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## POLISH AGRICULTURAL HOLDINGS IN THE FIRST YEARS OF THE EU MEMBERSHIP

### Abstract

*On the basis of literature, the paper describes changes observed in Polish agriculture in 2004 and the following years, against the background of the situation in previous years.*

*On the grounds of the above, eight theses have been formulated: on doubling agricultural income, on years needed for re-establishing economical balance disturbed by change of conditions, on increase of property size and modernization on farms of 16 and more ESU, on low profitability of equity capital in farms basing on high labour input and high capital resources, on growing range of agricultural producers who combine farm income with other incomes, on permanent deficit of part of farms of at least 100 hectares of cropland – in effect of legal regulations, incorrect definition of the areas with disadvantageous farming conditions and highly competitive potential of farms in Poland in comparison to the selected EU countries.*

*The above theses require to be confirmed or rejected on the basis of analyses carried out in a long term (i.e. in the years 2005-2007), after Poland's accession to European Union.*

Poland's membership in the European Union has substantially changed the farming conditions in Polish agriculture. Thus, the question arises: what has changed in that sector in recent years? The present article contains an attempt to answer this question<sup>1</sup>. The answers shall be given in the form of theses as the

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<sup>1</sup> The elaboration was developed on the ground of texts, prepared by the employees of the Economics of Agricultural Holdings Department, by dr Z. Floriańczyk from the General Economics Department, by dr A. Skarżyńska and other persons from the Agricultural Accountancy Department of IAFE-NRI; the texts contain mainly the results of the studies conducted in 2007 within the framework of Multiannual Programme of IAFE-NRI.

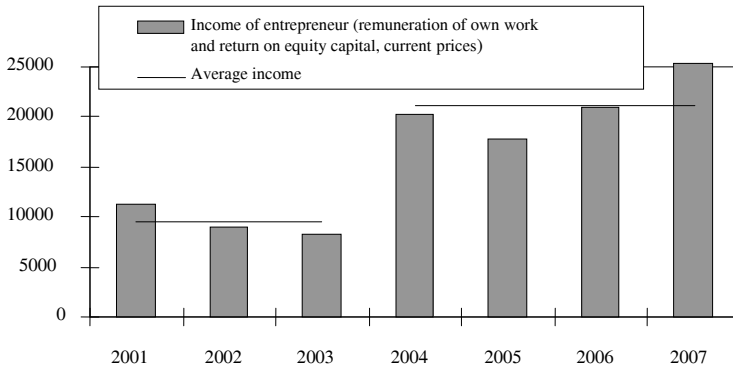
up-to-date knowledge on the subject still remains incomplete. The available empirical materials derive mostly from 2004 and 2005.

The following problems will be discussed here: incomes of agricultural holdings as compared to the incomes in the previous period, economic imbalance in the farms and possibilities of farms' expansion depending on the size and production directions. Moreover, conclusions will be formulated resulting from evaluation of the economic condition of the farms of natural persons who obtain the prevailing part of their incomes from non-agricultural sources, the conclusions will also concern the evaluation of the economic situation of the so-called large-sized farms. On the ground of analysis of production potential and economic situation of agricultural holdings and balance of internal migration in all the Polish gminas (the smallest administrative unit), the justification of the current delimitation system of LFA (less favoured areas) will be evaluated. Final part of the article contains the attempt to evaluate and compare the competitiveness of Polish agricultural farms with the holdings of the selected EU countries.

