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THE EVALUATION OF EFFICIENCY OF POLISH AGRICULTURE

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Abstract

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The objective of the paper was to recognize the efficiency of Polish agriculture. We have studied data from Main Statistical Office (MSO) and compared the efficiency in the years 2000–2010. The data proved that the efficiency of Polish agriculture improved in the analyzed period. To measure the impact of macroeconomic variables we introduced these into the regression model. The macroeconomic factors included: X_1 (nominal prices of land), X_2 (land prices expressed in dt), X_3 (inflation), X_4 (investment in agriculture and hunting), X_5 (balance of trade) and X_6 (GDP). We wanted to recognize the impact of macroeconomic factors on: Y_1 (gross output), Y_2 (intermediate consumption), Y_3 (gross value added). Multiple regression was used to measure the impact of macroeconomic factors on global production of agriculture. The strongest impact on gross value added had: X_4 (investment in agriculture and horticulture) and X_4 (trade balance). Poland is a member of European Union and the Common Agricultural Policy has improved the situation in agriculture. There are about 2 100 000 farms in Poland but only 300 000–400 000 are producing for the market. Other farms have social functions and are place for work for rural inhabitants.

Keywords: economic efficiency, agriculture, macroeconomic factors, policy, multiple regression

1 INTRODUCTION

Agricultural production faces many problems because unpredictable factors such as weather effects, diseases and pest damages can have large effects on farm output. Agricultural markets can also be unstable, generating large price volatility and can be difficult to anticipate (Chavas, 2011). Agricultural production is a policy issue worldwide. There are many policies that can increase the efficiency of agricultural production and the problem has been widely debated (Nauges *et al*., 2011). Crop yields can be affected by the amount and timing of rainfall, growing season temperatures, pests, diseases, hailstorms, fire, and other factors. Rural production is subject to uncertainty and the risk associated with agricultural production is considerable. As Reddy and Bantilan (2012) point out the current level of agricultural efficiency can be improved by replacing traditional varieties with new, improved varieties. Agricultural production can also increase with improved macroeconomic stability, an increase in agricultural investment and favorable weather (Bokusheva *et al*., 2011).

Productivity is measured as the ratio of output to inputs in production; it is a measure of the efficiency of production. Productivity has many benefits. At the national level, productivity growth raises living standards because it improves people's ability to purchase goods and services, enjoy leisure, improve housing and education and contribute to social and environmental programs. Productivity growth is important to the firm because more real income means that the firm can meet its (perhaps

growing) obligations to customers, suppliers, workers, shareholders, and governments (taxes and regulation), and still remain competitive or even improve its competitiveness in the market place. Production technology is the core theoretical concept, where one can define formally the notions of technological efficiency (operating on the boundary of the feasible technology set), technical progress (shifting the boundary of this set) and scale effects (moving along the boundary of an existing set)(Genius *et al.*, 2012).

The macroeconomic survey is necessary to find the relations between the main economy aggregates (land, capital and workforce) and the factors having an impact on the sector. The most important relations appear between agriculture and macroeconomic factors. It is not enough to state that the land is stable and measure the inflow of capital and workforce. Without analyzing the resources between agriculture and economy, the analysis seems to be inefficient (Czyżewski, 2009). There are many problems of economy (illnesses of economy) among which the most important are: inflation, unemployment, deficit of demand and supply, the high debt, difficulties with development, social inequality and bureaucracy (Kornai, 1982). Many problems appear in agriculture and this sector is inefficient and may require subsidies to eliminate the negative effects of the market mechanism. The specific character of agriculture appears in supply character, its menial role to the economy, traditional management, slow adjustment process, long production cycle caused by weather conditions (Schiff, Valdes, 1998).

Even though currently agriculture faces many problems, it is still important for economy because of its high percentage in GDP of developing countries and its role in the trade of agri-food products. But over time we can observe the outflow of resources from agriculture to other sectors, which creates the need for deep analysis of the impact of macroeconomic factors on the efficiency of agriculture (Shiff, Valdes, 1998). What is more, the natural and social capital of agriculture is substituted to a certain extent with physical capital, what creates changes in agriculture (Czyżewski, Brelik, 2013). Agriculture faces the problem of depreciation because the productivity of production factors is low. The non-elastic adjustment causes economic surplus outflows to other non-agricultural sectors. Many well developed countries are characterized by high retransfers to agriculture, and face many problems because of high public debt, unemployment rate and ability to create long-term development (Czyżwski, Kułyk, 2012). The problem of depreciation in agriculture can be weakened by the investment, which is the basis for keeping competitive potential and helps to shorten the distance to other sectors of the economy. The low level of investment can be the result of structural deficiencies of agriculture, where farms have low production potential, weak contact with the market, low economic force and a low possibility of capital accumulation (Kusz, Gębek, Ruda, 2013). Only investment has an impact on modernization of production processes with technical, technological and biological development, which lowers production costs and replaces workforce by assets which lead to restructurisation and modernization of agriculture.

