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INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

***Economic
and social conditions
of the development
of the Polish
food economy
following Poland's
accession to the
European Union
(Synthesis)***

no **184.1**

Warsaw 2010

THE ECONOMIC AND SOCIAL CONDITIONS
OF THE DEVELOPMENT OF THE POLISH FOOD
ECONOMY FOLLOWING POLAND'S ACCESSION
TO THE EUROPEAN UNION



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This report constitutes the end result of the research conducted at IERiGŻ-PIB within the framework of the Multi-annual Programme 2005–2009 “Economic and social conditions for the development of the Polish food economy following Poland’s accession to the European Union”

under the following research topics:

The Polish food sector in the first years of membership,

The impact of structural funds of the European Union on rural development in the first years of membership. The general concept of supporting this development from structural funds and the Cohesion Fund in 2007-2013,

The monitoring and analysis of changes in the Polish food supply chain,

The position of Polish agriculture in the global food market,

Polish agricultural holdings in the first years of membership,

Regional differences in agricultural development and their impact on economic and social problems in rural areas,

Calculation of gross margins for selected agricultural products and classification of agricultural holdings according to the European Union standards,

Development and application of advanced analytical methods for ex-ante and ex-post evaluations of impacts of changes in the Common Agricultural Policy and macroeconomic determinants,

This report also draws on the findings from external studies and expert opinions commissioned during the implementation of the Multi-annual Programme. All the staff of IERiGŻ-PIB participating in the research wish to thank the Authors and Experts supporting the research conducted at the Institute.

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Introduction

The social and economic functions of agriculture change substantially in the course of socio-economic development of populations. Formerly a sector to determine the survival of entire communities and to lay the foundations for economic growth, it has come to require an active policy. Today, it is obvious that its development prospects depend to a greater extent on the economic situation outside agriculture than on the agricultural policy. In the modern world, it is hardly possible to understand the development mechanisms of the food sector without analysing macroeconomic factors. In Poland such an analysis is more difficult as the Polish economy has undergone profound changes in the economic policy at least six times in the past hundred years. The most recent changes are related to the adjustment of Poland's economy to the European Union standards and membership of the EU.

In the past two decades, the sectoral and ownership structure of the economy has changed during transition. The assessment criteria for such changes have been evolving as well. Under the former economic regime, the structure of the economy was assessed on the basis of centrally-planned development criteria. Those criteria comprised characteristics such as harmoniousness, consistency, flexibility, modernity, comprehensiveness, high efficiency, etc. The responsibility for shaping the structure of the economy rested upon the state. Any state-initiated plans of structural changes not only failed to produce the desired results, on the contrary, they reinforced the existing economic structure. The high energy- and material intensity of the economy involved continuous recapitalisation of industries and sectors supplying energy and raw materials. The share of such industries was several times higher than in developed countries.

The start of systemic transformation in Poland's economy implied a dramatic change in the balance of market forces.

The transition from a supply-driven to a demand-driven economy (i.e. from a resource-constrained to a demand-constrained economy) began in agriculture. The emergence of a demand barrier in the agri-food market indicated a fundamental change in the economic conditions for agri-business. Fluctuations in food and purchase prices were no longer a function of costs, they became a function of demand movements. The food demand barrier exerted

economic pressure on producers and involved their selection, at the same time aggravating both social and economic problems.

Social and economic developments became decreasingly predictable, in spite of a considerable progress in forecasting methods. The determination of agri-business trends in Poland in the next fifteen or twenty years to come seems to fall into the field of futurology rather than projection. The difficulties involved stem not only from the complexity of the problem, including environmental, social, economic, spatial and political issues, but primarily from changing initial assumptions.

In addition to the well-known problems involved in any forecast, i.e. difficulties with predicting the economic situation in the national economy and in those of the main trading partners, orientations and possibilities of implementing technological progress, demographic activity, developments in the labour market, etc., in Poland there are also constraints related to poorly imprecisely defined objectives and rules of the economic policy in agri-business. It has been an increasingly widespread belief in Poland that the issue of restructuring and modernisation of agri-business is one of the most pressing and at the same time the most difficult tasks in the national economic policy. The agricultural policy raises major theoretical controversies, which is reflected in political disputes and hinders the adoption of long-term rules and objectives of the economic and social policies. Although it is quite frequent, strategic problems of agri-business cannot be considered solely from the point of view of domestic food supply and the living conditions for the farming population. It is indispensable to view such issues from the angle of unemployment, the burden of welfare on the state and local budgets, the possibilities of financial support from the state, the risk of spreading poverty, increasing liberalisation of international trade and the requirements of integration into the European Union. For all the aforementioned reasons, it is impossible to resolve long-term problems of agriculture within the framework of a narrowly defined agricultural policy.

In the modern world, the development of agriculture results from both spontaneous economic processes and the national agricultural policy implemented, taking account of the internal conditions as well as of the world trends determining the role of the agricultural sector in individual countries. The knowledge of external conditions related to the internationalisation of economies and societies, the development of market and democratic systems as well as to the emergence of the so-called global problems makes an in-depth analysis of the world economy and incorporating the ensuing conclusions in economic policy-making, also with regard to the agricultural policy, necessary for a successful economy.

The analysis of the world trends determining the changing position of the food sector in the economy suggests that the most important developments are those described below.

To begin with, the links between agriculture and the whole social sphere of the economy have been strengthening, despite the diminishing relative share of agriculture in the main macroeconomic indicators. This pattern has been observed in every country and can be explained mostly by a lower income elasticity of the demand for food products than of that for other goods and services, food demand limitations and by a higher growth rate of the total factor productivity in agriculture than that of demand.

Another observation is that the prosperity of the economy as a whole is impossible with a backward agriculture.

Thirdly, there has been a reorientation of economic interrelations between agriculture and the whole national economy. Such relations change as agricultural activity becomes increasingly integrated into other production activities and there is a reversal of economic flows, i.e. transfers from agriculture for the overall development of a given country are replaced by transfers to agriculture.

Furthermore, agriculture as a production activity has been gradually incorporated in a broader and consistent agri-business system. No longer an autonomous component, agriculture has become a part of agri-business. Development disparities between specific links of agri-business result in an under-utilisation of the production potential of agriculture.

The socio-economic development of agriculture has been considerably influenced by the evolving status of the farming family and of the farmer's household.

The awareness of global trends in agriculture as well as of the changing position and significance of agriculture in national economies has gained special importance in a globalising world. Globalisation processes require a redefinition of goals and put in question the sovereignty of the social and economic policies of individual countries. A number of authors are of the opinion that in the modern world no country is capable of resisting the mechanisms and consequences of globalisation. Since globalisation leads to free cross-border movement of savings and goods, thus investment and demand, it fundamentally changes the efficiency criterion. Efficient and competitive players are those able to exploit scarcity and abundance relationships on a global scale. This mechanism disrupts the basic equation of economics, expressing the relation between savings and investment. The global market represents a place of contact for

capital and borrowers, seeking profitable investment locations and the cheapest borrowing opportunities respectively.

Poland's accession to the European Union on 1 May 2004 required the fulfilment of a number of difficult political, economic and social conditions. It involved the determination of political elites and major social groups in the implementation of socially and economically costly transition towards a market economy and adjustment to the European Union standards. However, Poland's joining the European structures implies neither a successful resolution of all economic and political problems nor a completion of the transition. Integration into the EU merely offers an opportunity for and legitimate hope of the continuation of the process in a much more efficient manner and at lower social costs.

The enlargement of the European Union meant an integration of 25, and then 27 states with varying levels of national income *per capita*. In Central and Eastern European countries this indicator does not exceed 35% of the EU average. They are also characterised by much lower levels of development defined by factor productivity, the stability of the macroeconomic environment, the efficiency of institutions implementing the economic policy, a business-friendly institutional environment, including the legal order. The attainment of the EU levels of those indicators by the acceding countries will take time and require economic policies with an emphasis on significantly increased investment, developing human capital as well as on the transfer of technology and capital.

Agriculture, as the entire food sector, ranked among the sections of the national economy with the most complicated modernisation and restructuring processes. The resolution of acute social and economic problems in agriculture was one of the most difficult challenges facing successive governments, and the assessment of such processes is a most complex exercise.

In order to cope with those challenges, in 2004 the Council of Ministers adopted the Multi-annual Programme "Economic and social conditions of the development of the Polish food economy following Poland's accession to the European Union" (Program Wieloletni *Ekonomiczne i społeczne uwarunkowania rozwoju polskiej gospodarki żywnościowej po wstąpieniu Polski do Unii Europejskiej*), whose implementation was entrusted to the Institute of Agricultural and Food Economics (*Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej*). This volume presents the most important conclusions from the research conducted.

The position of Polish agriculture in the global food market¹

One of the most important development problems of the modern world economy is to incorporate agriculture in the system of market regulations and to shape the agricultural policy at national and supranational levels. The challenges of the modern world set new tasks for the food sector.

Functions of agriculture in a changing world

The main functions of agriculture, i.e. those related to food production, are increasingly performed by a complex of activities involving various factors and conditions independent of agriculture rather than by agriculture itself. The global experience shows that development prospects of agriculture are less and less dependent on endogenous factors in the sector, being more and more contingent on the macroeconomic policy. Development trends in the economy as a whole are of paramount importance to the competitiveness of the food sector. Positive effects on a macro scale are transmitted to agriculture and its environment. Economic conditions in agriculture represent an integral part of the overall economic situation and its derivative at the same time.

Opportunities and threats related to globalisation and global competition to the food sector can be described in real and institutional terms. Globalisation significantly strengthens the comprehensive interrelations between agriculture and the economy, even though the position of agriculture measured by traditional indicators relatively diminishes. Agriculture is gaining in importance to the preservation of the environment, employment, lifestyles, the satisfaction of aspirations of the farming population, the conservation and creation of cultural values, the development of tourism and recreation. There has been a gradual shift from the concept of quantitative development towards qualitative solutions. Agriculture increasingly realises not only economic goals, but also serves welfare, social, cultural and environmental purposes.

¹ The research topic in question comprised the following tasks: “The impact of globalisation processes upon agricultural and rural development in Poland” (*Wpływ procesów globalizacji na rozwój polskiego rolnictwa i wsi*); “Socially sustainable agriculture” (*Rolnictwo społecznie zrównoważone*); “Possibilities of pursuing a national agricultural policy by Poland under the common agricultural policy” (*Możliwości prowadzenia narodowej polityki rolnej przez Polskę w ramach Wspólnej Polityki Rolnej*).

The global experience clearly shows that economic growth is a necessary but insufficient condition for agricultural development. Undoubtedly, the search for satisfactory solutions must go beyond economic sciences, taking account of various institutional, cultural, political, sociological, environmental and technological factors.

The increasing scope of the WTO accelerates changes in policy mechanisms and objectives towards producers of agricultural raw materials. The liberalisation of international trade has been progressing through the elimination of or reduction in tariff and non-tariff barriers. On the other hand, advanced economies compensate their farmers for globalisation-related “losses” by the application of support and market protection measures. In OECD countries, the total amount of agricultural land subsidies approximates USD 250 billion annually. Such mechanisms overlap with the parallel structural processes of technological and organisational change in the agricultural sector.

The most spectacular result of such developments is the reduction in the workforce engaged in the production of agricultural raw materials. For the past fifty years, due to technical, biological, technological and organisational progress as well as to an increased scale of production, there has been a gradual decrease in agricultural prices. At the same time, the value of subsidies has soared. Such an agricultural policy model results in a strong dependence of agriculture on state intervention and undermines the international competitiveness of this sector. The majority of agricultural producers are unable to obtain a satisfactory income without public support. It is not only becoming difficult for taxpayers to accept such a significant distribution of national income towards agricultural producers, but first of all protective policies create long-lasting barriers to the development of the poorest countries for which exports of raw materials, including agricultural raw materials, often represent the only export opportunity.

In comparison with industry, agriculture is characterised by a number of specific characteristics. Technical progress in agriculture is slower and largely unavailable to many small farms, particularly in developing countries. Agricultural markets are rather unstable on account of uncertain climatic conditions and opportunities for speculative behaviour, which forces producers to face considerable price and income fluctuations. Finally, agricultural activity is not confined merely to production. Such mechanisms overlap with the parallel structural processes of technological and organisational change in the agricultural sector. Agriculture is a weaker market player. Farmers are dispersed, therefore incapable of oppose the organised power of purchasing centres and processors of agricultural raw materials. Hence, the bargaining power of farmers is limited.

Those unequal positions of market partners result in a downward pressure on prices from the environment of agriculture. The free market mechanism is by no means neutral in terms of distribution of costs and benefits of growth processes. Even if the market is efficient economically, the principle of social justice is not always respected.

Being a raw material sector, agriculture is distant, both spatially and economically, from the end purchaser of goods (i.e. the consumer and exporter). At the same time, the market favours further stages of the processing of raw materials into end products. The links which are closer to the end buyer are more likely to reap price benefits than those more distant (in an economic sense) as the former in fact have a greater influence on the prices for their products and services. There is much empirical evidence that purchasing centres, processors and traders capture a relatively high proportion of value added in their prices. Their share in the distribution of the total value added (generated during the production of food end products) exceeds their share in generating that value added. The share of value added realised by agriculture is less than proportional to that generated by the sector in question. Thus, the market redistributes value added, with a long-term disadvantage to agriculture. It stems from the imperfection of the market mechanism. It appears that also in developed countries where the market mechanism is supposed to operate more fully agriculture is at a permanent disadvantage in the distribution of value added.

As in many countries worldwide, thus far the long-term development mechanism in Poland has not been conducive to the strengthening of the competitiveness of agriculture in the internal market. Agriculture has been perceived as a backward and non-development sector. Left to its own resources, it has been unable to attain a critical mass of reforms and, as a matter of fact, has been functioning on the periphery of the national economy. Economically weak agricultural holdings had limited capability to accumulate capital and invest, which further deteriorated their unfavourable economic and social situation. Poverty reproduced poverty.

Structural changes in agriculture are hampered by distortions in the allocation function of the market. It is beyond doubt that any market economy must be based on a mechanism of resource allocation under market conditions. However, the market mechanism sometimes also has some inherent faults and proves to be ineffective, inadequate in certain areas. Its failures show in monopolised sectors, in areas where the market account excludes externalities or in markets with blocked information channels.

Frequently, there is an additional obstacle to the operation of the allocation mechanism in agriculture, related to the limited responsiveness of supply to price movements and the exclusion from a very important part of the market mechanism, namely the selection of inefficient operators. The underlying assumption is that in the economy there are no barriers to the movement of labour or capital, either in time or in space. However, the assumption in question fails to reflect the real conditions of Polish agriculture and rural areas. Market reallocation of production factors from less efficient to more efficient applications involves factor mobility, whereas the specific characteristic of Polish agriculture is low mobility of production factors. Many of them cannot be employed elsewhere. Such factors are not subject to market allocation, have no alternative applications, thus they constitute no social costs (alternative costs). As they cannot be priced, they are in fact outside economic choices based on market logic. A significant part of agricultural production factors will be either employed in the existing farms or inactive. From this point of view, increasing farming efficiency through changes to the agrarian structure is very costly in Poland since the social costs involved include the substitution of new technology for a considerable share of production factors which would then irreversibly fall outside the economy. A certain part of labour would cease to be economically active, at the same time remaining part of social life. They would have to move from economic activity to social security. Therefore, a stringent selection mechanism in agriculture would have to result in pushing up the current unemployment level and in burdening the strained state budget with new social security commitments, thus eliminating precluding any possibility of mobilising greater funds for animating rural areas.

This degeneration of the market mechanism mostly concerns fragmented peasant agriculture under conditions of considerable hidden unemployment in the countryside, which is large the case in Poland. It is characteristic of a private business operating in the market that it cannot continue to be inefficient in the long term. This is the driving force for the dynamics of the market allocation mechanism. However, a family farm survives even with declining income and unprofitable production. Peasant holdings face very different risks and bankruptcies. In Poland farms do not go bankrupt, they suffer poverty and privations instead. Price and financial restrictions increase the phenomenon of naturalisation rather than resulting in bankruptcies. The fact that under conditions of high unemployment in Poland family farms are not subject to selection, surviving despite unprofitability and eating away at their capital, unambiguously shows that the usual market allocation mechanism is inefficient. Therefore, a large-scale improvement in the agrarian structure

cannot be achieved through the mechanism of selecting weak holdings if price restrictions fail to bring about such a selection.

Since Poland's labour force is characterised by low mobility, stemming from forced attachment to one's place of residence, the key problem of structural change in agriculture is investment in job creation in the countryside. Such an approach is called for not only by very limited mobility of the rural workforce. Another argument is that housing prices and living costs are lower in the countryside than in urban areas.

The development prospects of agriculture are also affected by the low income elasticity of food demand. The economic conditions in agriculture primarily depend on the general economic situation. In a market economy, the final demand for agri-food products is crucial for the situation in the agricultural market. According to national accounts, between 1993 and 2006 an increase in GDP by 1 percentage point pushed up private consumption of food by 0.5 percentage point. The upper limit of the growth rate of food demand depends on the growth rate of disposable income and on the income elasticity of food demand. On the supply side, the respective limit is determined by the aggregate raw material conversion factor for end products.

Therefore, the most effective way of ensuring the development of the food sector and improving the income situation of food producers is to pursue a development-oriented macroeconomic policy conducive to a high growth rate of demand for agricultural products.

The underlying reason for the low internal capital accumulation in agriculture is lower labour productivity in comparison with industry. Hence, income disparities can be reduced mainly through structural change in agriculture, the modernisation of agricultural holdings and the elimination of unviable farms. This idea represented an important guideline for developing the common agricultural policy of the European Economic Community, now the European Union.

Economic policy should be based on a specific vision of the future. Any reasonable action requires the knowledge of direction and purpose. Whatever seems reasonable locally and in the short term may turn out extremely unreasonable macroeconomically and in the long term.

The key issue in elaborating a development strategy is to choose objectives. Defining the goals to be achieved must take account of the main aspects of development, i.e. technical and economic, spatial and environmental, social and political, civilisational and cultural. Since the points of view behind those aspects and the related assessment criteria vary widely, the ensuing

differences in assessments are inevitable. Possible development paths can be evaluated differently from specific points of view and on the basis of related selection criteria.

The set of possible selection criteria comprises technical and economic, environmental and spatial as well as social and political criteria. Technical and economic criteria are oriented towards the rationality of production, reflected in the efficiency and productivity of the process.

Economic criteria can be microeconomic or macroeconomic. The former are those oriented towards company profitability, whereas the latter concern the dynamics of sustainable growth. Environmental and spatial criteria are of an interdisciplinary character as they refer to the concept of ecological balance on the one hand and to the notion of spatial order on the other hand. Social and political criteria reflect preferences for specific political forces and are related to efforts at pursuing the group interests of constituencies of various political factions.

There is conflict between particular criteria. From the technical and economic point of view, the most efficient (in practice, the most recent) solutions may be the most reasonable choice. From the microeconomic point of view, the reasonableness of the choice will be connected with its effect on the company's bottom line. The selection of macroeconomic criteria will involve taking account of the situation in the labour market, which might result in a preference for labour-intensive solutions, unreasonable from the technical and technological point of view. Similarly, including both environmental/spatial and social/political selection criteria will produce conflict. Therefore, final specific criteria of reasonableness, justified from a narrow professional point of view, must lead to different solutions. In practice, it poses the risk of development decisions being dominated by a particular set of criteria, e.g. technical/technological or macroeconomic in nature, with all the controversies involved.

When developing the guidelines for economic policy, it is indispensable to define the assessment criteria for that policy.

With regard to modern agriculture, the criteria for determining its efficiency and competitiveness should take account of the following:

1. farming efficiency (technical and economic efficiency, dynamics and stability, reasonableness, productivity),
2. structural efficiency,
3. efficiency of the export/import openness of agriculture,
4. efficiency in ensuring working and living standards to agricultural producers,

5. efficiency with respect to capital extension,
6. efficiency with respect to the environmental protection,
7. efficiency with respect to its positive versus negative place in the national economy.

The above-mentioned efficiency criteria for agriculture constitute a social and economic system, including technical, economic, social and environmental conditions. This set of criteria reflects the main interests of various social groups participating in the generation and distribution of agricultural production: agricultural producers, consumers of food products, producers of agricultural inputs, processors, etc.

The relationships between specific efficiency criteria are of importance as well. Most frequently, they complement each other, which means that the realisation of one criterion advances the realisation of other criteria. Such relationships are rarely directly proportional. Furthermore, a certain group remains in competition with one another, e.g. the minimising the harmful impact of agricultural production on the environment which tends to be inconsistent with most criteria.

Reference points are also important to the evaluation of assessment criteria. The relationships between the agricultural policy reference points on the one hand and those adopted by agricultural producers on the other hand can be coherent or dichotomous. The maximisation of technical and economic efficiency of farming is a fully coherent criterion, common to farmers and policy makers, but the maximisation of the volume of output has become a dichotomous one. Agricultural producers are interested in the maximisation of production, whereas agricultural policies of many countries aim to limit agricultural output.

The above remarks lead to the conclusion that any assessments of farming efficiency, based on either theoretical/modelling analyses or empirical experience of other countries, cannot be generalised or treated as universal since their significant information value is combined with limited practical usefulness. It is impossible to successfully import and implement highly effective concepts and improvements of agriculture if they take no account of the conditions and socio-economic needs of the importing country.

The choice of a development path no longer concerns the trajectory of economic growth in traditional macroeconomic terms. Neither can it concern a model of the economy, society or country. The choice of a development path is not about specific macroeconomic proportions either. The dilemma is reduced to choosing between the following three options:

- continuation of the development pattern of a consumer and industrial society pursued, despite its negative consequences, by developing countries,
- rationalisation of the pattern in question, based on the awareness of its shortcomings, primarily concerning the “points of contact” of the economy, society and ecosystems,
- rejecting both the discontinuation and rationalisation of the dominant development pattern, and seeking own development alternatives as a result of believing in the merit of preserving own cultural identity.

Main modern strategies for agricultural development

When designing a new agricultural development strategy suited to domestic conditions, it is useful to analyse the existing agricultural development models in the modern world.

Industrial development. On the material side, industrialisation opened new avenues for increasing agricultural output through supplying means of production supporting and substituting labour – both human and animal (mechanisation) – as well as improving the productivity of land and farm animals (agricultural chemicals, manufactured feedingstuffs, agribiological progress). The former pushed up the scale of production, previously constrained by labour resources, freed considerable resources of human labour for industry and other non-agricultural sectors of the social economy as well as freeing for human consumption agricultural products previously allocated to feeding draft animals. They enabled the multiplication of yields and productivity of farm animals. There was an intensification of farming, usually through the implementation of capital-intensive agricultural production techniques. All that led to increasing manufactured inputs, also those eliminating products of agriculture. Agriculture advanced technologically, agronomically and genetically. It enabled a remarkable rise in yields, animal productivity and primarily in labour productivity.

In economic terms, industrialisation affected agriculture by increasing the demand for agricultural products, absorbing workforce from agriculture, progress in transport equipment facilitating the movement of agricultural products over long distances (and urban development), taking over certain functions of agri-food processing and the development of agricultural technology. It created the conditions for the most significant change: the commercialisation of agriculture, i.e. monetary income becoming the most important, and in extreme cases the sole purpose of farmers. Obviously, it meant a reorientation of the entire agricultural economics and of the

organisation of agricultural holdings towards the maximisation of income (profit), the main motivation for farming. That motivation forced production maximisation based on the principle of marginal increases. As long as demand presented no barrier, farmers benefited from the maximisation of production. But the situation began to change in the last decades of the 20th century, under the influence of increased productivity of agriculture, particularly in developed Western European countries, cheap agricultural imports from overseas countries (development of transport equipment) and of widening socio-economic disparities, which impeded growth in demand. The emerging demand barrier had an enormous effect on agriculture. Under conditions of rising supply, the demand barrier triggered a dramatic downward trend of agricultural prices, i.e. the opening of agricultural price scissors, thus the process of transferring value added generated by agriculture to consumers and non-agricultural sectors of the economy. At the same time, it significantly stimulated concentration and specialisation, changes in the agrarian structure as well as capital-intensive intensification of farming, including the implementation of scientific and technological progress.

Despite a rapid increase in labour productivity in agriculture, agricultural income, the main motivation for the functioning of farms in the industrial age, lags behind non-agricultural incomes. Agriculture is exploited as it bears the costs of the reproduction of labour force moving to other sectors, transfers agricultural land for the needs of non-agricultural sectors, whereas a significant share of generated income is distributed through the market mechanism and other socio-economic servomechanisms to non-agricultural sectors. This is mostly done through prices showing the preferences of buyers in relation to suppliers (the supply/demand relationship). Thus, the market mechanism determines the price for specific supply and demand conditions which may not reflect the actual value added generated but regulate the value added realised, i.e. income. This mechanism transfers a major share of value added generated by agriculture, thus of income as well. It appears that certain fields of generating income are rewarded by the market mechanism, whereas others are debased. Agriculture belongs to the latter group.

In cultural terms, industrialisation strongly affected farmers' values and attitudes, increasing their needs and aspirations. Such changes had an ever-growing impact on agricultural technology and motivations for farming. The need for earning money became obvious, making farmers increase their market-oriented production and change farming techniques. Social (including family) relations evolved as well.

Induced development. Induced development is a notion of forced development of agriculture. Since agriculture generates too weak internal forces to launch a growth process and maintain its dynamic equilibrium, the main agricultural development impulses must be external. Those include key issues such as capital formation, innovation, institutional structures, efficient allocation of resources, etc. It is argued that without appropriate public intervention external effects may prove too weak, resulting in a below-optimum equilibrium in the economy.

According to the induced development model, innovation and material carriers of progress in agriculture are created in non-agricultural sectors and transferred to agriculture through market channels. For such a process to be both effective and efficient, the market must function normally and generate genuine price information, thus determining allocation decisions. But the problem is that the majority of developing countries have no such market. If there were such a market and allocation decisions were made in accordance with the neoclassical notion of microeconomic efficiency, those countries would be far better developed. This assumption represents a weak point of the induced development model.

The model in question might find a much wider application in Poland than in less developed countries as Poland has a fairly normal market for means of production, enabling allocation decisions to be made according to the criterion of microeconomic efficiency. Broader progress (innovation) must be transferred to agriculture from outside and such innovation transfer is beneficial to both farmers and the whole society. The more efficient agriculture is the lower the burden of agricultural development costs on the national economy. The problem to be resolved by economic policy is to create a mechanism of transferring progress to agriculture and its structures. Such a mechanism should include four components: innovation in the private sector, innovation in the public sector, interrelations between technical progress and institutional changes as well as dynamic relations between technical progress and economic growth.

The bipolarisation strategy is inspired by market liberalism. According to the doctrine in question, it is *a priori* assumed that the main problem of Polish agriculture is an inadequate agrarian structure, thus a radical transformation offers an opportunity to modernise and advance agriculture. Advocates of this strategy argue that this structure should be polarised, as soon as possible, into a sector of economically strong commercial farms and a large sector of non-development “social” holdings at the other extreme. The latter would then gradually collapse as agricultural holdings and transform into multifunctional entities.

The assumption that improving the area structure will solve the most pressing problems of agriculture is a simplification. Increasing the area of agricultural land will not automatically lead to new quality. There are many examples of farms which are large (in Polish conditions) and economically weak at the same time. It is also corroborated by the results of agricultural censuses. It appears that approx. 24% of farmers, owners of holdings with an area of 10 to 50 ha for whom agricultural activities represent the main source of income, regarded their farms as non-development entities. Therefore, simply increasing the area of a holding is insufficient. In the modern world, success is driven by technology and management quality. It is true that a larger area offers greater flexibility and facilitates the application of modern technologies, particularly mechanisation. But nowadays there are also technologies to be applied on a small scale. The age of mechanisation technologies giving an absolute advantage to large farms is over.

It is a case of conflicting criteria of individual and social efficiency. Concentration, within its traditional meaning, improves individual efficiency, at the same time neglecting broader social conditions. Improvements in macroeconomic efficiency are accompanied by major drawbacks, such as uncontrolled agricultural unemployment, economic and civilisational disadvantages for a large group of economically weak holdings which must be supported by the whole society from budget funds.

The sustainable growth strategy. Despite attempts to enter an industrial growth path, Poland has not yet reached critical thresholds. The situation in this respect is still more favourable in Poland than in most developed European countries, which might be Poland's opportunity if it makes appropriate amendments to the development policy and respects the basic rules of sustainable agriculture. The world is changing the criteria for distinguishing between development/modernity and backwardness. The theories behind agricultural development are being verified. The development of sciences, particularly of biology and genetics, has led to the multiplication of the productivity of land and other resources. Increasing productivity per unit area is no longer a problem. The boundaries are being pushed further and further, even without using additional chemical products. Ever more food is produced on an ever smaller area of agricultural land, and the boundary of the possible in agriculture still seems to be distant. The operation of the law of diminishing productivity is suspended again as production involves new technologies allowing more and cheaper output. Conditions are being created for ever larger areas of land used for agriculture to be allocated for meeting human needs other than food. All this promises a fuller harmony in biocenotic systems, a gradual

discontinuation of agricultural monoculture and reaching a balance in shaping the environment.

The industrial model solved the production problem of agriculture (large-scale production of standardised food at relatively low cost), but it failed to resolve two extremely important issues of modern agriculture, namely the level of agricultural income and the state of the environment, which in turn has an essential impact on food quality.

Drawing on historical experience of other countries, supporters of the model of socially sustainable agriculture argue that modern concepts of development should comprise the following three components:

- adjusting the volume and growth rate of food production to final demand,
- maintaining a fair level of agricultural income in order to prevent excessive outward migration of the rural population and reduce the pressure on the labour market (the uptake of workforce is and will remain limited),
- stopping environmental degradation, thus improving the biological quality of food and making the countryside an attractive and valued place to live for a growing number of families. Such environmental values will be highly priced, which will create an additional flow of income to rural areas.

Socially sustainable agriculture is also favoured by an increasing orientation towards final demand, i.e. food consumers and other users of agricultural products, which involves more fierce overall competition. Food demand has been segmenting. On the one hand, it is demand from the mass consumer of cheap food products, the results of mass production within industrial agriculture. It is difficult to replace industrial agriculture in meeting this type of demand. On the other hand, there has been an upward trend of the market for organic products, with high nutritional and health values, but also at higher prices. The segment in question is not yet very large, for various, not only economic reasons. However, it can be presumed that it will develop as the environmental and health awareness rises.

The general goal of this agricultural development strategy is a shift towards agriculture which is modern, technologically and economically efficient, people and environmentally friendly, based mainly on family farms, integrated into the whole national economy and, especially, complementary to other rural activities. Such a policy should encompass reasonable public intervention and State aid, multifunctionality of agriculture and of rural areas, the reinforcement of rural and agricultural self-governments, regionalisation and internationalisation, including the effects of integration into the European Union structures.

Globalisation and the competitiveness of European agriculture

One of the characteristic features of the world economy, understood as a historically developed system of diverse and changing forms of economic links between specific actors of the international division of labour, is the transmission of cyclical fluctuations on an international scale. It means that at any time in the national economy of a given country there are effects of the cyclical development of other national economies and *vice versa*: the cyclical development of a given national economy has a greater or lesser impact on the economic development of its partners. From the point of view of a given national economy, particularly that of a small or medium-sized country, it is important to what extent the cyclical development of individual countries is synchronised.

The world economy is a historically developed system of diverse forms of economic links, changing over time, between specific actors of the international division of labour, including between countries, understood as sets of nations, natural resources and various assets of national wealth, more or less isolated from other sets defined by economic and political regimes. Such countries cooperate and compete with each other at the same time. The more a given country draws on the body of theories of economic growth, international trade and the location of economic activity in the world the higher the degree of competition effectiveness.

The globalisation of the world economy raised anew a number of questions which seemed to have been answered by science long before. Although many social scientists are of the opinion that globalisation dates back as early as the antiquity, it became one of the world's major economic and political problems in the 1990s. Unlike any other, the process is particularly conducive to fundamental disputes and controversies. Such differences emerge as early as defining globalisation. The majority of definitions stress that the process is related to the narrowing of the world ("global village"), greater awareness of the world as a whole, the elimination of artificial barriers to the movement of goods, services, capital and knowledge, the development of trade, the transfer of capital and technology. The effects of globalisation are frequently presented at two extremes.

Rapidly growing disproportions in GDP growth dynamics, increased competitiveness of economies resulting in rising unemployment in certain countries and subsistence wages in others all lead to impoverishment and migration on the one hand and to the emergence of very rich communities on the other hand. The new international economic order to result from the

globalisation process is supposed to ensure the redistribution of world resources favourable for the peripheries of the world economy. Today it is difficult to empirically verify the thesis that globalisation represents one of the most progressive forces in the modern world, conducive to reduced poverty and, in the long term, also offering developing countries an opportunity to become high-income economies. For some researchers, it is sufficient proof of the notion of bipolar development of the world into the rich North and the poor South as a result of globalisation.

Such objections can be confronted with the view that the mobility of transfers opens new possibilities. Globalisation and technological revolution, particularly the development of information and communications technologies, is directly reflected in increased competition. What in the past could only be manufactured in advanced economies for technological reasons now can just as well be produced almost in any part of the world, due to the international mobility of technology.

For many researchers the above argument justifies the need for the liberalisation of the world economy. It is pointed out that economic freedom enabled a number of countries to overcome economic and social malaise. According to the paper by Sachs and Warner on 135 countries over the period 1970–1985 published in 1995, open economies have annual GDP growth rates 2.5% higher than those of other countries.

The results of studies of the relationship between the size of the public sector in the economy and the growth rate show a clear negative correlation between the size of the public sector and the GDP growth rate: the smaller the public (government) sector the higher the growth rate².

A similar relationship has been found between the economic growth rate and the tax ratio. Also in this case there is a clear even if not very strong correlation³.

Thus, there is every indication that wealth tends to be created the easiest and maintained the longest in liberal economic regimes.

An overwhelming majority of economists and sociologists agree with the above assertions. However, assessments of social consequences of economic growth tend to vary widely.

² J. Gwartney, R. Lawson, R. Holcombe, *The Scope of Government and the Wealth of Nations*, "Cato Journal" 1998, Vol. 18, pp. 163–190.

³ See e.g. OECD reports.

Growth, i.e. the production of a greater quantity of goods and services, cannot be an objective in itself, growth for growth's sake. Economic freedom naturally leads to inequality. It is often argued that economic growth only benefits the rich and evidence is sought in the world economy. To illustrate such developments, it is indicated that the disparities between the wealthiest and the poorest countries have widened. Whereas in the early 1960s the average income *per capita* in the seven richest economies was 25 times higher than the respective income in the seven poorest countries, at the beginning of the 21st century the difference was already 39-fold⁴. Opponents of the notion of the bipolarisation of the world point to methodological flaws of such studies. The results take no account of changes in the purchasing power parity. The information value of such indicators only to a certain extent shows an improvement or deterioration in the material situation of societies. According to the research conducted by the Norwegian Institute of International Affairs, taking into consideration the purchasing power of currencies, inequalities between countries have been in fact diminishing since the late 1970s. A particularly rapid reduction in such disparities was noted between 1993 and 1998 when globalisation leapt forward. Similar studies carried out at Columbia University by Xavier Sala-i-Martin, an economist interested in development issues, confirmed the above findings⁵. According to the Author in question, if we focus on inequality between individuals instead of countries, it appears that in 2000 global income inequality was at its lowest after World War II. Between 1965 and 1998 the world's average income *per capita*, adjusted for purchasing power and inflation, went up from USD 2,497 to USD 4,839, i.e. it practically doubled. The rise did not result solely from multiplied income in the richest and developed countries. In the period in question, the richest one-fifth of the world's population increased its average income from USD 8,315 to USD 14,623 (i.e. by ca. 75%), whereas the poorest one-fifth augmented its income *per capita* from USD 551 to USD 1,137, thus by over 100%! This is the reason why today global consumption is more than double the figure for the 1960s.

Thanks to material development in the past fifty years, over 3 billion people live above the poverty threshold. According to UNDP estimates, the poverty rate has decreased more in the past half-century than in the past five hundred years.

⁴ Data as in A. Dylus, *Globalizacja. Refleksje etyczne*, Ossolineum, Warsaw 2005, p. 37. The figures largely coincide with the UNDP *Human Development Report 1999*.

⁵ Xavier Sala-i-Martin, *The Disturbing "Rise" of Global Income Inequality*, National Bureau of Economic Research Working Paper no. 8904, <http://www.nbr.org/papers/w8904>.

Areas affected by deprivation continue to shrink rapidly. Absolute poverty is frequently defined as conditions where an individual must live on less than one dollar a day. In 1820 approx. 85% of the world's population lived on an equivalent of one dollar a day. By 1950 the figure dropped to 50% and reached ca. 30% in 1980. According to calculations of the World Bank, the share of the global population living in absolute poverty fell from 31% in 1980 to about 24% (the share of developing countries in the world's population) in 2005. Such an improvement, observed between 1980 and 2005, is unprecedented in world history. We should also remember that at the same time the world's population increased by over one billion people, whereas the number of individuals living in absolute poverty declined by as many as 200 million. Such a decline is related to economic growth.

The above data seem to correspond with the UNDP Human Development Index (HDI), an indicator of social welfare. It points to an even deeper fall in the poverty rate and income inequality than the Norwegian report. The HDI combines various aspects of well-being, e.g. income, educational standards, life expectancy. It ranges from 0, the worst poverty, to 1, the perfect well-being. Over the past 40 years, the HDI has gone up in all groups of countries, with the fastest increase observed in the poorest ones. Between 1963 and 1993, in OECD countries the HDI rose from 0.8 to 0.91, whereas in developing countries it grew from 0.26 to 0.56.

On the basis of analyses of equality in 70 selected countries, G. W. Scully, a US economist, came to the conclusion that the most even distribution of income was found in countries with liberal economies, open markets and respect for property. In such countries, the middle class tended to have more wealth than higher classes. The share of the richest one-fifth of the population in national income was 25% lower in countries with more liberal economies than in those with other economic regimes. Although the share of the poorest one-fifth of the society in income did not depend on the degree of economic freedom in a given country, real income on of the least wealthy individuals in countries with liberal economies was much higher⁶.

