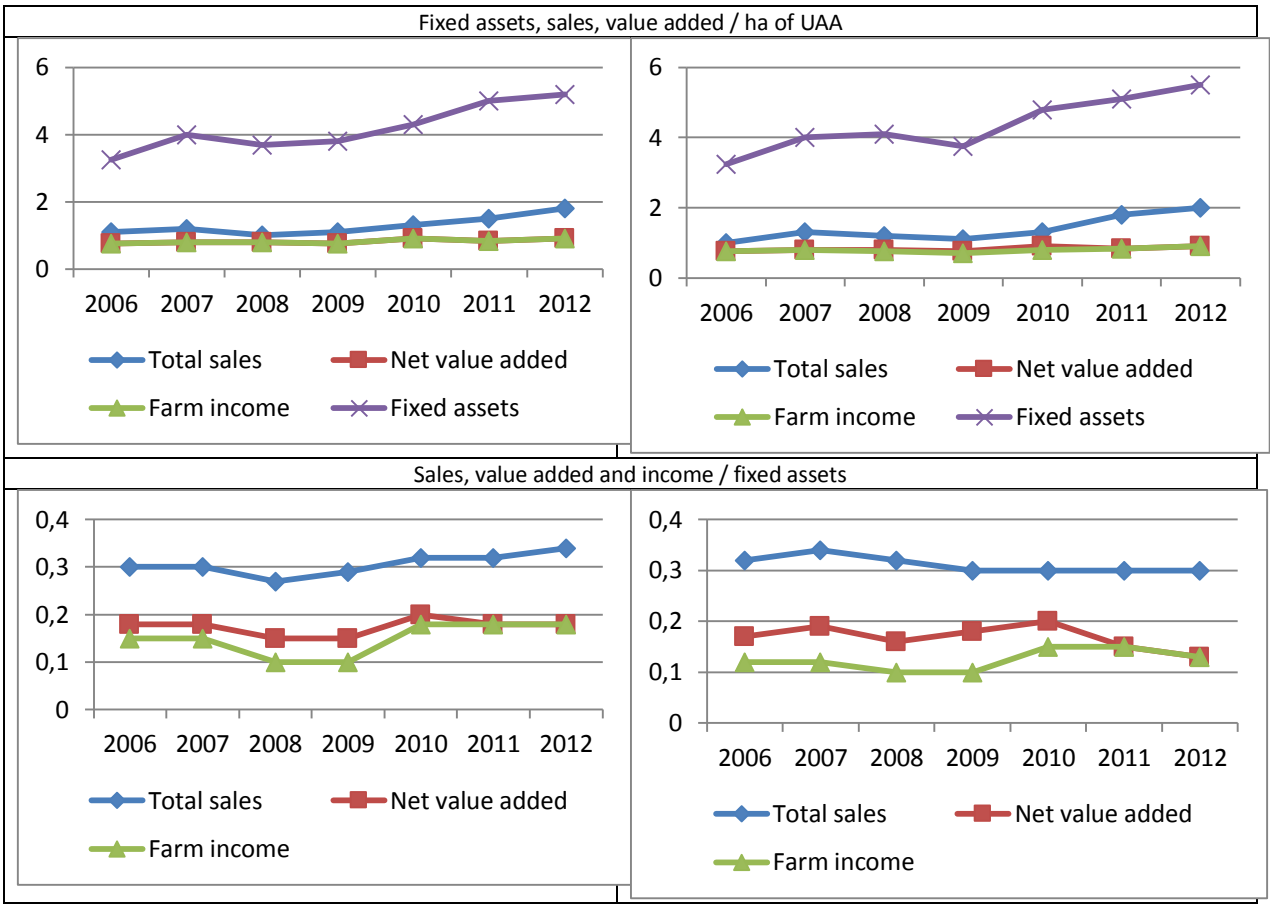


Figure 6. Fixed assets, sales, value-added and income Polish of FADN farms
Source: Prepared by Dr D. Osuch (IAFE-NRI) based on Polish FADN data, Warsaw 2013.