The concept of the development of agriculture on the basis of intensiveness of production functions did not bring expected results. The structural changes seemed to be too slow and the benefits from policy of cheap food were exhausted mainly in high developed countries. The fast increase of agricultural production helped to fulfill the demand for food. But as a result it enabled a fast outflow of economic surplus to other sectors. The multifunctional development was created as a concept of an answer of the expected functions which the rural sector should fulfill in the economic system (Czyżewski, Kułyk, 2011). There are different tools in rural policy that have an impact on agriculture. Budget transfers to agriculture flow from the problem of non-perfect market allocation and the need to correct the transfers causing resources reallocation. The solutions used in agriculture change the price relations, change the resource division and changes in relationships between production factors (Czyżewski, Kułyk, 2014).

Moreover, the development of farms needs the implementation of new technologies for costs reduction. It helps to maintain competitive position in the global market and fulfill the increasing nutrition needs. This can be achieved by strong support of credits (Kułyk, 2014).

Macroeconomic factors have an impact on efficiency of agriculture. The aim of this article is to analyze and quantify the relationship between chosen macroeconomic determinants and agricultural efficiency in a given period.

2 EFFICIENCY IN THE LITERATURE

Efficiency is a fundamental concept of economics. In terms of the market, it is described by the benefits of maximizing production, especially from the sale, which is a consequence of the use ofboth tangible and intangible resources. Efficiency of the company refers to all management options, whether positive or negative (Jarka, 2009). Efficiency is used to describe the condition, opportunities for development and operation of various organizations especially economic (Szymańska, 2011). To obtain or maintain the competitive position in the market, the company must be able to organize properly. Efficiency in this case is the formation of the conditions for the acquisition of resources and their rational use. So to evaluate the effectiveness of this approach is to determine the ability to getf resources and obtaining an estimate of the degree of their use (Szymańska, 2011). Allocative efficiency is related to the combination of inputs with the lowest

costs, and scale efficiency refers to the optimum level of output selection. The farm is allocatively inefficient if it operates off the minimum cost expansion path (Reddy, Bantilan, 2012). Allocative efficiency can be the effect of transition process from the state to a market economy. There are at least two types of allocative efficiency caused by the transition processes. The first is input allocative efficiency, which exists when no relocation of inputs among producers could generate more of one good without decreasing the output of some other good. The second type of allocative efficiency is output allocative efficiency, which occurs when the mix of goods produced and consumed maximizes consumer welfare (Liefert, Liefert, 2012). To increase income a farmer can take into account the efficiency of the expected value, as it has an impact on some of the components of the manufacturing process, such as fertilization, agronomic treatments and plant protection. However, soil and climatic factors can destroy everything. Evaluation of the efficiency is carried out before the fact, so we have to deal with the nature of ex ante. Production efficiency, in turn, has the character of an ex-post, because the assessment comes after the actual results of the farm (Juchniewicz, 1999).

Agricultural income is the main source of cash for the farm and the basis for assessing the economic efficiency (Bórawski, Pawlewicz, 2006). Income earned by the person working on the farm is the most important indicator of the effects of agricultural activity and shows the status of farming families. Agricultural income should be adequate to ensure a decent family life. The highest net income is achieved when the production on the farm is maintained at a good level. To have a positive balance of agricultural income, the cost of production cannot exceed the net price received for these products.

Efficiency of agriculture depends on financial sources. As Carter *et al.* (2012) point out financial resources flow out of agriculture during industrialization. Certainly the United States experienced this. However Poland exhibited a different process, particularly when it joined to EU with the possibility of applying for money from the Rural Development Program and other sources. Relevant policies are implemented in the EU and are a key to economic growth of agriculture and environment protection enhancement (Grochová, 2014).