Such trends are confirmed by the experience of transition in Central and Eastern Europe and in the CIS. Those countries which increased the degree of civil liberties and economic freedom have noted higher growth rates of labour productivity and of real income *per capita* and as well as a less dramatic increase in income inequality than the countries which gave up reforms. Also in

⁶ G.W. Scully, *Constitutional Environments and Economic Growth*, Princeton University Press, 1992.

countries where the liberalisation of the economic regime and market-oriented reforms are assessed as the most advanced there has been a relatively limited rise in income disparities than in countries where reforms have not reached satisfactory levels. The comparison of the buoyant economy of China with those of India and Pakistan leads to similar conclusions. Income inequality is far greater in communist China than in India and Pakistan.

Furthermore, it is pointed out that in liberal economies it is much easier to move out of poverty. In the USA, 1% of the population, i.e. 2.7 million individuals, have as much as the least prosperous 38%, i.e. 100 million people. The poorest one-fifth of the US population accounts for a mere 3.6% of national income. However, thanks to mobility between social groups, facilitated by education and work experience, only 5.1% of US citizens who had belonged to the poorest one-fifth of the population in 1975 remained in the group in question in 1991. In the meantime, almost 30% of such individuals had moved to the richest one-fifth, and 60% to the wealthiest two-fifths of the US society.

The best remedy for poverty is an opportunity to change one's position. In the United States, those who "fall" below the poverty line "stay" there for an average of slightly over four months. A mere 4% of US citizens can be considered poor, i.e. living below the poverty threshold for more than two years.

Obviously, income and wealth inequalities are reflected in health and longevity. The life span of individuals in poor countries is on average 25 years shorter than in highly developed countries.

However, it should be pointed out that in recent years life expectancy has increased much faster in developing than in high-income countries. In the 1960s, the average life span in poor countries was over 40% shorter than in wealthy nations, whereas at present the difference is 20%.

Infant mortality represents perhaps the best indicator of living conditions. In developing countries there has been a sharp decline in the measure in question. In 1950 18% of (nearly one in five) infants died. By 1976 the rate dropped to 11%, and it was 6% in 1995. Over thirty years, the overall infant mortality rate decreased by more than half, from 107 deaths per 1,000 live births in 1970 to 59 per 1,000 in 1998. Today, despite poverty, more people have the chance to survive. Since in low-income countries a growing number of individuals live ever longer, whereas the group of poor people is shrinking, it means that the poverty rate is decreasing faster than a superficial analysis of statistical data would suggest.

One of the most effective ways of bettering oneself is education. Regrettably, many people are still deprived of it. Access to education is mostly

determined by sex: 65% of those condemned to be illiterate are girls. Education is related to the problem of poverty. In a number of countries, the poorest have no education. Low-income families are unable to send their children to school since schooling is too expensive or the return on education is insufficient. Thus, it is hardly surprising that the accessibility of education increases as economic conditions improve. On the other hand, rising levels of education attainment are the main driver of economic growth.

The share of the population with primary education has been going up rapidly, being close to 100% now. A notable exception is Sub-Saharan Africa, but even there the respective proportion has increased to reach three-quarters. The share of those with secondary education worldwide rose from 25% in 1960 to 67% in 1995. In the period in question, the proportion of schooled children augmented to 80%. Nevertheless, there are still ca. 900 illiterate adults in the world.

According to the authors of the Club of Rome report adopted in Brussels in 1996, the global revolution has no ideological basis. It is shaped by a mixture of social, economic, technological, cultural and ethical factors.

Globalisation leading to free cross-border movement of savings and goods, thus also of investment and demand, essentially changes the criterion of efficiency. Those able to exploit scarcity and abundance relationships on a global scale become efficient and competitive.

The global market is not only about ever fiercer competition for cutting costs, but primarily about creating the most attractive possible conditions for investors. The competition for capital location values must have various consequences. The simplest instrument is to lower taxes and grant tax relief to companies and capital, which may in turn reduce the possibilities for funding important social tasks by the state. Ever more frequently, it proves to be insufficient. Governments and societies attaching priority importance to social welfare become less competitive than populations where the main form of social insurance are blood ties of multigenerational families or a social contract on limiting the personal and material scope of social policy. Therefore, the liberalisation of capital flows entails competition for low taxes, decreasing public expenditure and the discontinuation of social assistance programmes.

The pressure from financial markets and voters' expectations have been increasingly conflicting. It follows from the logic of the global economy that capital markets should become the main arbiters of economic policy since no country can afford to drive away domestic and external capital. This mechanism affects the sovereignty of monetary and exchange rate policies.

The consequences of such changes are more painful for less developed countries which must catch up with more advanced economies. On the one hand, such countries need to develop infrastructure and education in order to become attractive investment destinations, and on the other hand, creating attractive conditions hampers the mobilisation of funds for development programmes and reduces instruments indispensable to the implementation of catching-up strategies.

Efficient allocation of production factors makes supply significantly exceed effective demand. The growing demand barrier then results in the under-utilisation of existing production capacities, which in turn brings about considerable unemployment. Employees face an increased risk of losing their jobs in connection with business cycle fluctuations, they also incur the costs of insurance.

Revolutionary changes in value systems of entire communities and in production objectives raise anew certain fundamental question which seemed to have been answered long before. Many of those concern the possibilities and quality of market solutions to social, demographic and environmental problems. The dispute regarding the role of the market in facing strategic challenges remains unresolved. It is difficult to assess the efficiency of market forces in dealing with new phenomena accompanying the development of modern technologies. A catalogue of new global interests awaits definition. There have been changes in the role and importance of the main participants in economic life: the market, the state, producers, consumers and the environment, a relatively new player.

The end of the East-West conflict was regarded by many researchers and politician as a victory of liberal democracy, whereas other theoreticians and political activists consider the global financial crisis of the 2000s to be the substantiation of the thesis that liberal theories have failed.

The former view an economy based on market mechanisms as a reliable and, thus far, the only model of an efficient economy. The market proved to be the only reasonable form of resource management. It is the logic of market economy development that a global market should emerge. Consequently, the global market resulted in a rapid development of consumerism as a life philosophy. Consumerism reflects attitudes and values where excessive importance is attached to the freedom of purchasing and using goods and services which not only perform their utilitarian functions but also bring joy and satisfaction. Consumerism is a predominant attitude in post-industrial societies, a desire for purchasing goods in order to keep up with friends and technological progress. The choice of an article has a certain class, cultural and emotional

meaning. Any purchase involves choosing between many available options, and production changes its character. Goods and services are produced to be consumed, not to satisfy needs.

In many sectors and markets, competition increasingly becomes global rather than international. As a consequence, a number of established international companies replace their traditional, country-specific multinational strategies with strategies characterised by increased co-ordination and integration of geographically dispersed operations.

The scope of globalisation differs between sectors and markets. There are still many national sectors and markets, there are also others where businesses are forced to adapt their strategies to local conditions.

Over the past decades, technological change as well as social, economic and political development have put the world on the path towards a “global village”. Consumer preferences resulting from unified tastes have led to the formation of a homogenous global market. The process mainly benefits global entities producing standardised goods on a global scale. Thanks to economies of scale, they are able to set prices at lower levels than their competitors oriented towards national or local markets. Large transnational corporations are increasingly dominant among economic operators. The enormous power of such enterprises and dispersed shareholders allow them to control not only weaker countries, but also the entire market segments. The development of the IT sector, the homogenisation of consumer tastes and preferences which make it possible to increase the scale of production all fuel the formation of a new global economy, based on knowledge supported by creativity and entrepreneurship not only of the management, but also of all employees.

The global market neglects regional or local needs, assuming that they are the same worldwide. Companies deliberately overlook potential sales opportunities resulting from regional differences. They build competitive advantages taking no account of local production benefits. Marketing strategies are oriented towards products rather than customers.

Globalisation includes megatrends. In economic terms, the most important conditions resulting from globalisation concern the market, economic operators and foreign direct investment. Removing or reducing barriers to trade in goods and services accompanied by the development of transport equipment and logistics makes international competition more fierce. Any product produced anywhere in the world can be traded. The globalisation of the goods and capital markets involves the relocation of the production of goods to countries and places where capital can be employed most efficiently. Furthermore, attracting capital

increases competition in the labour market, through reducing labour costs and improving the quality of human capital. The environment also becomes a component of competition. At the same time, it is no longer possible to operate in an isolated, self-sufficient national economic system. In the new economic era, all countries in the world are increasingly interdependent and such interrelations become global.

Assessments of economic and social effects of the globalisation process primarily indicated developments unfavourable for poorer regions and countries. However, threats to advanced economies have been increasingly recognised recently. As Buchanan points out, globalisation leads to a system where dumped products are sold in a fair market. Thus, it jeopardises the existing order.

Globalisation and the integration of economies not only eliminate barriers to factor mobility, but also facilitate demand shifts, which is frequently overlooked in relevant analyses (as stressed by W. Szymański, among other authors). Domestic demand does not determine the demand for domestic products, neither does its absence rule out production activity of domestic operators if they are capable of satisfying external demand in a cost-efficient manner.

In such a situation, specialisation in foreign trade decreasingly depends on comparative costs which come to determine capital inflow and the location of specific production phases.

Globalisation opens new possibilities for the development of international economic cooperation. It improves access to new markets, distribution chains, capital, technology and information. Simultaneously, global competition makes market players adapt to new conditions, changes the behaviour of and interactions between enterprises, workers, consumers. It unleashes entrepreneurship, but it also increases the risk involved.

Lower transport costs, and particularly a gradual reduction in tariff and non-tariff barriers as well as efforts to minimise the costs of food production by transnational food corporations triggered a new and strong impulse to the world food trade. In 1990 agricultural exports were USD 414.7 billion, whereas in the late 2000s they reached USD 1,341.6 billion, a 2.5-fold growth over eight years.

Globalisation and the development of agri-food trade also continue to lengthen the food supply chain “from field to table”. It makes the market ever more anonymous, to both the producer and the consumer, which creates opportunities for obtaining additional income at lower costs, i.e. attempts to market low-quality food or even products dangerous to health. As distribution channels become longer and the number of intermediaries rises, it is increasingly

difficult to track and monitor the entire food chain, including a particular product (traceability).

All this means that our everyday diet contains not only more and more products from other climatic zones, which can be considered advantageous and justified, but also products typical of our climatic zone and produced in other regions of the world. In regions which guarantee lower labour costs or material consumption, frequently also in regions where the location of cultivation or stock farming is determined by low environmental costs and minimum requirements concerning the quality of technology applied, raw materials, thus of end products, i.e. food. Such articles are then distributed by an extensive chain of intermediaries to tables of consumers worldwide. They are often low-quality products, containing significant amounts of residues of heavy metals, pesticides, unauthorised food additives or substances, i.e. not only of limited nutritional value, but even harmful, possibly dangerous to human health.

Another important factor in food safety is the dominant global position of transnational corporations in modern agri-business.

The domination of TNCs also has adverse effects on development and growth as they squeeze out of the market firms which are unable to cope with global competition (small and medium-sized enterprises, local, peripheral, niche companies), which results in an oligopoly in the market⁷.

The economic (market) power of TNCs has been steadily increasing. It also concerns those operating in agri-business. At present, food corporations in developed countries rank among leading firms of national economies and the global (world) economy. Although their potential or market value are lower than those of the world's largest enterprises, e.g. petrochemical, energy, automotive and chemical corporations as well as banks, but the rankings of the largest, strongest or the most valuable companies always include food corporations.

On account of the ever-growing power of TNCs in the global economy, changes in international business practices developed by TNCs are now more important than the creation of new economic and financial systems by governments and government agencies⁸. The scale of concentration in agri-business is reflected in the fact that the three largest TNCs account for over 80% of the world cocoa trade, three TNCs – for 80% of trade in bananas, six TNCs – for 85% of the world cereal trade, eight TNCs – for 55–60% of coffee trade,

⁷ T.G. Grosse, *Europa na rozdrożu*, Instytut Spraw Publicznych, Warsaw 2008, p. 29.

⁸ R.D. Hurt, *Review of From Columbus to ConAgra: The Globalization of Agriculture and Food*, ed. by Alessandro Bonanno, Lawrence Busch, William Frieland, Lourdes Gouveia, and Enzo Mingione, Great Plains Studies, Center for Great Plains Research: *A Journal of Natural and Social Sciences University of Nebraska* – Lincoln, 1995, vol. 5, No 2, p. 370.

11 TNCs supply 81% of the world's agricultural chemicals, whereas 24 TNCs control more than half of global sales of seed for sowing⁹.

Corporations are driven by their own goals, which is hardly surprising. However, if their practices are not only contrary to business ethic, but even infringe the law and applicable regulations, whereas the field in question is food and our health, it becomes a serious matter.

Owing to the cross-border operations of TNCs, food safety systems cannot be simply national (local). They can only be effective if applied across regions, in fact globally, which requires combined efforts of the global community. But the fundamental difficulty in any such initiative is that a vast majority of the world's population have not yet achieved the first two dimensions of food security, namely the physical and economic availability of food. Under such circumstances, the third dimension – food safety, nutritional and health values of food – inevitably recedes into the background.

The scale and intensity of developments observed in food production and distribution in the past 20 to 30 years also requires a different attitude to the problem of the quality of food, its nutritional values as well as health effects on the human body. The much greater role of agricultural chemicals, successive epidemics of zoonoses (e.g. BSE, H5N1, blue tongue), the rising use of food additives, hormones, antibiotics – all these call for changing our approach to food production issues. In such circumstances, there are ever more comments on the need to move away from the paradigm of the level of food production and supply, i.e. food security, towards food safety¹⁰. It is an important and politically sensitive problem, particularly with over 1 billion people worldwide starving. But it is impossible to avoid decisions on food quality and safety. Access to healthy and safe food is a basic human right of each individual.

Healthy and safe food is a growing challenge in the globalisation era. If so, what action should be taken to advance towards this objective? There are at least several important measures to achieve it.

Firstly, any efforts aimed to reinforce the consumer movement. It is incomprehensible why the largest social group, consumers, thus all of us, has such a weak representation in national, regional and international authorities and

⁹ J.M. Rao, S. Storm, *Agricultural Globalization in Developing Countries: Rules, Rationales and Results*, Political Economy Research Institute, University of Massachusetts Amherst, Working Paper Series, 2002, Number 71, p. 25.

¹⁰ *Ethics of modern developments in agriculture technologies. Proceedings of the round-table debate*, The European Group on Ethics in Science and New Technologies to the European Commission, Brussels, 18 June 2008, from p. 17.

institutions. Therefore, action should be taken at every level to empower consumers. The consumer no longer makes decisions on food and clothing. Today even university students are taught that the company's customer needs to be "created", i.e. told what to eat, what to wear and what unnecessary gadgets to buy in absurd quantities.

Secondly, the development of consumer education. Basic knowledge is indispensable with respect to food in general, its health values, the consequences of consuming junk food, the main regulations and consumer rights.

Thirdly, the tightening of the requirements of food law. The existing food law as a separate legal area is relatively recent, although food regulations have been made for hundreds, even thousands of years. The law should protect the consumer against unhealthy and dangerous food and consistently eliminate unfair producers. Such a system should comprise effective legislation as well as efficient control and judicial institutions. Unfortunately, those are no rare cases, also in Poland, where it is not easy to obtain conviction, even for evident food adulteration.

Fourthly, institutional changes in food inspection. Effective food inspection requires the development of efficient inspection authorities. Institutions with well-defined hierarchies, delimitation of competences, adequate resources and powers. This is the case for modern food inspections systems in the world. At the same time, the reorganisation of this service in Poland is heading in the opposite direction, towards a fragmented, decentralised system with unclear competences and responsibilities.

Fifthly, the promotion of local foodstuffs. Local food produced close to places of consumption has a much lesser environmental impact (low transport costs) and does not require such an amount of preservatives as food transported over thousands of kilometres. Thus, it is more healthy and "ecological".

Finally, the development of food quality systems. Food adulteration, the deterioration of the nutritional value of foodstuffs, chemical and microbiological contamination as well as aggressive marketing of fast food should be addressed by creating regional, local or sectoral food quality systems, marketing standards and certification systems. It concerns the protection of regional products, organic products, schemes established by selected regions and the popularisation of "slow food".

Only one conclusion is to be drawn under such circumstances. In a globalised world, with transnational corporations imposing conditions on other market players and success mainly measured by profit, food safety cannot be treated as a fad, a marginal concern or eccentric expectations. Food

safety becomes a necessity to be accepted and recognised by producers as well as by politicians laying down standards and regulations. And all this must be done for the good of the largest social group, i.e. consumers.

Increasing internationalisation involves the problem of ecological safety of the civilisation. Specific environmental problems spreading to different continents and geographical zones have become global, which has led to the worsening of the new multifaceted ecological situation in the world, with a number of previously unknown characteristics. Until recently, the environmental crisis was mostly associated with industrialised countries. The specific feature of the current ecological situation is that life-threatening environmental problems have also arisen in developing countries. Environmental threats to the material foundations of life have resulted in entirely new challenges to the world. Nowadays, owing to the unity and indivisibility of the ecosphere, activity in any country has international implications. Imbalances have become global rather than local or regional.

Efforts to change the ecology of the planet have met with strong opposition from transnational corporations exporting their “dirty production” to those countries. Operating in accordance with the microeconomic efficiency criterion, companies disturb the ecological balance, whereas the cost of its restoration is born by the whole society. If they wish to survive, societies need to impose certain environmental restrictions. Activities of individuals must not threaten long-term community interests. The condition in question can only be met if environmental goods and services have market prices high enough to protect them against excessive exploitation. Making the idea of sustainable development work requires a strong state. Only the state is able to define and effectively realise general social objectives in managing renewable resources. Classical and neoclassical economics is dominated by the input/output analysis of current flows of goods and services in the economy. Advocates of the concept of sustainable growth focus on long-term analyses, particularly on resources analysis. It requires moving away from the traditional assessment criteria and changing the economic approach to the maximisation of social well-being in the long term, which also involves respecting the laws of ecosystems. Maintaining biocenotic balance is not sufficient for sustainable growth. It is necessary to create appropriate conditions for the ecosystem to be capable of restoring the balance. The self-regulation of the environment is only possible within certain ecological boundaries. At present, the scale of the anthropogenic impact on the environment makes natural compensation mechanisms insufficient. Ecological barriers and related risks concern all areas of human life. There is a pressing socio-economic need to inject capital into the environment, as the indispensable

source of consumption and production, and to make it subject to the same economic systems (e.g. prices, charges) as all the remaining production factors.

Globalisation issues new challenges to the state, raising questions as to the limits of national interests. The telecommunications revolution is creating an enormous global economy with one market. In this context, there have been comments that the economic function of the state is withering. The debate on the role of the state in the economy no longer concerns merely the scope of public intervention, but addresses the legitimacy of the very existence of the state.

The freedom of nation states to choose their social and economic policies has been curtailed considerably. By freeing the market from the limitations imposed by the state, globalisation eliminates obstacles to differentiation and widens economic disparities between and within societies. As L. Thurow puts it, *“A global economy creates a fundamental disconnect between national political institutions and their policies to control economic events and the international economic forces that have to be controlled. Instead of a world where national policies guide economic forces, a global economy gives rise to a world in which extranational geoeconomic forces dictate economic policies. With internationalization, national governments lose many of their traditional levers of economic control.”*¹¹ According to H. Chołaj, the formation of the global village, the global market, transnational corporations will be increasingly in opposition to government and national restrictions. They may significantly contribute to increasing various threats such as a collapse in financial markets, environmental disasters, climate change, environmental degradation (the thinning of tropical forests, water contamination, predatory exploitation of raw materials).

The changing role of the state again posed a dilemma to be solved: should socio-economic processes be left to market mechanism or should the state resort to public intervention?

The economic policy (interventionism) derives from the statist concept of market failure based on the Keynesian theory and welfare economics. This economic theory produced assertions of shortcomings of the market, i.e. the inefficiency of market regulation with respect to income (allocation and distribution), stabilisation and relationships between Pareto efficiency and justice (equality). The assumptions of market inefficiency in these respects result in a theoretical justification for active and comprehensive state interference (intervention) in economic processes, including those adjusting the effects of market regulation. The functioning of the agricultural market,

¹¹ L. Thurow, *The Future of Capitalism: How Today's Economic Forces Shape Tomorrow's World* (New York: William Morrow, 1996), p. 114.

agricultural crises (overproduction), the agrarian issue and income disparity reinforced the above assertions and postulates.

The economic theory in question is criticised by the anti-statist approach. This economic approach is in turn based on the assertion of the economic failure of the state. Anti-statism comprises monetarism and neoclassical economics. The assertion of state failure is based on the doctrine that the market is efficient unless the government interferes with it, thus public intervention is unnecessary. Theoretically, the state can improve resource allocation, reducing market failures, particularly with respect to public goods, but this economic approach demonstrates that inefficient allocation of resources is caused by the state itself.

Opponents of the view that in the globalisation era the state should be deprived of influence on economic policy argue that it is the scope and direction of state influence that changes, that globalisation represents an impulse to strengthen national institutions rather than curtailing them. Since there are no global political institutions in the globalised world, the shaping of global processes – control, regulation – must be done at national level. Globalisation does not destroy the nation state; rather, it changes the hierarchy of state functions, reducing the importance of some of them and increasing that of others. Moreover, new functions and tasks arise for the nation state which can be replaced by neither supranational organisations nor transnational corporations. According to J. Stiglitz, free and spontaneous development of the market creates unequal conditions in the economy, and major conflicts lead to destabilisation and crises. Among the functions in question, protection against the risk of speculative capital inflow is of vital importance. Due to the globalisation of the world economy, the focus has moved from direct regulation methods towards the creation of necessary conditions for improving the competitiveness of the national economy. Globalisation processes increase the significance of internal policy as the state is compelled to pursue various regional or sector-specific protectionist policies in response to global challenges. The market is unable to solve the problems related to the globalisation of the world economy. The majority of countries take action to boost their competitive advantages in the global market, fostering the modernisation of production resources as well as stimulating domestic production in technologically underdeveloped and export-oriented sectors. The shedding of operating functions is accompanied by the development of strategic functions, i.e. creating visions for the future and designing development strategies.

As has been mentioned above, the globalisation processes are heterogeneous and vary widely between sectors. In agriculture, as in the whole food sector, such processes are slower. As S. Kowalczyk aptly observed, the

highest level of globalisation in agri-business is noted in the agricultural input industry, the processing industry as well as in food trade. At the same time, the production of agricultural raw materials and agricultural land have been the least affected by globalisation.

Slower and incomplete globalisation processes result, among other factors, from specific characteristics of the sector in question. The countryside and agriculture are less adaptive to market-economy conditions than other sectors. Underdeveloped infrastructure, low-skilled labour, inadequate educational infrastructure, underdeveloped business activities in rural areas, all this discourages private capital. Extensive interrelations between agriculture and the whole economy become markedly stronger in the globalisation process, even though the relative position of agriculture measured by traditional indicators has been diminishing. At the same time, agriculture is gaining in importance with respect to the preservation of the environment, employment, lifestyle, satisfying aspirations of the farming population, the conservation and creation of cultural values, the development of tourism and recreation.

There has been a gradual shift from the concept of quantitative development towards qualitative solutions. Agriculture increasingly realises not only economic goals, but also serves welfare, social, cultural and environmental purposes.

The countryside and agriculture face ever-more pressing problems, difficult to be resolved: overpopulation, low labour productivity, inadequate agricultural structure, low internal and external competitiveness as well as low agricultural income. Coping with such problems requires various, sometimes conflicting measures. All those difficulties must be tackled under conditions of permanent overproduction of food and low labour absorption capacity of non-agricultural sectors of the national economy.

The issue of reconstructing and modernising agri-business represents one of the most important and at the same time the most difficult tasks of the national economic policy. Agricultural policy raises major theoretical controversies, which is reflected in political disputes and impedes the adoption of long-term economic policy principles and objectives. Although it is quite frequent, strategic problems of agri-business cannot be considered solely from the point of view of domestic food supply and the living conditions for the farming population. It is indispensable to view such issues from the angle of unemployment, the burden of welfare on the state and local budgets, the possibilities of financial support from the state, the risk of spreading poverty, increasing liberalisation of international trade and the requirements of integration into the European Union. For all the aforementioned reasons, it is

impossible to resolve long-term problems of agriculture within the framework of a narrowly defined agricultural policy.

Many economists point out that globalisation leads to the marginalisation of entire sectors, as is exemplified by agriculture. Owing to the geographical and economic distance from the consumer, agriculture is by its very nature seen as a weaker partner.

In comparison with industry, agriculture is characterised by a number of specific characteristics. Technical progress in agriculture is slower and largely unavailable to many small farms, particularly in developing countries. Agricultural markets are rather unstable on account of uncertain climatic conditions and opportunities for speculative behaviour, which forces producers to face considerable price and income fluctuations. Finally, agricultural activity is not confined merely to production. Living standards, the environment, landscape or social balance largely depend on the type of farming. For all the above-mentioned reasons many governments decide to pursue active agricultural policies: systems of guaranteed prices, import duties and direct subsidies. Such measures distort competition.

In the thirty most advanced economies government subsidies to agriculture amounted to USD 311 billion in 2001¹². Production subsidies in rich countries at the same time hit farmers in poor countries. The average subsidy per European cow is more or less USD 2 a day, i.e. as much as the daily income of billions of people in the Third World living at risk of poverty¹³.

Import barriers introduced by industrialised countries block market access by certain countries, whereas the latter are subject to the rules of free trade within the framework of the WTO and structural adjustment plans imposed on them. Furthermore, export subsidies and direct payments in the European Union, the United States, Japan contribute to the stifling of world markets and to hampering the development of the agri-food sector in less developed countries. This is why, between 1965 and 1985 the supply of cereals from countries characterised by 200 to 300 times higher productivity pushed down local production in Tropical Africa. Similar developments can be observed with regard to poultrymeat in Sub-Saharan Africa or to milk in Ecuador and Peru. The impoverishment of small agricultural producers (accounting for three-fourths of economically active population in the countries of Sub-Saharan Africa)

¹² M. Kuźmicz, *Bogaci i biedni przy jednym stole*, "Gazeta Wyborcza" of 27.12.2002.

¹³ J.E. Stiglitz, *Komu pomoże szczyt w Cancun? – as in W. Szamański, *Interesy i sprzeczności globalizacji. Wprowadzenie do ekonomii ery globalizacji*, Difin, Warsaw 2004, p. 189.*

aggravates the difficulties faced by such countries in their attempts to achieve long-term robust growth.

Despite such unequal conditions of competition, in the past half-century the global food production has doubled, or even tripled in developing countries. The latter have experienced the most impressive growth, with only a minor share of this rise resulting from an increased area under cultivation. Since the early 1980s, food prices have dropped by half, whereas productivity in agriculture has gone up by 25%. The process in question has been more rapid and distinct in low-income countries.

The dispute over the impact of globalisation and liberalisation on the dynamics of social and economic development of the world remains unresolved. Similarly, it is difficult to assess the effects of liberalisation on world and Polish agriculture.

The common agricultural policy and the challenges of the modern world

The common agricultural policy (CAP) of the European Community, defined in 1962, is at present criticised by external partners, particularly by the United States and countries with extensive farming systems (New Zealand, Australia and Argentina). Indeed, it cannot be denied that the common agricultural policy system is costly for European taxpayers and leads to overproduction. The application of CAP instruments has resolved neither the income problems of farmers with regard to income disparity nor the differences in agricultural incomes. According to estimates, a mere 25% of holdings take up ca. 75% of support funds. The failure to make significant progress in solving the income issue compounded by rising implementation costs, increasing consumer prices as well as distorting international trade in agricultural products have been the main rationale justifying the need for amendments.

Even though it is widely criticised, the European Union continues to pursue the common agricultural policy, for three reasons, namely: the protection of rights acquired, the existence of small low-income holdings and because of the US approach, out of line with official declarations.

However, under external and internal pressure the Community had to push ahead with reforming the rules and objectives of the CAP. On 26 June 2003 the ministers of agriculture of the European Union Member States agreed on the most important points of a considerable reform of the common

agricultural policy¹⁴. The EU agricultural policy changes towards a reduced market protection and lesser distortions in trade and agricultural markets. Further reforms can be expected to continue those trends in the future. It is very likely that the current level of support will not be maintained.

The CAP is becoming more oriented towards market needs, by decoupling support for farmers from the production types. Farmers receive direct payments decreasingly related to the type of production, which makes their production decisions more guided by the current market situation and relationships between production factors in their farms rather than by the amount of product subsidies. They are increasingly market-oriented and competitive. There have been gradual changes in the organisation of agricultural markets, market intervention instruments have been reduced and modified, the rules on trade with third countries are being amended.

After the fundamental reform of the first pillar of the common agricultural policy in 2003 and 2004, the main goal of reforming the policy for agriculture and the countryside has been rural development. In order to simplify the financial support system, the *European Agricultural Fund for Rural Development (EAFRD)* was established. The Fund aims at promoting sustainable rural development throughout the Community in a complementary manner to the market and income support policies of the common agricultural policy, to the cohesion policy and to the common fisheries policy. According to the guiding principles for rural development, it is possible to reallocate support from the new Fund for the purposes of economic growth, employment and sustainable development. The aims of the new rural fund must be consistent with the priorities of the new Lisbon Strategy.

The evolution of the priorities of the common agricultural policy has concrete financial implications. The share of the CAP expenditure in the European Union budget has changed fundamentally.

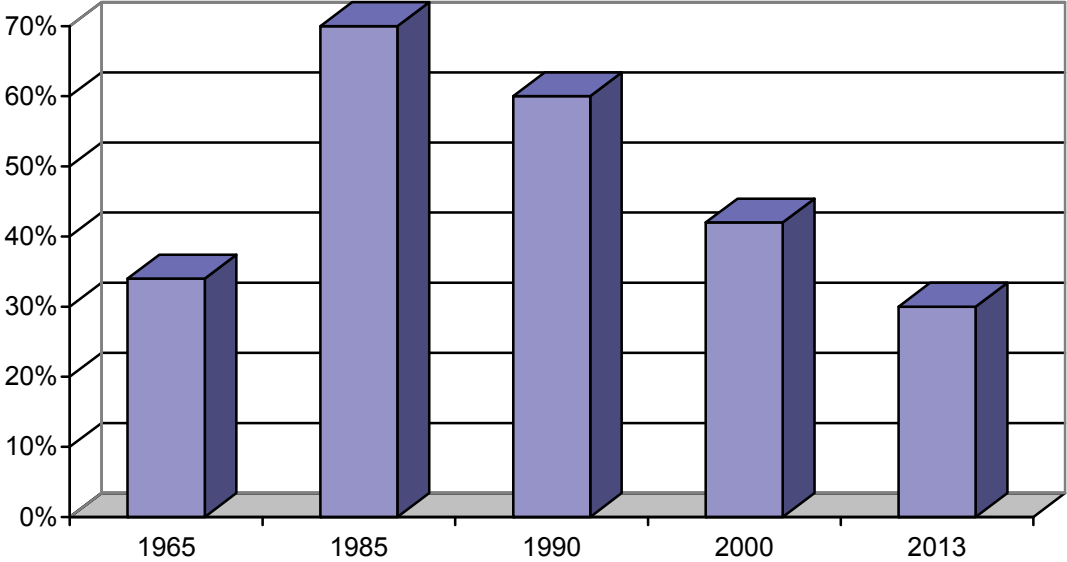
The dispute over the scope of active state measures remains unresolved. On the one hand, the development and restructuring of the countryside and agriculture cannot be done without an active role of the state. On the other hand, the state must not apply solutions replacing or distorting the market, particularly for economic reasons, but also because of its international commitments.

Opponents of public intervention point to the rising burden on consumers and taxpayers, significant limitations on the mechanism to reinforce farming efficiency, hindering indispensable structural changes, the costs born by

¹⁴ CAP Reform – Presidency Compromise (in agreement with the Commission), DS 223/03, Brussels, 30 June 2003, AGRI 217.

farmers (support for the least efficient holdings), reducing interest in the implementation of innovation and progress in agricultural activities, which further hampers structural changes.

Figure 1. Changes in the share of the CAP expenditure in the EU budget



It is very likely that the financial crisis will affect the debate on the future budget of the European Union, especially that it was criticised prior to the onset of the crisis. The financing of the EU budget is complicated and not very transparent. The traditional sources of EU budget revenue include customs duties (three-fourths of duties on imports from third countries), sugar levies, the VAT resource (from 1979) as well as Member States’ contributions calculated on the basis of their gross national income. Every year, such contributions bridge the gap between planned expenditure and revenue from other sources. The difference, calculated for the Community as a whole, must be covered by Member States according to the share of each Member State in the total GNI of the EU. The GNI resource is supplementary to other sources. Those contributions allow a fairer distribution of the financial burden on Member States, in proportion to their economic development level, whereas such an approach ensures a deficit-free budget. Average Member States’ contributions (without customs duties and agricultural levies) represent ca. 0.80% of the EU’s total GDP. Poland’s contribution is 0.84% of its GDP (excluding traditional own resources and the UK correction payments). The burden on Poland is approximately the EU average (Table 1). The respective share is the highest for Portugal (0.90% of its GDP), and the lowest, mostly due to correction payments, for the United Kingdom (0.72% of its GDP).

The data presented in the Table 1 indicate different burdens depending on the calculation method. The current system makes Member States assess them in terms of their net position. Member States expect their net positions to be the most favourable possible and compare them with those of other Member States, e.g. in a similar economic situation. Understandably, national interests become more important than the general interest of the European Union. It is a major problem, particularly during negotiations concerning successive financial perspectives when the guidelines for multi-annual Community policies are laid down.

Table 1. Payments between the EU budget and Member States in 2006
(in EUR million and in EUR *per capita*)

Specification	Transfers from the budget	Contributions to the budget	Net payments = transfers less contributions		
	EUR million	EUR million	EUR million	EUR <i>per capita</i>	% of GDP
Austria	1,830	2,209	- 379	- 45.9	- 0.18
Belgium	5,625	4,156	1,469	139.8	0.38
Cyprus	240	153	86	112.6	0.42
Czech Republic	1,330	1,035	295	28.7	0.29
Denmark	1,502	2,193	- 691	- 127.3	- 0.18
Estonia	300	130	170	126.2	1.61
Finland	1,280	1,560	- 280	- 53.2	- 0.05
France	13,496	16,636	- 3,140	- 49.8	- 0.19
Greece	6,834	1,834	5,000	449.4	2.41
Spain	12,883	9,800	3,083	70.5	0.95
Netherlands	2,190	6,132	- 3,941	- 241.3	- 0.65
Ireland	2,462	1,482	980	232.8	1.05
Lithuania	800	234	566	166.3	2.04
Luxembourg ^a	1,195	217	978	2,084.1	3.15
Latvia	403	155	248	107.9	1.78
Malta	157	50	107	263.7	1.04
Germany	12,242	20,501	- 8,259	- 100.2	- 0.38
Poland	5,306	2,447	2,859	74.9	0.69
Portugal	3,635	1,378	2,256	213.5	2.15
Slovakia	696	402	295	54.7	0.50
Slovenia	406	279	127	63.3	0.42
Sweden	1,573	2,698	- 1,124	- 124.3	- 0.04
Hungary	1,842	783	1,060	105.2	- 0.26
United Kingdom	8,294	12,381	- 4,086	- 67.7	- 0.22
Italy	10,922	13,507	- 2,585	- 44.0	- 0.25

^a The high net positions of Luxembourg and Belgium vis-à-vis the EU budget result from the fact that transfers to the countries in question also include amounts for administration as a number of EU institutions are headquartered there.

Source: E. Kawecka-Wyrzykowska (ed.), *Budżet dla Unii Europejskiej po 2013 roku*, SGH Warsaw 2008.

Discussions on the size and establishment of the budget of the EU are further complicated by the issue of budget distribution (Figures 2 and 3).

The debate concerning reductions in the Community budget is always more heated during economic downturns. In such periods, not only does GDP decline and relative social spending go up in individual countries, but also revenue from direct taxes decreases, which is particularly important to national budgets and EU indirect taxes. In periods of recession Community policies are subject to particular criticism, on the grounds that they are inefficient and lag behind socio-economic changes, including key globalisation-related challenges faced by the European economy.

Figure 2. Net payments from the EU budget in 2007–2013

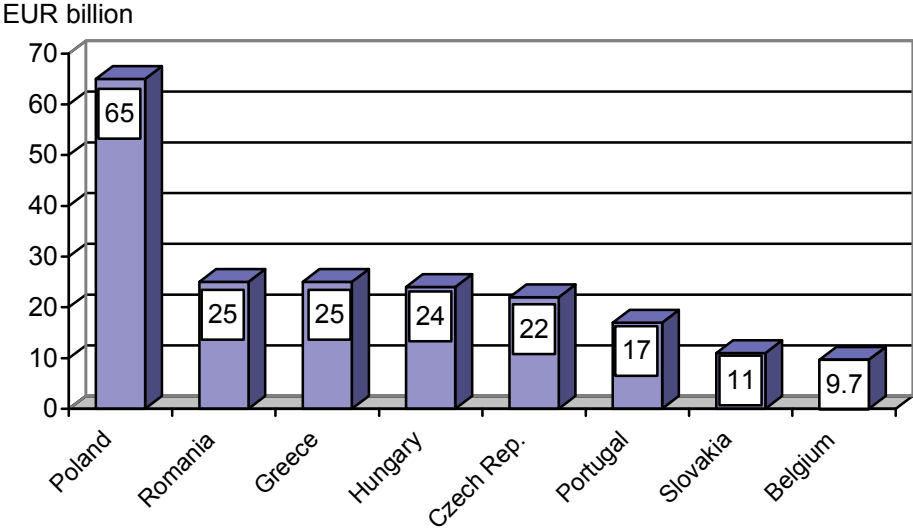
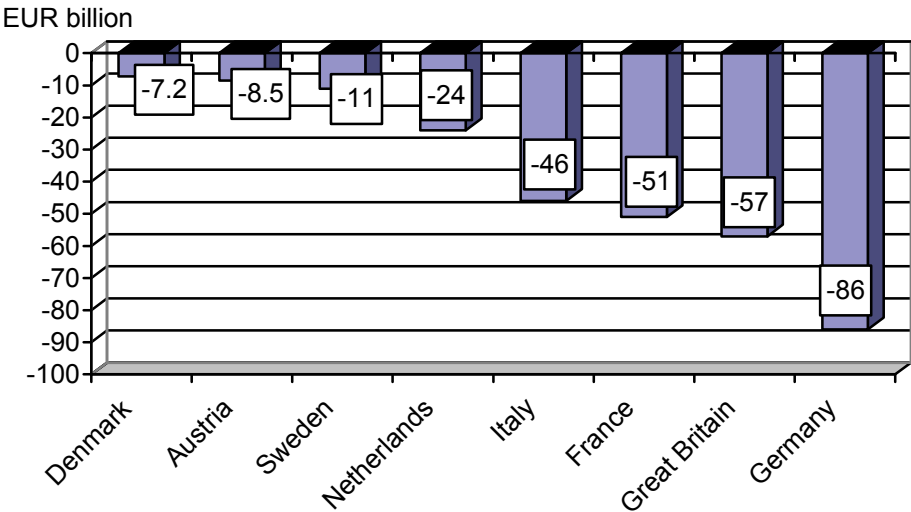


Figure 3. Net payments from the EU budget in 2007–2013



Periods of crisis witness increased developments referred to as home bias in the economic literature. Thus far, home bias has been generally assessed negatively, and the usual criticism is that it reduces the effects of integration and financial globalisation in the form of better allocation of capital and increased possibilities for risk diversification, which might combine to boost economic growth, decrease fluctuations in consumption and make the main macroeconomic aggregates and business cycles more synchronised (the so-called *comovement*).