**Thesis I:** *In 2004, the agricultural incomes doubled as compared to the situation in the previous years. This favourable situation was maintained in the years 2005-2007 and it is possible that the phenomenon reflects the long-term trend.*

As we remember, the summary of 2004 revealed a surprisingly high (by ca. 70%) increase of incomes of all agricultural farms compared to the incomes in the previous year, which was a matter of considerable public disbelief. These incomes, calculated upon the application of the accrual based method [3, 4, 5, 6] being exclusively employed in the remaining countries of the European Union, increased even more (by ca 129%). It was revealed that the incomes, calculated in current prices during the successive two years (2005 and 2006) were maintained, however, on the new high level. In 2005, they were slightly lower than in the previous year but in 2006 they increased by ca 3% in relation to favourable 2004. The preliminary estimates indicate that 2007 was even more favourable (Fig. 1) because the incomes, calculated in current prices increased by 20% as compared to the previous year. Similar conclusion can be drawn from Fig. 2 where the effects of agriculture were expressed in fixed prices.

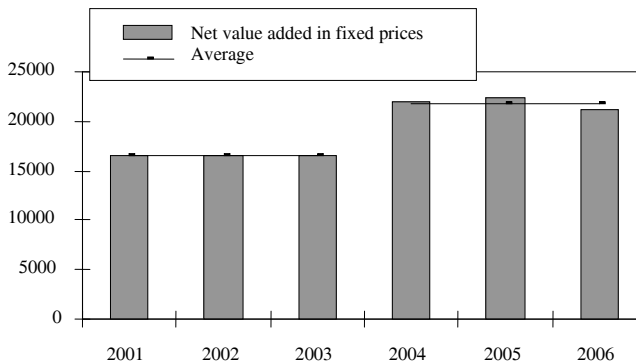
The phenomenon resulted from a higher growth rate of revenues than costs. The total value of revenues was by 37% higher in 2006 as compared to 2003, whereas the costs increased only by 17% in that period. There were few reasons for the discussed phenomenon. Agricultural production value was on the increase, but the total sums of subsidies increased even faster from year to year. On the other hand, a small growth rate of production costs was caused by technical progress and by replacing (substituting) of more expensive production means with the less expensive ones. The phenomenon resulted also from changes in agrarian structure: the process of eliminating of medium-sized and ineffectively functioning agricultural holdings in favour of larger and more effectively managed farms was observed.



### Year 2007 – preliminary forecast

**Fig. 1.** Incomes of Polish farmers in the years 2001-2007 (in PLN million, in current prices)

Source: Results of EAA monitoring, i.e. economic accounts for agriculture, performed at IAFE-NRI for the needs of the European Commission in Brussels.



**Fig. 2.** Net value added in fixed prices (in PLN million)

Source: Results of EAA monitoring, i.e. economic accounts for agriculture, performed at IAFE-NRI for the needs of the European Commission in Brussels.

The growth of the share of subsidies in the incomes of agricultural farms needs some comments. In 2003 this share amounted to 1.4%, while in 2006 it increased to 15.3%. Obviously, the share will still be increasing and in the coming 5 years, the position of the Polish farms will be close to the holdings in the EU-15 in terms of the level of subsidies and structure of incomes. It may be therefore expected that a high level of agricultural incomes will be maintained in Poland at least for the first half of the coming decade.

A very specific phenomenon connected with the high role of subsidies should be mentioned here. On the one hand, subsidies guarantee high incomes

of agricultural holdings; on the other however, they reduce farmers' interest in improving farming efficiency. The incidence of the discussed phenomenon in French farms was reported by L. Latruffe [10] from Department of Agricultural Economics of INRA in Rennes, France. There are premises indicating that the discussed phenomenon occurs also in Austria, Denmark, Germany and Sweden. Therefore, the beneficial effect of increasing subsidies on Polish agricultural holdings' incomes will be hampered by their declining efficiency. It is unfortunate, since the Common Agricultural Policy will be most probably less favourable in 2013 and in the next years than it is now.