There are many factors having an impact on agriculture efficiency in Poland. Smolík *et al.* (2014) proposed the following factors having an impact on commodity price volatility: inflation and the money supply, the exchange rate of USD, economic growth measured by GDP, inflation and the money supply. It seems that these factors may affect the efficiency of agriculture because commodity prices have an impact on agricultural incomes. Czyżewski and Kułyk (2012) claim that the most important factors having an impact on the economic situation of agriculture are: public debt, exchange rate, terms of trade, the interest rate and the inflation rate. However the authors of the article stress the importance the following factors have on the efficiency of agriculture: prices of land, land prices expressed in dt, inflation, investment in agriculture and hunting, the balance of trade and GDP.

3 MATERIAL AND METHOD

The objectives of the study are to: (i) analyze the gross output, intermediate consumption and gross value added, and (ii) estimate the impact of macroeconomic factors on the efficiency of farms. This paper concentrates on the analysis of macroeconomic variables, using data from the Statistical Yearbooks of *A*griculture and Rural Development and the Eurostat Yearbook.

We estimated the productivity of Polish agriculture. Consider, for simplicity, a single output-single input industry (Ray, Desli, 1997). Let X_k^t and Y_k^t represent the input and output quantities of firm *k* at time *t*. The average productivity (AP) of this firm at time t is:

$$AP_k^t = \frac{Y_k^t}{X_k^t}. \tag{1}$$

Thus, a productivity index for this firm at time *t*+1, with period *t* treated as the base will be;

$$\Pi_k = \frac{AP_k^{t+1}}{AP_k} = \frac{(Y_k^{t+1} / X_k^{t+1})}{(Y_k^t / X_k^t)}. \tag{2}$$

We also wanted to answer the question how to address the competitiveness of the Polish agricultural sector's reaction to the macro forces. In order to determine the impact of macroeconomic variables on the efficiency of agriculture, the multiple regression approach was used, which is described by the following formula (Sobczyk, 2005):

$$\gamma_i = \beta_0 + \sum_{j=1}^{K} \beta_j X_{ij} + \varepsilon_i, \tag{3}$$

where

γ_i.....is the th observation on the dependent variable (i = 1, 2, …, n),

x_{ij}.....is te ith observation on j dependent vabiable belonging to the set of explanatory variables,

β_0, β_j ....are structural parameters of the regression equation.

However, the explanatory variables were successively: X_1 (nominal prices of land), X_2 (land prices expressed in dt), X_3 (inflation), X_4 (investment in agriculture and hunting), X_5 (balance of trade) and X_6 (GDP). The choice of variables was due to substantive logic and the accessibility of data.

The authors put in the table the estimated values of regression, standard error, t test to evaluate the regression equation and the level of importance (p = 0.05 most important).

We used the method of stepwise regression. It is based on sequential adding to the model those variables that have the most important impact on gross output. Variables were sequentially explained: Y_1 (gross output), Y_2 (intermediate consumption), Y_3 (gross value added).

Agricultural output was defined by using basic measures i.e., gross agricultural output (including both agricultural market and final output), intermediate consumption as well as gross value added of agricultural output that were compiled according to the principles of the "European System of Accounts ESA 1995". Gross agricultural output includes:

- crop output, i.e., raw (not processed) products of plant origin (harvests for a given year);
- animal output, i.e., production of animals for slaughter, raw (not processed) products of animal origin as well as the increase in farm animal stocks (livestock – the basic and working herd) which include: cattle, pigs, sheep, horses and poultry (Statistical Yearbook of Agriculture, 2012).

Intermediate consumption includes the value of agricultural products from own production, agricultural products utilised for production purposes as well as purchased materials (including fuels), energy, outside services (external processing, agricultural, veterinary, insemination and transport services, current repairs, telecommunications services, commissions paid for banking services), financial intermediation services indirectly measured (FISIM), costs of business travels (excluding data regarding private farms) and other costs (e.g. insurance, rentals and leasing). The valuation of materials used in production was performed using annual average purchase prices (Statistical Yearbook of Agriculture, 2012).

Gross value added of agricultural output is the difference between gross output and intermediate consumption expenditures (Statistical Yearbook of Agriculture, 2012).

The paper is structured as follows: the first section describes the agricultural sector development. The second section focuses on gross output, intermediate consumption and gross value added in the years 2000–2010. In this part of the paper we also described main crop production wheat, rye, barley and oats in the years 2000–2010. To characterize the animal production we presented cattle, calves, sheep, horses and pigs in thousand head. We also evaluated the production of milk in Poland.