The current crisis has shown that to a certain extent home bias protects against shock transmission, financial fragility and contagious distortions in financial markets. In practice, however, such protection is incomplete since new behavioural and psychological channels emerge apart from traditional channels of crisis contagion (the spread of economic slowdown, the exchange rate channel, the channel of banks and financial institutions).

All in all, it is a certain trade-off: greater benefits of integration and financial globalisation or a better protection against destructive effects of such integration and globalisation. There is no easy recipe for determining an appropriate position between the two extremes. Each country must find its own solution, frequently by trial and error. Until recently, it seemed that financial innovation would enable an effective shift from *trade-off* (either this or that) to *trade-up* (both this and that), but the fact that a significant part of financial engineering products turned out to be pseudoinnovation encourages a cautious and critical approach to such an option.

The not-yet-fully-overcome economic crisis has revealed tendencies to support national financial and real sectors, which is jointly referred to as economic nationalism. With regard to international trade in tangible and financial assets, any obstacles are indications of protectionism. Protectionist inclinations are observed even in the USA as President Obama, advocating his own economic stimulus package, used the term “Buy American”, although it was subsequently mitigated. At the same time, in the European Union there has been a growing opposition to foreign labour force and cross-border provision of services. Such actions directly undermine the principles of the single European market of the EU and hamper European integration. Strong expectations of promoting domestic production and services have been noted also in Poland¹⁵. However, US studies suggest that the application of the aforementioned “Buy American” option could increase investment costs by ca. 25%, and as much as

¹⁵ According to surveys by GFK Polonia, 75% of Poles think that budget support should only be granted to banks with Polish capital, whereas 83% of Poles are of the opinion that public institutions should only buy Polish products (“Rzeczpospolita” of 11.02.2009).

90% of Obama's stimulus package would actually be transfers of funds to politically-friendly organisations and social groups¹⁶. This is pure political patronage, auguring ill for the effectiveness of anti-crisis measures such as fiscal and monetary expansion. It even seems that protectionism may prolong the duration of the crisis and aggravate its adverse influence. Finally, it should be pointed out that protectionism can eventually result in trade wars as well as in greater and lesser political tensions.

The last election to the European Parliament clearly showed strengthening nationalist and xenophobic attitudes in Europe, which may undermine European solidarity, the foundation of current financial support for poorer countries, peripheral areas and sensitive sectors such as agriculture. It is a bad omen for the preparation of the new financial perspective of the EU for 2014–2020.

In global terms, the years to come are likely to witness moving further away from the unipolar geopolitical order towards a multi-polar world, spreading state interventionism, strengthening regulation and more or less hidden protectionism, thus the development of a new economic, political and military balance. In the case of financial globalisation, the view that it benefits all will be increasingly questioned. Instead, it will be argued that there is a need for partial and controlled definancialisation, that it would be safer to have fragmented rather than integrated financial markets, and that the role of the US dollar as the world currency, particularly as a reserve currency, should be at least reduced. As a consequence, the leadership of the West, primarily of the United States, will be challenged. Moreover, the EU's position is likely to diminish, mainly due to its democratic deficit and the reluctance of major EU Member States to strengthen economic and political integration. In general, the world can be expected to be entering a period of weaker integration and greater instability.

The inclusion of developing countries in the international division of labour, not only in production but also in services, a key driver for the economy in the 21st century, the differentiation – to the disadvantage of Europe – of global demographic trends, important to the re-distribution of sources of growth, income and savings in the coming years, all these are but a few challenges faced by the European Union.

The global market involves not only ever fiercer competition aimed at cost minimisation, but primarily the competition for creating the most attractive possible conditions for investors. The competition for attracting capital must

¹⁶ According to "Rzeczpospolita" of 11.02.2009.

have various consequences. The simplest instrument is to lower taxes and grant tax relief to companies and capital, which may in turn reduce the possibilities for funding important social tasks, including education, by the state. Ever more frequently, it proves to be insufficient. Governments and societies attaching priority importance to social welfare become less competitive than populations where the main form of social insurance are blood ties of multigenerational families or a social contract on limiting the personal and material scope of social policy. Therefore, the liberalisation of capital flows entails competition for low taxes, decreasing public expenditure and the discontinuation of social assistance programmes.

The pressures from financial markets and voters' expectations have been increasingly conflicting. It follows from the logic of the global economy that capital markets should become the main arbiters of economic policy since no country can afford to drive away domestic and external capital. The consequences of such changes are more painful for less developed countries which must catch up with more advanced economies. On the one hand, such countries need to develop infrastructure and education in order to become attractive investment destinations, and on the other hand, creating attractive conditions hampers the mobilisation of funds for development programmes and reduces instruments indispensable to the implementation of catching-up strategies.

The remedy to boost competitiveness in the global market is supposed to be the fragmentation of Community policies or even their renationalisation, as some experts suggest. Such an approach reduces the need for horizontal and integrated thinking. It seems that, instead of speaking of the necessity of a fundamental change in EU finance after 2013, one should speak of further smooth adaptation to new challenges.

Discussions on the shape of the budget and the scope of Community policies must take account of global development trends if Europe is to cope with international competition. The future of nations will chiefly depend on the demographic factor, usually underestimated. The human factor together with rising labour productivity – based on intellectual capital, cutting-edge technology, inventiveness and entrepreneurship as well as working time – determines economic growth and the well-being of nations. This is the case, even though certain theories, dominant until recently also in Poland, demonstrated that demographic development posed a barrier rather fuelling economic growth.

As international agricultural markets are expected to be increasingly unstable and the Community market opens up to external competition, it seems

unjustified to cut expenditures on the implementation of the CAP or its renationalisation. In order to ensure equal conditions of competition, it is indispensable to guarantee equal conditions of competition for the agricultural sector in the single European market, which will only be possible within the framework of the Community mechanism of financing the EU agricultural policy (financial solidarity), as well as by defining current and future objectives of the CAP and appropriate new orientations of financial support. Globalisation affects the agricultural sector through direct channels (stimulating savings, reducing borrowing costs, technology transfer and the development of the financial environment) and indirect channels. The latter include promoting specialisation and encouraging improvement in the quality of agricultural policy. The two effects combined may lead to faster economic growth in agriculture and its socio-economic development.

On the other hand, the opening-up of a country to international financial markets also exposes agriculture, though usually indirectly, to various economic shocks which may trigger the outbreak or contagion of a crisis. Such crises may be demonstrated by the following:

- reduced dynamics of GDP growth, thus of domestic demand and exports,
- increased volatility of prices, with inflation turning into deflation and vice versa,
- limited possibilities for budget support for agriculture,
- restricted access to external capital sources, in particular to bank credit.

Obtaining net benefits of financial globalisation in agriculture of individual countries is contingent on their own actions and on creating a friendly and catalyst international environment by economic powers. In the case of national instruments, it is of key importance to constantly improve the institutional infrastructure, i.e. to ensure respecting proprietary rights, proper banking supervision and regulations, high quality of financial information. No lesser role is to be played by extending the scope of national agricultural policy, that is to make it more proactive, balanced in quantitative and qualitative terms, and to provide sound macroeconomic foundations, i.e. good economic and financial health of agricultural holdings. Moreover, continuous attention should be paid to fostering all mechanisms contributing to the improvement of efficiency and productivity in agriculture, hence to balancing market-based, fiscal as well as legal and administrative instruments.

The common agricultural policy should retain the current intervention instruments, especially that they are not the main agricultural income support measures, and yet effectively ensure a “safety net” in emergency situations

(considerable price fluctuations). The continuation of restricted possibilities of market support would be crucial for sensitive sectors and those economically vital for regional development. Effective stabilisation instruments are particularly important to the majority of medium-sized and smaller holdings as they have limited financial capability to cope with crisis situations. It is also necessary to improve access to modern risk management instruments, especially for larger commercial farms.

It will be important to align direct payment rates across the EU on the basis of real and objective criteria concerning the requirements imposed on agricultural producers. Direct payments should then remain one of the main CAP instruments, aimed at:

- supporting and stabilising agricultural income,
- compensating for the costs involved in compliance with the high Community standards (with respect to quality and production methods, particularly environmental requirements),
- maintaining agricultural production in the least favoured regions.

Thus, direct payments should serve to ensure the economic stability of agriculture as well as food and environmental security.

At the same time, the target system of direct payments should be a compromise between simplicity (cutting transaction costs), general character (the main support instrument) and orientation towards basic functions of the agricultural policy. The payment system should move away from the current solutions, with payment rates and national envelopes reflecting historical levels and intensity of production.

The amount of the national envelopes for direct payments should take account of the current and future challenges addressed by agricultural production support in the European Union.

The increasing role of rural development policy should contribute not only to the process of structural change in agriculture, but also cope with new challenges to European agriculture related to climate change, water management or the conservation of biodiversity. The rural development policy seems to be an appropriate tool for the realisation of new functions of the CAP, complementary to agricultural markets and agriculture. Thus, the amount of funds allocated for the implementation of rural development policy should not be lower than in the current financial perspective, particularly due to new functions connected with climate change or renewable energy, addressed by this part of the CAP.

Priority importance should be given to the current rural development policy objectives related to closing the gap in rural development between EU regions as well as reducing the distance between rural and urban areas.

Agriculture in European Union Member States is and will be differentiated, in terms of not only natural resources, production technology and methods applied, profitability and competitiveness, but also regional socio-economic systems. This heterogeneousness constitutes one of its merits, with a broader cultural aspect. It also encompasses Polish agriculture, with its family-based system of production organisation. Furthermore, the rather low farming intensity, relatively well-preserved traditional production methods and the diversity of agricultural micro-structures offer an opportunity for Polish agriculture to develop in line with the European model set by Agenda 2000. The current and future position of Polish farms in European agriculture becomes crucial, not only for their production and economic functions, but also social and environmental aspects.

The scope of implementation of national policies within the framework of the CAP remains an open issue. The new direct support scheme left Member States more freedom in implementing the CAP according to their own national interests. In specific segments of the system, the possibilities were as follows:

- The implementation of the **single payment system** allowing Member States to choose between various options, which determined the degree of “decoupling” payments from agricultural production. New European Union Member States could also increase the level of direct payments up to 30% above the EU rate. Such additional funds could be used to support specific agricultural sectors. Alternatively, a given Member State might also complement direct payments to the level applicable prior to accession.

Although the principle of decoupling aid has been a general rule in the European Union since 2005, Member States could decide to maintain a part of direct support in the form of subsidies coupled to production. Such a decision could be made where there were reasonable grounds for believing that the introduction of new forms of direct payments might cause distortions in agricultural markets or the cessation of an agricultural activity. Member States were then entitled to apply various options at national or regional levels, but only under well-defined conditions and within specific limits. The available options were as follows:

- retaining up to 25% of the single agricultural payment (for base areas for cereals and other arable crops) or, alternatively, up to 40% of the durum wheat supplement payment, on a per hectare basis, i.e. coupled to production;

- up to 50% of sheep and goat premiums could be granted as subsidies coupled to production;
- in the cattle sector, Member States could choose retaining up to 100% of suckler cow premiums and up to 40% of slaughter premiums, to be granted as payments coupled to production. Alternatively, they might retain up to 100% of slaughter premiums or up to 75% of special male premiums;
- in the milk sector, the decoupling of subsidies from production was applicable once the reform was fully implemented, i.e. from 2007. However, Member States might introduce the principle of decoupling as early as 2005;
- dried fodder and seed aids as well as direct payments in remote areas could be excluded from the single payment scheme.

It was also possible for Member States to choose between three models of implementing the principle of decoupling:

- one based on the agricultural area of holdings, with payment entitlements per hectare and no redistribution of subsidies between individual farms,
- a regional model with payments established for the whole region at fixed rates,
- the so-called hybrid model, a combination of the first two.

Member States could also decide to retain up to 10% of decoupled direct payments and to allocate such funds for specific types of farming, important for the environmental protection or for improving the quality and marketing of agricultural products.

- According to the principle of **cross-compliance**, in order to apply for support under the CAP it is necessary to comply with certain statutory requirements, legal standards and respect good agricultural condition. Such requirements and conditions are defined by Member States. Cross-compliance constitutes an integral part of the first pillar of the CAP. It means that it is not co-financed by Member States, but it is also universally binding and applicable in its entirety in all Member States of the European Union. However, the commitment of individual partners to its implementation is of particular importance since it involves establishing a national administration authority. Member States also have the right to cancel or reduce payments to entities failing to comply with the requirements concerned. Therefore, although the introduction of the principle of cross-compliance is obligatory, Member States have a considerable influence on its implementation. New Member States of the Community are obliged to introduce the principle of cross-compliance by 2013.

- The principle of **modulation** limits the level of direct payments by setting annual payment ceilings applicable to farmers receiving the highest income support. The amounts generated by modulation are assigned to promoting sustainable regional and rural development. As intended by the reformers of the common agricultural policy, reductions of direct payments to large agricultural holdings should constitute an additional source of funding the new rural development policy.

Margin for national discretion within the second pillar of the CAP

The second pillar of the CAP leaves a much wider discretion to Member States than the first one. The main reasons are as follows:

- the application of the principle of subsidiarity, requiring that decisions be taken as closely as possible to the citizens of the EU. Thus, considering the development policy objectives, the majority of framework measures leave a relatively wide discretion to Member States in introducing their own solutions;
- a variety of structural goals and policy measures applied by the current Member States of the European Union prior to accession, much more differentiated than in the case of the first pillar;
- less rapid development of structural policy than that of market policy as well as the diversity of financing systems and types of Community legal acts regulating both fields of the CAP;
- rural development policy represents an area where the number of objectives, measures and instruments has been increasing faster than its budget. It requires continued efforts on the part of Member States to make particularly careful choices of national allocation priorities with respect to the limited budget appropriations from the European Union and supplementing them with national funds.

The fact that before joining the Community each Member State of the European Union developed its own traditional objectives concerning the improvement of agricultural structures and other aspects of rural development represents a very important factor in the evolution of such policies within the framework of the CAP. It contributed to the co-existence of many national interests in rural development policy-making at the level of the European Union and its implementation in each Member State.

The EU defines general rules, the framework for promoting rural development in Member States. It is hierarchical and enables policy makers to design support programmes for individual countries, in cooperation with rural

operators. Such cooperation concerns using the existing as well as potential but identified possibilities of improving the living and working conditions of the rural population as a whole.

Chart 1. Structure of rural development policy priorities

LEADER axis (5%): local development and governance				
Axis 1 (10%) competitiveness		Axis 2 (25%) environment, land management		Axis 3 (10%) diversification, quality of life
<ul style="list-style-type: none"> • human capital • innovation • knowledge transfer • IT • research and development 		<ul style="list-style-type: none"> • biodiversity • soil and water • climate change 		<ul style="list-style-type: none"> • diversification of the rural economy, non-agricultural jobs • improving the quality of life in rural areas
European Agricultural Fund for Rural Development (EAFRD)				

The margin of manoeuvre for Member States of the European Union in the implementation of the rural development policy under the financial perspective for 2007–2013 includes the following:

- The choice of measures to be implemented. Although development programmes must maintain a certain balance between the axes, the allocation of 55% of the total appropriations remains at the discretion of Member States. Minimum contribution rates are only set for EU funds. In addition, Member States wishing to finance rural development above national minimum levels are entirely free to do so.
- Decisions on funding rural development have become even more important than in the previous budgetary perspective. The number of both measures and objectives has increased, whereas the EU financial contribution has declined. Some of the necessary national funds may become available through voluntary modulation, a mechanism to transfer funds from the first to the second pillar of the CAP. The mechanism in question allows Member States to transfer up to 20% of the amounts corresponding to market-based measures and direct payments to the rural development policy. The funds generated by modulation do not involve additional national co-financing. Neither are they included in the minimum requirements concerning particular axes.

- As regards the LEADER approach, Member States are free to decide whether to allocate this instrument in whole as part of Axis 3 (diversification of the rural economy), which must account for at least 10% of the total financial contribution of the European Union, or to place it also in Axes 1 and 2. In this case top-down measures previously planned by central or regional administration could be designed by local communities and on the basis of local criteria.

It follows from the conducted analyses that the greatest influence on the shape of national strategies for agriculture and rural development is exerted, on the one hand, by taking appropriate account of domestic conditions, and on the other hand, by the choice of priorities adopted in development concepts. The effect of the two factors seems much stronger than that of short-term interests of individual occupational groups, including farmers. In economically weaker countries, more sensitive to any policy changes, the public functions of agriculture have been gaining in importance, which changes its position in the whole national economy.

A vital conclusion can also be drawn from analysing the very approach to formulating strategic objectives and to defining the notions of strategy or national interest. It is that excessive adherence to mechanisms which bring certain short-term benefits but are unlikely to survive in a reformed system in the long term only postpones the resolution of national problems concerning agriculture and the countryside. Much better effects would be produced by predicting future developments which determine specific solutions and anticipating them in own development strategies. As regards the group of countries in question, this is the case for Ireland and Germany. France and Spain adopt a more conservative approach.

In Ireland key problems of agriculture were resolved when the country entered the path of rapid economic growth. At present, the Irish agricultural sector no longer suffers the shortage of capital, the agricultural production is efficient, whereas the area structure is well adapted to conditions. Furthermore, the environmental pollution is low, which is favourable for the development of rural tourism. Under such conditions, the national development strategy adopts an approach based on the principles of a free-market economy, open to the global market and creating incentives to foreign investors. EU support funds obtained within the framework of the CAP are chiefly assigned to the promotion of sustainable rural development. Financial aid is mostly granted to non-productive functions of agriculture and pro-environmental initiatives, the elimination of barriers to young farmers and measures aimed at the development of non-agricultural activities in rural areas. However, area payments

considerably pushed up land prices, which in turn hamper the favourable structural changes observed in the Irish countryside.

Different conditions after the unification made Germany change its national strategy for rural areas and agriculture. It no longer supported the high-price policy as one to guarantee the development of family farms and switched to supporting agricultural income and sustainable rural development taking account of environmental and cultural aspects. In the implementation of the CAP reform Germany opted for rapid and almost full decoupling, at the same time fostering the competitiveness of agriculture and forestry, creating and protecting rural jobs as well as further improving the environment. The new national policy, implemented at the regional level by individual lands, was elaborated together with regional authorities and with a wide participation of social partners. It attaches particular importance to investment in human capital as it creates the foundations for future innovation and improvement in the quality of rural life.

France is one of the greatest beneficiaries of the CAP, but it experiences difficulties with maintaining an appropriate level of efficiency in agriculture relative to other sectors of the economy, stopping the process of diminishing biodiversity and eliminating the risk of degradation of many less-favoured areas. Such problems are compounded by decreasing income obtained by French farmers, a high unemployment rate in rural areas, significant regional disparities and limited diversification of economic activity in the countryside. Therefore, since France derives major benefits from the CAP, it opts for as few amendments as possible. Its national strategy is aimed at protecting the level of farmers' incomes and promoting investment in human capital in order to offer a wider choice to rural dwellers. France fully utilised the allowable limits of maintaining support coupled to production. Its development policy promotes investments in agricultural holdings, job creation in rural areas, the diversification of economic activities and the environmental protection. Another priority is improving the quality of life in rural areas.

Difficult farming conditions in Spain make Spanish agriculture particularly sensitive to changes in agricultural and development policies. Due to unfavourable soil, climatic and demographic conditions as well as to the risk of discontinuation of agricultural production in many areas, Spain's national strategy is mainly oriented towards the maintenance of agricultural activity in the largest possible area as well as using its productive and public functions. For that reason, Spain fully utilised the allowable limits of coupled support. Owing to the significant regional differences, it also exploited the possibilities resulting from the application of Article 69. In Spain decision-making powers with

respect to agriculture and rural areas are divided between the central government and Autonomous Communities. The rural development policy is implemented both at the national level and in individual regions. Spain allocates the vast majority of financial resources to measures enhancing the competitiveness of agriculture, primarily to the irrigation of agricultural land, as well as to supporting the food industry, forestry and agri-environmental schemes.

The conducted analyses also demonstrate that national strategies frequently address specific problems and are targeted at particular beneficiaries. They strengthen and extend the competences of relevant regional and local institutions in order to tap into the existing but unused potential of a given region and channel it into development needs of the region concerned. In all the countries in question the viability of rural areas is maintained by a territorial approach encompassing many sectors operating in the same area. It is primarily done by coordinating bottom-up initiatives of local entities participating in development programmes.

The CAP reforms will not be completed during the current budget perspective 2007–2013, they will continue. Further changes seem inevitable, for at least two reasons: the likely outcome of WTO agricultural talks within the framework of the Doha Round negotiations and the full inclusion of the new Member States of the European Union in the CAP mechanisms. The continuing liberalisation of world agricultural trade as well as the reduction in internal support and changed categories of subsidies make it necessary to decouple financial aid from production and to support farmers' incomes under the first pillar of the CAP. The application of uniform rules in all the new Member States of the enlarged Community will result in pressure to control the unit cost of the single payment so that it becomes more acceptable to net payers to the EU budget. However, the issue concerns not only the budget, but also the conflict between national interests of the European Union Member States.

The new Member States of the Community have contributed an enormous but as yet unused production potential to EU agriculture. The accession of twelve countries resulted in a 40% rise in the utilised agricultural area, whereas the growth in production was half as fast. Simultaneously, the EU population, i.e. the number of potential consumers, increased by one-third. Within the framework of the reformed CAP this significant potential will not be supported since aid has been decoupled from production. The level and structure of agricultural production is supposed to be determined by demand and supply, whereas the competitiveness in the EU and world markets, particularly after the forthcoming abolition of export subsidies – by technological advancement.

As the economic situation of the new Member States improves after their joining the European Union, their rising demand for food, including for highly processed food, will be satisfied by the better developed food sector of the EU-15 which has gained free access to a market of 120 million consumers. Thus, after the elimination of export subsidies the EU-15 will be able to compensate lower sales in world markets with increased deliveries to the new Member States of the Community. The new trading partners, characterised by a much higher share of farmers, will receive funds for rural development in return. Such appropriations will be used for purposes such as increasing non-agricultural employment in rural areas in order to mitigate unavoidable social tension. However, such financial resources will only be available when national budgets mobilise their own funds, in line with the principle of co-financing of measures under the second pillar of the CAP.

Owing to the considerable development gap, particularly with the EU-15, Poland should prefer amendments to the CAP conducive to the its narrowing. Within the framework of the first pillar of the CAP, the key issue is the choice of a payment system. The current single area payment scheme is easy to implement, but it makes the pursuit of an active agricultural policy difficult. Payments received by farmers under the scheme in question account for ca. 50% of agricultural income. Therefore, consideration should be given to a switchover to the single area payment scheme (SAPS) which facilitates active regional and sectoral policies. Such a system, under the regional model, supported by a well-prepared rural development programme (PROW), would be the most suitable for promoting the improvement of the productivity of the Polish agricultural sector and sustainable development of agriculture and the countryside. One drawback of the SAPS would be more difficult administration and less egalitarian aid.

Within the framework of the second pillar of the CAP, the measures included in PROW 2007–2013 should focus on the optimum use of available funds. Unlike in the first pillar, decisions regarding the second pillar in fact concern the period after 2013. Therefore, Poland should actively participate in designing the scope of structural and development support in such a manner that it comprises measures important to the realisation of Poland's national interests, particularly those enhancing agricultural and rural structures, fostering entrepreneurship and stimulating the development of infrastructure. In the Polish strategy, development-oriented goals should override the environmental objectives. Differences in economic development existing after 2013 must be taken into account in the agricultural and rural policies of the European Union as well as in the set of instruments applied.

Furthermore, it is not in Poland's interest to renationalise the CAP even in part. As a matter of fact, it is an ongoing process, through the mechanism of transferring support funds from the first pillar, where there is no national co-financing, to the second pillar, where projects are co-financed by Member States as a rule. Hence, increasing the margin for Member States' discretion entails increased participation of national budgets in the financing of the CAP. The development needs of the Polish agricultural sector and major national budget constraints indicate that in the case of greater restrictions on Community aid and moving support mechanisms towards the second pillar of the CAP the pace of indispensable changes in the Polish agricultural and rural sectors will be far from satisfactory and dependent on funds assigned from the national budget.

Conclusions and recommendations

- The process of globalisation is accompanied by a number of new cross-border challenges which call for effective responses from the European Union. Some of those challenges are related to the environmental degradation, demographic changes and the new situation with respect to global food and energy security. Agriculture and rural areas play an important role in such developments. It means new tasks for the common agricultural policy. In the future, maintaining the productive resources of agriculture in good condition will be vital not only for the food security in the Community, but also for meeting the world's growing food needs. As has been demonstrated above, the demographic trends indicate that in the long run Europe's share in the global food production resources can be much higher than that in the world population. Rising global food needs mean that by 2050 the indispensable growth in agricultural output will require doubling the production of agricultural raw materials.
- Another important challenge facing agriculture and agricultural policy is stopping the rapid process of diminishing biodiversity.
- The most pressing challenge is to counteract the reduction in available water resources. This issue is particularly important to agricultural policy since nearly 70% of global water resources are used for agricultural production.
- The completed review of the CAP represents a significant stage in the evolution of the common agricultural policy as it confirms that it is capable of adapting to changing needs and conditions. The review resulted in adding certain CAP objectives in order to deal with new challenges. That is important not only from the point of view of agriculture and rural development, but also in the context of expectations and demands of all

European Union citizens. It emphasises a Community rather than merely sectoral dimension of the common agricultural policy. The CAP is incorporated into other horizontal strategies of the Community, particularly into the implementation of the Lisbon Strategy.

- The CAP Health Check showed that CAP expenditure contributed to the generation of European value added, which will facilitate the revision of the Community budget where the appropriations for agricultural and rural development represent an important item. In connection with forecasts of increased instability of international agricultural markets and the opening-up of the Community market to external competition, it seems unjustified to cut the funds allocated to the implementation of the CAP or its renationalisation.
- In order to ensure equal conditions of competition, it is indispensable to guarantee equal conditions of competition for the agricultural sector in the single European market, which will only be possible within the framework of the Community mechanism of financing the EU agricultural policy (financial solidarity), as well as by defining current and future objectives of the CAP and appropriate new orientations of financial support. It will be important to align direct payment rates across the EU on the basis of real and objective criteria concerning the requirements imposed on agricultural producers. The common agricultural policy should retain the current intervention instruments, especially that they are not the main agricultural income support measures, and yet effectively ensure a “safety net” in emergency situations (considerable price fluctuations). The continuation of restricted possibilities of market support would be crucial for sensitive sectors and those economically vital for regional development. Effective stabilisation instruments are particularly important to the majority of medium-sized and smaller holdings as they have limited financial capability to cope with crisis situations. It is also necessary to improve access to modern risk management instruments, especially for larger commercial farms.
- Direct payments should remain one of the main CAP instruments, aimed at supporting and stabilising agricultural income, compensating for the costs involved in compliance with the high Community standards (with respect to quality and production methods, particularly environmental requirements), maintaining agricultural production in the least favoured regions.
- Analysing world agriculture constitutes a prerequisite for designing a development programme for Polish agriculture and agricultural policy. The agricultural policy should be increasingly based on global conditions. The following factors will gain in importance on a global scale:

- an increase in the world population (by 2 billion by 2030),
 - low production activity of agriculture relative to information technology,
 - implementation of new generations of farming technologies and “smart” food,
 - dramatic changes in agricultural structures and agricultural marketing,
 - a decline in agricultural output in advanced economies,
 - emergence of a new centre of food production on a global scale, i.e. Latin America and the Caribbean,
 - increased environmental degradation,
 - accelerated urbanisation of rural areas.
- The strategic direction of agricultural development should be consistent with a vision of agriculture. The vision should be based on the notion of sustainable development, which points to a model of socially sustainable agriculture. Such a model should be the basis for the national agricultural and rural policy, but the choice is increasingly dependent on EU-wide and global market developments. A realistic vision must also take account of objective motivations for the pursuit of economic activity by agricultural holdings, i.e. the maximisation of profit/income. Such a criterion for farming on a microeconomic scale is a fact as it constitutes, regardless of the moral assessment, the basis for market efficiency and economic progress. In such a situation, the market mechanism triggers and drives the so-called technology treadmill which comprises the processes of specialisation, concentration of production (production scale) and spatial concentration as well as intensification by the use of manufactured inputs based on limited natural resources. Consequently, the productivity of production factors improves, which leads to a growing supply of agricultural products. However, the process also has certain drawbacks: excessive negative externalities and insufficient positive ones. There is a *thin red line* between economic results and environmental and social effects. Making the outcome of the operation of market mechanisms (the application of the microeconomic criterion by economic operators) convergent with the desirable state resulting from the application of the macroeconomic (social) criterion requires the elaboration of boundary conditions for agricultural holdings.
 - Policy instruments should ensure such convergence by either internalising externalities in prices for agricultural products or, in the case of negative externalities (external costs), by administrative regulations (e.g. charges for using non-commercial resources of the environment), and in the case of positive externalities (public goods), by introducing relevant payments. In practice,

however, in the foreseeable future Polish agriculture will be characterised by a dual development path, i.e. some holdings will adopt production methods guaranteeing high economic efficiency and respect only the basic standards of the environmental protection, whereas other farms will choose more environmentally-friendly techniques and use their ecological, social and cultural values.

- The future development of agriculture will have three coordinates: production growth, the environmental protection and competitiveness. It determines a new paradigm which must provide an answer to the basic question: how to maintain a competitive and economically efficient (viable) agriculture and at the same time meet the demand with respect to other functions. Under market economy conditions, competitiveness is of key importance among the three goals.
- The choice of the strategic direction – sustainable agriculture – involves taking action in the short, medium and long term. The first step should be to undertake measures aimed at preserving the capacity of the agri-ecosystem, i.e. simply at restoring soil fertility. Ensuring long-term soil fertility is one of the main features of sustainable agriculture at the level of individual holdings. In order to maintain the desirable soil properties, it is indispensable to apply crop rotations including leguminous plants and successive crops for green manure.
- The utilised agricultural area adjusted for soil fertility determines the potential capacity for producing agricultural plant biomass. Therefore, it is indispensable to maintain soil fertility and use agricultural land economically, including for other purposes such as residential and commercial construction as well as technical infrastructure. Regrettably, the protection of agricultural land of good quality is too weak, it is not protected by appropriate regional planning and high-quality agricultural land is not infrequently used for non-agricultural purposes, although Poland is not abundant in such land. This squandering of agricultural land is even made easier by the odd act on the automatic “loss” of agricultural-land status, which may compound the pathologies of land management.
- Maintaining the renewal of agri-ecosystems requires imposing boundary conditions on the market mechanism, thus on the behaviour of economic operators. With regard to agricultural holdings, the environmental order is of key importance. To this end, it is necessary to apply the “carrot and stick” method, i.e. a combination of administrative instruments (prohibitions, directions) and economic measures (incentives). Farms should adopt

technologies which restore soil fertility and allow a positive energy balance. The granting of subsidies from the budget (from public funds) should be made contingent on compliance with such requirements and animal welfare standards. At the same time, economic viability, understood as obtaining farm income allowing development-oriented investments and parity remuneration of labour, should concern commercial holdings representing the main source of income to the holder and his family. As regards agriculture as a whole, it is necessary to adopt a holistic approach to agriculture with all its complexity. It should be seen as a diversified structure of agricultural holdings (sustainable farms, only environmentally sustainable farms, unsustainable farms and various specific types of agricultural holdings such as organic farms, holdings applying integrated technology) with spatial and landscape components (forests, trees, lakes, ponds, nature monuments, ecological wastelands, etc.). This biodiversity should be reflected in the set of agricultural policy instruments. It is in the context of this diversity, and of exogenous conditions for agricultural development, that decisions should be made on support for conventional (industrial) and alternative (sustainable) agriculture as well as for large-scale and family farming.

- Public support should be increasingly granted for alternative and family farming.
- The agri-environmental scheme was designed to protect the environment, nature and landscape. It is of key significance to determine the level of compensation for income foregone arising from the implementation of such packages and the premium amounts. According to provisional estimates, the promotion of usual good agricultural practice alone in the agri-environmental scheme or in less-favoured areas involves a more or less 15% decrease in SGM in the holding concerned. Significant effort should be made to develop the available databases so that they comprise farm data to be used for the evaluation of compensations for farmers engaged in the protection of environmental, natural and landscape features for the general public, including taxpayers, as the source of funding for the agri-environmental scheme. One of the weaknesses in the implementation of the scheme proved to be a low number of agri-environmental advisors: they were only approx. 2,000 to assist 1,430,000 farms with an area of over 1 ha participating in support programmes within the framework of the CAP. It needs to be pointed out that any farmer joining the scheme should have a detailed agri-environmental plan prepared for the whole holding and approved by an advisor. It seems that the agri-environmental scheme should include packages protecting and enhancing soil fertility and water balance.

- Thus far, the vast majority of public appropriations, not to mention private funds, have been spent on the creation and dissemination of progress oriented towards the multiplication of benefits for economic operators, in the case in question for agriculture-related enterprises and, to a lesser extent, for agricultural holdings. An important feature of this progress has been an increased use of limited natural resources. It has supported the technology treadmill, simultaneously augmenting the risks involved in the depletion of natural resources and the capacity of the environment. However, progress should be primarily oriented towards enhancing the knowledge on the possible use of solar energy in biomass production based on natural laws, not only of genetics, but without chemicals or synthetic substances. The point is to direct scientific research on gaining more knowledge on Nature rather than creating an artificial world. Such knowledge coupled with the value system will lead to a Nature-friendly agriculture, i.e. organic farming. Thus, there is no need for us to passively follow the path of more developed countries.
- The magnitude of impacts of climate change will depend on the introduced mechanisms of adaptation and mitigation. It is necessary to increase the so-called small water retention (increasing the water retention capacity of soils by changing the land-use structure) and hydrotechnical retention (using storage reservoirs to capture and store excess water). It is indispensable to improve water efficiency (water saving) in all sectors. In order to address threats and exploit opportunities, it is vital to verify the agriculture management strategy, specify new development directions and prepare an appropriate set of instruments. The failure to take into consideration the climate change impacts may aggravate the degradation of rural habitats, deteriorate the economic results of farming and increase the severity of social problems in the agricultural sector.
- Reducing spatial disorder, having major economic, environmental and social consequences, requires the inclusion of the whole area in spatial planning, with hierarchical and irrevocable plans. Such plans should specifically identify areas intended to perform different functions: residential, infrastructural, industrial, service, agricultural, environmental, etc. Spatial planning represents a very weak link in Poland's sustainable development, including rural development. Unfortunately, although there is a concept of national spatial planning as well as a number of documents to plan and direct agricultural and rural development (e.g. Strategy for Agriculture and Rural Areas, Coherent Structural Policy for Rural and Agricultural Development, Rural Development Plan, National Strategy Plan for Rural Development etc.), the chaos in the planning of rural space has been increasing, also owing to

agriculture. On account of the hierarchical structure of ecosystems, spatial planning should not be left exclusively at the discretion of local self-governments, but the needs of ecosystems should be incorporated into such plans. More European Union funds should be allocated to the preservation of landscape and the development of spatial order. However, the National Strategic Reference Framework 2007–2013 is focused on ensuring equal development opportunities and fostering structural changes in rural areas through measures such as new economic investments and promoting entrepreneurship, the development of technical infrastructure, improving transportation. Such measures are absolutely indispensable, but they jeopardise harmony in rural space. Therefore, they must be preceded or accompanied by adequate planning work to establish optimum changes causing the least possible conflict in rural areas.

- Under the Nature Conservation Act, woods and trees are legally protected. But there are no implementing regulations relating to technical and environmental requirements for establishing tree strips on arable land and planting roadside trees nor any provisions on co-financing of such activities under the agri-environmental schemes implemented in Poland. The problem is to regulate the legal status of woods and trees on arable land, to specify the sources and rules of financing as well as compensations for maintaining them as environmental features in the public interest. It is necessary to integrate the programmes aimed at increasing the tree area with the National Programme for Afforestation as well as with the agri-environmental scheme. In order to determine the compensations for the tree areas on arable lands, the suggestion is to apply payments at lease rates, according to the implementing guidelines to the Act on the Management of Agricultural Real Estate of the State Treasury, elaborated by the Agricultural Property Agency in 1998. The annex to the guidelines in question contains a table of minimum lease rates. The minimum lease rate, expressed in dt of wheat, varies depending on the tax district in which the holding is situated and on the class of agricultural land (arable land and grassland) of the holding.
- Food is of crucial importance to the health condition of the population. There are three vital components, namely: safe food products, consumer awareness and regulations on the production of food and making it available to consumers. The agri-food sector is fundamental to the first component. Agricultural policy should not neglect objectives relating to healthy nutrition. With regard to the second component, it includes broader education on the significance of nutrition (diet) in maintaining good health, the importance of food quality, eating habits, safe handling of food. The third component is

about efficient systems of food quality inspection, legislation concerning the production and marketing of food products, provisions precluding the advertising of low-quality food, particularly that addressed at children. Unfair advertising, inconsistent with the facts, should be eliminated. Harmony should be sought in political action concerning food production, nutrition, the promotion of health and environmental quality.