**Thesis II:** *The change in farming conditions, as commenced in 2004, has threatened the farms' economic balance. The highest imbalance occurred in case of land, probably as a result of the long-term lease agreements, which were concluded before 2004 with the Agricultural Property Agency (most of the leased land comes from this source). The leasehold rent was specified in wheat weight units, while the prices of wheat increase at a slower pace than the incomes of holdings. Economic balance in this respect is expected to be slowly restored in the next several years at least, i.e. as soon as the new lease contracts become more adequate to the operating conditions.*

*A considerable degree of economic imbalance was also noted in the case of hired work inputs. On the other hand, the recovery of economic balance as regards the capital outlays is noticeably faster.*

This thesis was formulated as a result of econometric analysis of farms [1, 2] with different types of production (farms whose major part of incomes comes from mixed crops; those conducting milk production; combining different crops with rearing livestock of different breed etc.) and of different farm size, measured in ESU. Based on data available for 2005, the marginal profitability of material factors of production (labour, land and capital) was calculated and incomes were measured by the category of gross incomes from production factors<sup>2</sup>.

In the conditions of economic balance, marginal profitability of inputs of production factors should be close to zero, so the relation of income growth rate and cost growth rate (index of profitability) should equal almost 100%. In case of land leasing<sup>3</sup>, the level of the index varied from ca 400% to slightly more than 1200%.

Quite diverse situation occurred also in case of seasonal hired work inputs. In some part of farms, profitability indicator of increasing such inputs amounted to 47.5% which indicates that they suffered a considerable loss. In such conditions it was purposeful not to increase, but to limit the inputs. On the other side, there were holdings whose profitability index of increasing the inputs of

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<sup>2</sup> Income from agricultural holding increased by a payment of external factors of production and amount of depreciation.

<sup>3</sup> Profitability of land purchase was not analysed due to a small range of such investment.

seasonal hired labour exceeded 200% which indicates that such an action was rational from the economic point of view.

The situation close to economic balance existed in the case of investing own financial means in own farms because index of profitability of equity capital ranged from 105% to ca 117%.

When completing the characteristics of thesis II, it should be added that redressing of economic balance would mean an increase (even fourfold) of the costs of land lease which would especially strongly affect the greater agricultural holdings as they mainly lease that production factor.

**Thesis III:** *New farming conditions contribute well to increasing the property size and its modernisation only in farms owned by natural persons and with the size of 16 ESU and more. Their owners achieve the profitability of equity capital equal or higher in relation to deposit interest rates at commercial banks.*

In order to estimate the profitability of equity capital in agricultural holdings owned by natural persons it was necessary to estimate the costs of own labour of farmers and members of their families. To this end, it was assumed that the remuneration of labour of a person with agricultural higher, post-secondary or secondary education per unit of own labour input in the utilized farm is by 48% higher than the national average, i.e. than the parity remuneration. The remaining persons with agricultural education obtain parity remuneration. The remuneration of unqualified farmers in formal aspect was set on the level of average remuneration of hired labour in agriculture (seasonal and permanent). Taking these assumptions into account and knowing the inputs of own labour of farmers and members of their families, it was possible to establish the costs of own labour. By deducing that item from farm incomes the sums of profit could be calculated – which were then analysed against to the sums of equity capital in the held farms; it enabled to calculate the profitability of equity capital. The results are presented in Table 1.

The table contains also the estimated costs of own labour in relation to average level of remuneration in the country.

It has been revealed that the farms with economic size of 2–4 ESU and 4–8 ESU in the years 2004–2006 had a negative profitability of equity capital. The holders of such farms suffered losses of own means (and even more of external ones – credits, loans) thus it was not profitable for them to invest. The probable reasons for bad economic situation of these small farms were inappropriate scale of production, imperfect knowledge on optimal technologies and low managerial and marketing skills.

Similar situation occurred in farms with size of 8–16 ESU. The index of profitability of equity capital was still negative or slightly higher than zero. Under such conditions, it was not profitable to invest in the farms.