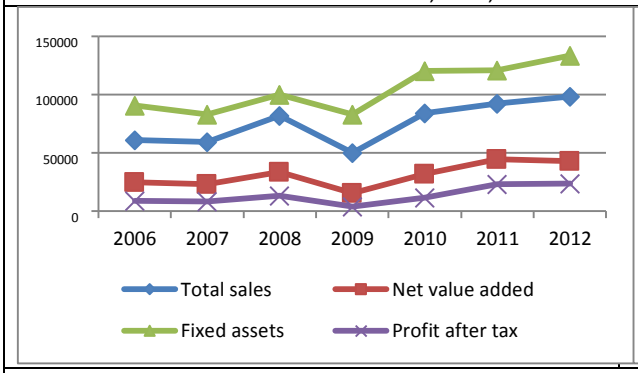
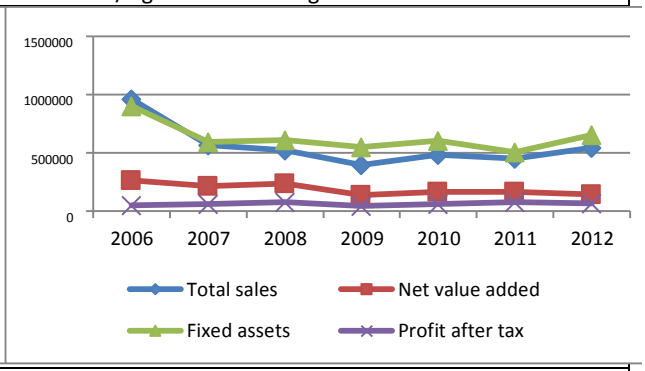
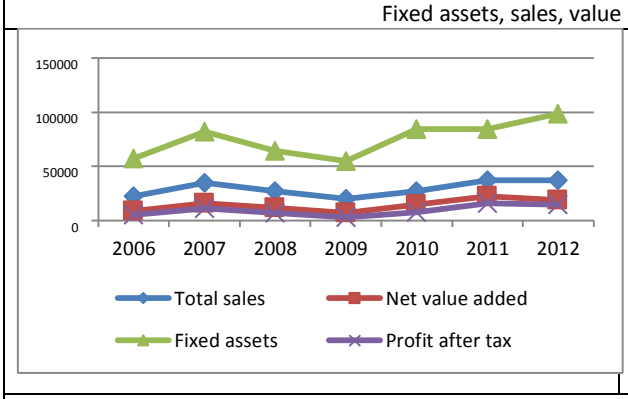
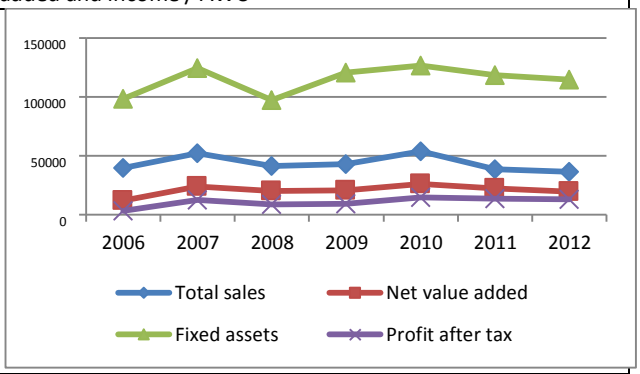
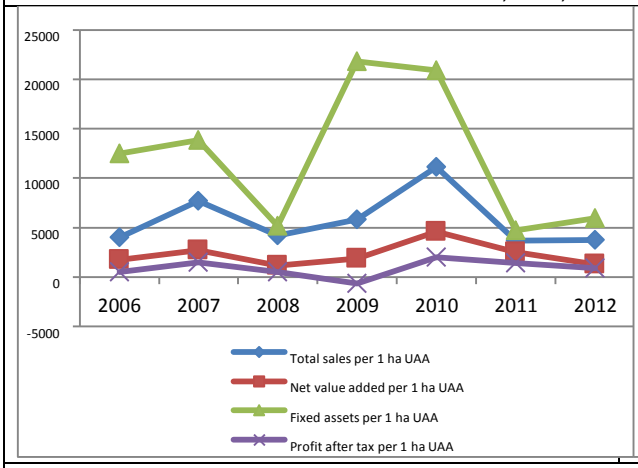
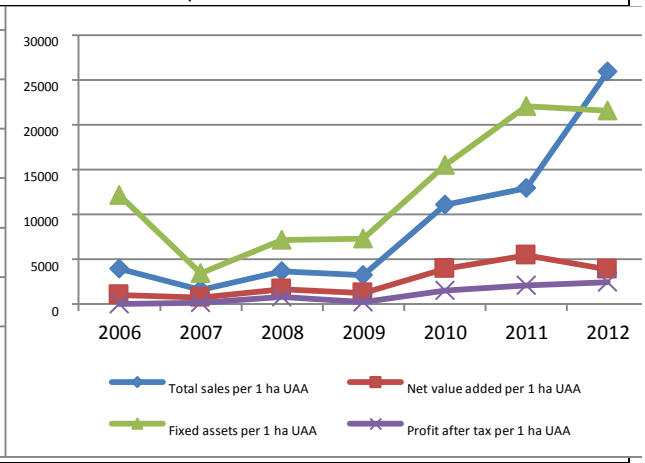
Similar indicators are presented in Figure 7 for Hungary. In the case of farms in this country a difference in economic results can be observed between farms investing with the funds coming from public support and with own capital or foreign capital. The fixed assets per farm, the sales per farms, the net value per farm and the profit after tax per farm is higher in case of farms investing without investment support than in case of farms with investment support. These indicators are increasing in the first case while in the second case they are decreasing.