- Organic farms are relatively less oriented towards production for own consumption, i.e. semi-subsistence production, and more often towards the needs of the local market. It confirms the hypothesis on underdeveloped “wholesale” sales channels for organic products. Thus far, initiatives concerning traditional, regional products (e.g. exhibitions, festivals, the contest “Our Culinary Heritage”) should be backed by information and promotion campaigns. To this end, use should be made of the CAP instrument enabling the co-financing of promotion activities. The main goal of such campaigns should be to inform consumers of the merits of such products as well as making producers realise that the production of traditional and regional products involves tangible benefits.
- Public statistics include a rather wide range of data which can be used, directly or indirectly, to assess the macroeconomic sustainability of agriculture. But information (data) resources are dispersed (in charge of various institutions), there is no complete inventory of resources (i.e. thus information on such resources is incomplete), they are frequently inconsistent in terms of methodology of their generation and description. Therefore, it is desirable to make one consistent system out of individual information subsystems created by institutions such as GUS (Central Statistical Office), MRiRW (Ministry of Agriculture and Rural Development), ARiMR (Agency for Restructuring and Modernisation of Agriculture), ANR (Agricultural Property Agency), KRUS (Agricultural Social Insurance Fund), IERiGŻ-PIB (Institute of Agricultural and Food Economics – National Research Institute), IUNG-PIB (Institute of Soil Science and Plant Cultivation – National Research Institute), etc.

The Polish food sector in the first years of membership

Introduction

Poland's accession to the European Union, preceded by several years of adjustments (in legislation, economic operators and public institutions), significantly changed the conditions for the food sector, i.e. agriculture, processing and agri-food trade, as well as for their market environment¹. This change resulted from a number of factors, directly or indirectly related to the processes of European integration, including the following:

- the opening-up of the large and wealthy EU market for Polish producers as well as access to the Polish market for products from other EU Member States,
- the inclusion of Polish agriculture in the common agricultural policy,
- the acceleration in Poland's economic growth,
- the internationalisation of the Polish economy, increasing its sensitivity to global developments.

The opening-up of the EU market was significant for Polish producers since previously the market had been protected by customs and non-tariff systems. It is a large market, nearly 0.5 billion consumers with more than double the purchasing power of Polish households. It was important to Polish food producers and farmers that production costs and prices for most agri-food products in developed EU Member States were higher than in Poland. In such a situation, EU accession helped reveal Poland's comparative advantages and made Polish exports expand much more rapidly than anticipated, whereas the threat of imports was lesser. It offered additional opportunities for the development of the Polish food sector, particularly that its adjustment to EU integration was better than expected.

The inclusion of Polish agriculture in the EU common agricultural policy primarily resulted in an increased inflow of public funds to agriculture. It contributed to a significant improvement in the income situation in agriculture as a whole and in specific groups of agricultural holdings. The living standards

¹ Cf. S. Stańko, *Wpływ integracji z UE na warunki prowadzenia działalności gospodarczej w rolnictwie, obrocie i przetwórstwie rolno-spożywczym*, [in:] R. Urban (ed.), *Wpływ integracji z Unią Europejską na polską gospodarkę żywnościową*, seria Program Wieloletni 2005–2009, No 90, IERiGŻ-PIB, Warsaw 2008, pp. 9–34.

of the farming population and of the rural population enhanced. It was followed by an upturn in the market in agricultural inputs and in the capital goods market, which stimulated agricultural production and allowed to overcome several years of stagnation. However, a rise in agricultural subsidies weakened the need to improve farming efficiency, intensify agricultural production or to streamline agricultural structures.

In the first years of membership there was an economic upswing in the world and in Poland. Between 2004 and 2007, the hopes of the new European Union Member States for accelerated economic growth materialised. In Poland and in a number of other new EU Member States the GDP growth rate went up two to three times, and in the Baltic States (Lithuania, Latvia and Estonia) it remained high, at ca. 8% annually. At the same time, certain acceleration was also observed in the “old” EU Member States, e.g. the EU’s five largest economies grew at an annual average rate of 2.2%, i.e. 1 percentage point higher than in 2001–2003. A similar acceleration was observed in the US economy (from 1.7% to 2.9%), and very buoyant economic growth continued to be noted in China (at an annual rate of 11%), India (9%) and Russia (7%). The boom in the world economy had a favourable effect on foreign trade, and Poland’s accelerated economic growth boosted the capacity of the domestic market, including the food market. Although between 2003 and 2009 the nutritional value of the average food ration remained unchanged, its structure showed an improvement since there was a rise in the consumption of meat (by approx. 13%), fish, vegetable oils, and a particularly significant augmentation (by more than 20%) in the consumption of beverages, desserts, snacks and other highly processed foodstuffs².

The strengthening of the links between the food sector and the world and European markets, thus the internationalisation of the Polish economy, naturally increased its dependence on global developments. There were two such processes in the first years of membership. To begin with, the food crisis observed in the marketing year 2007/08 resulted in an upsurge in agricultural prices³, followed by a sharp fall. Domestic prices, particularly for cereals and

² Cf. E. Rosiak, *Popyt na żywność po integracji Polski z Unią Europejską*, [in:] R. Urban (ed.), *Stan polskiej gospodarki żywnościowej po przystąpieniu do Unii Europejskiej. Raport 6 (synteza)*, seria Program Wieloletni 2005–2009, Report No 145, IERiGŻ-PIB, Warsaw 2009, pp. 116–122.

³ In mid-2008 world prices for basic foodstuffs (with the exception of meat) were more than double the 2002–2004 average prices: they were higher by 165% in the case of cereals, by 175% for oils, by 140% for dairy products, by 170% for sugar, whereas a mere 40% increase was noted in the case of meat (cf. J. Rowiński, *Międzynarodowe rynki rolne – co dalej?*, “Przemysł Spożywczy” 2009, No 8, p. 22). In 2009 world prices for cereals, milk and oils returned to the 2005–2006 levels.

milk, followed similar patterns. The other development was the global financial crisis which triggered recession in countries such as the United States of America, the largest EU Member States: Germany, Spain, the United Kingdom, Italy, whose economies contracted by ca. 4%, Russia and Ukraine. The Baltic States, Ireland and Greece also faced a deep crisis. Poland proved to be rather resilient to this crisis as it only suffered a slowdown in GDP growth (to 1.7–3% in 2009–2010) and a marked drop in foreign trade (in 2009: by 17% and 26% in exports and imports respectively). The food sector showed even greater resilience to crisis developments.

The state of the food sector in the first years of membership also resulted from the transformation it had undergone in the years preceding Poland's accession to the European Union. Those particularly comprised the restructuring and modernisation of the food industry, the inclusion of this industry in globalisation processes, a steady concentration of agricultural production⁴ but with relatively stable agrarian structures, the introduction of regulation systems for the main agricultural markets (similar to EU solutions) prior to accession and gradual adjustments in agriculture and in the food industry to EU standards, mostly concerning food quality and the environmental protection.

Agriculture and agricultural markets in the first years of membership

Poland's joining the European Union primarily resulted in a considerable rise in agricultural income. Between 2004 and 2008, value added generated by agriculture, at constant prices, was approx. 70% higher than in 2000–2002. In the period in question, agricultural entrepreneurial income more than doubled in real terms. This income was mainly pushed up by increased subsidies since in comparable periods the growth in agricultural sales was similar to the rise in expenditure on current means of agricultural production. In 2008 total subsidies increasing agricultural income accounted for two-thirds of agricultural entrepreneurial income. This marked improvement of the income situation in agriculture is also confirmed by microeconomic data concerning the profitability of various types of agricultural holdings, budgets of farmers' households or by the financial performance of agricultural enterprises⁵. Such

⁴ For instance, in 1996–2002 the number of sugar beet growers plummeted by two-thirds, that of cattle farms dropped by 32%, and that of pig holdings declined by 30%.

⁵ Cf. W. Poczta, *Wpływ integracji z UE na sytuację strukturalną, produkcyjną i ekonomiczną polskiego rolnictwa*, [in:] R. Urban (ed.), *Stan polskiej gospodarki żywnościowej po przystąpieniu do Unii Europejskiej. Raport 6 (synteza)*, seria Program Wieloletni 2005–2009, Report No 145, IERiGŻ-PIB, Warsaw 2009, pp. 30–44; W. Dzun, M. Zdzieborska, *Sytuacja*

data also point to limited stability of incomes of different farms and a growing subsidy rate.

Buoyant foreign trade in agri-food products and increased capacity of the domestic food market, resulting from integration into the EU, boosted agricultural production. It was observed in all agricultural sectors, with the exception of pig farming. Acceleration was noted in the production of cereals, rape, beef, eggs and vegetables. The rather high growth rate of the output of poultrymeat and fruit continued, whereas the decline in the production of potatoes and sugar beet slowed down.

Increased agricultural income and a rise in the demand for agricultural products contributed to an upswing in the market in means of production and capital goods. During integration into the EU, there was an augmentation in the consumption of mineral fertilisers, plant protection products and manufactured feedingstuffs, accompanied by a downward trend of the use of calcium fertilisers, energy and certified seed. In 2006–2008 the total expenditure on current means of production at constant prices was 11.5% higher than between 2001 and 2003. The growing demand for such agricultural inputs drove up their prices, particularly in the case of fertilisers and agricultural machinery. In 2009 prices for products purchased by farmers were 40% higher than in 2000–2002, whereas those for products sold only went up by slightly over 20%. The so-called “price scissors” opened wider, mainly in 2008–2009.

After EU accession, the productivity of the main production factors showed a slow upward trend. The most rapid increase in productivity was recorded in the case of land, labour productivity improved at a lower rate, and the enhancement in the productivity of capital was even slower. There was an improvement in the productivity of intermediate consumption and energy consumption, whereas the productivity of expenditure on current means of production declined. However, those changes had no major effect on the economic situation in agriculture as it was determined by subsidies. In the period in question, there were no significant movements in the stock of the main agricultural production factors, i.e. land, labour and capital, or in the relationships between them. Poland continues to be characterised by relatively limited capital, whereas the capital/labour and land/labour ratios prove a poor competitive situation of Polish agriculture and determine low labour

ekonomiczno-finansowa przedsiębiorstw rolnych po wejściu do Unii Europejskiej, [in:] R. Urban (ed.), *Stan polskiej gospodarki żywnościowej po przystąpieniu do Unii Europejskiej. Raport 6 (synteza)*, seria Program Wieloletni 2005–2009, Report No 145, IERiGŻ-PIB, Warsaw 2009, pp. 75–85.

productivity. Therefore, the favourable results of foreign trade come at least partly at the price of social dumping⁶. Even the investment boom in agriculture could not change this situation. It was not observed until 2006–2008. In 2008 the value of investment (at constant prices) was ca. 50% higher than between 1998 and 2005, which indicates that EU accession accelerated modernisation processes in Polish agriculture and allowed to overcome years of sluggish investment. Those processes were stimulated by EU subsidies which covered ca. 36% of the value of agricultural investments after Poland's joining the EU.

Accession to the European Union has not brought about the expected structural transformation in Polish agriculture. Certain changes could be noted in the last five years, but they did not narrow the structural gap observed for years between Polish agriculture and that in developed European countries⁷. There was a slight improvement in the situation of large farms and economically viable holdings. The concentration of agricultural production was somewhat faster, particularly in the case of livestock production and sugar beet growing. Between 2002 and 2007 the number of sugar beet planters dropped by one-third, and that of holdings engaged in stock farming went down by one-fifth. But the progress in concentration was slower than in 1996–2002.

This minor advancement of structural changes, or even a slowdown after EU accession, is attributable to the system of agricultural subsidies, primarily in the form of direct payments and LFA payments, decoupled from the results of agricultural production. Nevertheless, the adaptability of agriculture and institutions to EU standards and requirements, resulting in high utilisation rates of all types of EU funds by farmers and agriculture-related production and services, should be evaluated very positively.

European integration meant the inclusion of Polish agriculture in the common agricultural policy. It enlarged the set of instruments to influence agriculture, but mainly affecting farmers' income and only to a minor extent shaping production and the development of agrarian structures. As a result of subsequent reforms of the CAP, it comprises a wide range of instruments, namely:

- direct area payments granted under a mixed system, i.e. partially decoupled from agricultural production, made dependent on the maintenance of good

⁶ Cf. W. Poczta, *Wpływ integracji...*, op. cit., p. 38.

⁷ Cf. W. Poczta, *Wpływ integracji...*, op. cit., pp. 14–30; W. Ziętara, *Stan dostosowań polskiego rolnictwa do integracji z Unią Europejską*, [in:] R. Urban (ed.), *Stan polskiej gospodarki żywnościowej po przystąpieniu do Unii Europejskiej. Raport 6 (synteza)*, seria Program Wieloletni 2005–2009, Report No 145, IERiGŻ-PIB, Warsaw 2009, pp. 48–55, 60.

agricultural conditions and on compliance with standards for the environmental protection, animal welfare and food safety,

- production quotas for milk, sugar, potato starch and isoglucose,
- intervention buying-in and private storage aid, related to price regulation (intervention, minimum and reference prices),
- support for consumption or use for non-consumption purposes,
- export subsidies, tariffs and quotas on imports from third countries.

The above-mentioned instruments increased the scope of agricultural market regulation. They are applied in a similar manner in all EU Member States. However, the applicable rates vary considerably (particularly with regard to area payments), other specific solutions differ as well. Such differences did not ensure equal terms of competition for producers (of agricultural and food products) within the EU, and the application of CAP measures did not improve the stability of agricultural income, output or prices. Thus, the expectations of greater stability of agricultural markets were not met. Rather, the situation in those markets was determined by the opening-up of the large EU market and by developments in world markets.

The low effectiveness of the CAP as a regulator of production and markets stems from the fact that its main instrument, i.e. direct payments, reinforced the duality of agricultural prices. The market price for agricultural products represents the main source of information only for the buyer of a given product, whereas the farmer relies on the producer price, i.e. the market price plus payments, of varying amounts depending on the intensity of production. Therefore, dual agricultural prices distort the economic account of the farmer and deprive the market of incentives to increase the productivity and efficiency of agricultural production, thus reducing the effectiveness of the market mechanism. It is also significant that direct payments increasing farmers' incomes and producer prices reduced the pressure from farmers for increased market prices and allow to maintain relatively low prices for pigs and poultry for slaughter.

Another important CAP instrument, i.e. production quotas, imposes limitations on the domestic supply of sugar, starch and isoglucose, as well as hampering the development of the dairy industry which could be fuelled by both export expansion and an upturn in the domestic market for dairy products, particularly cheese and desserts. On account of production quotas, the sugar, starch and isoglucose sectors have contracted in Poland, the export potential of the three industries has shown a decline, whereas the dairy sector functions below its production capacity. Furthermore, reduced supply also results in high

prices, especially in the milk and sugar markets. The rise in prices in the two markets (in 2009 sugar and milk prices were 30% and ca. 20%, respectively, higher than prior to EU accession) was much sharper than in other sub-sectors of the agricultural and food market (with the exception of the beef market), and they continue to exceed world prices.

In the first years of membership, a vital role in regulating the agricultural market was played by direct intervention by the EU in the agricultural price system, in the form of minimum prices for sugar beet, intervention prices for cereals, sugar, butter and skimmed milk powder, as well as by direct intervention by the EU in those markets. These forms of intervention maintained prices for cereals in three marketing years (2005, 2006 and 2009) and those for sugar in the first two marketing years after accession to the European Union (2005 and 2006). Such assistance had a lesser impact on the dairy market, and only a marginal influence on the meat market.

Following accession to the European Union, a new instrument for regulating the agricultural market, hardly applied in Poland previously, represented export subsidies. As a method for exporting excess supply, they played the most important role in the most regulated markets, i.e. in the sugar and milk markets, accounting for nearly 90% of the total amount of export subsidies, with a considerable impact on receipts and profits of enterprises. They also had a certain effect on the meat and starch markets. Subsidised consumption, food aid and use for industrial purposes played a similar role. These forms of subsidies were primarily applied in the dairy market. Importantly, the food sector was capable of exploiting opportunities offered by EU accession and the resulting application of export and consumption subsidies.

A significant component of the CAP is the protection of the EU market against agricultural imports from third countries. This system is considered to be effective with respect to competition from non-EU countries⁸. On the other hand, however, there was a marked rise in imports of all agri-food products regarded as those requiring increased protection before accession. It primarily concerned imports to processing plants from other EU Member States, not only supplementing domestic supply, but also helping cut the costs of production of processed products. The opening-up of the EU market became a vital factor for the stabilisation of the Polish agricultural and food market, particularly the cereal and pigmeat markets. Prices for and the supply of these products are now increasingly dependent on the situation in the whole EU market, which regulates

⁸ Cf. J. Rowiński, *Polska gospodarka żywnościowa pięć lat po akcesji*, "Wspólnoty Europejskie" 2009, No 5, pp. 14 and 17.

and stabilises these markets more effectively than direct market interventions or other production/price regulations.

All the above-mentioned developments indicate that Poland's joining the European Union was an effective factor in improving the income situation in agriculture, but it did not accelerate structural changes in agriculture or efficiency progress in this sector of the Polish economy. At the same time, the CAP increased Polish farmers' incomes, but it did not help stabilise them or the agricultural market. The CAP had no instruments for restoring the balance and reducing agricultural price fluctuations caused by the global food crisis or setting off market disturbances during the global financial and economic crisis. Neither did the common agricultural policy have suitable measures and instruments for overcoming the deep crisis in pigmeat production. This assessment is indirectly corroborated by simulations of the effects of the future CAP reform (after 2013), suggesting that the reform will only bring about minor changes in agricultural supply, demand and prices⁹.

The state of the food industry and the competitiveness of Polish food producers

In addition to agriculture, the food industry represents a major beneficiary of integration into the European Union. The first years of membership witnessed the following developments in this sub-sector of the food economy:

- there was another economic upturn, resulting in accelerated growth,
- the opening-up of the EU market revealed comparative advantages of Polish food producers,
- there was an improvement in the productivity and efficiency of the agri-food processing industry,
- corporate profits went up and the economic and financial standing of enterprises enhanced,

⁹ Cf. S. Stańko, *Prognozy zmian na podstawowych rynkach rolnych w Polsce do roku 2020 oraz ocena wpływu zmian WPR w ramach health check na ceny i produkcję (Projected changes in the basic agricultural markets in Poland until 2020 and the assessment of changes resulting from the CAP health check on prices and production)*, [in:] R. Mroczek (ed.), *Wpływ instrumentów polityki handlowej Unii Europejskiej na handel zagraniczny produktami rolno-spożywczymi*, seria Program Wieloletni 2005–2009, Report No 155, IERiGŻ-PIB, Warsaw 2009, pp. 124–146; M. Hamulczuk, S. Stańko, *Ekonomiczne skutki likwidacji kwot mlecznych – wyniki symulacji z wykorzystaniem modelu AGMEMOD*, “Zagadnienia Ekonomiki Rolnej” 2009, No 4, pp. 3–20.

- another investment boom improved the technical condition of production plants, brought them into compliance with EU standards and increased their competitiveness in world markets,
- the renewed processes of production concentration increased the economic strength of food companies.

Between 2003 and 2008, the annual average growth rate of the sold production in the food industry was high, at 5.2%, and it went up by 35% (at constant prices) in the period in question. After accession to the European Union, this sector grew three times as fast as in the years of stagnation (1999–2002) and twice as fast as in the past twenty years, ale less rapidly than in the previous boom (1993–1998). The impact of integration into the EU was less significant than the effects of transition of Poland's entire economy. The development of the food industry was faster than that of agriculture and the increase in the domestic demand for food products, but it was less buoyant than the rise in Poland's overall industrial output. In the first years of membership the food industry strengthened its position in the agricultural sector and increased its share in satisfying food demand, but it diminished in importance in Poland's industry and national economy as a whole.

The key factor to stimulate the development of the food industry was rapid export expansion and a growing demand for processed foodstuffs. After EU accession, 45% of growth in the production of this sector was sold in foreign markets, and the share of exports in total sales of the food industry more than doubled (from 11% in 2000–2002 to 24% in 2009). In the past years, the most buoyant increase in production has been noted in the secondary processing of food products and in the manufacture of licit substances, whereas the primary processing of agricultural products has been growing at a slower pace.

In the first years of membership there was a marked improvement in the productivity of the food industry. The upward trend of labour productivity accelerated and the downward trend of the unit consumption of water and energy continued. This enhancement was achieved by an increased capital-intensity of production, particularly by a rise in the capital/labour ratio. Such changes resulted from an investment boom. Between 2003 and 2008 investment activity measured by the value of investments undertaken in the food industry (at constant prices) was an average of nearly 50% higher than in the years preceding accession to the European Union. It brought about the following:

- rapid and appropriate adjustment of processing plants to EU standards (sanitary, veterinary and environmental),

- a further improvement in the technical and technological state of food production, which results in an enhanced competitiveness and ranks the Polish food industry among the most modern in the enlarged EU,
- improved relationships between raw materials, labour, energy and capital, conducive to an enhanced economic state of the sector.

The accelerated growth in output, increased productivity and the rising share of exports in total sales pushed up profitability and improved the economic and financial standing of food businesses. After accession to the European Union:

- net profit in the sector went up from less than PLN 1 billion in 1996–1998 and ca. PLN 1.5 billion in 2001–2003 to over PLN 5 billion between 2006 and 2008 (at constant prices: PLN 1.3 billion, PLN 1.5 billion and PLN 4.8 billion respectively),
- net profitability (return on sales) rose from approx. 1.5% in 1996–1998 and 2001–2003 to more than 3.5% after EU accession,
- return on equity (ROE) grew to 10–15%, i.e. more than double the interest rate on bank deposits and the yield on Treasury bonds,
- food enterprises improved their liquidity to a safe level of 1.30, whereas the value of equity increased from PLN 28.4 billion in 2002 to PLN 44.4 billion in 2008,
- long-term debt remained at a low level of ca. 15% of equity.

At the same time, the economic power and the competitive potential of the average operator in the food industry showed an increase as the concentration of production started again in this sector. After 2003, there was a decline in the number of active companies, mainly small and micro-enterprises (by 11%), accompanied by a slow rise in the number of large and medium-sized businesses. Consequently, the share of large producers in total sales of the sector went up (from 43.5% in 2003 to 51% in 2008), and its structure by company size became similar to the average structure of the food industry in the EU-15.

The growth in output and the improvement in the economic condition of the food industry were widespread, observed in all main sub-sectors of the manufacture of food products and beverages. After Poland's accession to the European Union, a contraction was only noted in the wine-making industry, the production of sugar and of potato starch. The advancement in the food industry mostly resulted from effective regulation by market mechanisms, compelling operators to improve efficiency. It was contributed to by transformation in the years preceding EU accession and the opening-up of the large EU market. Only a limited role in the development and progress in the food industry was played

by public support and intervention measures undertaken by the Member States or the European Union. Undoubtedly, public funds aimed to promote investment sped up adjustment processes and the modernisation of sensitive sectors, i.e. the processing of livestock products¹⁰. Certain sub-sectors, mainly the dairy, sugar and cereal industries, also benefited from other CAP instruments which interfered with (frequently distorted) the market mechanism in those sub-sectors. In general, there were no major distortions in the economic systems of regulation in the food industry, therefore its development was more rapid, and changes more profound, which represented a contributory factor increasing disparities in development and efficiency of agriculture and of the food industry.

Poland's accession to the European Union revealed previously achieved comparative advantages of Polish food producers. Therefore, the first years of membership saw a robust increase in agri-food exports and a significant improvement in the balance of foreign trade in such products. Importantly, such favourable developments had also been observed in the year immediately preceding EU accession, with the value of agri-food exports up from approx. EUR 3.1 billion in 2000–2002 to EUR 4 billion in 2003, and trade balance changed from a deficit of ca. EUR -0.5 billion to a surplus of EUR +0.45 billion. In subsequent years, the value of exports of such products rose to EUR 11.4 billion in 2008 (2.8 times), and trade balance jumped to EUR +2.1 billion (in 2006 and 2009), i.e. 4.5 times. When assessing the development of agri-food trade in the first years of membership, the following should be emphasised:

- The most buoyant growth was noted in trade with other EU Member States: in 2003–2008 exports to the new EU Member States increased 4.5 times, deliveries to the EU-15 went up 3.3 times, their share in exports augmented from 65% to 80%, whereas trade surplus soared from EUR 440 billion to EUR 2.2 billion. At the same time, exports to CIS countries grew by 75%, sales to other developed countries rose by ca. 60%, and those to developing countries only by less than 40%. As regards those groups of recipients of Polish products, there was an improvement in the surplus on trade with CIS countries (to EUR 0.8 billion, by approx. 60%) as well as a marked deterioration in the deficit on trade with developed countries (from EUR -32 million to EUR -240 million) and developing countries (from EUR -0.45 billion to EUR -1.4 billion). The last development stemmed from growing

¹⁰ Between 2003 and 2008, support for investments in the food industry totalled PLN 3.5 billion, accounting for 8.5% of investment spending in this industry and for 25% of investments in sensitive sectors.

imports of products not produced in our climatic zone (from EUR 1.5 billion to EUR 2.6 billion), enhancing the diversity of domestic food supply.

- Agri-food trade is characterised by a large and increased deficit on agricultural trade, relatively balanced trade in semi-finished products as well as by the highest and robust exports and surplus on trade in finished goods. In the period in question, exports of agricultural products went up from EUR 0.75 billion to EUR 1.78 billion (2.4 times), sales of semi-finished products grew from EUR 1.4 billion to EUR 3.5 billion (2.5 times), whereas those of finished goods jumped from EUR 1.8 billion to EUR 5.3 billion (nearly 3 times). There was a deterioration in the deficit on agricultural trade from EUR -0.6 billion to EUR -1.4 billion, the balance on trade in semi-finished products changed from a surplus of EUR 0.26 billion to a deficit (EUR – 0.05 billion), whereas the surplus on trade in finished products improved from EUR 0.75 billion to EUR 3.3 billion. It means that Polish producers of food products and Poland's competitors in agricultural trade enjoy significant comparative advantages.

The assessment of the competitiveness of the sector, based on foreign trade performance and comparative advantage indices (RCA and Lafay), suggests the following conclusions:

- Polish producers of dairy products, animals for slaughter, meat and preparations of meat (except for beef), preparations of fish, tobacco and tobacco products, sugar and sugar confectionery, vegetables, preparations of fruit and vegetables, products of secondary processing of cereals enjoy significant comparative advantages,
- Poland has no comparative advantages in food industries such as the production and primary processing of cereals, oil seeds, oils and feedingstuffs, alcoholic beverages, coffee, tea, spices, cocoa, (southern) fruit and fish.

At the same time, in sectors regarded as uncompetitive there are certain products offering Poland comparative advantages. This group, mostly processed products, includes rapeseed oil and meal, margarines, non-alcoholic beverages, coffee extracts and rape. It is also important that in the first years of membership there was an improvement in most revealed comparative advantage indices, e.g. the RCA index in total agri-food exports to the world market increased from 1.08 in 2003 to 1.34 in 2008, and the majority of sub-sectors generating trade deficits experienced considerable export expansion, which mitigated somewhat the deterioration in trade balance in those industries.

The competitiveness of the food sector can also be assessed on the basis of export orientation, measured by the ratio of exports to the sold production of particular sub-sectors. Thus, it follows that the most export-oriented industries include the manufacture of tobacco products, the processing of tea and coffee, the fish, fruit and vegetable and confectionery industries. In the above-mentioned sub-sectors a minimum of 30% of output was sold in foreign markets. This group comprises industries which largely rely on imported raw materials such as tobacco, coffee, cocoa and fish. The development of export orientation of the processing of such products confirms assessments that the Polish food industry is highly competitive. In the main sub-sectors mostly using domestic raw materials, i.e. in the dairy, meat, poultry and sugar industries, the ratio of exports to sold production is similar to the figure for the whole Polish food industry. At the same time, export orientation continues to be limited in food and beverage industries such as the production and primary processing of cereals, the baking industry (with the exception of the manufacture of pastries), the manufacture of feeds for farm animals, non-alcoholic beverages, beer and other alcoholic beverages. Those are sub-sectors clearly oriented towards the domestic market.

The main sources of comparative advantages of Polish food producers are much lower costs of labour and land, and of energy to a lesser extent, than in developed EU Member States. For this reason, food prices and costs of food production are also lower in Poland than in the EU-15, but those price advantages have been gradually diminishing. Prior to EU accession, retail food prices in Poland were ca. 40% lower than in the EU-15, selling prices in the processing industry were approx. 30% lower, whereas the gap in agricultural prices was ca. 20%¹¹. After five years of Poland's membership of the EU, such differences decreased nearly by half as in 2008–2009 consumer prices in Poland were ca. 28% lower¹², the gap narrowed to approx. 15–20% in processing and to 10–15% in agriculture¹³. Such diminishing price advantages result from a more rapid rise in agricultural and food prices in Poland than in the EU-15 as well as from the strengthening of the zloty. The latter was the reason for a considerable decline in Poland's price advantages in 2008.

¹¹ R. Urban, *Analiza przewag komparatywnych na poziomie przemysłu rolno-spożywczego*, IERiGŻ, Warsaw 2003, pp. 20 and 52.

¹² *Wide spread in consumer prices across Europe in 2008*, Eurostat, "Statistic in focus" 2009, No 50.

¹³ I. Szczepaniak (ed.), *Ocena konkurencyjności polskich producentów żywności po akcesji do Unii Europejskiej (synteza)*, seria Program Wieloletni 2005–2009, Report No 150, IERiGŻ-PIB, Warsaw 2009.

The comparison of prices in Poland and the average EU prices indicates that in agriculture Poland continues to have significant price advantages in the production of cattle for slaughter, poultry and milk, much lesser in the production of cereals, and very volatile and usually limited in the production of pigmeat. At the same time, in the processing industry Poland maintains its considerable advantages (over German producers) in fish processing, in the baking industry, in the production and processing of meat (poultrymeat, beef, preparations), in the manufacture of juices and non-alcoholic beverages, confectionery, pastrycooks' products, preparations of fruit and vegetables, margarines as well as of certain dairy and cereal products. Selling prices are higher in Poland than in Germany in the case of the following products of the processing industry: rapeseed oil and meal, frozen fish fillets, pigmeat, cheese, potato products, spices, mayonnaise, ketchup and roasted coffee.

Diminishing price advantages suggest that the favourable performance of foreign trade and Poland's comparative advantages result from making better use of other sources of competitiveness. Unquestionable strengths of Polish food producers include quality and widespread application of food safety assurance systems as well as effective search and catering for niche markets in the EU. In the first years of membership significant progress was made in such areas. Polish businesses over better exploit other sources of competitiveness such as innovation, entrepreneurship, knowledge and intellectual capital. Enterprises increasingly recognise the importance of those competition instruments and rank high (third) among the most innovative low-tech industries. Highly globalised food industries are the most effective in this respect.

Conclusions

1. In the first years of membership of the European Union the Polish food sector was influenced by a number of factors. The main determinants included the upswing in the world economy and in Poland's economy, the opening-up of the market of developed EU Member States for Polish food producers, the inclusion of Polish agriculture in the common agricultural policy as well as improving links with the European and world markets.

The Polish food sector was also significantly influenced by the transformation it had undergone in the years preceding Poland's accession to the European Union.

2. In the first years of membership the state of the Polish food economy was better than expected. Concerns that Poland's agriculture and food

industry would prove unable to cope with competition from the agri-food sector of advanced European countries did not materialise. Neither did fears that it would result in a reduction or even discontinuation of the production of certain food products. In the period in question considerable progress was made:

- the domestic food market showed buoyant growth (by ca. 2.5–3.0% annually), and agri-food exports went up at several times higher rate (approx. 20% annually),
- after a few years of stagnation, agriculture again experienced an upturn in production (ca. 2.5% annually), and the food industry grew 2 to 3 times more rapidly,
- investment activity picked up noticeably, in both agriculture and the food industry,
- there was a dramatic increase in farmers' incomes (by approx. 110%) and in profits of food enterprises (threefold).

3. The common agricultural policy has been successful in improving the income situation in agriculture. It ensured a marked rise in farmers' incomes and enhanced the living standards of the farming population. However, it failed to stabilise agricultural income and the agricultural market with equal effectiveness. Even production or sales quotas are not effective as price stabilisers, although they do reduce the export potential or domestic demand. The CAP had no instruments for restoring the balance and reducing price fluctuations caused by the global food crisis or setting off market disturbances during the global financial and economic crisis. The CAP should mostly (or even solely) focus on regulating farmers' incomes rather than on efforts to fulfil other roles, mainly market stabilisation or stimulating structural transformation. It is also important that the CAP should be a common policy rather than a combination of national policies.

4. The results of foreign trade in agri-food products and selected competitiveness indicators reflect high competitiveness of Polish food producers in the EU and world markets as well as pointing to increased comparative advantages in the first years of membership. The main source of competitiveness was cost and price advantages. Such advantages have been diminishing, but it is increasingly important to skilfully exploit other sources of competitiveness such as quality (the quality and uniqueness of products,

the development of business image based on confidence), innovation, entrepreneurship as well as knowledge and intellectual capital.

The long-term prosperity of an undertaking is determined by its innovation. Food producers recognise the significance of innovation as a vital instrument of competition in the global market. The ability to undertake innovative projects is determined by intellectual capital. Global companies acknowledge the role of human capital as the source of comparative advantage to a greater extent than Polish enterprises.

The monitoring and analysis of changes in the Polish food supply chain

The monitoring and analysis of changes in the Polish food supply chain involves the monitoring of the implementation and application of quality management systems, the examination of economic interrelations between specific components of the food supply chain and their impact on price transmission as well as the monitoring of the volume of imports and import prices of agri-food products subject to special safeguard provisions. The functioning of the food supply chain has a growing impact on retail food prices and consumer satisfaction, agricultural income and the development of agriculture. Consumers are ever more frequently of the opinion that food products are increasingly expensive, whereas producers claim to have a declining share in consumers' growing food expenditure. On account of the ongoing concentration (particularly in trade), agricultural producers and processors are becoming more anonymous and distant from the consumer. Thus, consumers are convinced that they have limited possibilities to assess the actual quality of food products, and food producers, without direct contact with the buyer, do not feel fully responsible for food quality, especially when the seller presses for price reduction. As a result, it is necessary to constantly develop quality control and quality management systems, to trace food products from the field to subsequent processing and marketing stages to the consumer's plate.

Therefore, the monitoring of the food supply chain and the analysis of changes observed seemed particularly important in the period of transition and adjustment of the food sector to operating under market-economy conditions as well as in the period of the integration of the Polish food sector into the single European market after ten years of preparations. It is worth remembering that Poland's integration into the EU raised great concerns, as reflected in the exceptionally long list of agri-foodstuffs regarded as sensitive and protected by high import duties. However, there were equally great hopes for increased access to the single European market, which seemed to be an oasis of stability with its market support.

1. The rate of implementation of quality management systems

Prior to Poland's accession to the European Union, a number of concerns were expressed, e.g. that the Polish food sector would not be competitive in the EU market and that Polish businesses would prove unable to comply with the EU requirements and standards in terms of food safety in a short time span. The monitoring of the stages of implementation of quality management systems has shown that that such concerns were unjustified.

In the group of enterprises processing food of animal origin (the processing of meat, fish, milk, the manufacture of feed) and subject to the surveillance of the Veterinary Inspection Service, the processes of the implementation of mandatory quality management systems (GHP, GMP and HACCP) were largely completed (90–100%), with the exception of the fish industry where mandatory quality management systems were only implemented by 63% of companies. As regards businesses producing food of non-animal origin, subject to the surveillance of the State Sanitary Inspectorate, the average rate of implementation of GHP and GMP is 85–88%, whereas the respective rate for HACCP is only 43%. In the group of enterprises in question, the rate of implementation of the HACCP system widely varies between industries, companies of different sizes and voivodships. Large and medium-sized businesses were characterised by the most advanced implementation and application of those systems (from 86% to 96%). The most operators without mandatory quality management systems were found in the group of small and micro-enterprises. The rate of implementation of the HACCP system was the highest in the following industries: the processing of tea and coffee (76%), the brewing industry (75%), the oil and fat industry (67%) and the wine-making industry (62%), whereas it was the lowest in companies producing sugar (36%), other food products (38%), operating in the cereal and milling industry (40%), the baking industry (41%), the pasta industry (49%).

Poland's joining the structures of the European Union had a crucial impact on the rate of implementation and application of mandatory quality management systems in food businesses. The application of obligatory quality management systems has become so widespread that it is now indispensable to the further existence of any food operator in Poland. However, it is still problematic to enforce, particularly by the State Sanitary Inspectorate, the mandatory implementation of the HACCP system in enterprises which have as yet not done so. At the same time, the improvement in the competitiveness of Polish food businesses can be achieved by implementing non-mandatory quality management systems (e.g. IFC, BRC, ISO 22000, ISO 9000 series), so far

applied by a mere 5–10% of food operators. The share of enterprises with non-obligatory quality management systems significantly varies between industries. Those with the highest proportion of companies with non-mandatory quality management systems include the processing of tea and coffee, the wine-making industry, the oil and fat industry, the manufacture of spirits, the dairy, brewing as well as fruit and vegetable industries.

Integration into the EU spurred investment in the food industry. The most robust growth in the value of investment was noted between 2003 and 2004, particularly in the processing of livestock products, deemed sensitive. After EU accession, investment in such sub-sectors doubled or tripled on the 2000–2002 average. The most funds (nearly PLN 3 billion) were invested in such industries in 2004, and the following years witnessed investment exceeding PLN 2 billion annually. The rise in investment in the food industry pushed up the number of enterprises with completed implementation of GHP, GMP and HACCP after an average of two years. As investment went up, there were more and more companies with the HACCP system fully implemented.

According to the vast majority of the surveyed operators, the implementation and application of quality management systems has affected production costs. But the assessment of the actual effect of the implemented and applied quality management systems on production costs widely varied. Characteristically, only 18% of those surveyed considered this impact to be significant, whereas 52% regarded it as insignificant. Presumably, such evaluations were influenced by the knowledge of production costs as well as by marginal interest in quality costs and their effect on production costs. According to the surveys, a mere 8% of the surveyed enterprises kept full quality cost accounts, and 36% kept partial accounts. As many as 56% of the surveyed businesses kept no quality cost accounts, although 28% of them planned to do so in the future.