Table 1

**Level of profitability of equity capital and income disparity  
in Polish agricultural holdings in the years 2004-2006**

Specification	Years	Size of farms in ESU					100 and more
		2-4	4-8	8-16	16-40	40-100	
Indicators of profitability of own capital*	2004	-11.2	-4.5	-0.5	6.4	12.4	20.4
	2005	-10.9	-7.5	-1.4	5.0	10.6	19.4
	2006	-10.0	-6.1	0.1	6.1	11.4	14.9
Income disparity rates (%)**	2004	88.0	94.0	99.6	102.8	106.0	120.6
	2005	87.3	92.0	97.6	100.6	103.7	118.0
	2006	92.4	97.3	103.2	106.4	109.8	124.9

\* Relation of profit from an agricultural holding (income from farming decreased by calculated conventionally cost of own labour) and value of equity capital of a farmer.

\*\* Relation of calculated conventionally own labour of a farmer and members of his family and average remuneration in the country [15, 16].

Source: Own calculations prepared on the ground of the results of Polish FADN monitoring of farms of natural persons in 2004-2006.

Much more favourable situation was observed in the holdings of 16–40 ESU. They achieved the profitability of equity capital at the level of 5% and more. A farmer who invested own financial means in the managed farm, obtained (bearing in mind the average level in the whole discussed group of holdings) interest on his own capital on the level of the interest rates on current accounts at commercial banks, or even higher. Even more favourable situation was recorded for the farms with the economic size of 40–100 ESU and 100 and more ESU.

When finishing the description of thesis III, we should draw attention to the fact that only 4.3% of farms with the area above 1 ha, owned by natural persons had the size of 16 and more ESU and they covered only 24% of the national area of agricultural land. It is probable that just these farms (or most of them) will be gradually concentrating the resources of production factors, which are in possession of the remaining agricultural holdings now.

**Thesis IV:** *New farming conditions have a negative effect on profitability of equity capital of the holdings whose existence is based on big labour and capital inputs but on small resources of utilized land.*

The reason for the phenomenon is a system of support payments to agricultural farms which is binding at present in Poland. The sums of support payments depend mainly on the area of the agricultural land which means that smaller farms are placed in worse situation (Table 2). The increase of labour costs and other costs affects them more than others because it is not compensated by sufficiently high increase of support payments.

Table 2

**Indicators of equity capital profitability\* in Polish agricultural farms of the size of 16–40 ESU and with different types of plant production (2004–2006)**

Directions of production	Indicators of equity capital profitability (%) in the years		Average area of agricultural land of one farm in 2005 (ha)	Participation of subsidies in income of farms in 2005 (%)
	2004	2005		
Vegetable-growing, specialized	4.4	5.8	3.6	4.2
Fruit-growing, specialized	3.1	4.5	27.6	13.4
Mixed plant production (typical field crops, vegetable and/or fruit-growing)	7.8	4.4	45.2	53.3
With prevalence of typical field crops	14.0	10.2	57.4	43.1
Cereal, specialized	15.7	9.8	96.8	94.6

\* Sums of profit in % in relation to value of own capital.

Source: As in Table 1.

The above phenomenon (if it is confirmed on the basis of wider empirical data) undermines often formulated thesis on the future specialization of plant production of Polish agriculture. Until now the production of vegetables and fruits has been believed to have undergone such a process, as it achieved good economic results and had low labour costs. But small amounts of the support payments allocated to these types of production and the increase of wages which has been recorded since 2006 indicate that the thesis should be verified.

**Thesis V:** *Contemporary production techniques, employed in Polish agricultural production allow widening the circle of agricultural producers who may combine incomes from agricultural farms with the incomes from work outside their farms.*

The above thesis was formulated on the ground of analysis of economic condition of agricultural farms of the size of 8 ESU and more and considering their intentions to invest; the farms were held by natural persons and were covered with FADN monitoring in the years 2004 and 2005 [17, 18]. The farms were divided into two subgroups. The first one included holdings where nobody was insured in Agricultural Social Insurance Fund (Polish abbreviation: KRUS) which enabled to assume that these farmers and their families gained most of incomes from the work outside their farms and therefore, they paid the social insurance premiums in other institution. The problem is important, because it concerns ca 36% of all agricultural holdings with the area above 1 ha of agricultural land. The second analysed subgroup covered the farms with at least one person insured in KRUS which allowed assuming that these farmers and their families gained most of their incomes from the agricultural production.