4 RESULT AND DISCUSSION

Agriculture is a division of the national economy providing food. But consumers buy products with high added value. This added value is created by processors that convert agricultural raw materials into the final products that consumers expect. It is important to have continuous production of agricultural commodities to ensure food security of the country. Aggregate output in agriculture is measured in monetary units as the sum of the value of all production in the agricultural sector minus the value of intermediate inputs originating within the agricultural sector (Zepeda, 2006). In other words, final output is the amount of agricultural output available for the rest of the economy, while agricultural GDP measures the net contribution of agriculture to the GDP of a country.

Tab. I presents output, intermediate consumption and gross value added in real terms, which increased steadily in Polish agriculture in the years 2000–2010. The data show that in 2000–2010 output measured in millions of zloty has increased by nearly 51%, intermediate consumption by 41.1% and the gross value added by 72% (Tab. I).

Similar growth in output, intermediate consumption and gross value added calculated per hectare occurred. This suggests Poland might be self-sufficient in food production. On the other hand, overproduction brings the opportunity for increased exports, which allows the imports of items better grown elsewhere, such as bananas and citrus.

Labor productivity is often used as a means of comparing the productivity of sectors within or across economies. It is also used as a indicator of rural welfare or living standards since it reflects the ability to acquire income through sale of agricultural goods or agricultural production (Block, 1994; Zepeda, 2006). The data presented in Tab. I confirmed the increase of gross output, intermediate consumption and gross value added calculated per 1 worker employed in agriculture in the years 2000–2010. Gross value added per 1 hectare of agricultural land in the EU countries was analyzed by Wąs and Małażewska (2012). The authors found that the gross value added was highest in 2010 for the Netherlands ($5,428 US/ha) and Germany ($4,066 US/ha). However, in countries such as Lithuania ($275 US/ha), Czech Republic ($603 US/ha), and Poland ($614 US/ha), gross value added was the lowest. Poland has a significant potential to increase agricultural production effects that are associated with adopting existing technology and better management practices from its EU neighbors.

Agricultural production is often analyzed in relation to GDP. The results show that countries with a high GDP per capita (e.g., Norway, Finland) achieved high value added per hectare. These countries are characterized by high efficiency for labor and land (Wąs, Małażewska, 2012). Agriculture is subsidized by a number of material incentives, such as direct subsidies and support prices of agricultural products and production quotas. The elimination of these incentives might lead both to short-term financial losses but efficiency should improve as producers become more market driven (Kay *et al.*, 2008).

The data presented in Tab. II show big changes in main agricultural inputs in Polish agriculture in the years 2000–2010. Agricultural land designated for cultivation decreased because of different

possibilities of using it, for example building roads, forestation or private activity. The next important input in agriculture is labor (people employed in agriculture). We can observe positive changes in decreasing employment in Polish agriculture, however the employment rate is about 17%, but producing less than 4% of GDP. These results prove that Poland has got still large employment in agriculture. Next we analyzed production of nitrogenous fertilizers and sale of crop protection chemicals, which increased. Polish farmers to achieve better production results use more fertilizers and crop-protection chemicals.

It is accepted that we need a composite use of all inputs. This is the total productivity, which is output per an aggregation of all inputs. Then we look at productivity growth (or change), which can be decomposed into several effects such as the technical change effect, a scale effect, and the efficiency effect (for farms that are not meeting their productive potential and observing how that changes over time). We also analyzed the production of main crops calculated in kilograms per 1 ha of agricultural land. The yields of wheat increased from 477 kilograms per 1 ha of agricultural land in 2000 to 607 in 2010. The yields of rye decreased in analyzed period. Also the yields of barley decreased by 45% and oats by 63.3% in the years 2000–2010 (The Statistical Yearbook Of Agriculture and Rural Areas, 2008). Crop production is determined by various factors such as soil condition, weather, and use of new varieties of chemical fertilizers. Barley, oats and rye are mainly used in animal production and transformed for fodders whereas wheat has got utilization in human nutrition and for animals' fodder. All the kinds of animal production

I: *Gross agricultural output, intermediate consumption and gross value added (current prices)*