When the value of total sales, net value added, profit after tax and fixed assets is reported to the labour used (Annual Work Units) the situation is different. There is no major difference between the two group of farms in case of the first, second and third indicators, but there is a well evident difference in case of the last indicator. The value of fix assets per the used labour is higher in case of farms investing with investment support, which may indicate over investment in case of these farms.

In case of the indicators calculates as a report of utilised agricultural area, farms investing with investment support improve their performance after 2009, which suggest that the investment support have positive contribution to the increase of profit after tax, net value added and sales as the value of fixed assets is increases.

When the profit after tax, the net value added and the sales are reported to the value of fixed assets we can observe that these indicators are almost constant during the analysed period in case of farms investing without investment support, while in case of farm with investments support the

value of these indicators are decreasing, which indicate again the presence of over investment situation in case of farms benefitting of public support.

Farms not benefiting from subsidies	Farms benefiting from subsidies
Fixed assets, sales, value added and income / agricultural holding	
	
Fixed assets, sales, value added and income / AWU	
	
Fixed assets, sales, value added and income / UAA	
	
Sales, value added and income / fixed assets	

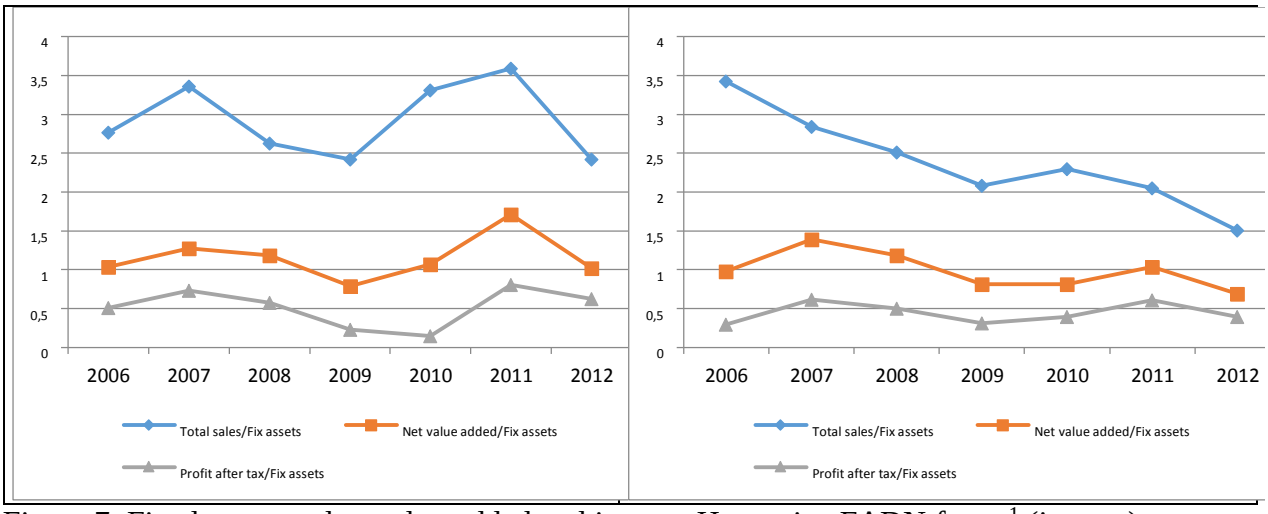


Figure 7. Fixed assets, sales, value-added and income Hungarian FADN farms[1] (in euro)
Source: Own elaboration based on Hungarian FADN data.