The surveys carried out in selected food operators confirmed that the application of quality management systems stimulated the processes of integration with suppliers of raw materials in the majority of the surveyed food enterprises (80%). The traceability of raw materials and food products in order to guarantee food safety primarily represents an obligation of food businesses. Furthermore, it is increasingly acknowledged that closer links, developing feedback systems with market partners in the whole food supply chain, often referred to as “from field to fork”, enhance food safety and quality as well as allowing to satisfy consumer needs better than competitors. The relationship between the quality systems applied and the degree of integration with suppliers of raw materials grows stronger as the company size increases, owing to more

competent marketing services in large enterprises. The majority of operators (58%) conduct audits of their suppliers of basic materials. The frequency of such audits varies between industries and companies of different sizes.

The introduction of management systems also markedly stimulated vertical integration with major purchasers (distribution chains, large wholesalers), but it only had a marginal effect on links with minor purchasers. Purchasers (distribution chains, wholesalers) audit their suppliers with varying frequency (every six months to every few years), depending on the industry and the size of the supplier. The enterprises, particularly large and medium-sized ones, also reported improved communication with customers after implementing quality management systems.

In 2003–2008 export receipts (in PLN terms) on food products more than doubled, and food exports to the EU increased at a higher rate than those to non-EU countries. This buoyant growth would not have been possible without a marked rise in the number of companies applying obligatory quality management systems as the implementation of the HACCP system was the basic condition for placing food products on the single European market.

The decision to implement the rules of the HACCP system in small and micro-enterprises is mainly taken in order to avoid sanctions for non-compliance with the legal obligations imposed by the act of 25 August 2006 on food and nutrition safety. But food operators with properly functioning quality management systems certainly enjoy a number of benefits, e.g. operating in accordance with applicable regulations, thus at no risk of receiving a fine or an order to cease food production activities; increased food safety and quality; greater satisfaction and expectations of external customers; improved communication with customers; a more efficient internal information system; transparent documentation, instructions and procedures; significantly increased awareness and knowledge of quality issues by the top management and all the staff; more strict observance by all employees of the applicable procedures and instructions in the process of food production; a decrease in the number of complaints and the resulting reduction in the costs involved in non-compliance; attracting new customers; the possibility to market company products with certain distribution chains which require the application of non-mandatory quality management systems; enhanced competitiveness of the company in the domestic market, in the single European market and in other world markets; more efficient business management.

2. The evolution of basic agricultural markets and its effect on price transmission

The introduction of the market mechanism to the food sector brought about a fall in food prices in real terms, which was reflected not only in a slowdown in the upward trend of retail food prices, but mostly in a reduced share of food expenditure in total consumer spending. It allowed a considerable improvement in the average level and quality of food consumption. However, changes in the consumption of specific groups of food products were less significant than the movements in incomes and prices would suggest. A surge in food prices after 2004 primarily stemmed from a wide price gap between Poland and the EU-15 countries upon accession as well as from exceptional conditions in world food markets. Extremely high prices for cereals and dairy produce quoted in world markets after mid-2007 and in the first six months of 2008 resulted from the combination of changes in the common agricultural policy and the liquidation of stocks with speculative elements related to very high oil prices and speculative bubbles in financial markets. As the integration effect fades out and the balance is restored in world markets, the Polish market will return to the long-term downward trend of real food prices.

The fall in agricultural prices in real terms was much deeper than that in retail food prices. More importantly, it was accompanied by a rise in agricultural inputs. Significant disproportions between the growth rates of prices for products sold and purchased by farmers could be observed in all the periods in question, with the exception of 2004–2008 when increases in agricultural prices almost fully compensated for the rise in retail prices for agricultural inputs, even if with a certain delay. Sharp price decreases, mostly concerning cereals and pigs for slaughter and chiefly stemming from cyclical fluctuations in supply, combined with limited demand made aggregate agricultural prices grow at a much lower rate than those for agricultural inputs (whose prices also rose faster than inflation). The price scissors index went up particularly rapidly in the early 1990s and in 2000–2003. After Poland's joining the EU, the rise in selling prices obtained by farmers markedly exceeded that in retail food prices. Increases in purchase prices for agricultural products were so high that they almost fully compensated for the upsurge in retail prices for agricultural inputs, and the price scissors index augmented to 98.5. Between 1990 and 2008, in the case of products sold by farmers the real price index did not exceed 37, whereas it reached nearly 119 for retail prices for agricultural inputs purchased by farmers. This is the underlying reason for the unprofitability of the majority of agricultural holdings and the need to support agricultural income.

The high volatility of cereal prices constitutes one of the main factors destabilising the agricultural market as a whole, and the markets in pigs for slaughter and poultry in particular. This volatility was not reduced by Poland's inclusion in the single European market and in the mechanisms of the common agricultural policy or by a rise in mutual trade, although the analysis of price transmission revealed increased responsiveness of the Polish market to price impulses originating in other markets. As a rule, Poland is a price taker, as a minor player in the international market. It particularly concerns the market in cereals, but also the majority of livestock products. A weak influence of the Polish market on prices in other countries is only observed in the case of the pigmeat market.

Domestic cereal prices are mostly determined by world prices. However, the long-term analysis of fluctuations in agricultural prices and in relative prices has confirmed that an important factor to hamper growth in cereal prices in Poland was also the fact that there was a relative decline in prices for poultry and pigs, the main consumers of cereals. The scope for price increases in the case of pigs and poultry was limited not only by the low consumption of meat, mainly due to low incomes, but also, first of all perhaps, by the development of highly efficient technologies of meat processing allowing to reduce the use of raw material per unit of the final product and by competitive strategies chiefly based on price competition. The rise in cereal prices relative to poultry and pig prices stimulated the technological progress and forced enhancement in the efficiency of livestock production.

Integration into the European Union pushed up prices for bovine animals, which improved the profitability of beef cattle production. Another impulse to this effect is the CAP reform, implemented with 12 years of delay in the milk market. This reform, aimed to increase to competitiveness of the EU dairy sector by cutting prices to the level of world prices, had a distinct downward influence on the high growth rate of selling prices for milk which ranked among the highest before 2007.

As follows from the analysis of price fluctuations at different market levels, a decreasing share of selling prices in retail prices was only observed in the cereal market, particularly with respect to bread prices. As regards the meat market, from the mid-1990s the proportion of selling prices in retail prices remained unchanged, with the exception of beef. At the same time, in the milk market the share of selling prices in retail prices for milk products showed an increase until 2008, which implies that the market mechanism in this market was distorted by price policies pursued by dairies, the common agricultural policy in the milk market and by significant support for the necessary restructuring

processes. The discontinuation of market support, the solution of problems related to milk quality and the entry into a new phase of the restructuring of the dairy industry will lead to smooth transmission of price impulses between particular levels of the milk market. It is confirmed by a fall in the share of selling prices in retail prices for milk products in 2008 and 2009.

Changes in support for agricultural producers (direct payments decoupled from production), moving away from market support and reducing intervention in the internal market all increase price volatility and show the ineffectiveness of production quotas as stabilisation instruments as they only serve to lower budget expenditure. It was particularly evident in the milk market. Milk production quotas proved insufficient to protect the EU market from the transmission of dramatic price fluctuations from the world market to the Community market when market support had been limited.

The introduction of the market mechanism to agriculture, although it was modified by intervention measures, brought about a number of changes in the domestic supply of agricultural raw materials. To begin with, one-fifth of the total area of agricultural land was excluded from agricultural use, there was a 63% fall in the area under the most labour-intensive root crops (mainly potatoes; the area under potatoes dropped by 73%) and structure-forming forage plants (by 56%) whose combined share in the total sown area went down from 30% to 13.5%. At the same time, the area under rape and maize showed an increase. As a consequence, the share of cereals in the total sown area rose to 74%, and that of technologically similar crops exceeded 80%. It resulted in a decline in the volume of crop production which has not returned to the level noted prior to transition until the late 2000s.

After the collapse observed in the early 1990s, thanks to expanding poultry production, livestock production grew at a much higher rate than that of crop production and faster than consumption, which led to rising surpluses, particularly in the case of poultry for slaughter. The main reason for a rapid increase in beef surpluses was the fall in beef consumption which diminished even faster than production. The development of cereal-intensive livestock farming and the improvement in feed efficiency led to a marked rise in livestock production per ha of utilised agricultural area, but at the cost of greater dependence on cereal production and exports. It also concerns milk production which slowly increased, driven by enhanced profitability after 2004, accompanied by declining consumption. Consequently, the self-sufficiency ratio exceeded 116% in 2008. Considering the stagnation in cereal production, strongly fluctuating yields, repeated shortages of domestic supply as well as the

underdeveloped and shallow market, it is the cause of both frequent tension between supply and demand and the destabilisation of food markets.

Due to increasing surpluses, mainly of livestock products, as well as to reduced domestic fish catches, foreign trade gained in importance to the functioning of agri-food markets and to their stabilisation. Trade liberalisation (approx. 80% of exports and more than 70% of imports represent intra-EU trade) revealed comparative advantages, allowed the export of surpluses and the improvement in the balance on foreign trade in agri-food products. In 2006–2007 foreign trade surplus exceeded EUR 2 billion, whereas in the mid-1990s trade deficit ranged between EUR 0.4 billion and EUR 1 billion annually.

The adjustment of production structures, triggered by market requirements and stimulated by EU and national budget support, has varied considerably between industries. The most advanced processes of concentration and integration are observed in poultry production, in the animal feed industry and in the processing of potatoes for human consumption, which was contributed to by a significant degree of concentration and integration prior to transition (poultry farming) as well as by a marked inflow of foreign capital (the animal feed industry, the processing of potatoes). Such processes are much slower in milk production, particularly in milk processing, in the cereal and milling, pasta, red meat and fish processing industries. Minor progress in production structures was made in the production of cereals, pigs and, especially, beef cattle. There is a very wide gap between Poland and developed countries in the organisation and technological advancement of the dairy industry, the production and processing of red meat or of fish farming.

Despite the considerable progress fuelled by heavy investment, the fundamental problem of the meat, dairy and cereal sectors remains the excess capacity in the processing industry as well as high property costs, accompanied by significant labour intensity. Although the low remuneration of labour and lower costs of other production factors still allow to effectively compete in European markets, increasing income of the population and growing income aspirations of farmers will force accelerated progress and the deployment of modern sources of competitiveness in Polish agriculture. It should be facilitated by an efficient market mechanism.

The sluggish restructuring in production and processing in the main sectors, accompanied by a rapid advancement in the organisation of trade and a growing share of distribution chains (the current proportion of distribution chains in retail trade is estimated at 50%), gradually undermines the market position of food processors and producers. In addition, high selling costs also

have an adverse effect on the ability to compete. All food processors offer the widest possible range of products and develop various distribution channels in order to reduce their dependence on distribution chains.

The analysis of price relationships in the main agri-food markets provided a more detailed description of those markets in Poland, including the identification of trends in links between them. In 1996–2008, there was a general increase in the responsiveness of agricultural prices in Poland to price movements in foreign markets. It could be clearly observed in the markets in cereals and pigs for slaughter. Poland's accession to the European Union had a marked impact on price transmission between the domestic market and foreign markets. Domestic markets became distinctly more responsive to prices quoted in EU Member States. As exemplified by the cereal market, however, at the same time there was a slight fall in responsiveness to prices in non-EU markets. The results definitely point to the transmission of price impulses from foreign markets to the Polish market. Only in the case of pigs for slaughter price transmission was observed in both directions between the Polish market and certain foreign markets.

The examinations unambiguously indicate that price impulses were mostly transmitted upwards in the market channels, from raw material prices to selling prices obtained by processing plants to retail prices. Downward price transmission was rarely noted. It was more visible in the case of milk powder prices influencing selling prices for milk. Furthermore, butter prices also had a distinct effect on milk prices in 1996–2003. As for wheat prices, in the short term, i.e. 2 to 3 months, they primarily affect poultry prices. After more than six months, they also influence pig prices. At the same time, no major effect of cereal prices was found with respect to beef prices, even within a year. Those were more affected by pigmeat prices.

The impact of prices for agricultural raw materials on retail prices for agri-food products clearly diminished in the period in question. In the light of the results obtained, it can be concluded that during six months a 1% increase in the selling prices for pigmeat caused a rise in retail prices for a basket of pork products by ca. 0.1%, the same increase in the purchase prices for milk pushed up butter prices by approx. 0.5%, whereas a rise in wheat prices resulted in a growth in bread prices by ca. 0.15%. In the case of certain products there was an increase in price margins, but only the market in dairy products displayed clear distortions in price transmission which might stem from the differences in the functioning of the markets from competitive conditions.

3. Imports and import prices for agricultural and food products covered by the special safeguard clause (SSG) prior to accession

The elimination of customs duties in imports from Member States of the enlarged European Union, the application of lower tariffs on imports of many products from third countries and the virtual lifting of the safeguard mechanism in the form of the SSG clause brought about, as expected, a rise in imports of nearly all products deemed sensitive, i.e. requiring special protection, before accession. Between 2004 and 2009, the sharpest growth was recorded in the volume and value of imports of raw materials for processing plants, mostly livestock products (meat and pet food), products of the primary processing of fruit and vegetables as well as of oilseeds (chiefly rape seeds and rapeseed oil). Products intended for further processing dominated Polish imports of products determined to require protection against imports prior to accession (ca. 80% in 2001–2003). Between 2007 and 2009 they accounted for an average of 85%.

In the first years after Poland's joining the Community, the growth in imports of the majority of products considered to require increased protection against imports was driven by a fall in import prices resulting from the diversification of supply sources and from changes in the product and sectoral structure. Prices only rose in imports of certain products whose quality parameters were higher than before accession (most vegetables, margarines, honey, flowers) or whose markets were significantly influenced by the EU price regulations (butter, concentrated milk, sugar). In 2007–2009 prices for almost all products deemed to require special protection against imports prior to accession exceeded the average prices noted in 2001–2003. It resulted from reduced scope for further changes in the sectoral and product structure of imports. Owing to a rise in import prices, the growth rate of the value of imported products determined to require special protection before accession exceeded that of the import volume in the last years of the period in question. In 2007–2009 the value of imports was higher than the 2001–2003 average by 220% (in EUR terms) or by 210% (in PLN terms).

Following Poland's joining the EU, imports of products covered by the safeguard mechanism (SSG) prior to accession went up faster than those of other agri-food products. On average, between 2007 and 2009 the products in question represented 38% of the value of agri-food imports, against 27% in 2001–2003. After accession, the growth rate of imports of nearly all products to which the special safeguard clause had been actually applied in the pre-accession period did not exceed the figure for products whose imports had not been subject to possible additional tariffs under the SSG mechanism.

EU accession was followed by an increase in the share of imports in the volume and value of output of all the analysed products. The proportion of imports in the total value of sold production of the products in question went up from an average of 4.5% in 2001–2003 to 8% between 2007 and 2009. The figure rose from 2% to 9% in the cereal sector, from 2% to 8% in the oilseeds sector, and from 5% to 11% for horticultural products. The share of imports in the value of production remained the lowest in the dairy and meat industries (below 5%). Competitive imports only contributed to the stagnation of the production of dried vegetables as well as of dextrans and modified starches. But the domestic output of either product group did not decline on account of increased domestic demand. However, greater imports are not favourable for modernisation processes in these food industries. With regard to other products, the rise in imports allowed to diversify the range of products offered by domestic suppliers or stimulated production and export sales. “Import for export” was clearly observed with regard to imports of pet food, unmanufactured tobacco (increased exports of cigarettes) as well as of tomato concentrate (greater exports of ketchup and tomato paste). Shifts in the production and import structure, robust demand in the domestic market as well as a major share of foreign-owned companies (including transnational corporations) in most domestic food industries allowed to maintain the level of output noted before accession also in the case of articles where Poland enjoyed no price advantages in the European and world markets.

After accession, the price competitiveness of the majority of Polish agricultural and food products in comparison with EU products, combined with increased imports of complementary and supplementary character, determined more buoyant exports than imports of the agri-food products in question. Between 2007 and 2009, the surplus on foreign trade in products considered to require special protection prior to accession was an average of 5% higher than the average trade balance noted in the previous three years and 2.7 times higher than in 2001–2003. The relatively limited rise in balance recorded in the last years of the period covered by the analysis was almost exclusively determined by an increase in cereal and pigmeat imports, due to a drop in domestic production. After Poland’s joining the EU, the most impressive growth in trade surplus was noted in the case of the majority of livestock products (mainly beef, poultrymeat, meat products, eggs and dairy products), whereas there was a deterioration in the deficit on trade in products of the primary processing of cereals, starch products, thermophilic vegetables, tomato concentrate and flowers. As prior to accession, the balance on trade in cereals and rape seeds continued to fluctuate. The surplus on pigmeat trade turning into a deficit in the past years was of a cyclical character. Owing to very rapid export expansion, in 2007–2009 the surplus on trade in

livestock products was triple the average figure for 2001–2003, whereas the balance on trade in horticultural products was more than twice as high. The deficit on trade in other crop products showed an improvement.

The rise in trade surplus in products considered to require special protection against imports before accession was accompanied by a growing share of imports in exports. On average, in 2007–2009 this proportion reached 61%, against 57% between 2001 and 2003, which confirms a favourable impact of increased imports on the performance of Polish foreign trade in the agri-food products in question. It was determined by a rising share of imports in exports in the case of nearly all products generating trade surpluses. Thus, import gained in importance in boosting market supply and exports of such products. At the same time, greater exports and re-exports pushed down the respective proportions in the case of products with trade deficits. On average, the share of imports in exports jumped from 39% in 2001–2003 to 51% in 2007–2009 in the group of livestock products, whereas it went up from 21% to 39% for horticultural products. As regards the remaining crop products, the proportion of imports in exports dropped from 179% to 106%.

The monitoring of imports of the products in question, with respect to the output of such articles, trade balances and the share of imports in exports, clearly indicates a favourable contribution of imports, increased after accession, to stimulating production and exports of the majority of products determined to require special protection against imports prior to joining the Community. Neither did negative developments, e.g. reduced output, deteriorated trade balance or a fall in prices for domestic products, materialise in the markets in products whose imports had been subject to additional customs duties under the special safeguard clause. Not only were greater imports not in competition with domestic products, but due to ample opportunities to improve product quality or cheaper supply of raw materials to the economy, they also played a role in positive changes in the functioning of many domestic food operators. Such businesses were well able, even before accession, to efficiently operate in the single European market. Under conditions of the free movement of goods, the price competitiveness of Polish products was confirmed, as was the technical, technological, economic and managerial efficiency of the majority of food operators. Imports only “filled in the gaps” in the food sector and offered new opportunities for the exploitation of Polish comparative advantages in the European and world markets.

The analysis results point to Poland’s excessive caution in constructing the WTO concession list of products considered to require special protection against imports.

Polish agricultural holdings in the first years of membership – efficiency¹ and competitiveness

Introduction

The report focuses on four issues. Firstly, it discusses the efficiency of Polish agriculture between 2004 and 2008 in comparison with relevant indicators recorded in previous years as well as with those observed in other European Union Member States; secondly, it describes the competitiveness of farms held by natural persons (the analysis mostly covers the years 2004–2006) as compared to agricultural holdings in selected other EU Member States. Thirdly, the report raises the question of efficiency of particular groups of Poland's largest farms in 2004–2008. Such holdings are analysed separately as they differ in methods for labour remuneration, the calculation of related costs (social security, taxation on salaries and wages), etc. Finally, it examines Russian, Belarusian and Ukrainian agriculture, with the aim of establishing whether and for how long the countries in question would import Polish agri-food products.

The analyses were based on the results of monitoring under the Polish FADN and the Community FADN, empirical data (collected through steered interviews and questionnaires), statistics of Eurostat, GUS and statistical offices of Russia, Ukraine and Belarus, as well as on relevant Polish and foreign literature. The substantive correctness of the analyses of agricultural holdings in Poland and in other EU Member States was ensured by using the same methods for collecting and processing numerical data.

The analyses conducted allow to draw conclusions regarding future developments, primarily in the medium term.

¹ As a matter of fact, the emphasis is not on efficiency as such, but on the productivity of Polish agriculture, since it was primarily measured by the ratio of the production value to inputs of all material production factors used, mainly expressed in physical units rather than in monetary terms.

The efficiency of Polish agriculture²

The analysis covering the first years after Poland's accession to the European Union indicates a positive influence of the common agricultural policy (CAP) on the level of agricultural income in Poland. The value of production of the Polish agricultural sector³ at constant prices was 25.6% higher in the four-year period 2005–2008 than in the four-year period 2000–2003, which was accounted for by a price rise in ca. 71% and by an increased volume of output in 29%. The production of poultry and industrial crops gained in importance, the production of potatoes and pigs showed a decline, whereas intermediate consumption went up by 3.9%. Consequently, as much as approx. 86% of the growth in the production volume was determined by shifts in the production structure and a mere 14% of this increase was due to greater intensity.

The difference between the value of production of the agricultural sector and the value of intermediate consumption is referred to as gross value added. At current prices, it augmented from PLN 19,016 million in the four-year period 2000–2003 to PLN 23,100 million in the four-year period 2005–2008, i.e. by 21.5%.

The rise in transfers directly influencing the agricultural income account was an immediate effect of the inclusion of Polish farmers in the common agricultural policy. Such transfers, in the form of direct payments, increase the value of agricultural production or are recorded in the income account, depending on the link with agricultural products. In the years immediately preceding EU accession, payments increasing the value of agricultural production concerned support for wheat and rye producers. Upon the inclusion of Polish farmers in the CAP, this group of instruments comprised complementary payments and subsidies for tobacco, hop and sugar beet producers. Periodically, recipients of such payments also included producers of certain fruit and vegetables withdrawn from the market. On average, in 2005–2008 the total amount of such payments was PLN 4,000 million, i.e. approx. 17% of gross value added at producer prices (Table 1). For comparison, in the years preceding EU accession product subsidies of PLN 416 million only accounted for a mere 2% of gross value added. The growing role of direct payments on production in generating agricultural income

² This part of the text was prepared on the basis of: Z. Floriańczyk, *Polskie rolnictwo w pierwszych latach akcesji do UE w świetle rachunków ekonomicznych dla rolnictwa*, IERiGŻ-PIB, typescript, 20 November 2009.

³ The value of production of the agricultural sector consists of the value of the following: agricultural output, services supplied and secondary activities, e.g. on-farm processing of milk for human consumption.

in Poland resulted from the implementation of the EU system of direct income support under the EU agricultural policy.

Following EU accession, the rise in costs related to the consumption of fixed assets in agricultural production was relative. In the pre-accession period such costs represented ca. 26% of gross value added at producer prices, whereas after Poland's joining the EU this proportion decreased to approx. 23%. Thus, there was a relative fall in the share of depreciation in the income account for agriculture. As a result of increased product subsidies and relatively lower depreciation, after EU accession net value added constituted nearly 95% of gross value added at producer prices, whereas it only accounted for 75% prior to accession. Similarly, there was a relatively decline in the compensation of employees and in the value of other taxes on agricultural production (e.g. land tax and tax on vehicles). A moderate rise in the value of such items at current prices stemmed from inflation, i.e. it reflected the increase in unit prices of these cost components.

Table 1. Value added and income in Polish agriculture at current prices in 2000–2003 and 2005–2008

Specification	2000–2003		2005–2008	
	PLN million	GVA PP=100	PLN million	GVA PP=100
1. Gross value added at producer prices (GVA PP)	19,016	100.0	23,100	100.0
2. Subsidies less taxes on products	416	2.2	4,000	17.3
3. Gross value added at basic prices (1+2)	19,433	102.2	27,100	117.3
4. Depreciation	4,987	26.2	5,365	23.2
5. Net value added (3-4)	14,445	76.0	21,736	94.1
6. Compensation of employees	2,982	15.7	3,364	14.6
7. Other taxes on production	1,360	7.2	1,418	6.1
8. Other subsidies	447	2.3	7,307	31.6
9. Operating surplus (5-6-7+8)	10,549	55.5	24,261	105.0
10. Rents	329	1.7	416	1.8
11. Balance on interest paid and received	-824	4.3	-1,028	4.4
12. Agricultural entrepreneurial income (9-10+11)	9,397	49.4	22,817	98.8

Source: RER, www.rer.ierigz.waw.pl.

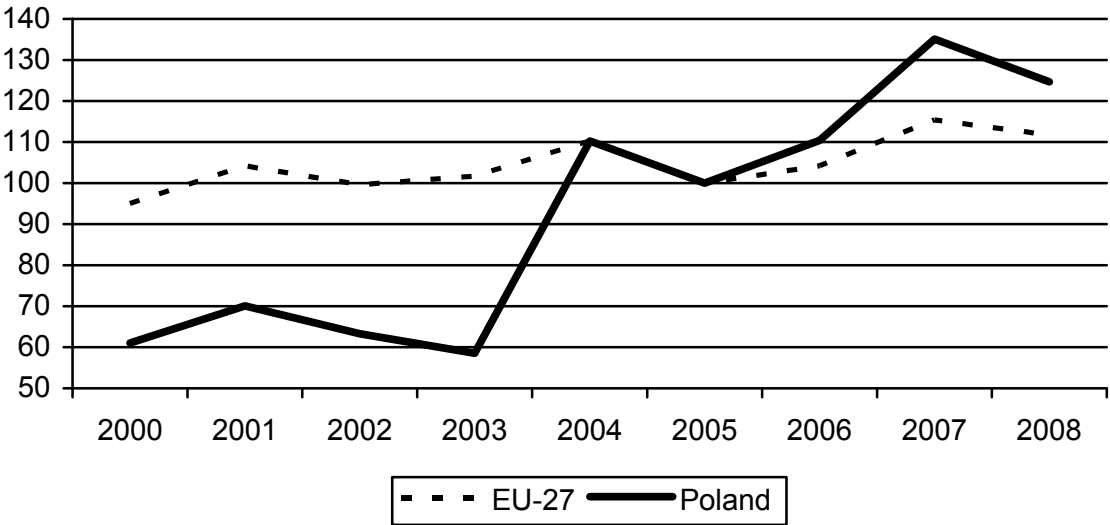
Among the components of the income account, there was a particularly sharp rise in the value of other subsidies on production. In the pre-accession period, they only included subsidies to biological progress in crop and animal production as well as to calcium fertilisers. The share of this item in gross value added at producer prices went up from ca. 2% prior to accession to over 30% in the first years of membership. It resulted from the inclusion of Polish agriculture

in direct payments on agricultural land (single area payment), support for farming in less-favoured areas, the implementation of support schemes for semi-subsistence farms, agri-environmental schemes and animal welfare measures as well as from the introduction of refunds of excise duty paid on mineral oil used as motor fuel in agricultural production. Such support totalled PLN 7,300 million between 2005 and 2008.

Due to the rise in production subsidies to the level exceeding the compensation of employees and other taxes on production, in 2005–2008 the income of production factors in Polish agriculture was higher than gross value added at producer prices, whereas in the pre-accession period the remuneration of the factors used in agricultural production only accounted for approx. half of gross value added. In the period in question, there was also an increase in rents on land and in the negative balance on bank interest, but growth in these cost items had no significant impact on the economic performance.

Thus, the annual average value of agricultural entrepreneurial income (in the case of agricultural enterprises this income refers to profit), in nominal terms, jumped from PLN 9,397,000 in 2000–2003 to PLN 22,817,000 in 2005–2008, up by ca. 143% on the pre-accession period. It represented the rise in the remuneration of own labour as well as of tangible and financial assets of Polish farmers in comparison with 2000–2003.

Figure 1. Fluctuations in real income of production factors in the agricultural sector per full-time worker (ratio A) in Poland and on average in the European Union in 2000–2008 (ratio A in 2005=100)

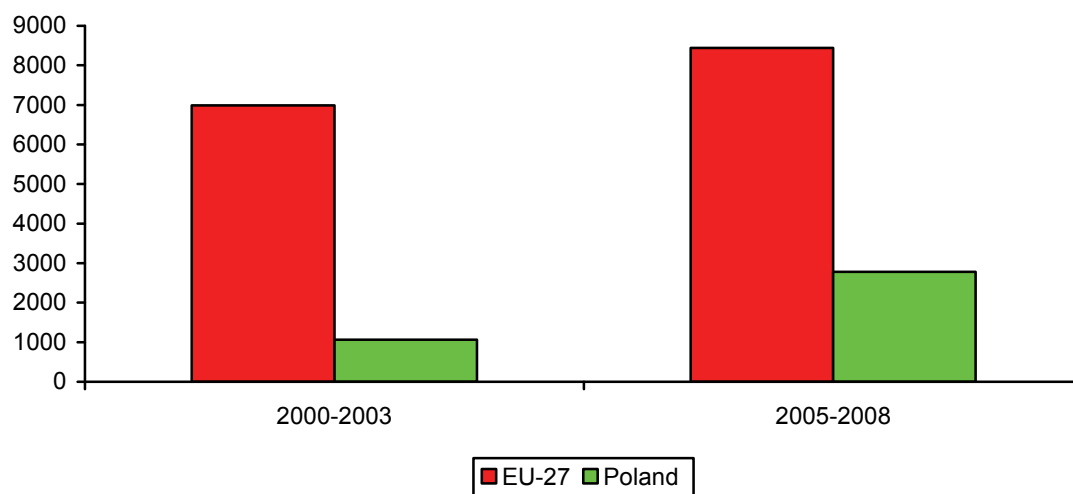


Source: RER, www.rer.ierigz.waw.pl, <http://epp.eurostat.ec.europa.eu/>.

The improved income in the agricultural sector resulted in an increase in the profitability indicator (ratio A), reflecting the real income of factors of production per full-time worker engaged in agricultural production. In 2000–2003 this ratio for Polish agriculture followed a similar pattern (Figure 1) to that observed in agriculture of all EU Member States (EU-27), but in the first year after the accession there was a rapid growth, as a consequence of the implementation of direct support instruments and price convergence. In subsequent years, ratio A changed at the EU-27 average or greater rate.

The higher average growth rates of profitability ratios in Polish agriculture in comparison with those noted in other EU Member States proved to be insufficient to considerably narrow the gap in the remuneration of labour and capital between Polish and EU agriculture. Although the annual average value of this ratio in Polish agriculture increased from approx. EUR 1,000 in 2000–2003 to EUR 2,800 (by approx. 64%) in 2005–2008, the average profitability ratio for the EU-27 rose from ca. EUR 7,000 to approx. EUR 8,000 respectively (Figure I.2).

Figure 2. Agricultural income in Poland and in the EU per full-time worker in 2000–2003 and in 2005–2008, in EUR



Source: RER, www.rer.ierigz.waw.pl, <http://epp.eurostat.ec.europa.eu/>.

Poland ranks among countries characterised by the lowest levels of the remuneration of production factors in agriculture (Figure 2). Only Romanian and Bulgarian agriculture noted lower profitability ratios. The structure of agricultural holdings in the two countries is dominated, as in Poland, by farms of a social character. At the same time, holdings characterised by the highest profitability ratios were found in Western European countries and in Estonia. They were distinguished by large-scale production which allows to make efficient use of modern production technologies and to minimise labour input. In this light, the

increase in agricultural income in Poland depends on structural changes determining a more efficient utilisation of production factors in agriculture.

It should be emphasised, however, that in 2000–2008 Polish agriculture experienced a gradual improvement in the use of means and factors of production. Those favourable processes were reflected in lower values of the following technological and production indicators: material intensity, energy intensity, capital intensity, land intensity and labour intensity of agriculture (Table 2). As compared to the period immediately preceding EU accession, the sharpest fall, by an annual average rate of over 3%, was recorded in the case of land intensity of production, measured by the ratio of utilised agricultural area to the volume of agricultural production. A similar decline, by an annual average rate of 2.9%, concerned labour input relative to the volume of agricultural production. At the same time, energy intensity and material intensity went down, on average, by 1% annually.

Table 2. Technological and production indicators characterising changes in costs and inputs of means and factors of production in Polish agriculture in 2000–2003 and 2005–2008

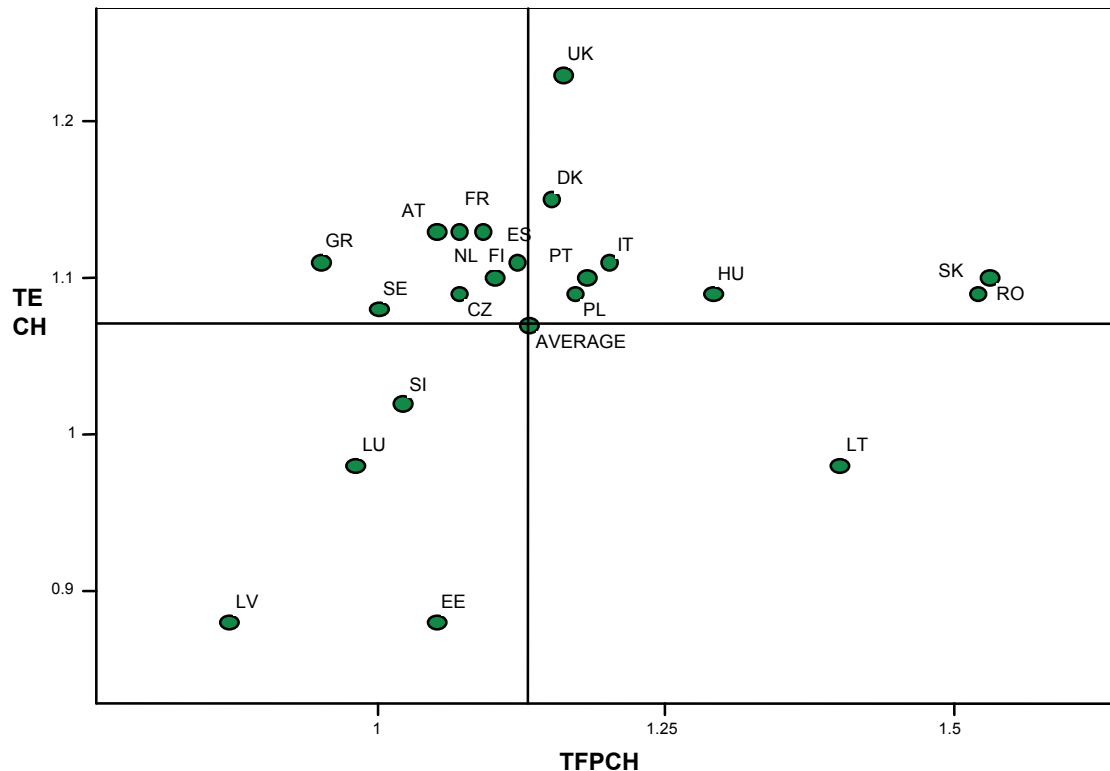
Specification	2000–2003	2005–2008
	Annual average changes in %	
Material intensity of production	-0.8	-0.7
Energy intensity of production	-1.2	-1.7
Capital intensity of production	-2.2	-3.7
Land intensity of production	-3.1	-1.2
Labour intensity of production	-2.9	-1.0

Source: RER, www.rer.ierigz.waw.pl.

In the period 2005–2008 there was a particularly rapid drop (by an annual average of 3.7%) in the capital intensity of production, as a result of more efficient utilisation of the production base in Polish agriculture and an increase in the volume of production. However, this process cannot be unambiguously assessed as a favourable development as a continued downward trend of the production base would have an adverse effect on agricultural output in the long term. At the same time, a faster decline in the energy intensity of production should be seen as unquestionably positive, even though this process is likely to have been caused, to a certain extent, by an upsurge in fuel prices. There was a slowdown in the decrease in inputs of other means and factors of production relative to the volume of production, which reflects a deceleration in processes of productivity improvement in agriculture.

The thesis of a negative impact of direct payments on farming efficiency is not a new one, it was formulated on the basis of empirical data collected from French agricultural holdings⁴. In fact, agricultural producers treat payments as premiums on prices obtained from the sale of finished products, therefore the marginal productivity of inputs is lower than in a situation without subsidies.

Figure 3. Total factor productivity change (TFPCH) and technological change (TECH) in agriculture of selected European Union Member States in 1999–2006



TECH – Technological Change

TFPCH – Total Factor Productivity Change

Source: Z. Floriańczyk, “Polskie rolnictwo w pierwszych latach akcesji do UE w świetle rachunków ekonomicznych dla rolnictwo”, IERiGŻ-PIB, typescript, 20 November 2009.

The analysis prepared on the basis of the Malmquist productivity indices pointed to a moderate improvement in productivity change in Polish agriculture in comparison with other European Union Member States. This improvement in productivity was only slightly above the average for EU Member States in question (Figure 3). The most rapid increase in total factor productivity was observed in Romanian and Slovakian agriculture, owing to more efficient utilisation of the production base, as in Poland.

⁴ As put forward, among others, by L. Latruffe in her doctoral dissertation. She is a researcher at INRA, Economics Unit of Rennes, France.

Agricultural productivity change driven by technological change primarily concerned Western European countries. In this respect, Polish agriculture was only marginally above the average for the analysed countries, and the majority of the new EU Member States experienced a similar scale of agricultural productivity change through technological change. The comparison of the two groups of countries suggests that the improvement in the productivity of agricultural production as a result of technological progress is inevitable in the new EU Member States. The actual pace of this process depends on structural changes allowing to fully exploit various forms of progress.

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To recapitulate, Poland's accession to the European Union brought about a marked increase in agricultural income in Poland. It resulted from the introduction of the EU direct payment scheme, a significantly faster rise in prices for agricultural products than in those for agricultural inputs in the first year of membership as well as from a moderate improvement in the productivity of means and factors of production. In this light, the favourable impact (of the Polish version) of the common agricultural policy on the economic performance of the agricultural sector should be assessed with caution as it was mainly based on unstable prices for agricultural products and direct transfers.

Such transfers cannot be perceived as the main stimulant of change, due to their limited effectiveness in promoting agricultural development. As a matter of fact, they distort market processes and, most probably, hamper the improvement in production efficiency. Specifically, they impede the concentration of agricultural land, which constrains structural changes, very desirable in Polish agriculture.

Other types of transfers, not directly linked to products, belong to the group of instruments with a moderate distorting effect on market forces. At the same time, they stimulate or compensate for the production of socially desirable non-market goods and services (the protection of biodiversity, the preservation of landscape, etc.). Therefore, in the future such instruments will be more widely applied in support for the agricultural sector.

The competitiveness of holdings held by natural persons⁵

The pre-accession period, and especially Poland's membership of the European Union, markedly improved the conditions for farming in Polish agriculture. But only a relatively limited group of holdings held by natural persons made actual use of it, modernising and extending their farm capital. At the same time, a significant share of holdings responded rather passively, only deriving some benefits (of the Polish version) of the common agricultural policy, chiefly direct payments, whereas others did not even apply for such payments. Therefore, it is justified to pose the question of assessing the competitiveness (the ability to compete) of Polish farm in comparison with holdings in other EU Member States.