Farms where none of the family members was insured in KRUS were by ca. 6 ESU (i.e. 38%) larger compared to the remaining ones. Moreover, they had slightly higher technical potential and the related smaller labour consumption, which was obvious in the discussed situation. Their incomes in 2005 were by 4%, on average, lower than the incomes of the remaining holdings. The average figures have not been however fully confirmed by the results of analysis of the group of farms which differed in type of production and size, measured in ESU. For example, the incomes of the farms of the size of 8-16 ESU and 16-40 ESU which conducted pig and/or poultry production were distinctly higher. On the other hand, in case of the farms with the domination of incomes from field crops, they were higher only in the farms with the size of 8-16 ESU.

The farms where nobody was insured in KRUS were characterized by extended reproduction of fixed assets although the rate of that reproduction was slightly lower (by 0.7 percentage point) as compared to the remaining farms.

Similar conclusions were also formulated on the basis of analysis of numerical data referring to 2004 but the difference in incomes was in that year much higher (ca 30%) between the farms of the both compared groups, and obviously unfavourable for the farms without any persons insured in KRUS.

If the thesis is confirmed in further studies, than together with the increase of demand on work in non-agricultural branches of Polish economy, the phenomenon of combining farm work with hired work outside farms by the agricultural producers will intensify. But that time, the described phenomenon will occur among the agricultural producers who own relatively large (in the Polish conditions) farms.

**Thesis VI:** *Some part of large holdings (each with the average area equal to at least 100 ha of agricultural land) permanently reports deficits which is related to specific legal provisions.*

Large-sized farms in 2002 covered almost 3.5 million ha, i.e. 21.2% of the area of agricultural land in Poland and supplied almost 25% of commercial production of agriculture. In recent years, the number of large farms has increased although their average area has decreased. In 2006, there were 7.8 million of large farms, with the average area of ca 400 ha of agricultural land.

About 2/3 of large holdings are established on land which originated from the privatized former State farms. Their strong point includes advantages resulting from a large scale of production which enable them to conduct current production as well as to make investments. However, the problems are with one-man State Treasury-owned companies, which are situated in LFA and lease the whole or a part of the land [7].

The responsibilities resulting from legal status of the State Treasury companies place the additional burden on them. When they employ workers, they have to insure them in the Social Insurance Institution (Polish abbreviation: ZUS) which leads to multiplying of the costs as compared to the costs of KRUS insurance. They are also obliged to pay the payroll tax on wages which is not done

in the case of farms of natural persons. The State Treasury companies pay also the costs of bookkeeping and other costs connected with the economic activity conducted by legal persons. Therefore, the additional profits resulting from a large scale of production significantly decreased.

Moreover, since 2004, large farms have been affected by the implementation of the principle of modulation of direct payments for the holdings situated in LFA. According to that principle, the area of agricultural land exceeding the specified limit has been deprived of a part of direct payments and in extreme situations (area above 300 ha) such support has been withdrawn totally. Also there is an uncertainty concerning the continuation of the production in the long term, because of the pressure of farmers who run the smallest holdings to revise the land lease contracts concluded by the Agricultural Property Agency (formerly the Agricultural Ownership of the State Treasury Agency) with the very large holdings of latifundium size. The uncertainty leads to the reduction of investments in buildings and land reclamation, because the lessees attempt rather to buy out the leased property first, which decreases the financial liquidity of holdings. For these reasons, many one-man State Treasury companies are permanently unprofitable (in 2006, about 1/3 of these companies incurred a loss).

On the ground of thesis VI and the above formulations, we may conclude as follows:

- the criteria of entitlement to support funds for holdings located in LFA should be revised. The support payment should cover the whole area of holdings, regardless of their size;
- legal measures to strengthen leases, also in longer perspective than now, are required;
- there is a need of deeper privatization of one-man State Treasury companies, among others because the employees are interested in active participation in the process.