Specification	2000	2002	2005	2008	2009	2010
mil. zloty						
Gross output	55.985	55.706	63.337	83.126	79.908	84.492
of which private farms	50.417	50.226	56.563	73.440	70.288	74.937
intermediate consumption	38.290	38.843	41.015	56.062	52.236	54.047
of which private farms	33.752	34.476	35.846	48.350	45.553	47.242
Gross value added	17.695	16.863	22.322	27.064	27.672	30.445
of which private farms	16.665	15.750	20.718	25.090	24.735	27.696
per ha of agricultural land in zloty						
Gross output	3.143	3.296	3.982	5.146	4.957	5.450
of which private farms	3.662	3.380	4.039	5.085	4.863	5.486
intermediate consumption	2.150	2.298	2.579	3.471	3.240	3.486
of which private farms	2.184	2.320	2.560	3.348	3.152	3.458
Gross value added	993	998	1.403	1.675	1.717	1.964
of which private farms	1.078	1.060	1.479	1.737	1.711	2.028
per one worker in zloty						
Gross output	13.168	13.171	30.272	39.742	38.508	36.263
of which private farms	11.874	11.875	27.035	35.111	33.872	32.162
intermediate consumption	9.018	9.184	19.603	26.803	25.173	23.196
of which private farms	7.949	8.152	17.133	23.116	21.952	20.276
Gross value added	4.168	3.987	10.669	12.939	13.335	13.067
of which private farms	3.925	3.724	9.902	11.995	11.920	11.887

Source: own elaborations based on the Statistical Yearbook of Agriculture and Rural Areas, MSO, Warsaw

II: *Agricultural inputs in Polish agriculture*

Specification	2000	2002	2005	2008	2009	2010
Agricultural land (in thous. ha)	18557.6	19161.9	19148.2	19025.0	18980.7	18931.0
Labor (employed persons in agriculture)	4245900	4229400	2092242	2091623	2075118	2329990
Gross value of fixed assets in Polish agriculture (in million zloty)	109 073.8	110 479.5	112 777.1	119921.4	122570.0	124296.9
Production of nitrogenous fertilizers (in commodity mass in thous.)	4401	3650	4908	4821	4472	4709
Sale of crop protection chemicals (in commodity mass)	22164	26578	41135	53347	49761	51613

Source: own elaborations based on the Statistical Yearbook of Agriculture and Rural Areas, MSO, Warsaw

decreased in the years 2000–2010. The production of cattle decreased by 18%, calves by 37.9%, sheep by 49.2% and horses by 30.5% (The Statistical Yearbook Of Agriculture and Rural Areas, 2008). Although the production of animals for slaughter decreased, the concentration of farmers breeding increased. We have fewer farms but the amount of production per farm is bigger.

Poland is a major EU pig producer. However, the production of pigs decreased by 26,8% in the years 2000–2010. Poland is also a significant milk producer. However, we can observe the decrease in production of milk. The production of milk decreased 21.9% in the years 1995–2008. Milk production per cow increased by 36.2% and the number of cows decreased about 38.8% in the years 1995–2008 (The Statistical Yearbook of Agriculture and Rural Areas, MSO, Warsaw, 2008). As Fałkowski (2012) points out, Polish dairy business has undertaken many changes for example the huge outflow of people from the sector and the change in the dairy supply chain.

Investment outlays are financial or tangible outlays, the purpose of which is the creation of new fixed assets or the improvement (rebuilding, enlargement, reconstruction or modernization) of existing capital asset items as well as outlays on so-called initial investments. Investment outlays are divided into outlays on fixed assets and other outlays. Outlays on fixed assets include outlays on:

- buildings and structures (include buildings and places as well as civil engineering works), which includes, among others, construction and assembly works, design and cost estimate documentations,
- machinery, technical equipment and tools (including instruments, moveables and endowments),
- transport equipment,
- others i.e. detailed amelioration costs incurred for purchasing land and second-hand fixed assets as well as, since 1995, livestock (basic herd), long-term plantings, interests on investment credits and investment loans for the period of investment realization (included exclusively in data expressed at current prices).

Other outlays are outlays on so-called initial investments as well as other costs connected with investment realization. These outlays do not increase the value of fixed assets prices (Statistical Yearbook of Agriculture, 2012).

We wanted to examine if there is a correlation between variables (Tab. III). We have found a large correlation between analyzed variables. That is why we decided to analyze the individual impact on the efficiency of agriculture. We cannot measure the impact of all variables together on economic efficiency of agriculture. The nominal prices of land X_1 are correlated with X_2 (land prices expressed in dt). That is why we eliminated the variable X1. Investment in agriculture and hunting (X_4) is correlated with X_5 (balance of trade) and X_2 (land prices expressed in dt) which suggest common relations in agriculture economy.