In case of farms with investment without investment support the decrease of sales/UAA in 2008 can be attributed to economic crisis, and the very high increase in 2009 and 2010 can be caused by price spike of agricultural products. It is unclear why this is not the situation in case of farms with investment support.

The substantial difference between farms without and with investment support, and the drop of Sales/farm and Fix assets/farm in case of farms without investment subsidy in 2007 comparative to 2006 is the following:

1. In 2007 started the new financial framework and the number of farms receiving investment support had increased. While in 2006 only big farms received investment support, from 2007 many smaller farms have received investment support: in 2006 only 64 (weighted 687) farms in the sample received investment support and 222 (weighted 2390) in 2007. The smaller farms receiving investment support caused the reduction of value of sales per farm and the value of fixed assets per farm.
2. In a lesser extent the other cause is that many farms with investment subsidy characterised by very high sales and fixed assets data did not received investment subsidy, they become part of the subgroup of farms with investment without subsidy.

3. Summary and conclusions

The EU accession caused major changes in both Hungarian and Polish agriculture. Among the enormous changes in the regulatory, institutional and market setting there was also a great increase in the level of public support for the sector. Among CAP and national policy instruments there is investment support that is supposed to accelerate the structural changes in agriculture and make the farms more competitive.

[1] In case of Sales/farm, Value Added/farm, Fix assets/farm and Profit after tax/farm, as well as in case of Sales/AWU, Value Added/AWU, Fix assets/farm and Profit after tax/AWU are calculated on whole sample, while in case of Sales/UAA, Value Added/UAA, Fix assets/UAA and Profit after tax/UAA excluded from the sample are the farms with 0 UAA.

Based on the study it can be concluded that due to financial transfers occurred a relatively modest change in the use of production factors and their inputs, which resulted in minor changes the relationship between the factors of production. Generally, there was a slight improvement in the relationship between land resources and the amount of work (mainly due to a decrease in number of farms, and hence in the real employment). Similarly shaped was the relationship between capital expenditure and labour. Although production assets were decapitalised, despite significant public transfers (this situation applies to the majority of small and medium farms), but transfers also contributed to the acceleration of processes of concentration of production and the accelerated technological development of farms.

Thanks to the conducted policies the objectives of public policies consistent with the intentions of the legislators were met. Substitution and income effects caused by investment support programmes, however, led to a reduction in resource efficiency. The source of this inefficiency was usually the substitution effect and in the income distribution participated not only farmers, but also third parties providing all sorts of services for the agricultural sector. Providing public funds to private activity also led to the formation of the "crowding out" effect. Beneficiaries' sensitivity to of costs of their actions decreased as a result of refunding some or all of the investment costs, the scope of which was adjusted to the eligibility criteria stipulated in a given support programme. Public support also did not provide equality and social justice. Beneficiaries of the programmes, using public funds were in a privileged position in relation to those producers who did not enjoy such subsidies.

Further research should concentrate on more homogenous groups of farms and differentiate between scale and type of investment. It should also take into account application of specific eligibility criteria limiting the access to public support for some types of agricultural production or some size groups (generally the ones performing better and having better access to other sources of capital). Public funds also limit types of investment project and thus can have an impact on the scale of observed changes in the economic performance of the analysed farm.

The results obtained show that public support in both countries analysed is not characterized by efficiency and effectiveness. A significant deadweight effect is observable. The farms investing without public funds are characterized by a stable level of investment whereas the other group invests when public money is available. The FADN data shows that there are no significant differences between the two groups in their production efficiency and competitiveness with the only exception being the value of fixed assets. The investment projects conducted based on public funds seem to be less efficient that the other ones, what can be a result of a lower use of credit as a source of capital and lower quality of business plan evaluation conducted by public administration in comparison with private banks.

These results suggest that public support for investment is not well targeted and there is a burning need to make the analysis of business plans more result-oriented. However, with the EU and national budgets being more and more constrained it is important to re-think the whole rationale of supporting competitiveness of the EU agriculture. The problem is exacerbated with the increasing presence of non-EU agricultural producers on both global and the EU markets. Therefore, the EU CAP policy should redesign its approach towards support for agricultural sector and find more effective and efficient policy instruments.

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