Competitiveness is a permanent ability of economic operators (including agricultural holdings) to gain, and then retain a share in the local, regional, domestic, or even international market, under conditions of market access. The competitiveness of farms is primarily reflected in income and investment activity. Substantial income indirectly shows a strong economic position of holdings, which indicates not only the living standards of producers, but also the current market share and the possibility to finance investments from own funds (at least in part). Investment activity implies occupational skills and the willingness to adapt to the changing environment, a vital prerequisite for maintaining long-term competitiveness of agricultural holdings.

Issues concerning the competitiveness of Polish agriculture have been raised in the Polish economic and agricultural literature. Some studies referred to the period preceding the break-through year 2004, some discussed the following years, but only few addressed the subject of competitiveness of various groups of farms.

Due to improved economic conditions, in 2004 the income of Polish agricultural holdings more or less doubled on the previous year, but the following years witnessed continued polarisation of agricultural income which had already started prior to EU accession. On the one hand, the vast majority of small farms obtained low incomes, and on the other hand, there were relatively few large, prosperous holdings. The polarisation of the economic situation of farms also had a crucial impact on their development prospects.

⁵ This part was prepared on the basis of: W. Józwiak, Z. Mirkowska, *Zdolność konkurencyjna polskich gospodarstw rolnych w zestawieniu z gospodarstwami węgierskimi i niemieckimi*, collective work ed. by W. Józwiak: "Sytuacja ekonomiczna, efektywność funkcjonowania i konkurencyjność polskich gospodarstw rolnych osób fizycznych" IERiGŻ-PIB, Program Wieloletni (Multi-annual Programme) 2005–2010, Warsaw, October 2009.

In 2007, out of approx. 1,402,000 holdings held by natural persons who were active in agricultural production and applied for subsidies, as many as ca. 83% had an economic size of less than 8 ESU and the average utilised agricultural area of approx. 6 ha. Between 2004 and 2007, such entities only provided part of income to their holders (a predominant share of income was derived from other sources such as gainful employment of the farmer or his family members). This group of farms was characterised by negative capital replacement (they were unable to fully replace fixed capital consumed in production), and merely ca. 18% promised to improve their economic performance (naturally, provided that they would enhance their agronomic and zootechnical knowledge as well as managerial and marketing skills). Thus, the overwhelming majority of small farms had no prospects for development, which means that in the next 15 to 20 years they will lose their farm buildings, machinery and equipment due to economic wear and tear. It is unclear how agricultural land held by such entities (accounting for ca. 36% of the total utilised agricultural area in Poland) will be utilised then.

Every tenth holding applying for subsidies had an economic size of 8 to 16 ESU, and the average utilised agricultural area was 17.3 ha. In 2005–2007 such farms obtained sufficient income to undertake investments allowing capital extension (although to a limited degree) and to have farm income per full-time worker close to the parity rate, equal to the average net wage in non-agricultural sections of the national economy. Thus, between 2005 and 2007 holdings with an economic size of 8-16 ESU had development prospects. Furthermore, from 45% to 50% of farms in this economic size group had a chance of improving their economic performance. After 2004, the number of holdings with 8-16 ESU rose at a very slow pace, due to changes in economic size. As a consequence, in 2007 there were approx. 145,000 such farms.

However, the slowdown in the Polish economy resulting from the global economic crisis is projected to have an adverse impact on this group of economic operators. Moreover, it is even likely that by e.g. 2013 only more or less every thirtieth farm will be able, as in 2005–2007, to ensure simple capital replacement and the remuneration of family labour⁶ at a level close to the parity rate. The situation of other holdings, ca. 94,000, will be as unfavourable as that of entities with less than 8 ESU between 2005 and 2007.

In 2005–2007 only the largest commercial farms, with an economic size of at least 16 ESU, and the average utilised agricultural area of approx. 42 ha

⁶ In holdings held by natural persons the remuneration of family labour is included in farm income.

(although varying significantly, from 31 ha to 496 ha), were characterised by considerable farm capital extension, and the average remuneration of labour by the farmer and members of his family was above the parity rate. According to projections, the largest Polish holdings held by natural persons will guarantee above-parity remuneration of family labour and funds for investments allowing capital extension, i.e. financial resources to modernise and extend farm capital, also until 2013.

But will the largest Polish holdings held by natural persons be able to compete with farms from other EU Member States? In order to find an answer to this question, agricultural holdings broken down by type of farming (production structure) and economic size were analysed and compared with their counterparts in Poland's EU neighbours, Germany and Hungary. The production structure of agriculture in these countries is similar to that in Poland, therefore German and Hungarian holdings compete with Polish farms in the EU market. Furthermore, between 1997 and 2004 very similar trends and processes had been observed in agricultural holdings in certain EU-15 countries, i.e. in Germany, Denmark and Sweden, which served as the basis for reducing the field of observation and, consequently, for comparisons. At the same time, Austrian farms were not comparable with Polish holdings due to a much higher share of farms situated in mountain and submountain areas, rendering agro-tourism services and engaged in organic farming. Agricultural holdings in the remaining EU-15 countries would be an even less suitable basis for comparisons, chiefly due to significant differences in natural conditions, particularly the climate. As regards countries acceding to the European Union in 2004, Hungarian agriculture was chosen. It has a rather substantial stock of agricultural land among Central and Eastern European countries. Furthermore, owing to the fact that Hungary became an EU Member State in the same year as Poland, Hungarian holdings have had similar experience. Czech and Slovak agriculture would be a worse basis for comparison as after 2004 their development followed different patterns from those observed in Poland. In the Czech Republic, and even more so in Slovakia, a prominent role is played by large agricultural enterprises established from assets of former state-owned or cooperative farms.

The analysis was based on empirical data for 2004–2006, a relatively good basis for drawing conclusions. Obviously, more recent data would have been more desirable, but at the time of preparing the analysis they were not yet available. The comparison of holdings with an economic size of 16 ESU or more was additionally backed by the fact that in Germany income monitoring only covered this group of farms.

The analysed sample of agricultural holdings accounted for approx. 80% of Polish farms with 16 ESU or more, but this report only describes a part of the cases examined.

Cereal holdings

Cereal holdings (specialising in cereal production) produce not only cereal grain, but also seeds of rape, legumes, etc., obtained using the same technology.

Only two economic size groups were compared, i.e. 16 to less than 40 ESU and 40 to less than 100 ESU, since the monitoring under the Polish FADN did not cover larger farms.

It follows from the figures presented in Table 3 that Polish and Hungarian holdings obtained comparable incomes in both economic size groups. Notably, incomes of Polish and Hungarian farms with 16 to less than 40 ESU were several times higher than income derived by their German counterparts. Lesser differences between holdings in the countries in question were observed in the case of the other analysed economic size group.

Table 3. Income obtained by Polish, Hungarian and German cereal holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU^a in 2004–2006 (in EUR per holding)

Year	Holdings with an economic size of (ESU):					
	16–<40			40–<100		
	Polish	Hungarian	German	Polish	Hungarian	German
2004	15,353	19,512	8,027	34,351	37,862	24,430
2005	13,248	16,571	4,830	33,408	29,915	18,906
2006	25,360	18,841	7,319	52,747	30,858	25,150

^a Income was calculated for holdings with an economic size of at least 16 ESU since Germany did not monitor the situation of smaller farms, and in Poland holdings with less than 16 ESU are not competitive. Neither were holdings with at least 100 ESU compared as they were not covered by the monitoring under the Polish FADN.

Source: Own study based on data of the Polish FADN concerning Polish holdings held by natural persons and of the EU FADN with regard to Hungarian and German farms.

A more in-depth analysis leads to a surprising conclusion that the high incomes of Polish and Hungarian holdings were largely contributed to by subsidies. In 2006, for instance, Polish farms received 48% to 59% higher subsidies than German entities, and the difference was 19% to 23% in the case of Hungarian farms. Simply, in the years covered by the analysis the agricultural subsidy calculation systems in both countries privileged farms with large utilised agricultural area, such as cereal holdings. At the same time, Germany applied a different method for calculating subsidies (on the basis of the so-called

reference yields), and the average area of agricultural land at the disposal of German cereal farms was half as large.

The remuneration of own labour in Polish holdings was estimated to be respectively 68% and 100% of the parity rate, compared to net wages in industrial and service enterprises with 10 or more employees. At the same time, in Hungarian and German farms this remuneration did not exceed (respectively) 60% and 90% of the corresponding remuneration of labour outside agriculture. These differences in the remuneration of family labour were the likely reason that fixed capital replacement in Polish holdings was significantly greater than that in their Hungarian and German counterparts.

Table 4. Fixed capital replacement^a (%) in Polish, Hungarian and German cereal holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU in 2004–2006

Year	Holdings with an economic size of (ESU):					
	16–<40			40–<100		
	Polish	Hungarian	German	Polish	Hungarian	German
2004	3.0	1.6	0.1	2.0	-1.8	-0.8
2005	8.0	1.8	0.5	7.0	0.3	-0.5
2006	7.0	5.0	0.3	6.0	6.6	0.5

^a Capital replacement is expressed as the ratio of net investment (gross investment less depreciation) to the value of fixed assets (land, buildings and fixed equipment, machinery and equipment, livestock and forest plantations).

Source: Own calculations based on monitoring data of the Polish FADN and data of the EU FADN.

Thus, in 2004–2006 Polish cereal holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU were competitive with respect to their counterparts in Hungary and Germany. Polish farms were characterised by lower income disparities relative to average wages in industrial and service enterprises with 10 or more employees. Moreover, their income allowed farmers to undertake investments ensuring capital extension. At the same time, the competitiveness of Hungarian and German holdings was less clear as the remuneration of family labour differed to a greater degree from the parity rate, and they were characterised by much lower investment activity, which in German farm only allowed simple capital replacement.

Pig holdings

Pig holdings belong to farms engaged in specialist rearing of the so-called granivores, i.e. pigs and poultry. Since the share of the latter group of animals is limited, this section refers to granivore farms as pig holdings. The analysis covered three economic size groups of such economic operators: 16 to less than 40 ESU, 40 to less than 100 ESU and 100 ESU or more.

In the period in question, the annual average income of Polish pig holdings with an economic size of 16 to less than 40 ESU was nearly identical with the income of Hungarian farms, whereas it was high (by ca. 58% and 29% respectively) in the two subsequent economic size groups (Table 5). However, the reasons for such differences could not be identified on the basis of the empirical material available.

At the same time, income obtained by Polish agricultural holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU was markedly lower (by ca. 24% and 23% respectively) than income derived by their German counterparts, whereas in the largest farms it was 17% higher. Such disparities probably stemmed from different livestock structures. Polish farms of all the three economic size groups were mostly engaged in the rearing of piglets from own breeding sows (in a closed cycle), whereas in Germany holdings with an economic size of less than 100 ESU were oriented towards commercial production of piglets, sold to even larger farms for fattening.

Table 5. Income obtained by Polish, Hungarian and German pig holdings with an economic size of 16 ESU or more^a in 2004–2006 (in EUR per holding)

Year	Holdings with an economic size of (ESU):								
	16–<40			40–<100			100 or more		
	Polish	Hungarian	German	Polish	Hungarian	German	Polish	Hungarian	German
2004	12,768	7,890	21,859	27,635	-11,554	37,280	68,415	30,207	66,335
2005	11,608	16,897	15,694	27,194	32,385	40,207	84,191	157,571	69,481
2006	12,885	12,759	11,614	26,974	30,781	29,020	63,682	-19,755	48,635

^a Income was calculated for three groups of holdings, with an economic size of at least 16 ESU, since the monitoring in Germany excludes smaller farms, and in Poland agricultural holdings below this threshold are not competitive.

Source: As in Table 3.

Further calculations indicate that the contribution of subsidies to income obtained by Polish and German pig holdings was limited. Pig production was not subsidised, thus subsidies received by pig farms were solely dependent on subsidised crops (e.g. cereals). But it was unnecessary to have a large area under cultivation as the modern rearing of pigs is mostly based on purchased feed concentrates. In contrast, subsidies played a significant role in Hungarian holdings. Arguably, the importance of subsidies to Hungarian farms resulted from large-scale growing of cereals combined with pig production.

According to estimations, in Polish pig holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU income ensured the remuneration of family labour at 56% and 68%, respectively, of the average wage in industrial and service enterprises with 10 or more employees, and the parity remuneration was only found in the largest analysed farms. As far as

Hungarian and German holdings are concerned, the corresponding remuneration of family labour was approx. 50% and 60% respectively, whereas in the largest entities it represented 87% and 108%, respectively, of the parity level.

Table 6. Fixed capital replacement^a (%) in Polish, Hungarian and German pig holdings with an economic size of 16 ESU or more in 2004–2006

Year	Holdings with an economic size of (ESU)								
	16–<40			40–<100			100 or more		
	Polish	Hungarian	German	Polish	Hungarian	German	Polish	Hungarian	German
2004	1.0	2.6	1.7	2.0	-1.9	-0.8	2.0	0.1	-1.2
2005	0.9	8.1	-2.4	4.0	-5.9	0.6	4.0	-1.6	-0.1
2006	4.0	-0.7	-2.3	8.0	0.6	0.1	10.0	-3.6	0.9

^a as in Table 4

Source: As in Table 4.

Polish and Hungarian pig holdings were distinguished by capital extension, but the capital replacement ratios were higher for the former group. At the same time, German pig farms in question noted negative, simple or close to simple capital replacement, even when the estimated remuneration of family labour was above the parity level (entities with an economic size of at least 100 ESU). It is attributable to sufficient capitalisation of German holdings. The equity of German pig farms with an economic size of 16 to less than 40 ESU was ca. four times higher than that of their Polish counterparts. In the subsequent economic size group the difference was twofold, and the largest analysed German holdings had approx. 150% higher equity.

Therefore, the competitiveness of Polish pig holdings is unquestionable, both in the period covered by the analysis (2004–2006) and in the future. Such farms ensure tolerable economic living conditions to agricultural producers and provide funds for investments increasing farm capital (particularly in entities with an economic size of at least 40 ESU).

As regards Hungarian pig holdings with an economic size of 40 ESU or more, their future is not clear as they were characterised by negative capital replacement. German holdings were in a similar situation to that of Hungarian farms. They were competitive in 2004–2006, but without the extension of fixed assets their competitiveness may be in jeopardy in the future as this reduces adaptability to changing conditions for farming.

Mixed holdings

Mixed holdings (those engaged in non-specialist production) combine the rearing of livestock, frequently of different species, with a varying structure of fodder and commercial crops. Such farms are numerous in Poland, less frequent

in Hungary and even fewer in Germany. It is a rather plausible thesis that this type of holdings is in decline since mixed production organisation impedes improvement in production efficiency. Mixed farming, however, contributes to the stabilisation of farm income in subsequent years, which facilitates operating in volatile market conditions.

The income of Polish non-specialist holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU was lower than that of their Hungarian counterparts in each year of the period in question (Table 7). At the same time, larger Polish farms performed much better. Furthermore, non-specialist holdings in Poland obtained higher income than German farms, in all the three economic size groups and throughout the period covered by the analysis. The adaptation of Polish agricultural holdings (as well as of the whole agri-food sector) to the new conditions existing from 2004 was only accompanied by very gradual market stabilisation, which favoured non-specialist farms.

Subsidies played a vital role in the groups of holdings in question. In 2006, for instance, they accounted for 64%, 68% and 91%, respectively, of the income of Polish farms. The respective shares were even higher in the case of their Hungarian counterparts, whereas subsidies generated nearly 100% of income derived by German holdings.

Table 7. Income obtained by Polish, Hungarian and German mixed holdings with an economic size of 16 ESU or more^a in 2004–2006 (in EUR per holding)

Year	Holdings with an economic size of (ESU):								
	16–<40			40–<100			100 or more		
	Polish	Hungarian	German	Polish	Hungarian	German	Polish	Hungarian	German
2004	13,851	19,842	9,400	31,776	41,743	21,570	104,975	49,373	64,394
2005	13,224	14,641	7,396	26,398	37,591	26,398	136,664	48,837	55,920
2006	18,276	22,148	7,422	34,960	48,742	24,710	123,771	113,116	58,324

^a Income was only calculated for holdings with an economic size of at least 16 ESU since the monitoring in Germany excludes smaller farms, and in Poland agricultural holdings below this threshold are not competitive.

Source: As in Table 3.

According to estimates, income obtained by Polish holdings in the three economic size groups allowed the remuneration of family labour at 56%, 68% and 100%, respectively, of the average wage in industrial and service enterprises with 10 or more employees, whereas in Hungarian farms the respective shares were 49%, 59% and 87%. As regards German holdings with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU, the estimated remuneration

of family labour reached approx. 50% and 60% respectively, and it was 108% in the case of entities with 100 ESU or more.

When comparing pig holdings with mixed farms, there is no obvious correlation between the level of remuneration of family labour and subsidies received. Polish mixed holdings exploited favourable farming conditions existing in 2004–2006 to modernise farm equipment and increase productive assets, as reflected in capital replacement ratios presented in Table 8.

Table 8. Fixed capital replacement^a (%) in Polish, Hungarian and German mixed holdings with an economic size of 16 ESU or more in 2004–2006

Year	Holdings with an economic size of (ESU):								
	16–<40			40–<100			100 or more		
	Polish	Hungarian	German	Polish	Hungarian	German	Polish	Hungarian	German
2004	11.0	1.8	-0.3	17.0	2.1	-0.8	23.0	0.7	0.0
2005	11.0	1.8	-1.5	19.0	-2.7	-0.8	16.0	-3.9	0.3
2006	13.0	2.0	-0.6	20.0	-0.4	0.6	21.0	0.9	1.2

^a as in Table 4

Source: As in Table 4.

The situation in Hungarian farms was different. Capital extension (although limited) was found only in holdings with an economic size of 16 to less than 40 ESU, entities in the two remaining economic size groups reported close to simple capital replacement. The remuneration of family labour was perhaps insufficient in relation to wages in the reference enterprises with 10 or more employees. For a similar reason, probably, negative capital replacement was observed in German farms with an economic size of 16 to less than 40 ESU and 40 to less than 100 ESU, whereas in the largest group it only insignificantly exceeded simple replacement.

Bearing the above in mind, it can be responsibly argued that between 2004 and 2006 Polish holdings with an economic size of at least 16 ESU and engaged in mixed production were competitive in comparison with their Hungarian and German counterparts. Polish farms obtained income providing fair living conditions to the farmers and their families and allowing capital extension. Importantly, the latter indicates that the current favourable position will be maintained in the future.

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Bearing in mind the above analysis and studies conducted in 2005–2010 on this or similar subject, it can be concluded that in 2004–2006 the Polish agricultural holdings in question, held by natural persons and with an economic size of 16 ESU or more, were competitive relative to Hungarian, German,

Danish and Swedish farms, i.e. with respect to their counterparts operating in similar climatic conditions and in the single market of the European Union. Furthermore, there are indications that Polish agricultural holdings with an economic size of at least 16 ESU will maintain their good competitive position also in the years of recovery from the crisis.

In Poland the number of farms with an economic size of 16 ESU or more increased by 24,000 (32%) between 2002 and 2007, and in the last year of the period in question they accounted for a 6.7% share of the total number of holdings applying for subsidies. Such figures, however, are hardly impressive. In Denmark, for example, the proportion of holdings as large as 100 ESU or more soared from 6.3% to 22.4% in 1990–2005, and similar trends have been observed in many other EU-15 countries. In a developed economy, therefore, there are market opportunities for even larger farms than those currently operating in Poland.

What should be done in order to stimulate growth in the number of agricultural holdings with the ability to compete? The analysis of marginal profitabilities of material factors of production casts some light on this issue. It appears that:

- low mobility of labour was the reason that hiring workers tended to be unprofitable in farms with an economic size of less than 8 ESU, whereas it was profitable (with few exceptions) in larger entities. Thus, improvement in the mobility of labour force between regions and types of farming will be conducive to increased income derived by holdings with 16 ESU or more;
- where lease contracts were concluded with the Agricultural Property Agency, rented land was distinguished by very high profitability. It stemmed from low rents since long-term lease contracts had been signed before 2004, i.e. in the period of a general downturn in agriculture. The prime beneficiaries included larger farms, which is reflected in the high share of rented land in the total utilised agricultural area at their disposal. Hence, the revision of rents and additional restrictions on the lease of state-owned land will be unfavourable for larger entities.
- the marginal profitability of capital was very high, irrespective of the type of farming and economic size of holdings, in all the macro-regions of Poland. This was chiefly exploited by farms with 16 ESU or more, to the extent allowing capital extension, whereas farms with an economic size of 8 to less than 16 ESU were only characterised by simple capital replacement. It suggests the hypothesis that the lack of own free funds in entities with 8 to less than 16 ESU

represented an obstacle for farms to benefit from support measures targeted at the development of agricultural holdings.

A permanent change in farming conditions, e.g. arising from changes in the level and scope of subsidies for farms or fluctuations in agricultural prices in world markets, could force a revision of the above assessment and inferences. EU agricultural holdings vary (sometimes considerably) in the share of subsidies in farm income, remuneration of family labour, means of production, propensity to invest, etc. Polish farms, as compared to their counterparts in other EU Member States, are distinguished by a lower proportion of subsidies in income and a higher propensity to invest, which inspires optimism with respect to possible changes in farming conditions.

The adaptation of agricultural holdings to changing conditions for farming is related to specialisation in Polish agriculture. The established structure of agricultural production in Poland is likely to change within a new division of labour in the European Union. Only farms competitive relative to their foreign counterparts can hope for a long-term position as suppliers of agricultural products to the domestic and foreign markets. Uncompetitive holdings require restructuring and major investments in order to find a stable place in the market. Otherwise their products will be replaced by imports, unless other Polish farms prove to be competitive enough.

In conclusion, it should be added that, as in other EU Member States, holdings engaged in “leisure farming” (agricultural production carried out in one’s spare time) are likely to exist also in Poland. Such farms will use farm capital to produce, as a subsidiary occupation, agricultural products to meet the needs of the local market and to derive additional income. The functioning of such entities is very different from the functioning of large agricultural holdings, constituting the main or the sole source of income for farming families.

Adjustment processes in large agricultural holdings⁷

The aim of the study was to identify the trends of change and to assess the measures taken by large holdings in order to adapt to new economic conditions. The analyses also sought to answer the question as to what extent the new conditions determined the economic and financial performance of this group of entities, and to what degree those results resulted from changes in the utilisation of their production potential.

⁷ Prepared on the basis of: A. Kagan *Procesy dostosowawcze zachodzące w wielkoobszarowych gospodarstwach rolniczych*, IERiGŻ-PIB, typescript, Warsaw, January 2010.

Large agricultural holdings represent a marginal share in the total number of entities in Polish agriculture. On account of the value of commercial production supplied, however, they co-determine Poland's food self-sufficiency and the competitiveness of Polish agriculture in the EU and world markets. Their common characteristic is the scale of economic activity, established on the basis of utilised agricultural area (more than 100 ha per holding) or receipts from specialist types of farming (growing of vegetables, horticulture, glasshouse growing, poultry farming, etc.). In mid-2007 there were 8,020 such farms in Poland (0.6% of the total number of holdings applying for subsidies), but they accounted for 18.3% of Poland's utilised agricultural area.

Among large farms, some belonged to the public sector (12.5%), there were also agricultural cooperatives, but with a share not exceeding 10%. The most numerous group (a total of over 6,000) were those in the form of companies and partnerships as well as those held by natural persons.

Some agricultural production cooperatives date back to as early as the 1950s. The primary goal of their establishment and operations has been to meet the needs of their members and their families, mostly to provide employment and socially acceptable remuneration of the work performed.

Some of the remaining large farms have not been in the market very long as they were established on the basis of assets owned by the State Treasury as a result of ownership transformation and the liquidation of former state-owned agricultural holdings (*Państwowe Gospodarstwa Rolne* – PGR), whereas other farms (those held by natural persons) leased state-owned assets.

The objectives of the functioning of such entities vary, sometimes significantly, but there are two primary goals. One is profitability, i.e. achieving a financial return on the capital invested, at a level equal to or greater than the market remuneration of the employment of external factors of production. The other is increasing the value of the holding, which amounts to generating a financial surplus or attaining a sufficient rise in the market value of owned assets to ensure the remuneration of own production factors (labour, land, capital) and the compensation for business risk.

The starting point in describing this group of large holdings was the pre-accession period, although it was not homogenous.

Between 1995 and 1997 the economic conditions for agriculture were favourable but gradually deteriorating. Owing to advantageous price relationships, the return on sales (expressed as the percentage ratio of sales to the main operating costs) exceeded 107%, which allowed large holdings to make profits from economic activities. However, the return on equity (22% in 1995

and 8.6% in 1997) was lower than the yield on Treasury bills (by ca. 4 percentage points in 1995, the most favourable year, and nearly 13 percentage points in 1997), which meant a relative loss in equity since safe capital market instruments offered a higher return on investment.

Agricultural cooperatives were in a worse situation as their income was insufficient to ensure the desirable remuneration of labour to their members. The covering of expenses related to the remuneration of labour involved using depreciation allowances for this purpose, and at times selling certain assets. Cooperatives not only failed to generate a surplus as the remuneration of equity, they were even unable to replace fixed capital consumed in production. There were several reasons for such an unfavourable situation of such entities, but the crucial ones included the cooperative law, basically precluding the rationalisation of the number of cooperative members, and the increase in social security costs incurred by cooperative members to the level applicable to the non-agricultural social security system.

In response to the deteriorating economic conditions for agricultural production in markets for selected products (cereals, pigs for slaughter, sugar, etc.), the government began to intervene, directly or indirectly, in the market mechanism regulating demand and supply. The instruments applied comprised tariff protection, intervention buying-in, premiums on purchase prices, export support. In spite of efforts to counteract the downward trend of prices, the years 1998–2001 proved to be the most difficult period when large agricultural holdings incurred financial losses.

Between 1995 and 2001, the financial results of large farms were almost exclusively determined by price conditions. The share of subsidies representing direct support in income obtained by private holdings was less than 1%, and only state-owned companies benefited from subsidies to a greater extent. In 1999–2000 budget subsidies to biological progress in crop and animal production accounted for approx. 5% of receipts.

Until Poland's integration into the European Union, it was characteristic of the group of large non-cooperative agricultural holdings to cut employment and to switch from permanent workers to seasonal labour, both treated as ways of improving the efficiency of production, thus increasing income. Due to unstable market conditions, accompanied by significant costs of commercial loans and a relatively low remuneration of labour, those measures failed to bring the expected results. Apart from employment reduction, however, there were also other methods for enhancing performance: the simplification of production

technology, the specialisation of production and increasing the area of farms, with the remaining material factors of production unchanged.

After 2002, there was a change in state intervention measures as new non-price instruments of direct income support were introduced, e.g. fuel vouchers and private storage aid for cereal producers.

Only from 2004 direct public support was applied on a more significant scale, its level and share in the financial results of large holdings started to increase slowly but steadily. Whereas in the group of non-cooperative entities subsidies represented 9% of total receipts in the first two years of membership, they exceeded 10% in 2006–2007 and went up to nearly 12% in 2008. In the case of agricultural cooperatives, in 2008 the share of subsidies in total receipts was nearly 15%.

Poland's accession to the European Union also resulted in changes in subsidies to state-owned companies. Due to limitations on investment subsidies and subsidised biological progress, the share of subsidies in total receipts of this group of entities fell below the respective proportion for private farms. In 2008 the difference was almost 3 percentage points.

A somewhat simplified reflection of the impact of direct budget support on the performance of farms (subject to effects of financial costs and revenues) was the widening gap between the curves of business profitability and sales in all the groups of holdings in question in 2004–2008. It should be recalled, however, that state intervention in the form of budget payments did not merely play the role of a factor stimulating profits of large holdings, but it also reduced business risk, making a part of receipts independent of price movements. Moreover, budget payments helped boost investment activity.

After accession to the European Union, there was a marked improvement in the overall productivity of resources in the group of entities in question, particularly with regard to non-cooperative entities. Between 2004 and 2007, total factor productivity measured by the Malmquist index went up in the latter group by an annual average of 4%, on account of a combination of several favourable factors: a low cost of external capital, improved business profitability allowing a rise in investment financed from reinvested earnings, stricter legal requirements concerning production conditions and animal welfare as well as budget appropriations made available for the purchase of fixed assets under EU programmes.

During integration into the European Union, the focus of investments made by large holdings has moved from the acquisition of the land rented to purchases of machinery, vehicles and equipment. In 2005–2008, these items of

fixed assets accounted for more than half of expenditure, and the value of investment was double the annual depreciation of fixed capital. It enabled them to introduce new technological and technical solutions, largely substituting labour inputs.

But investment activity does not mean that all holdings extended or replaced productive assets. Between 2004 and 2008 nearly half of large non-cooperative farms made no or little investment, insufficient to ensure simple replacement. Neither did agricultural cooperatives increase their investments to a level allowing capital extension.

Since the productivity of resources and the ability to replace capital represent crucial elements determining the competitiveness of the analysed entities, certain stratification has been observed. Fully efficient holdings obtain funds for investments which allow them to widen the gap. It cannot continue for a long time, however, owing to development barriers. Those include legal limitations on purchasing agricultural land, the unresolved issue of capital claims by former owners and, in the case of lease, the risk of a rise in rent or even of the discontinuation of the lease of a given asset. Agricultural land represents an immobile resource, vital for the results of crop production. The possibility to utilise land or restricted access to it is not only essential to the development of large agricultural holdings through increasing or decreasing the scale of agricultural activity, but it can ultimately determine their existence or liquidation.

The holding of land has gained special importance after Poland's joining the EU, in connection with budget support instruments dependent on the farm area. From 2004, there was a rapid rise in prices for agricultural land as well as growing interest in the acquisition of land from entities previously not engaged in farming and from small and medium-sized farms. This pressure was a natural result of the improved performance of agriculture and, consequently, its increased attractiveness as a location for investment and for the capital market. Agriculture ceased to be merely a workplace for land owners with a preference for a particular lifestyle, who settle for the remuneration of labour below its market value, thus subsidising the functioning of the farm by lower consumption in exchange for guaranteed employment. Since accession to the European Union large non-cooperative holdings have been again providing the remuneration of all production factors. Investing own funds in the farm allows to obtain an economic rent greater than the return on alternative investments in safe financial instruments, thus to increase the value of equity. For private non-cooperative holdings this rent reached 17.5% in 2004, and then dropped to 2.1% in 2008.

State-owned companies were characterised by worse economic results. Although in 2004–2008 they reported financial profits and in 2004–2005 and 2007 their return on equity was from 1 to -3.3 percentage points greater, the last year covered by the analysis indicates a very low level of financial efficiency (return on equity at 1.4%), thus to a considerable decline in the value of equity.

Agricultural production cooperatives have also failed to fully exploit the existing opportunities. Starting from 2004, they ensured a rise in the remuneration of members employed, but in 2006 and 2008 their income was lower than the costs of labour.

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After Poland's accession to the European Union to 2007, the improvement in the financial and economic performance of large agricultural holdings resulted from more advantageous relative prices for products purchased and sold as well as from increased budget support. Furthermore, the stock of production factors was used to a greater extent, which was very favourable in social terms. The increase in productivity (technical efficiency) noted in the period covered by the analysis was mostly due to a rise in investment in fixed assets and the implementation of biological and organisational progress, which allowed to introduce new production technologies and methods.

Undoubtedly, integration into the European Union became a stimulus to increasing investment efforts by large agricultural enterprises and to seeking new production, organisation and financial solutions. However, a more detailed analysis of relative technical efficiency has demonstrated that there is still significant scope for improving the technical and economic results of the group of large holdings in question, by making more efficient use of the production factors at their disposal. Therefore, all instruments (including EU subsidies) aimed to stimulate innovation-oriented investments should be given priority with regard to this group of farms.

The downward trend of world agricultural prices observed in 2008–2009 was partly compensated by growing budget support. Unless there is a rapid strengthening of the zloty against the euro by 2013, price shocks should not jeopardise the functioning of the analysed holdings, and direct payments will serve as a buffer guaranteeing business profitability. But attaining high financial and economic efficiency and achieving the most important goals of such entities will be impossible without an improved return on sales through changes in relative prices.

The growing role of budget support will increase competition for land as the factor largely determining the level of subsidies received. Thus, the

pressure for changing the allocation of land from the stock owned by the State Treasury will increase rather than fade, which will involve greater business risk for large farms, whose existence depends, to a significant extent, on agricultural land leased.

Sole-shareholder companies of the State Treasury lag behind other holdings from the analysed group in terms of technical and economic efficiency. The question arises whether their tasks such as work in the field of biological progress (creative and conservation breeding) could be performed by entities with a different legal and organisational form or perhaps different instruments should be used to boost their efficiency. Will the privatisation of the entities formerly supervised by the Agricultural Property Agency, i.e. those regarded as strategic from the point of view of agriculture and society, not increase the pressure to achieve the owners' objectives at the cost of deteriorated quality of their goods, or will there not be, in some cases, an irreversible loss of unique activities? This is a real threat, particularly under the national budget constraints with regard to supporting such holdings.

A steady downward trend of the number of operating agricultural production cooperatives (from 2,177 in 1989 to 820 in 2008) and of their share in total utilised agricultural area (from 3.8% in 1989 to 1.4% in 2008), observed from the early 1990s, indicates relatively lower economic efficiency of such entities. It should be attributed to the fact that cooperatives were deprived of privileges such as those enjoyed by holdings held by natural persons, e.g. a separate social security system with lower contribution rates. Furthermore, the shortcomings of the cooperative law preclude benefiting by the members from their contributions, or from their membership after retiring from working life. It is symptomatic that no new agricultural production cooperatives were set up in the period covered by the analysis.

The future of agricultural cooperatives will depend on their members' expectations as to the remuneration of their work for the cooperative. Cooperatives characterised by the largest scale of economic activity are expected to be able to ensure, owing to positive economies of scale, the level of income allowing the remuneration of labour and capital replacement at the same time. However, the generational renewal of cooperative members remains to be seen: will there be successors? Will there be persons in local communities who will pursue their self-interest through enhanced cooperation and the attainment of collective goals in the first place? Will there be efficient managers with a priority to people-to-people links and local communities over their immediate

personal benefits? The answers to these questions will depend on economic conditions as well as on amendments to the cooperative law.

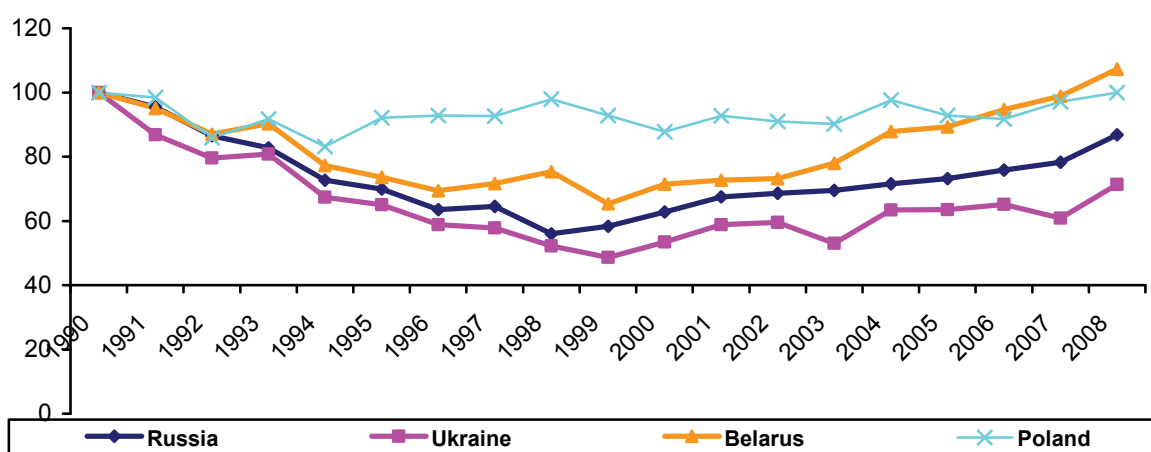
At the same time, the outlook for small, medium-sized and certain large agricultural cooperatives is not very favourable. The downward trend of the overall number of such entities will continue, and they will be gradually replaced by large private holdings or companies.

Changes in Russian, Ukrainian and Belarusian agriculture⁸

Until recently, agriculture in Russia, Ukraine and Belarus was recovering from the deep production and economic crisis observed in the 1990s. But the duration and the severity of this crisis differed between the three countries. In Russia the fall in agricultural output came to a halt in 1998, at 56% of the 1990 level, in Ukraine it stopped at 49% in 1999, whereas in Belarus it was basically curbed at 69% in 1996. After a period of such a collapse in agricultural production, all the countries in question experienced an increase, but despite government programmes aimed to improve the situation the growth rate was insufficient to meet the needs and considerably varied between countries. In 2000–2008 agricultural production rose by 38% in Russia, by 33% in Ukraine and by 50% in Belarus. As a result, the 1990 production level was only achieved and exceeded in Belarus (at 99% and 107% of the 1990 output in 2007 and 2008 respectively). Russia gradually reduced the distance to the 1990 production level (at 78% and 87% respectively). At the same time, in Ukraine agricultural output continued to be markedly below the 1990 level (at 61% and 71% of the 1990 production in 2007 and 2008 respectively). For comparison and assessment of the depth of the crisis in agriculture in the three countries, in Poland the fall in agricultural production basically stopped in 1994, at 83% of the 1990 output. Between 2000 and 2008 agricultural production went up by 14%, to the present level roughly the same as in 1990 (at 97.1% and 100% in 2007 and 2008 respectively).

⁸ Prepared on the basis of: W. Dzun, M. Tereszczuk, *Przemiany zachodzące w rolnictwie Rosji, Ukrainy i Białorusi*.

Figure 4. Dynamics of agricultural output in 1990–2008 (1990=100)



Source: own study based on statistical yearbooks of Russia, Ukraine, Belarus and Poland.

In all the Eastern European countries in question, livestock production suffers from a particularly deep crisis. In comparison with 1990, in Russia this production dropped below 50% in the late 1990s, and in Ukraine it plummeted to 43% in 2000. Also in Belarus livestock production represented ca. 58% of the 1990 output in 2000⁹. In spite of measures aimed at production recovery, even in 2007 output in the countries in question remained significantly below the 1990 level (at 80% in Belarus, ca. 60% in Russia and below 50% in Ukraine). For comparison, in 1994 in Poland livestock production accounted for approx. 84% of the 1990 output. Subsequent years saw a continued growth in this production, and in 2007 it was over 10% above the 1990 level. Such a noteworthy improvement in livestock production in Poland resulted from increased farming efficiency, particularly from a rise in livestock productivity.