**Thesis VII:** *As of 2004, the improper definition of Less Favoured Areas (LFA) has been binding in Poland.*

Analysis of the holdings of natural persons [11, 12] prepared on the basis of empirical materials of Polish FADN indicates that the farms situated in LFA in 2004 had lower incomes (by 26.5%) than the farms in better quality areas; it was at least partially caused by postponing the application of the so-called compensatory payments (paid due to location of a farm in LFA) for the next year. In 2005, the difference in incomes distinctly decreased (to 6.5%) because the subsidies were paid in a normal way. When analysing the incomes of farm groups, separated according to a type of production and size, expressed in ESU, some exceptions to this average picture were observed. The farms belonging to eight out of thirteen groups obtained higher incomes in 2005 as compared to the incomes of the farms in areas with more favourable conditions.

The holdings in LFA were also distinguished by 42% higher scale of investing activity, measured by net value of investments (value of investment decreased by the sum of depreciation of fixed assets) and extended reproduction of fixed capital. The reproduction rate (relation of net investment value to the value of fixed capital, expressed in percents) was even slightly higher than in the farms which served for comparisons.

We may, therefore, state that the year 2005, in which the compensatory subsidies for farms in LFA were applied without obstacles, was rather favourable for Polish farms of the size of 8 and more ESU.

The confirmation of the above observation was sought in the analysis of internal migration of the inhabitants of rural areas. It consisted in the comparison of average annual indicators of this type of migration in the pre-accession period (2001-2003) and the corresponding ones recorded in the period of application of compensatory subsidies (2004-2006) [13, 14]. On the discussed background, no differences were found in the process of migration of population in LFA in the period between Poland's accession to the European Union and the first years of the membership. Similar situation was observed in areas with more favourable conditions. On the other hand, it was recorded that the particular LFA categories were more differentiated internally in this respect than the whole area covered with LFA payments and the whole of the remaining areas outside LFAs. Perhaps the reasons for the observed phenomenon include some methodological problems (e.g. too short period of analysis, coverage of the whole rural population by the analysis instead of the farmers and their families only) as well as lack of evaluation of farmers' emigration intensity.

If the above observations were confirmed, we should consider the justification of the binding definition of the term: less favourable areas. The matter lies in the fact that the LFA payments are received not only by the holdings in areas with specific natural handicaps, but also by the farms which operate in medium conditions. As much as 56.5% of farmland was designated as LFAs in Poland, which meant that the payments neither compensated fully for the differences in opportunities resulting from different farming conditions nor would they protect the farms which were really affected by specific handicaps. The above definition should therefore be as follows: the areas with unfavourable and medium farming conditions (Polish abbreviation: ONiŚNW).

Therefore, the area of farmland eligible for LFA payments should be smaller and cover only the farms from ca 300 gminas with severe handicaps to agricultural production in Poland, i.e. 15–25% of national area of agricultural land; it would allow for better use of resources to support these farms.

But perhaps it is the matter of a specific camouflage which consists in hidden additional support of farms in medium farming conditions? If it is so, the presently applied system of compensatory payments is just good for it. If not, further studies of the characterized problem should aim at the analysis of agricultural holdings' incomes, incomes of households, internal and external migration and first of all, they should concern the farms, located in the above mentioned 300

gminas exhibiting most unfavourable conditions in Poland for running agricultural activity.

**Thesis VIII:** *Account of holdings' profitability of equity capital indicates considerable competitiveness of Polish farms against farms of other EU member states which have similar natural conditions of farming.*

The competitiveness of agricultural farms is manifested, first of all, by high incomes and inclination to invest. The latter is indicated by the value of equity capital profitability index. High incomes indicate a strong economic situation of the farms, which is reflected not only in the living standard of farmers and their families, but also in good management, marketing and possibility to finance (at least partially) investments from own means. Sufficiently high profitability of equity capital determines such a scale of investment activity which ensures maintaining the competitive abilities of farms in the long term.