Finally we have measured the impact of macroeconomic factors on efficiency of agriculture measured by Gross output, intermediate consumption and Gross Value added. We have found that all macroeconomic factors had an impact on the efficiency of agriculture in Poland (Tab. IV). The strongest impact was observed in gross value added analysis. The R^2 in the models are high which suggests that the variables are chosen well. We have used regression analysis to measure the impact of individual variables on efficiency of agriculture. We have found that some variables were important in the analysis. The variables had an impact on economic efficiency.

The efficiency of agriculture was explained by four variables: X_2 (land prices expressed in dt), X_3 (inflation), X_4 (investment in agriculture and hunting), X_5 (balance of trade) and X_6 (GDP). The strongest impact on gross output was: X_4 (investment in agriculture and horticulture) and X_5 (balance of trade). The same variables had an impact on intermediate consumption. One variable, X_5 (balance of trade), had a positive impact on gross value added. That is why we can conclude

III: *Correlation analysis of variables*

Variables	Variables					
	X_1 (nominal prices of land)	**X_2 (land prices expressed in dt)**	**X_3 (inflation)**	**X_4 (investment in agriculture and hunting)**	**X_5 (balance of trade)**	**X_6 (GDP)**
X_1 (nominal prices of land)	1.0000	**0.9023**	–0.0292	**0.93527**	–0.4736	0.3459
X_2 (land prices expressed in dt)	**0.9023**	1.0000	–0.2141	**0.752196**	–0.26082	0.1844
X_3 (inflation)	–0.02918	–0.2141	1.0000	0.07054	–0.2920	–0.03796
X_4 (investment in agriculture and hunting)	**0.93527**	**0.752196**	0.0705	1.0000	**–0.6971**	0.4914
X_5 (balance of trade)	–0.4736	–0.2608	–0.2920	–0.6971	1.0000	–0.4028
X_6 (GDP)	0.3459	0.1844	–0.0379	0.49145	–0.40281	1.0000

Source: calculations based on own survey

IV: *The impact of macroeconomic factors on gross output, intermediate consumption and gross value added*

Specification	Y_1 (Gross output)	Y_2 (Intermediate consumption)	Y_3 (Gross value added)
R^2	0.9242	0.9869	0.991
F	14.635	90.404	133.715
P	0.0026	0.000	0.000
X_2 (land prices expressed in dt)	0.021	–0.06	0.030
X_3 (inflation)	0.045	0.023	0.022
X_4 (investment in agriculture and hunting)	0.930	0.549	0.162
X_5 (balance of trade)	1.350	1.300	1.120
X_6 (GDP)	0.049	–0.03	0.031

Source: own calculation

that the integration with the European Union improved Polish agriculture efficiency because it helped to modernize agriculture and new markets of EU countries were opened for Polish nutrition products, which constitute nearly 75% of Polish agri-food products. Two variables X_2 (land prices expressed in dt) and X_6 (GDP) had a negative impact on intermediate consumption. It is difficult to explain this relationship. However the increasing prices of land hurt the development and economic condition of agriculture. What is more, decreasing GDP also had a negative impact on the efficiency of agriculture. Our results confirm the thesis that many developing countries having strong support of agriculture and face problems with development and increasing public debt.

5 CONCLUSION

In this article we analyzed the importance of chosen macroeconomic determinants to economic efficiency of agriculture. For this reason we applied multiple regressions. The model seems to be good tool in quantification of macroeconomic factors on efficiency. The model proved that the most important factors were: X_4 (investment in agriculture and horticulture) and X_5 (trade balance). This finding does not eliminate other factors and complete recalculations.

Both the output and the value of intermediate consumption and gross value added have increased from 2000 to 2010. This demonstrates the growing demand in the domestic market and more trade in agri-food products. However, the generated value added in agriculture per hectare puts Poland third from the bottom in the EU. Improvement of Poland's production capacity will be connected with better efficiency of agriculture, achieving higher yields or use of more meat and dairy breeds using a better feeding system. Poland has the ability to improve the economic effects of agriculture. It will be followed by the development of labor productivity and land. The EU policy is focusing on sustainable development of rural areas, including social, economic, and environmental aspects. What is more, the CAP is enhancing the role of social capital supporting the quality of life of people living in rural areas. Small farms dominate in the structure of Polish farms, so it is important to support their development and help them diversify income and introduce non-agricultural activity.

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