Table 9. Agricultural production in kg per capita in 2007

Specification	Russia	Ukraine	Belarus	Poland
Cereals	576	630	744	553
Potatoes	259	411	901	309
Vegetables	109	147	222	150
Fruit	28	32	43	45
Meat	41	41	84	101
Milk	226	264	608	308
Eggs (number)	267	302	333	258

Source: Statistical yearbooks of Russia, Ukraine, Belarus and Poland.

⁹ In this case, such a plunge in output largely stemmed from a very high level of livestock production, realised by Belarus under the division of tasks in the former USSR on the basis of cereals, primarily supplied from Kazakhstan. In 1990 Belarus produced, in per capita terms, 116 kg of meat, 732 kg of milk and 359 eggs, whereas Ukraine, for instance, produced 84 kg, 472 kg and 314 respectively.

The collapse in agricultural production observed in the Eastern European countries in question in the 1990s resulted from, among other factors, an abrupt drop in domestic demand for agri-food products, in connection with a steep fall in real disposable income of the population. But there were other causes as well, e.g. rapid restructuring (mostly in Ukraine) of the ownership structure as well as of the legal and organisational structure of state-owned and collective enterprises in agriculture and the agri-food processing industry. In Ukraine, particularly, and to a lesser extent in Russia and Belarus, there was a major shift in the area of agricultural land held by agricultural enterprises towards backyard holdings and commercial farms. At present, the share of such holdings in the total utilised agricultural area is 54% in Ukraine, nearly 18% in Russia and 13% in Belarus.

This substantial allocation of agricultural land to backyard holdings and commercial farms was not followed by a corresponding increase in agricultural output, particularly with regard to livestock production. The main obstacle to the creation of stable conditions for agricultural development in all the Eastern European countries in question was a very low level of disposable income of the population, mostly the rural and farming population. Low income was the underlying cause for almost all rural and some urban households to be engaged in food production in backyard holdings. The food market was in fact oriented towards meeting the needs of the urban population, which in turn determined a contracted internal food market. Thus, farms could not count on an improvement in income as a result of a rise in agricultural prices.

Table 10. Consumption of basic food products in kg *per capita* in 2007

Specification	Russia	Ukraine	Belarus	Poland
Meat and meat products	58	46	75	78
Milk and dairy products	239	225	233	183
Eggs (number)	256	252	275	207
Fish*	18,6	16,7	15,5	9,5
Cereal products	121	116	89	114
Sugar	39	40	39	39
Potatoes	132	130	189	121
Vegetables	106	118	143	115
Fruit	51	42	59	41
Vegetable oil	13	14	15	12

* FAO Yearbook: Fishery and Agriculture Statistics, 2007.

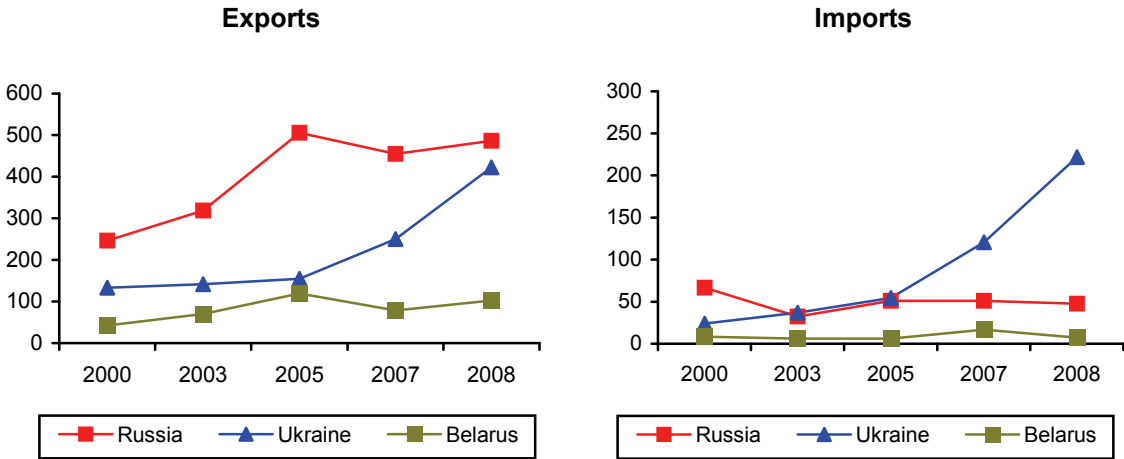
Source: Statistical yearbooks of Russia, Ukraine, Belarus and Poland.

In the above-mentioned conditions observed in the Eastern European countries in question, there was an increase in food imports aimed to enhance supply to the urban population, primarily the provision of highly processed

livestock products. It particularly concerned Ukraine and Russia. In Belarus food consumption *per capita* was much higher than in the two countries, even slightly higher than in Poland, but it was largely attained through prescriptive regulatory mechanisms targeted at maintaining low prices for food and enhancing its availability at the expense of economic operators in the food sector, particularly in agriculture.

As a consequence, under rising disposable income of the population in Russia, Ukraine and Belarus (the upward trend has already started and is likely to be continued) as well as improving food consumption levels and food quality, the growth in agricultural production recorded in recent years and expected in the near future has not led, and in the years to come is not projected to lead, at least in Russia and Ukraine, to a major decline in imports of livestock products and to an improvement in food self-sufficiency of these countries. It is very clear in Russia, an ever-larger importer of agricultural and food products, in particular animal products. According to analyses, even a full implementation of tasks laid down in the Russian agricultural development programme and of the guidelines for improving the security of food supply would not lead to full food self-sufficiency even by 2020.

Figure 5. Poland’s foreign trade in agri-food products with Russia, Ukraine and Belarus in 2000–2008 (EUR million)



Source: Own calculations based on data of the Institute of Agricultural and Food Economics – National Research Institute (IERiGZ-PIB), Foreign Trade Information Centre (Centrum Informatyki Handlu Zagranicznego – CIHZ), Analytical Centre of Customs Administration (Centrum Analityczne Administracji Celnej – CAAC), Ministry of Finance (MF), Ministry of Agriculture and Rural Development (MRiRW).

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The analysis conducted has demonstrated that in the next few years Poland's foreign trade in agri-food products with the countries in question will continue, perhaps even increase.

At the same time, recent years confirm that Russia and Ukraine may become large and growing exporters of crop products, particularly of cereals, oilseeds and vegetable oil. Such exports, especially in years of bumper crops, will have a significant impact on the world market of agri-food products, and an indirect effect of the competitiveness of Polish agriculture.

However, if the Eastern European countries in question take measures aimed to boost the livestock population in order to reduce imports of animal products, they will need to allocate certain cereal output to animal feed and to increase the share of forage plants in the sowing structure at the expense of other crops. Such a situation will also affect the Polish agri-food market, although it will partly concern a different group of products.

Conclusions

Accession to the European Union brought about a considerable rise in agricultural income in Poland. However, there are two sides to this. On the one hand, it created conditions for a rapid improvement in the living standards of a big part of farmers and their families, cooperative members, land and capital owners as well as of paid agricultural workers. At the same time, other agricultural holdings were given an opportunity to continue their existence, which allowed to keep jobs and related incomes.

On the other hand, the long-term influence (of the Polish version) of the common agricultural policy on the economic performance of Poland's agriculture does not seem very optimistic. The improved economic results of Polish agriculture resulted from a markedly faster rise in prices for agricultural products than in those for agricultural inputs in the first year of membership, a sweeping extension of the direct payment system and only to a moderate extent from enhanced efficiency of production. In this light, the impact of the common agricultural policy should be assessed with caution since the improvement in the economic performance was mostly based on unstable, by their very nature, price fluctuations and direct income support for agriculture. Those are by no means sustainable conditions for maintaining the favourable economic effects in Polish agriculture in the long term.

Furthermore, direct income aid cannot be perceived as a factor conducive to the enhancement of the economic efficiency of Polish agriculture. On the contrary, it impedes the improvement in farming efficiency by distorting market processes, particularly the functioning of the land market, which hampers so much desired changes in the land structure of Polish agricultural holdings. Only the part of income transfers which have a moderate distorting effect on the market mechanism regulating income and stimulate the supply of socially desirable non-market services (the protection of soil, water and air quality, the preservation of the rural landscape, etc.) can be evaluated positively.

The above assessment is confirmed by the examination of efficiency changes over time. In 1999–2006 the improvement of efficiency in Polish agriculture was only slightly greater than the average for the analysed EU Member States.

It is hardly surprising. In the period in question, as many as ca. 87% of agricultural holdings eligible for income aid (with an area of at least 1 ha) did not apply for such payments, or if they did, they allocated such funds, entirely or mainly, for current consumption. It has been demonstrated that only every sixth holding in this group would be capable of improving the results achieved, although it would involve enhancing the quality of managerial work and increasing the so-called social capital, whose favourable effects result from cooperation between agricultural producers.

Farms with negative capital replacement included small holdings held by natural persons, but also some large and very large holdings owned by legal persons and cooperative farms. The poor economic situation of agricultural cooperatives was partly due to institutional shortcomings. The cooperative law hindered the processes of employment rationalisation, and the social security system for cooperative members increased production costs in comparison with holdings held by natural persons.

In 2004–2007 only approx. 13% of farms eligible for income support were characterised by simple capital replacement or capital extension, which also means that it could have been accompanied by an improvement in farming efficiency. However, the years of recovery from the slowdown in Poland's economy caused by the global crisis will witness deterioration in the situation of some of those holdings, to the extent that they will no longer be able to fully replace their fixed assets.

Between 2004 and 2006 a mere 5–6% (i.e. ca. 97,000) of Polish agricultural holdings entitled to income transfers were competitive with respect to their Danish, German, Swedish and Hungarian counterparts. Those were large

farms, with an economic size of 16 ESU or more, and the average utilised agricultural area of 56 ha (although it significantly varied, from 32 ha to as much as over 1,000 ha). The vast majority of them were holdings held by natural persons who obtained at least most of their income from agricultural production, but this group also included farms owned by legal persons and agricultural cooperatives.

Only farms competitive relative to their foreign counterparts can hope for a long-term position as suppliers of agricultural products to the domestic and foreign markets. Uncompetitive holdings require restructuring and major investments in order to find a stable place in the market. Otherwise their products will be replaced by imports, unless other Polish farms prove to be competitive enough.

In 2002–2007 the number of competitive Polish holdings went up by 24,000 (34%), but as has already been mentioned, their share in the total number of farm eligible for income support does not exceed 6%. It is not very impressive. In Denmark, for example, the proportion of holdings as large as 100 ESU or more soared from 6.3% to 22.4% in 1990–2005, and similar trends have been observed in many other EU-15 countries. In advanced economies only farms with very large-scale production can maintain their presence in the market.

In 2006 competitive Polish holdings supplied approx. 43% of the overall agricultural output. Efforts should be made to increase this proportion. It would be desirable to enhance the mobility of labour between regions and farms representing different economic sizes and organisation types (from small holdings engaged in extensive farming to large entities with intensive production), and to create an efficient land market. It would mobilise a greater supply of this production factor (ca. 7 million), i.e. land held by farmers obtaining poor economic results. It could be done, for instance, by limiting the illegal practice of receiving (all or part of) income transfers by the owners of leased land. However, the attention of Polish politicians is focused on large holdings, with the total utilised agricultural area of approx. 1.3 million ha, distinguished by high competitiveness. Furthermore, it would be desirable to provide greater support for farms with an economic size of 8 to less than 16 ESU as ca. 60,000 of such entities might become competitive. The share of competitive holdings in Poland could increase to 8–9% of the total number of farms entitled to income transfers.

In conclusion, it is worth adding that agriculture in Poland's neighbouring Eastern countries such as Russia, Ukraine and Belarus has been strengthening, and it has started to exert a significant influence on the world market in cereals and oilseeds (and probably oil). In a longer term, however, there might be changes resulting in reduced imports of livestock products to these markets as well as in a fall in cereal exports. Such developments, if they do not have an impact already, will undoubtedly affect the economic situation in Polish agriculture in the future.

The impact of structural funds of the European Union on agricultural and rural development in the first years of membership

1. Preliminary remarks

Since the early 1990s, Poland has been receiving financial assistance from the EU, including for agricultural and rural development. The pre-accession programme PHARE (*Poland and Hungary: Action for the Restructuring of the Economy*), functioning in 1990–2003, had significant appropriations, but relatively limited in comparison with the subsequent programmes (between 1990 and 2003, Poland received ca. EUR 3.9 billion, i.e. approx. EUR 280 million annually). Projects financed under this programme were rather small and aimed at promoting integration into the European Union.

At the summit in Luxembourg (12–13 December 1997), the European Council decided to increase financial assistance granted to candidate countries and to launch two programmes in the following budget period (2000–2006). One of those was the SAPARD, which can be regarded as the first programme co-financed by the EU to support Polish agriculture and rural development. The SAPARD was supposed to apply from 1 January 2000 to 31 December 2006 but was launched in the candidate countries between 2001 and 2002. The implementation of the programme (the receipt of applications for the co-financing of projects) started in Poland on 17 July 2002. The final amount of national and EU public funds to be utilised by Poland for the implementation of the SAPARD was, at constant prices, approx. EUR 911 million, i.e. nearly an annual average of EUR 228 million.

Soon after Poland's joining the EU, the Commission approved two programmes co-financing Polish agriculture and rural development from the EU budget. One of them was the Rural Development Plan (*Plan Rozwoju Obszarów Wiejskich* 2004–2006, referred to as PROW-2006 in the text; approved on 6 September 2004; the EU and national public funds totalled EUR 3,592 million), and the other was the Sectoral Operational Programme for the “Restructuring and modernisation of the food sector and rural development” (*Sektorowy Program Operacyjny “Restrukturyzacja i modernizacja rolnictwa i rozwój obszarów wiejskich”* referred to as SPOR-2006 in the text, adopted on 7 July 2004; the total EU and national public funds amounted to EUR 1,193 million). Both

programmes were developed according to the EU provisions published in 1999 (as amended), applicable to the EU-15 countries in the programming period 2000–2006, and the provisions for the new EU Member States to introduce additional measures. Therefore, it appears that almost immediately after Poland's accession to the European Union Polish agriculture and rural areas were included in the EU support system on the same terms as those applicable to agriculture and rural areas of the EU-15.

Thus, the preparation and approval of the programmes implemented in 2004–2006 and co-financed from the previous multi-annual budget of the EU was much faster and more efficient than in the case of the SAPARD. However, it was a rather exceptional situation as months of delay in preparing EU regulations retarded the preparation and launch of the current PROW-2013.

The EU legislation regulating the programming and implementation of PROW-2013 is very different from the provisions applicable in 2000–2006. To begin with, the European Agricultural Guidance and Guarantee Fund (EAGGF), established in 1962, was replaced with two new funds: the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD). This change eliminated an odd situation indeed, with two agricultural and rural development programmes in fact constituting one programme artificially divided into two separate parts. The subsequent Council Regulation specified the scope of programmes co-financed by the EAFRD in 2007–2013 as well as the most important rules of programming and implementation.

As early as 2005, by adopting regulations concerning the programming and implementation of PROW-2013, the Council made it possible for the Commission to issue implementing regulations in time for Member States to complete the preparation of national agricultural and rural development programmes in the second half of 2006. Thus, the Commission could have approved them around 1 January 2007, which would have enabled Member States to launch their programmes in the first half of the year. However, an important Council decision laying down the overall amount of support from the EAFRD in 2007–2013, its annual breakdown and the minimum amount to be allocated to Convergence regions was taken as late as 19 June 2006, i.e. six months after the adoption of the multi-annual budget.

The lack of information on the funds available to individual Member States between 2007 and 2013 was not the only cause of delay in the preparation of national programmes. Detailed binding rules for the structure and content of the programmes were adopted by the Commission as late as mid-December

2006. Therefore in order to avoid nearly 18 months of delay the Commission cooperated with Member States, giving them information indispensable for the preparation of programmes.

The efficient cooperation between the Commission and Member States, which prevented a much-delayed launch of PROW-2013 in all Member States, does not change the fact that the long-drawn-out legislative process on the part of the Community authorities precluded a timely start of the implementation of multi-annual agricultural and rural development programmes for 2007–2013 in EU Member States.

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The launch date of PROW-2013 depended not only on the entry into force of relevant EU legislation and on the cooperation between the Commission and Member States. Although the Council and Commission Regulations are directly applicable in the whole Community, i.e. their transposition into national law is unnecessary, Poland adopted a solution which consisted in transposing EU legal acts into Polish law by national provisions. The act on support for rural development with the contribution from the European Agricultural Fund for Rural Development was enacted on 7 March 2007. On account of the date of entry into force, the act had no influence on the preparation of the programme. But the absence of such an act did not hamper the works on the draft programme since the authors relied on the Council Regulation, knowing that the future act must conform with it. What mattered in practice was the part of the act which specified the obligations and powers of the Polish authorities and bodies as well as regulating specific issues in the implementation of PROW-2013.

The EU regulations governing the implementation of PROW-2013 leave a wide discretion to Member States in specific issues. For this reason, it is necessary to adopt national legislation which in Poland tends to take the form of ordinances of relevant ministers. Those are, as a rule, ordinances of the Minister of Agriculture and Rural Development, with statutory powers to regulate various specific issues. Undoubtedly, the most important ones include detailed rules on financial aid and the granting thereof. A total of 23 relevant ordinances were issued. Since the last ordinance was issued on 7 July 2009, the national legislation regulating the rules for the implementation of PROW-2013 can only be considered to be complete as of that date.

Issuing as many as 23 ordinances reflects enormous legislative efforts by the lawyers employed at the Ministry of Agriculture and Rural Development (*Ministerstwo Rozwoju Rolnictwa i Obszarów Wiejskich* – MRiRW). But two and a half years for the adoption of a complete set of ordinances was definitely

too long a period from the point of view of the implementation of PROW-2013. Undoubtedly, the legislative work could have been finished earlier. Furthermore, the question arises as to the quality of the ordinances issued since a number of them had been already amended, in some cases several times. Although amendments usually concerned secondary details, each amendment, however small or justified, causes a certain legal destabilisation, whereas stability constitutes one of the foundations of a good legal system and of a good management system.

Complete national legislation laying down eligibility rules, the procedures for the preparation, receipt, examination and approval of applications and for project implementation to the payment by ARiMR of the support granted, is necessary but insufficient for a measure to be launched. National institutions serving as paying agencies must prove that they are prepared to fulfil their tasks. The formal acknowledgement of full organisational preparation is accreditation

The Polish programme PROW-2013 was not fully launched until 16 October 2009, primarily due to the lack of accreditation, necessary for ARiMR to handle the majority of measures. The Ministry of Finance could not grant accreditation as ARiMR did not have the IT system required for the implementation of PROW-2013. Such a situation undoubtedly surprised the general public, primarily potential beneficiaries of PROW-2013 as in the two previous programming periods the Agency had been rather well prepared to fulfil its functions.

2. Substantive assessment of PROW-2013 as compared to the previous programmes

By adopting Regulation No 1698/2005, the Council imposed on Member States, as in the previous programming periods, a uniform structure of agricultural and rural development programmes to be implemented between 2007 and 2013. At the same time, it introduced a new rule of obligatory distribution of a certain part of resources between particular groups of measures referred to as axes. The minimum Community financial contributions were specified as follows: axis 1 titled “Improving the competitiveness of the agricultural and forestry sector” – 10% of the available EU funds, axis 2 “Improving the environment and the countryside” – 25%, axis 3 “The quality of life in rural areas and diversification of the rural economy” – 10%. Axis 4, Leader, had another character with at least 5% of the total EAFRD contribution. Such requirements were not necessarily pivotal for the structure of a Member State’s programme, as reflected in Polish PROW-2013 approved by the Commission. Axis 1 accounted for nearly 45% of the total funds available under

the Programme, axis 2 – almost 37%, axis 3 – slightly over 16%. The programme conforms to the Council’s guidelines as it satisfies the requirement of “not less than”. At the same time, the funds available to Poland were distributed between the axes in very different proportions. As a result, PROW-2013 primarily reflects Poland’s preferences.

The titles of the axes suggest that axis 1 only comprises measures resulting in reduced costs of agricultural and forestry production, with a relatively greater reduction than that achieved by competitors (which is the essence of competitiveness). At the same time, all measures under axis 2 should contribute to improving the environment and the countryside. It appears, however, that the two titles fail to fully reflect the economic and social nature of measures classified under these axes. An important outcome of the implementation of some of those measures is the improvement in the income situation of the farming population as well as of rural dwellers not engaged in agriculture. Obviously, programmes promoting rural development also tend to bring about, indirectly or even directly, an increase in incomes obtained by certain social groups in the countryside. Simultaneously, programmes enhancing the competitiveness of agriculture and forestry basically improve the economic situation of beneficiaries, thus working indirectly as income aid. In general, it can be stated that very few programmes serve a single purpose; as a rule, the primary objective is accompanied by secondary, usually foreseeable goals. It is doubtful, however, whether the Council’s classification of measures under specific axes was based on correct determination of the main objectives. As a matter of fact, that grouping arouses suspicion that it was an attempt to conceal an increase in income as the primary objective of certain measures. Such measures should be included in neither axis 1 nor 2 as it obscures the true character of the measures in question, thus of the programme. The right solution would be to create another axis titled “Income aid and social measures”.

The objective to be attained by measures under axis 3, “The quality of life in rural areas and diversification of the rural economy”, was accurately determined. There is, however, a different issue. Support under axis 3 is only granted for the co-financing of investments (1) in the water supply and sewage systems, (2) solving the problem of the disposal of household waste, and (3) increasing internet penetration in rural areas. At the same time, funds for the construction, modernisation and repair of local roads and large wastewater treatment plants, i.e. the bulk of basic technical infrastructure in the countryside, are distributed within the framework of sixteen Regional Operational Programmes, covering one voivodship each. Furthermore, some of the largest investments in technical infrastructure, e.g. motorways and flood defence, with

an indisputable and significant indirect impact on rural development, are co-financed under the Sectoral Operational Programme “Infrastructure and Environment” (*Infrastruktura i Środowisko*).

The quality of life in rural areas depends not only on technical infrastructure, but also on social infrastructure (mostly healthcare establishments, schools at all educational levels, nursery schools and crèches), which is not co-financed under PROW-2013.

An important component of the assessment of PROW-2013 is a detailed analysis of its structure as compared to the previous programmes. The basic data for such an examination are shown in Table 1. It is complemented by Table 2, presenting the breakdown of public funds. This classification differs from the division into three axes adopted by the Council, but it is based on the same principle: the determination of the primary objective of a given measure. It was introduced for in certain cases the official EU categorisation was found to obscure the actual character of measures, thus precluding a proper analysis of the programmes. The classification adopted is subjective, particularly that it is sometimes difficult to identify the main objective and the secondary goal of a measure.

It follows from Tables 1 and 2 that the pre-accession programme SAPARD significantly differed from the programmes implemented in the two following periods. To begin with, its objectives were reduced to an efficient implementation of EU legislation (*acquis communautaire*) in the area of the CAP and related policies as well as to resolving the most pressing problems of agriculture and rural areas by the candidate countries. It was obvious that the full attainment of Objective 2 was impossible; Poland will continue to face the most acute problems of agriculture for many years, it is even doubtful whether such issues could ever be resolved. The different character also resulted from a much smaller scale in comparison with the following programmes; the SAPARD appropriations (in EUR) were over 7.5 times lower than the funds allocated to PROW-2006 and SPOR-2006 and more than 10 times lower than those assigned to PROW-2013 (Table 1). Nevertheless, it was a significant amount: the beneficiaries received over PLN 4.5 billion. The SAPARD had three important characteristics worth highlighting in the context of this evaluation. (1). The concentration of funds on three selected measures (“Modernisation of agricultural holdings”, “Adding value to agricultural and forestry products” and “Basic services for the economy and rural population”; cf. Table 1). (2). The measures referred to in (1) as well as “Diversification of economic activities in rural areas” supported the development of the food sector, small non-agricultural activities and the countryside. (3). All measures were investment-oriented.

Table 1. SAPARD, PROW-2006, SPOR-2006 and PROW-2013 programmes: public funds (EU and national appropriations), EUR million

Measure	SAPARD		PROW-2006 and SPOR-2006		PROW-2013	
	Appropriations used		Appropriations available ¹		Appropriations available ¹	
	Total	Annual average	Total	Annual average	Total	Annual average
A. Measures supporting the development of the food sector						
Modernisation of agricultural holdings	128.0	32.0	603.9 (626.1)	201.3 (208.7)	1 779.9 (1 849.1)	254.3 (264.2)
Adjustment of agricultural holdings to EU standards	-	-	243.4 (632.3)	81.1 (210.8)	-	-
Projects transferred from SAPARD	-	-	140.0 (119.3)	46.7 (39.8)	-	-
Adding value to agricultural and forestry products	280.5	70.1	464.2 (465.6)	154.7 (155.2)	1 100.0 (932.0)	157.1 (133.1)
Infrastructure related to the development and adaptation of agriculture and forestry	-	-	194.0 (193.5)	64.7 (64.5)	600.0 (637.5)	85.7 (91.1)
Semi-subsistence farms	-	-	376.4 (340.7)	125.5 (113.6)	440.0 (590.0)	62.9 (84.3)
Setting-up of young farmers	-	-	173.3 (177.2)	57.8 (59.1)	420.0 (420.0)	60.0 (60.0)
Use by farmers and forest holders of advisory services	-	-	53.8 (42.1)	17.9 (14.0)	350.0 (218.0)	50.0 (31.1)
Producer groups	-	-	25.4 (6.4)	8.5 (2.1)	140.0 (140.0)	20.0 (20.0)
Participation of farmers in food quality schemes	-	-	-	-	100.0 (80.0)	14.3 (11.4)
Vocational training for persons engaged in agriculture and forestry	5.5	1.4	20.0 (19.4)	6.7 (6.5)	40.0 (40.0)	5.7 (5.7)
Information and promotion activities	-	-	-	-	30.0 (30.0)	4.3 (4.3)
Group A, total	414.0	103.5	2 294.4 (2 622.6)	764.9 (874.3)	4 999.9 (4 936.6)	714.3 (705.2)
Of which: agriculture	133.5	33.4	1 830.2 (2 157.0)	610.1 (719.1)	3 899.9 (4 004.6)	557.2 (572.1)
food industry and trade	280.5	70.1	464.2 (465.6)	154.8 (155.2)	1 100.0 (932.0)	157.1 (133.1)
Group B: Measures supporting other sectors of the economy						
Basic services for the economy and rural population	459.9 ³	115.0 ³	-	-	1 471.4 (1 541.4)	210.2 (220.2)
Creation and development of micro-enterprises	-	-	-	-	1 023.6 (1 023.6)	146.2 (146.2)
Diversification into non-agricultural activities	70.9	17.7	107.1 (75.6)	35.7 (25.2)	345.6 (345.6)	49.4 (49.4)
Group B, total	530.8	132.7	107.1 (75.6)	35.7 (25.2)	2 840.6 (2 910.6)	405.8 (415.8)

Group C: Measures supporting the environmental protection					
Agri-environmental scheme (agri-environmental payments)	-	348.9 (208.4)	116.3 (69.5)	2 303.8 (2 314.9)	329.1 (330.7)
Afforestation of agricultural land and afforestation of non-agricultural land	-	101.8 (100.0)	33.9 (33.3)	653.5 (513.5)	93.4 (73.4)
Restoring agricultural production potential damaged by natural disasters and introduction of appropriate prevention measures	-	12.5 (13.9)	4.2 (4.6)	140.0 (100.0)	20.0 (14.3)
Group C, total	-	463.2 (322.3)	154.4 (107.4)	3 097.3 (2 928.4)	442.5 (418.4)
Group D: Income aid and social measures					
Support for farming in mountain areas and in other areas with handicaps (less-favoured areas – LFA)	-	976.8 (945.3)	325.4 (315.1)	2 448.7 (2 448.7)	349.9 (349.9)
Structural pensions (early retirements)	-	640.5 (534.8)	213.6 (178.3)	2 187.6 (2 549.5)	312.5 (364.2)
Complements to direct payments	-	705.3 (677.6)	235.1 (225.8)	-	-
Group D, total	-	2 322.6 (2 157.7)	774.1 (719.2)	4 636.3 (4 998.2)	662.4 (714.1)
Group E: Other measures					
Implementing local development strategies	-	18.8 (30.4) ²	6.3 (10.1)	620.5 (620.5)	88.6 (88.6)
Conservation and the upgrading of rural heritage	-	112.5 (120.0)	37.5 (40.0)	589.6 (589.6)	84.2 (84.2)
Running the local action group, acquiring skills and animating the territory	-	-	-	152.0 (152.0)	21.7 (21.7)
Technical assistance	1.0	57.9 (51.6)	19.3 (17.2)	266.6 (266.6)	38.1 (38.1)
Group E, total	1.0	189.2 (202.0)	63.1 (67.3)	1 643.7 (1 643.7)	234.7 (234.7)
Total	945.8	5 376.5 (5 380.2)	1 792.2 (1 793.4)	17 217.8 (17 417.5)	2 459.7 (2 488.2)

Source: PROW-2006 after reallocations: Orientacyjna zbiorcza tabela finansowa planu w euro zmieniona po realokacji środków No 4/2008(10), December 2008, and System Informacji Zarządczej ARiMR Informacja o realizacji Planu Rozwoju Obszarów Wiejskich na lata 2004–2006. Stan na dzień 31-01-2009 r.; SPOR-2006 after reallocations: Uchwała Nr 40 Komitetu Monitorującego Sektorowy Program Operacyjny „Restrukturyzacja i modernizacja sektora żywnościowego oraz rozwój obszarów wiejskich” of 5 December 2008. Table 4; PROW-2013. Approved programme: Program Rozwoju Obszarów Wiejskich na lata 2007–2013 (PROW 2007–2013). Ministry of Agriculture and Rural Development, Warsaw, July 2007. after reallocations: Obwieszczenie Ministra Rolnictwa i Rozwoju Wsi z dnia 18 marca 2010 r. w sprawie zmiany Rozwoju Obszarów Wiejskich na lata 2007-2013. Official Gazette of the Republic of Poland (M.P.) 2010. No 19 Item 193.

Note: 1. In brackets: limits after reallocations; 2. Leader+, 3. Measure “Development and improvement of rural infrastructure”.

Table 2. Financial structure of the SAPARD, PROW-2006, SPOR-2006 and PROW-2013 programmes

Measure	SAPARD	PROW-2006 and SPOR-2006	PROW-2013
A. Measures supporting the development of the food sector			
Modernisation of agricultural holdings	13.5	11.2 (11.6)	10.3 (10.6)
Adjustment of agricultural holdings to EU standards	-	4.5 (11.8)	-
Projects transferred from SAPARD	-	2.6 (2.2)	-
Adding value to agricultural and forestry products	29.7	8.6 (8.6)	6.4 (5.4)
Improving and developing infrastructure related to the development and adaptation of agriculture and forestry	-	3.6 (3.6)	3.5 (3.7)
Semi-subsistence farms	-	7.0 (6.3)	2.6 (3.4)
Setting-up of young farmers	-	3.2 (3.3)	2.4 (2.4)
Use by farmers and forest holders of advisory services	-	1.0 (0.8)	2.0 (1.3)
Producer groups	-	0.5 (0.1)	0.8 (0.8)
Participation of farmers in food quality schemes	-	-	0.6 (0.5)
Vocational training for persons engaged in agriculture and forestry	0.6	0.4 (0.4)	0.2 (0.2)
Information and promotion activities	-	-	0.2 (0.2)
Group A, total	43.8	42.6 (48.7)	29.1 (28.4)
Of which: agriculture	14.1	34.0 (40.1)	22.7 (23.0)
Food industry and trade	29.7	8.6 (8.6)	6.4 (5.4)
Group B: Measures supporting other sectors of the economy			
Basic services for the economy and rural population	48.6	-	8.5 (8.4)
Creation and development of micro-enterprises	-	-	5.9 (5.9)
Diversification into non-agricultural activities	7.5	2.0 (1.4)	2.0 (2.0)
Group B, total	56.1	2.0 (1.4)	16.5 (16.7)
Group C: Measures supporting the environmental protection			
Agri-environmental scheme (agri-environmental payments)	-	6.5 (3.9)	13.4 (13.3)
Afforestation of agricultural land and afforestation of non-agricultural land	-	1.9 (1.9)	3.8 (2.9)
Restoring agricultural production potential damaged by natural disasters and introduction of appropriate prevention measures	-	0.2 (0.2)	0.8 (0.6)
Group C, total	-	8.6 (6.0)	18.0 (16.8)
Group D: Income aid and social measures			
Support for farming in mountain areas and in other areas with handicaps (less-favoured areas – LFA)	-	18.2 (17.6)	14.2 (14.1)
Structural pensions (early retirement)	-	11.9 (9.9)	12.7 (14.6)
Complements to direct payments	-	13.1 (12.6)	-
Group D, total	-	43.2 (40.1)	26.9 (28.7)
Group E: Other measures			
Implementing local development strategies	-	0.4 (0.6)	3.6 (3.6)
Village renewal and development	-	2.1 (2.2)	3.4 (3.4)
Conservation and the upgrading of rural heritage	-	-	0.9 (0.9)
Running the local action group, acquiring skills and animating the territory	-	-	0.1 (0.1)
Technical assistance	0.1	1.1 (1.0)	1.5 (1.5)
Group E, total	0.1	3.6 (3.8)	9.5 (9.4)
Total	100.0	100.0 (100.0)	100.0 (100.0)

Source: Own calculations based on the data in Table 1.

In the period of implementation of the SAPARD there were major shifts between measures. In comparison with the initial plan, much more substantial funds were allocated to rural infrastructure (water supply and sewage systems, local roads), whereas there was a cut in the appropriations for the adjustment of agri-food enterprises to operating in compliance with the European Union requirements and for investments in agricultural holdings. The final version of the Programme was dominated by local governments implementing infrastructure investments, accounting for nearly 50% of the total funds. However, such reallocations cannot be regarded as discrimination against agriculture as they stemmed from limited interest in SAPARD measures on the part of farmers who did not apply for support almost until the deadline for the receipt of applications. Besides, the reduction in the funds for investments in agricultural holdings did not result in the rejection of any single application submitted by a farmer, provided that it met the criteria of the programme. All applications submitted in the last days before the deadline which satisfied the criteria but could not be funded within the framework of the SAPARD due to the exhaustion of appropriations were approved and included in PROW-2006 as a separate measure. Neither did the reallocations adversely affect the public support programme for the four sub-sectors of the food industry undergoing adjustment to EU standards (the meat, dairy, fish, fruit and vegetable industries). On the contrary, the outcome was much better than expected as from Poland's joining the EU the Polish agri-food industry experienced virtually no difficulties with access to the markets of other Member States stemming from the failure to comply with veterinary and sanitary regulations of the European Union.

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The programmes PROW-2006 and SPOR-2006 had much more significant appropriations than the SAPARD. The total amount of public funds to support various projects under the 24 measures of the programmes was nearly EUR 5.4 billion. The beneficiaries received approx. PLN 20.5 billion, of which PROW-2006 represented almost PLN 14.2 billion and SPOR-2006 accounted for PLN 6.3 billion. According to the official EU classification, those funds were aimed to co-finance projects: (1) improving the competitiveness of the food sector, or (2) promoting the sustainable development of agriculture and rural areas. The figures in Tables 1 and 2 where the Author's own classification was applied show that the objectives of the programmes were much more complicated. Thus, it appears that only approx. 50% of the appropriations (Groups A and B) were targeted at the development of the food sector and other sections of the economy. Together with environmental measures which also

promote sustainable development, this proportion increases to nearly 60%. Therefore, it appears more than 40% of the funds were allocated to measures whose primary goal was income support or social assistance.

In previous studies such a distribution of funds was criticised on the grounds that in 2004-2006 insufficient appropriations had been allocated to agricultural and rural development. It appears, however, that the programme designers had an extremely narrow margin of manoeuvre. Both programmes were co-financed from the European Agricultural Guidance and Guarantee Fund, but the appropriations for PROW-2006 and SPOR-2006 came from the Guarantee Section and the Guidance Section respectively. The breakdown of EU funds between the two programmes was made by the Community authorities. That decision largely determined the nature of support for agriculture and rural areas as Poland could transfer EU funds between the programmes neither at the stage of programming nor during implementation. Although both programmes comprised measures promoting development, PROW-2006 was mostly aimed at complementing agricultural income and clearly social measures. The most important development-oriented projects (the modernisation of agricultural holdings and of the agri-food industry) were co-financed from SPOR-2006 appropriations. According to the decision taken by the EU authorities, the funds for PROW-2006 were more than double the appropriations of SPOR-2006, therefore a significant share of the former needed to be assigned for measures supporting agricultural income and social projects (early retirement), even though it would have been more efficient to co-finance development-oriented investment projects. Otherwise, Poland would have failed to utilise all the available EU funds.

The above remarks do not mean that the programmes could have excluded agricultural income support and social measures. At least one of those, “Complements to direct payments”, had to be included in PROW-2006 in line with rather well-defined needs. Pursuant to the Accession Treaty, direct payments to Polish farmers will not be fully covered from the EU budget until 2013. However, Poland obtained the right to partial complements to direct payments from the funds received for the development of agriculture and rural areas in the first three years of membership, and had to make use of this provision for both political and economic reasons. It was also advisable to exploit the possibility of utilising subsidies in order to maintain agricultural activities in such less-favoured areas where the discontinuation of agricultural use of the land would lead to serious degradation of the environment. However, this measure should have been used in moderation, with respect to mountain and certain other areas of particular natural value.

The decision to include the measure “Structural pensions” (Early retirement) in the programme, taken in the period of programming of PROW-2006, was particularly controversial, especially excessive pension’s level and granting principles. Structural pensions continue to provoke discussion. Some economists, including the author of this text, see them as economically inefficient as well as of doubtful value as a social measure. Others consider such pensions to be rather effective in transforming agrarian structures. It is difficult to agree with such an optimistic assessment due to the very high costs involved. In 2004–2006 the appropriations allocated for structural pensions were much higher than the funds targeted at supporting investments undertaken by agri-food businesses (the measure “Adding value to agricultural and forestry products”) and exceeded those assigned for the measure “Modernisation of agricultural holdings”. There are also economists and sociologists who hold a compromise view that also in Poland structural pensions could be a very good instrument facilitating the restructuring of agriculture, provided that access conditions undergo some fundamental changes.