The analysis of the competitive abilities of various groups of Polish agricultural holdings was evaluated in the light of the data relating to analogical groups of German and Hungarian farms [8, 9]. Agriculture of the three countries is characterized by a similar structure of production, so the countries are in competition with each other. Moreover, natural conditions in Germany and Hungary do not differ from natural conditions in Poland. The empirical material consisted of the results of all-EU FADN monitoring for 2004 and 2005.

The incomes of the farms were divided into two parts – remuneration of own work of farmers and members of their families in the managed farms (conventionally calculated costs of own work) and the profitability of the equity capital invested in these farms.

The data enabling the estimation of the costs of own work, were obtained from the analysis of all-EU Statistical Yearbooks concerning wages and salaries. The costs of own labour of the farmers and members of their families were estimated separately, to add them later. The unitary costs of own labour of the farmers were differentiated according to the size of farms, measured in ESU. It was assumed that in the smallest farms (2–4 ESU) they were by 10% higher and in largest farms (100 and more ESU) by 230% higher than the unitary costs of own work of the members of agricultural families. The costs of labour of the farmers in the holdings belonging to the remaining size groups were established proportionally to the size of the farm. The unitary costs of own labour of other members of agricultural families were evaluated on the level by 28% higher than the minimal remuneration and they did not depend on the size of farm.

The estimated level of own labour costs was not high as compared to the average remunerations in the industrial enterprises employing 10 and more staff. These relations amounted to 55% in Germany, 56% in Poland and almost 60% in Hungary. The average figures do not, however, reflect the complexity of situation because the unitary costs of own labour were positively correlated with the size of farms. In the largest holdings (100 and more ESU) the discussed

relations amounted to 76%, 83.5% and 95%, respectively. It is obvious that the smaller the farms, the worse the relation. In the smallest ones (2-4 ESU) it reached as little as 50%.

The calculated index of equity capital profitability in Polish farms of the size of 2 and more ESU amounted in 2005 to 9% on average. In 16.4% of the analysed farms, the index was lower than zero. On the other hand, in Hungarian holdings, the indices were 5.9% and 19.9% respectively. In 2004, the levels of the indices were slightly more favourable in both the countries but the relations between the indices calculated for these countries were similar.

Another evaluation was prepared for the comparison with the profitability indicators of German holdings, because in Germany FADN includes only the farms of the size of 16 and more ESU. In Polish holdings of this size, the profitability index of equity capital was very high in 2005 and it amounted to 12% on average. Moreover, there were no farms with negative value of the index. On the other hand, these indicators in Hungarian farms were 7.3% and 2.5% respectively. The situation was quite different in German holdings. Index of equity capital profitability was negative (-1.8%) and it referred to 89.6% of all farms in this country.

In 2004, the average level of the profitability index of equity capital in Polish farms was by 130% higher as compared to Hungarian holdings, and 4 times higher than in German ones. In Poland, there were no farms with a negative value of the discussed indicator whereas in Hungary they constituted 6.3% and as many as 68.5% in Germany.

The countries under analysis differ in the number of the farms with the size of 16 and more ESU. In 2005, there were 76 thousand such farms with the positive value of profitability index of equity capital in Poland, whereas in Hungary – 11.1 thousand farms and in Germany – 19.4 thousand. In the previous year, these figures were respectively 76 thousand, 10.7 thousand and 58.7 thousand farms.

To finish up, we should underline the two following points. Firstly, the presently known premises indicate that since 2004 the conditions of farming have exerted a deep and many-sided effect on Polish agricultural holdings not only at present, but until the year 2012 at least. It has been reflected in this article, in which the particular attention was paid to 8 various aspects of their functioning. Secondly, it is necessary to carry out further analyses using wider empirical database in order to substantiate the findings of this study.

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