The granting of structural pensions in 2004–2006 involved making commitments beyond 2006. Those commitments reduced the margin of manoeuvre in the planning of PROW-2013 as part of the programme funds had to be pre-assigned. The amount of EUR 1.4 billion reserved in PROW-2013 for the commitments in respect of pensions granted in between 2004 and 2006 proved to be insufficient. As early as 2008 the Monitoring Committee of PROW-2013 decided to increase by EUR 362 million the appropriations for the measure “Structural pensions”, at the same time acknowledging that it would not suffice as the supplementary financial needs were estimated at EUR 800 million. Since the overall EU contribution to the Programme remained unchanged, this amount had to be reallocated from other measures, such as the co-financing of investments in the agri-food industry.

“Structural pensions” did not constitute the only measure implemented under PROW-2006 and SPOR-2006 to generate “fixed commitments”. A certain part of the appropriations of PROW-2013 needed to be reserved for the commitments taken on in the previous budget period in respect of the agri-environmental scheme (EUR 854 million), support for semi-subsistence farms (EUR 440 million), the afforestation scheme (EUR 183 million) and the promotion of producer groups (EUR 10 million). As a result, the team preparing PROW-2013 was free to allocate EUR 14,331 million rather than EUR 17,218 million as EUR 2,887 million had to be reserved for fixed commitments. It proved insufficient, however, and the Monitoring Committee decided (and its decisions must be approved by the Commission before entering into force) that

the total appropriations for fixed commitments should be increased to nearly EUR 3,400 million.

Therefore, it appears that the appropriations of PROW-2006 and SPOR-2006 were also used for agricultural income support, to finance projects aimed at the environmental protection, measures of a social character as well as animating local communities. Thus, the preparation of the programmes for 2004–2006 was based on the opinion that the Polish food sector and rural areas have a variety of needs, and each of those needs should be met to a certain degree. However, as a consequence of such a structure of the programmes, the available funds were spread rather thinly over a number of measures.

The second reason of spreading were unquestionable European Commission priorities – protection of rural landscape and environment. It was the justification why in PROW – 2006 relatively big appropriations for “agri-environmental payments” were reserved. The third cause was the opinion, that in the Polish programme some measures should be included for the political grounds, e.g. the measure “Structural pensions”.

The spreading of available funds was one of the main reasons why the programmes were far from optimal as their focus was not on resolving the most pressing problems of the Polish food sector and rural areas. Production structures constitute the main problem of Polish agriculture. Polish agriculture should consist of ca. 200,000 commercial holdings with an economic size of at least 12 ESU. Obviously, it will take at least a decade before such a structure of commercial agriculture in Poland can be formed, provided that a consistent support policy is pursued. The group of holdings with a sufficient economic size to provide a fair income to farmers, or those able to prove their potential to be such farms, should be offered opportunities for further development in the form of investment support. At the same time, owners or holders of small farms unable to reach the threshold of 12 ESU should be granted support facilitating multiple activities. The focus of the rural development programme should also be on assisting those farmers who decide to start a non-agricultural business.

It is doubtful, however, whether the financial resources allocated for the modernisation of agricultural holdings were actually conducive to a rapid improvement in the production structure of Polish agriculture as the lower limit for a viable holding was set at a very low level of 4 ESU. Furthermore, it is difficult to regard the measure “Investments in agricultural holdings” as one contributing to a quick improvement in production structures. The appropriations under the measure mostly supported farm mechanisation. Under the current circumstances, this is not the most important direction of

modernisation of Polish agriculture. Polish agriculture requires a transformation leading to a significant increase in the economic size of commercial holdings. Its long-term growth could be ensured mainly by measures such as investments increasing the production scale, i.e. in livestock production the construction of new or extension of the existing farm buildings, in crop production: purchases of agricultural land. However, the funds under PROW-2006 and SPOR-2006 could not be used for the co-financing of the purchase of agricultural land, whereas the possibilities of funding investments increasing the scale of livestock production were restricted.

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In the period 2007–2013 Poland is the largest beneficiary of EU support from the European Agricultural Fund for Rural Development. The approved version of the programme provided for public funds exceeding EUR 17.2 billion (over PLN 60 billion at the exchange rate EUR 1 = PLN 3.50), of which Community support and national funds represented EUR 13.2 billion and EUR 4.0 billion respectively. The EU funds were subsequently increased by EUR 169 million. Thus, the appropriations of the programme total EUR 17.4 billion of public funds. Furthermore, own contributions of beneficiaries were estimated at EUR 7.4 billion. Therefore the total value of programme is 24.8 billion.

But the appropriations of PROW-2013 will not be the only public funds spent on rural development between 2007 and 2013. Table 3 presents an estimation of possible amounts of public support for Polish agriculture and rural development in the period in question. Funds for this purpose are provided for not only in PROW-2013, but also in four centrally-managed structural programmes, with the total appropriations of ca. EUR 60.7 billion, as well as in the 16 regional programmes for each voivodship (with the overall public funds of approx. EUR 23.9 billion). Part of financial resources available under those programmes is assigned to the co-financing of projects implemented in urban areas, but some appropriations are reserved for supporting the countryside. In addition, there are measures available to both urban and rural applicants.

The estimation of public funds targeted at rural development and available under the centrally-managed programmes was based on the findings by R. Grochowska and L. Hardt, who analysed the impact of each programme on rural areas in a comprehensive study. Based on the above figures, the appropriations supporting rural development were cautiously estimated by J. Rowiński at EUR 21.6 billion, the sum of the funds allocated to measures with a direct impact and of half of the resources aimed at the co-financing of measures with a strong indirect impact.

Table 3. Total public funds (EU and national appropriations) supporting rural development in 2007–2013 (in EUR billion)

Programme	Amount of support
(1) Rural Development Programme 2007–2013	17.4
(2) Centrally-managed operational programmes	21.6
(3) Integrated Regional Development Programmes ¹	8.3
(4) Preferential investment loans	4.8
Total	52.1

Sources: (1) *Program Rozwoju Obszarów Wiejskich na lata 2007–2013, materiał informacyjny*. Ministry of Agriculture and Rural Development, Warsaw, November 2006; (2) On the basis of R. Grochowska and Ł. Hardt. /in/: *Możliwości oddziaływania środków finansowych Polityki Spójności na rozwój obszarów wiejskich w Polsce w latach 2007–2013*. /in/: J. Rowiński /ed./. *Wpływ funduszy współfinansowanych ze środków UE na rozwój regionów wiejskich w Polsce (Studia i Materiały)*. Program Wieloletni No 156. IERiGŻ-PIB. Warsaw 2009. (3) and (4): own estimations.

Note: 1. Programmes managed by Marshal Offices.

There is no study with a similar classification of measures included in the 16 regional programmes (implemented within voivodships). Therefore, it was assumed that the share of measures with a direct and strong indirect impact was the same as that for the centrally-managed structural programmes. Assuming, as above, that rural development is supported by the total funds for the co-financing of measures with a direct impact plus half of the appropriations allocated to measures with a strong indirect impact, the overall amount is EUR 8.3 billion.

According to the above estimations, the programmes co-financed by the EU between 2007 and 2013 include ca. EUR 47 billion (nearly PLN 165 billion) targeted at rural areas, of which approx. EUR 37 billion (almost PLN 130 billion) will have a direct impact, and ca. EUR 10 billion (PLN 35 billion) – a strong indirect influence.

The actual amount of funds for the co-financing of projects contributing to rural development will be higher or lower than estimated, not only for the fact that they merely indicate the order of magnitude. The differences may also result from the competition, in some measures, between urban and rural applicants for support. In this connection, there are concerns that urban beneficiaries will prove to be more successful in obtaining funds.

In addition to programmes co-financed from the EU budget, Poland also has national support programmes for agriculture, usually based on the mechanism of preferential investment loans, well-known and accepted by

farmers. As of 1 May 2007, Poland is not authorised to continue the existing programmes or to launch new ones without prior approval by the Commission. Poland prepared the national support programmes in agreement with the Commission, in time to launch new preferential credit facilities as early as July 2007. In 2007–2008, preferential investment loans totalled ca. PLN 4.8 billion, i.e. approx. PLN 2.4 billion (ca. EUR 685 million) annually. If the annual amount of preferential investment loans remains unchanged in the following years, between 2007 and 2013 agriculture will be injected with PLN 16.8 billion (EUR 4.8 billion) in this form of assistance. Preferential loans complement rather than compete with PROW-2013. In the first eight months of 2008, young farmers were granted more than 4,500 such loans for nearly PLN 750 million. An important role is also played by preferential investment loans for the purchase of land. The area structure of Polish agriculture is unlikely to change without increasing the farm size by purchasing agricultural land.

Naturally, preferential loans, which must be repaid together with interest in the following years, are not directly comparable to non-refundable aid granted under the programmes co-financed from EU funds. The actual public funds are spent on the difference between the interest rates on commercial and preferential loans.

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One of the conditions for an undisturbed and steady socio-economic development of agriculture and rural regions is consistent implementation of a multi-annual programme, with a duration of more than ten years, well-defined priorities and substantial funds. It is obvious, therefore, that PROW-2013 should be a revised follow-on from PROW-2006 and SPOR-2006. However programmes implemented in the previous and current periods differ significantly, even though for the three years there were no vital changes, since it was impossible, to justify the reorientation of support.

As follows from Tables 1 and 2, the food sector plays a much lesser role in PROW-2013. Not only is the share of programme funds co-financing its development in the total programme funds much lower (the share of public spending on measures classified as those fostering the food sector in the total expenditure was 48.7% in PROW-2006 and SPOR-2006 combined, whereas in PROW-2013 the initial proportion was 29.1% of the total appropriations, reduced to 28.4% after reallocations), but also the annual average amount of funds available to the food sector fell from nearly EUR 875 million in the previous financial perspective to EUR 705 million in PROW-2013 (after

reallocations). There were changes in the distribution of appropriations within the group as well.

To begin with, the clear orientation of PROW-2006 and SPOR-2006 to promote modernisation investments in farms is not continued in PROW-2013. In the seven-year period, support for investments in agricultural holdings (budget after reallocations) will total nearly EUR 2.9 billion, i.e. a mere EUR 410 million annually. However, in the previous financial perspective measures supporting the development of agricultural holdings were co-financed with public funds of ca. EUR 630 million annually. Even more conspicuously, the programme lacks continuation with regard to the share of appropriations to foster investments in agricultural holdings in the two periods in the total public funds. In PROW-2013, they represent (after reallocations) 16.4% of the planned public contribution, i.e. less than half the 2004–2006 figure. However, the demand for financial support for investments in agricultural holdings far exceeds the funds reserved for this purpose in PROW-2013. It is reflected, for instance, in the number of applications for support submitted between 2008 and 2009.

The appropriations of PROW-2013, as in the case of SPOR-2006, are mostly used to co-finance purchases of machinery. Undoubtedly, mechanisation contributes to the modernisation of Polish agriculture, but with a minor influence on economic size of farms. In 2007-2013 the production structures of Polish agriculture will only change to a limited degree. If in the next multi-annual rural development programme (for 2014–2020) the EU rules on support for agricultural holdings remain unchanged, in 2021 Poland will still rank among those EU Member States where the majority of farms, for structural reasons (too small economic size), are not able to ensure a fair income for the farmers concerned.

The measures to compensate for income foregone include the agri-environmental scheme and the afforestation of agricultural land. The funds planned amount to EUR 2.8 billion, i.e. more than a fivefold increase in comparison with the previous programming period. Their share in the total appropriations nearly tripled. A relatively limited part (ca. EUR 650 million) is assigned to the promotion of afforestation (mostly funds reserved to cover payments in respect of commitments made during the implementation of PROW-2006). Nearly 80% of appropriations (over EUR 2.3 billion, of which ca. EUR 850 million reserved for the clearance of commitments contracted during the implementation of PROW-2006) are allocated for the financing of the agri-environmental scheme. Without denying the need to protect the rural environment, it seems that there is an imbalance between funds intended to support the development of agricultural holdings (with less than EUR 2.3 billion

for new commitments) and those for the financing of agri-environmental schemes (with nearly EUR 1.5 billion reserved for funding new commitments). Probably, such proportions would be appropriate if Polish agriculture had a favourable agrarian structure and was capable of financing development with own funds and commercial loans.

In the current circumstances, the agri-environmental scheme should be mainly used to finance three “natural” packages: “Protection of endangered bird species and natural habitats”, “Conservation of endangered plant genetic resources in agriculture” and “Conservation of endangered animal genetic resources in agriculture”. However, the majority of farmers participating in the agri-environmental scheme choose “packages” protecting soil and water. At least a part of those agro-technical procedures should be performed by farmers without subsidies as normal farming practice. Another popular “package” supported under the agri-environmental scheme is the conversion to ecological farming. But is the environmental impact of an ecological farm essentially different from that exerted by a “traditional” holding applying good farming practice? Is ecological food healthier than traditionally produced food compliant with all sanitary and veterinary requirements?

It is fundamental, although usually overlooked, whether the current agri-environmental scheme, with voluntary participation, brings sustainable results. A farmer signs a five-year contract that expires after five to seven years. It is possible that then farmer will return to “traditional” farming.

As regards social measures (“Structural pensions”) and agricultural income support (Support for farming in less-favoured areas – LFA; according to the EU classification, is included in the set of measures intended to protect the environment), the PROW-2013 appropriations for such purposes total approx. EUR 5.0 billion, of which ca. EUR 2.5 billion for the funding of structural pensions. Unquestionably, this amount might be used in a much more efficient manner if it were assigned to measures modernising Polish agricultural holdings.

The level of public funds for the two measures as well as the conditions for the granting of subsidies or pensions were strongly affected by decisions taken in the previous budget period. This is particularly true of subsidies for farming in less-favoured areas as the area of agricultural land covered by such subsidies was determined on the basis of the delimitation prepared by the Institute of Soil Science and Plant Cultivation (*Instytut Uprawy, Nawożenia i Gleboznawstwa*), and changing it now is virtually impossible. At the same time, it would be possible, but very difficult, to reduce the level LFA payments per hectare which in Poland is much lower than the maximum possible.

Although the structural pensions (early retirement) system should be stable, the criteria for the granting of pensions were changed during the preparation of PROW-2013. The new rules are much stricter than the previous regulations, which results in a substantial drop in the number of potential pensioners. The maximum number was set at 50,400, i.e. only ca. 7,000 pensions to be granted annually between 2007 and 2013 (the annual average for the period 2004 to 2006 was 24,000 structural pensions). Furthermore, the new structural pensions are much lower than those granted under PROW-2006.

The new regulations cannot be applied retroactively, thus the structural pensions from 2004–2006 will be paid as granted in full until they expire. The PROW-2013 funds reserved for covering the commitments made in the previous period amounted to EUR 1.4 billion. However, this amount proved to be insufficient and was increased by EUR 362 million. Simultaneously, the number of pensions to be granted in 2007–2013 was cut to 20,400, i.e. approx. 3,000 annually and further restrictions were introduced. Since nearly 14,000 positive decisions were issued in 2007–2008, the lowered limit has been almost exhausted. In the following years only a marginal number of applications will be received, and the operation of the measure will soon be reduced to the payment of pensions granted.

Investments in businesses operating in the agri-food industry and trade were treated in a similar fashion to investments in agricultural holdings. In PROW-2013 there was a reduction in the share of funds for the co-financing of investment activity of industrial and commercial agri-food companies in the total appropriations to 5.4% (after reallocations), and the annual contribution fell from EUR 155 million in SPOR-2006 to EUR 133 million. Meanwhile the agri-food industry processes the majority of agricultural products and determines development of agriculture. At the same time, it is necessary to develop it further as the Polish agri-food industry still has, despite a rather widespread belief, a weak position in EU markets. Another argument for maintaining the co-financing of investments in certain food industries vital to agriculture is combining public funds with own resources of enterprises. Public funds only cover a certain share of investment costs, up to 50% of the so-called eligible costs. Therefore, at least 60% of investment costs are incurred by the assisted operator from own funds (total costs also comprise non-eligible costs, covered in full by the beneficiary). Thus, public support for investments in the agri-food industry has a multiplier effect as beneficiaries invest their own financial resources. It was assumed in PROW-2013 that PLN 1 of public funds supporting investments in the agri-food industry and trade would generate investment worth

PLN 4. Public assistance to the modernisation of agricultural holdings also leads to a multiplier effect due to the requirement of farmers' own contribution.

The appropriations assigned to the development of non-agricultural activities in rural areas in PROW-2013 are much higher than in the case of the previous programmes. They were divided into two measures. More than EUR 1 billion was allocated to the "Creation and development of micro-enterprises". The other measure, "Diversification into non-agricultural activities", with much lower appropriations (nearly EUR 350 million), is the continuation of measures included in the previous programmes managed by MRiRW and consists in supporting farmers or members of farming families running or starting small businesses. It is mostly targeted at persons with small agricultural holdings which do not ensure fair living standards. Both measures show that the funds available under PROW-2013 will be used to support projects helping transform rural areas currently dominated by agriculture into multifunctional regions.

3. Conclusions from the remarks on the preparation and implementation of agricultural and rural development programmes

3.1. Introductory remarks

At present it is too late for any major amendments to PROW-2013. It will be implemented with minor adjustments to current needs, consisting in transfers of funds between measures. Hence, this study only comprises substantive and organisational conclusions which may be useful in the preparation of an agricultural and rural development programme for 2014–2020.

3.2. Organisational conclusions

1. Thus far, EU-supported multi-annual programmes for agricultural and rural development have been, as a rule, launched with a considerable delay (a year or even more). One of the reasons has been the protracted work of the Commission on implementing regulations to Council regulations, but Member States participating in this work share the blame. However, as the formal period of the implementation of EU-supported multi-annual programmes is seven years, or actually nine years on account of the n+2 rule, full implementation of a programme is possible despite a delayed launch. However, in the economy time is a value and it is not irrelevant when a project is completed and starts to bring results. Moreover, a delay distorts the smooth implementation of a programme, with a pile-up of procedures such as the receipt and examination of applications for support and the clearance of accounts of completed projects. One of the tasks for

Polish EU presidency should be efforts to prepare EU legislation in time for the next stages of the preparation of EU-supported programmes (not only those for agriculture and rural areas) for 2014–2020 to be timely completed and their launch to be possible in the first months of 2014. If the Polish presidency shows sufficient determination, this goal can be achieved as in the second half of 2011 the legislative work of both the Council and the Commission should be much advanced.

2. Timely adoption of relevant EU legislation is necessary but insufficient for the launch of the programme without delay. It is also indispensable to timely prepare national legislation (an act and ordinances of the Minister of Agriculture and Rural Development and of the Minister of Finance based on it). However, much of the Polish legislation necessary for the implementation of PROW-2013 was adopted with delay, and the majority of the ordinances had already been amended. Thus, it turned out that the legal service of MRiRW failed to meet the deadline, and the provisions adopted required amending, for various reasons. Moreover, the legislation fails to satisfy one of the criteria of sound regulation as it is not clear, simple and precise. It is particularly important to beneficiaries, having a vested interest in the content of the relevant legislation; as a rule, farmers and rural dwellers are not lawyers, fully acquainted with the specific vocabulary and language of legal acts. Furthermore, after amendments some ordinances appeared to be unreadable due to the lack of consolidated versions. The legislative work on the next programme for the development of agriculture and rural areas must be much more efficient than in the case of PROW-2013, and the improved efficiency should consist in timely preparation of well-drafted regulations.
3. It is much more important to resolve the issue of ARiMR, which as the managing authority and the paying agency constitutes the key institution in the implementation of agricultural and rural development programmes. The Agency must follow detailed procedures (manuals of procedures), but undoubtedly much also depends on management efficiency and the service of beneficiaries by the ARiMR staff (according to the surveys conducted in the Podlaskie, Podkarpackie and Wielkopolskie voivodships among the farmers and enterprises assisted under the SAPARD, PROW-2006 and SPOR-2006, assessments of ARiMR tended to be positive or very positive). The Agency, set up in 1993, should have a well-established organisational structure and sound management after more than a decade of existence, but it has been in crisis in recent years. One requisite for sound management of ARiMR is the stabilisation of top managers. However, the Agency is seen

by successive governments as part of “political spoils”, which is reflected in frequent changes of the president and members of the management board as well as of managers in the head office and branches. Frequent changes of managers could be prevented by a procedure of competitions and tenurial management contracts, only allowing early retirement for an important reason specified in the contract.

3.3. Substantive conclusions

1. PROW-2013 does not satisfy the postulate of the concentration of appropriations on measures improving the competitiveness and productivity of the Polish food sector, including Polish agriculture. It is characterised by a rather even distribution of public funds (shares after reallocations; cf. Table 2) between the following measures: (1) the development of the food sector (slightly over 28%, of which 23% for agriculture), (2) the development of other economic sectors (less than 17%), (3) the protection of the agricultural and rural environment (18%), (4) agricultural income support and social measures (nearly 29%), other measures (9.4%). As regards its objectives, it is a compromise between different goals and needs. Naturally, such a programme will satisfy no-one, but neither can anyone submit that it excludes measures which should be implemented.
2. Undoubtedly, the structure of the programme and the breakdown of funding between measures were largely affected by decisions taken during the preparation of PROW-2006 and SPOR-2006. Those choices resulted in considerable amounts of fixed commitments and inflexible measures, and in fact forced the authors of PROW-2013 to reserve significant funds for agricultural income support and social measures. As a consequence, in PROW-2013 such measures, i.e. structural pensions (early retirement) and support for farming in mountain areas and in other areas with handicaps (less-favoured areas – LFA), accounted for a share nearly 6 percentage points higher than that of measures promoting the development of the food sector.
3. Only the need to cover in 2007–2013 the financing of the commitments made during the implementation of PROW-2006 fully revealed the danger of turning the EU-supported agricultural and rural development programme in Poland into a social assistance scheme. Such risk is still relevant, despite the new regulations amending the eligibility provisions and thus limiting the number of potential new pensioners or changes to the programme reducing the number of pensions to be granted under PROW-2013 nearly by half, since PROW-2013 continues the policy of maintaining farming in less-favoured areas under the PROW-2006 rules.

The eligibility criteria for LFA payments and their level applicable in the previous financial perspective remained unchanged.

4. It is now too late to reduce funds for agricultural income support or limit social measures in PROW-2013. Such amendments are only possible when a programme is being prepared and approved. Therefore, analytical work necessary for designing a sound programme for 2014–2020 should start now. One of the early stages should be an estimation of amounts to be reserved in the successive multi-annual programme for agriculture and rural development for the funding of fixed commitments (structural pensions, afforestation, the agri-environmental scheme, producer groups) and inflexible measures (support for farming in mountain areas and in other areas with handicaps). Such an estimation is indispensable, particularly that in 2014–2020 Poland is likely to have at its disposal lower EU appropriations for the development of agriculture and the countryside.
5. The continuation of the measures “Structural pensions” and “Support for farming in mountain areas and in other areas with handicaps (less-favoured areas – LFA)” under the current rules and with limited financial resources would be inconsistent with long-term development priorities for the Polish food sector and rural areas. Preparations should be made presently to decrease the appropriations for structural pensions and subsidising farming in less-favoured areas under the following multi-annual programme. A further reduction in the number of new structural pensions (a much better solution would be to cease granting new pensions) will be possible in the process of programme preparation.
6. Reducing the support for farming in less-favoured areas will require more stringent delimitation criteria. It is, unquestionably, a difficult decision to take. Thus far, the criteria have been mainly determined by Member States. The Commission is preparing new, probably much tighter delimitation criteria to be applicable in all EU Member States. For Poland, such a solution would be an advantageous way of reducing the area of agricultural land classified as less-favoured areas as it would be the EU authorities’ decision rather than one made by the Polish government.
7. Another issue worth considering is whether the area covered by certain agri-environmental “packages” should be increased further. The promotion of ecological farming on a large scale is particularly doubtful. In Poland the market for ecological food continues to be rather small. As a result, at present the strongest incentive to the conversion to ecological farming is the agri-environmental payment rather than the interplay of demand and supply

in the Polish ecological food market and in export outlets. However, the current legislation only provides for the agri-environmental subsidies for a fixed period. Thus, if a well-established market for ecological food does not develop in the next few years, at least in some farms no longer eligible for support ecological production may prove to be unprofitable. Possibly, owners of such holdings would then decide to return to “traditional” farming methods. It would be not only a “waste” of the funds granted to the conversion to ecological farming, but also a failure to farmers compelled to make such a decision. Therefore, decisions on increasing the number of ecological farms through subsidies compensating for higher production costs during conversion should be taken with caution and follow in-depth analyses of demand and supply.

8. At the same time, certain other packages represent procedures which should be performed in all well-managed farms. Undoubtedly, they do have a favourable impact on the rural environment, but is it the reason for agri-environmental payments? Projects eligible for funding under the packages “Extensive permanent grassland”, “Soil and water protection” and “Buffer zones” should be included in the list of procedures of good agricultural practice rather than constitute part of an agri-environmental scheme.
9. Funds freed as a result of reducing the budgets for agricultural income aid and eliminating or at least limiting some of the agri-environmental packages should be assigned to measures fostering the economic development of rural areas. The focus should be on four measures. With regard to the food sector, those should comprise “Modernisation of agricultural holdings” and “Adding value to agricultural and forestry products”, whereas greater support to other economic sectors should be granted under the “Creation of development of micro-enterprises” and “Diversification into non-agricultural activities”.
10. It is necessary to continue investment support of agricultural farms, but successful modernisation depends on its scope. The appropriations of PROW-2013, as in the case of the previous programmes, are primarily used to co-finance purchases of machinery. Undoubtedly, mechanisation contributes to modernisation, but with a minor influence on production structures, including on increasing the economic size of farms. Therefore, in 2007-2013 the production structures of Polish agriculture will only change to a limited degree. If in the next rural development programme (for 2014–2020) the scope of support for agricultural holdings remains unchanged, in 2021 Poland will still rank among those EU Member States where the majority of farms, on account of too small economic size, are not

able to ensure a fair income for the farmers concerned. Therefore, efforts should be made to change the current situation. Two solutions are possible. One is an attempt to amend the EU regulations restricting the possibilities for promoting investments in agricultural holdings aimed at increasing the scale of crop and livestock production. It is unlikely, however, that Poland manages to form a coalition with other Member States in order to enable such amendments. The other course of action is to complement, to a much greater extent than before, the programme co-financed from the EU budget with national programmes co-financing investments increasing the scale of production from public funds. Such a solution involves no amendments to EU regulations, but it is indispensable to obtain the Commission's approval, which is no easy task.

Regional differences in agricultural development and their impact on economic and social problems of rural areas

The main focus of the study and analyses was to describe changes in the basic agricultural structures in Poland and to identify the factors influencing rural development. They took account of both socio-demographic conditions and differences in the economic characteristics of Polish agriculture.

The analyses were carried out at the level of macro-regions, *poviats* and municipalities (*gminas*) as well as rural settlements. Bearing in mind historical differences between regions in the main problems of agricultural and rural development in the demarcated macro-regions, the emphasis was placed on the assessment of structural transformation in particular areas with regard to the improvement in the competitiveness of Polish family farms, the progress in the diversification of incomes for the rural population as well as the acceleration of the civilisational development of the countryside. The research also addressed the role of institutions in stimulating entrepreneurship and promoting economic initiatives for local development.

The source data used in the preparation of specific sections of the report were primarily those produced by own field research. In particular, the study widely relies on the findings from the 2005 survey carried out on a representative sample of ca. 8,000 rural households (including approx. 3,700 households with a family farm) and from interviews conducted in rural municipalities in the following years. Furthermore, it is also based on the available general statistics, mostly of GUS and Eurostat, but in a number of cases performing more detailed analyses involved ordering additional, unpublished numerical material data.

The research has shown that, despite the wide range of instruments stimulating changes in agricultural structures launched after Poland's accession to the European Union, the fundamental problem of Polish agriculture remains the fragmented agrarian structure, which is tantamount to a high number of holdings poorly endowed with factors of production, with limited investment capacity, significant and poor quality workforce as well as obtaining relatively low income. As a consequence, the existing conditions hamper the economic development of the agricultural sector, which is reflected in the civilisational backwardness of rural areas and in generally lower living standards in the countryside.

Table 1. Number of agricultural holdings and the land-use structure in the EU and in Poland by farm size class

Specification	Farm size class in ha of UAA				
	<5	5-<10	10-<20	20-<50	>=50
Number of agricultural holdings (million)					
EU-27 (14.5)	71.5	10.9	7.1	5.7	4.8
EU-15 (5.8)	54.6	12.9	10.7	11.2	10.6
Poland (2.6)	70.1	15.5	9.5	4.0	0.9
of which: family farms with more than 1 ha (1.8)	57.5	22.2	13.5	5.7	1.1
Agricultural land held by farms (million ha)					
EU-27 (172.0)*	8.6	6.4	8.4	15.1	61.5
EU-15 (124.9)*	4.5	4.3	7.1	16.9	67.2
Poland (16.2)	18.1	17.5	20.8	18.4	25.2
of which: family farms with more than 1 ha (14.1)	18.5	20.1	23.8	21.0	16.6

* including the area of land expressed as UAA (Utilised Agricultural Area) – areas used for agriculture, i.e. arable land, meadows and permanent pasture, areas under cereals and vegetable gardens.

Source: own calculations based on data of GUS (Statistical yearbook of agriculture and rural areas, GUS, Warsaw 2008) and of the European Commission.

(http://ec.europa.eu/agriculture/agrista/2008/table_en/en354.htm, 10.09.2009, 2005 figures).

On account of land fragmentation, characteristic of Polish agriculture, Polish farms account for 17.5% of the total number of agricultural holdings in the EU-27, and the number of persons employed in agriculture, forestry and fisheries represents 16.6% of the total employment in this sector (according to Eurostat data for 2007). Poland is far above the EU average number of farms: 1,800,000 in Poland against 507,000 per EU Member State. This is also the case for agricultural employment, with 19% in Poland as compared to the EU average of 6% (measured at the NUTS-2 level).

As a result, the majority of Polish agricultural holdings, especially family farms, are not competitive, and agricultural income obtained is strikingly low. This situation could be changed and the process of concentration could be accelerated by increased land mobility through commercial transactions. For several years, there has been considerable pressure from the demand side (pushing up land prices at an unheard-of rate), but the very limited supply of land for sale continues to pose a barrier. The stock of the Agricultural Property Agency is running low, and the majority of land transactions are non-commercial (within families). Nearly 90% of farms are transferred as family

inheritance, with rising land prices strengthening the importance of owned agricultural land as an asset and increasing its attractiveness as property.

The necessary structural changes in the agricultural sector towards improving its competitiveness and ensuring satisfactory income from farming require speeding up the decline in the number of persons employed in family farms and the professionalisation of such farm work. The reduction in agricultural employment will be largely connected with changes in the area structure and the modernisation of agricultural production techniques. According to the development patterns observed so far, the outflow of workforce from farming usually precedes land transformation and forces the dissemination of labour-saving methods of production.

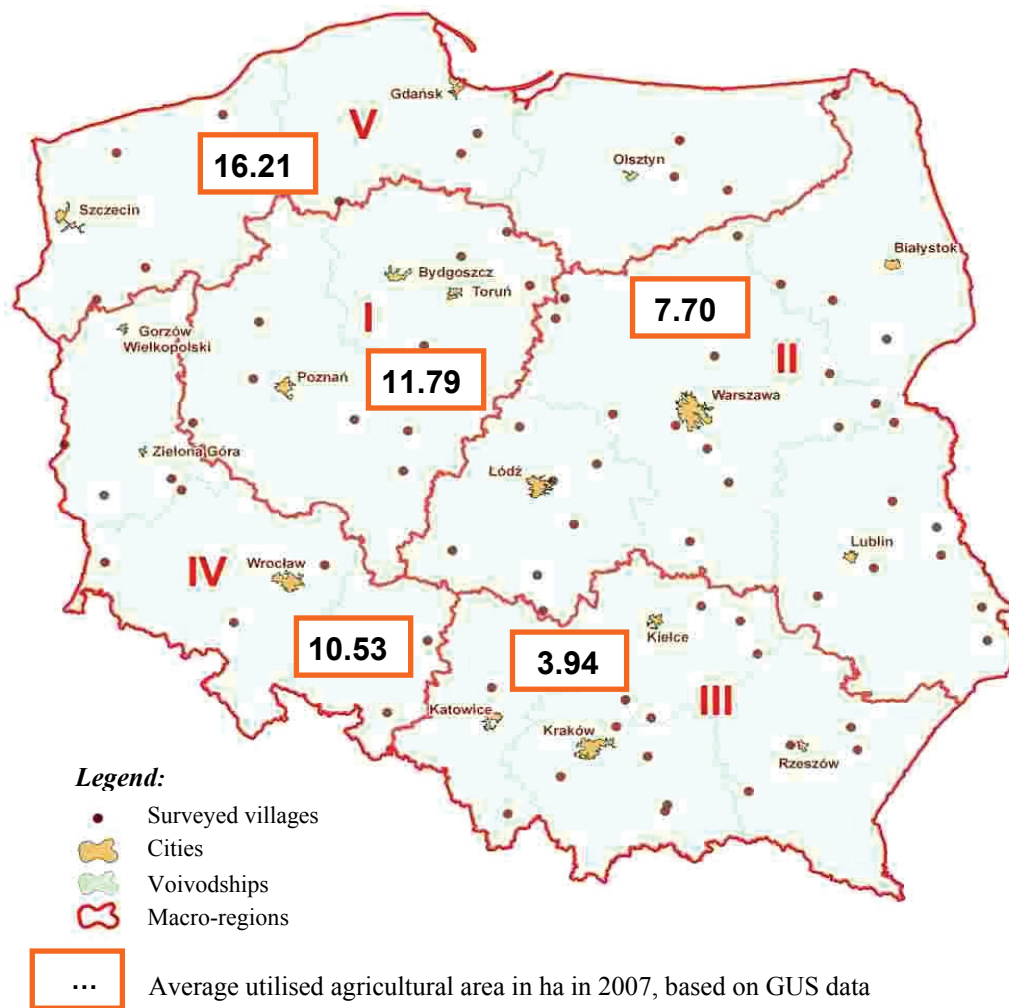
The analyses conducted suggest that developing a competitive agriculture would now involve intensive concentration of land in commercial holdings in Poland. Such transformation is not only indispensable to ensure the competitiveness of Polish agriculture, but it is also necessary in the context of sustainable development of agriculture and rural areas. It entails increasing the stock of land held by farms capable of competing in ever more liberalising agricultural markets rather than extreme land concentration.

The trends observed varied greatly between regions. The most advanced concentration of agricultural land was found in the Wielkopolskie and Kujawsko-Pomorskie voivodships, whereas in southern Poland, particularly in the Śląskie, Podkarpackie and Małopolskie voivodships, the land structure of agricultural holdings continued to be considerably fragmented.

Changes in the area of farms situated in particular voivodships did not reduce historical differences between regions in the agrarian structure. Regional dissimilarities remained significant, as shown in the proportion of relatively small holdings (1 to 2 ha of UAA) exceeding 40% in the above-mentioned southern voivodships as well as in a 22% share of farms with 20 ha or over in the Warmińsko-Mazurskie voivodship.

The differentiated area structure of agricultural holdings largely reflects the different role of agriculture as a livelihood for rural families, the scale of paid employment, unemployment and the importance of socio-cultural factors such as the observance of traditional forms of inheriting holdings, the attachment to the patrimony, etc.

Map 1. Average area of family farms with at least 1 ha of UAA by macro-region* in 2007



* The macro-regions are demarcated and denoted as follows: the **Central Western Macro-region (I)** – the Kujawsko-Pomorskie and Wielkopolskie voivodships; the **Central Eastern Macro-region (II)** – the Mazowieckie, Lubelskie, Łódzkie and Podlaskie voivodships; the **South-Eastern Macro-region (III)** – the Małopolskie, Podkarpackie, Śląskie and Świętokrzyskie voivodships; the **South-Western Macro-region (IV)** – the Dolnośląskie, Lubuskie and Opolskie voivodships; the **Northern Macro-region (V)** – the Pomorskie, Warmińsko-Mazurskie and Zachodniopomorskie voivodships.

The ownership of land should not be identified merely with the pursuit of agricultural activities, one must also bear in mind its significance as family property. For many years, the most conspicuous examples of such relationships could be found in southern Poland (mainly in the Małopolskie and Podkarpackie voivodships) where it is very common to have off-farm employment and the advancement of multifunctional rural development, considerable in certain areas, did not result in a fall in the number of holdings or stimulate land

concentration; on the contrary, it contributed to further land fragmentation on account of the continuing cultural differences. Thus, it should be concluded that economic conditions as well as social factors combine to reinforce the regional differences in the agrarian structure observed for many years and to maintain major disparities in the average farm size.

The relationships described above were also reflected in the differentiated use of specific forms of support for agricultural development available within the framework of the CAP. The single area payments constitute the most vivid example as they were distinctly higher in western and northern regions than in south-eastern Poland, owing to the differences in the agrarian structure. On account of the agricultural use of land, relatively the highest share of the total utilised agricultural area covered by the area payment scheme, 87%, characterised the Central-Western macro-region, i.e. the Wielkopolskie and Kujawsko-Pomorskie voivodships, whereas the lowest proportion, only 74%, was found in the South-Eastern macro-region, i.e. in the Świętokrzyskie, Podkarpackie and Małopolskie voivodships.

The scale of regional disparities in the socio-economic structure of the countryside and agriculture is reflected, among other things, in the share of agricultural income in the total income of the rural population. In the Central-Western macro-region rural dwellers obtain as much as 43% of the total income from farming (with direct payments representing 9.4%), in contrast to the South-Eastern macro-region where this proportion is less than 16%, of which receipts from the sale of agricultural products sales and direct payments account for 13.2% and 2.6% respectively.

According to regional dissimilarities in the structure of the rural population by main source of income, the most numerous beneficiaries of support under the measure targeted at the diversification of economic activities in rural areas were found in the South-Eastern macro-region. Thus, it should be concluded that measures for agricultural and rural development further increased significant differences between regions in the orientation of economic development and economic activities of the rural population.

At the same time, subsequent years after Poland's integration into the European Union witnessed certain trends of concentration and formation of new highly commercial holdings. In regional terms, such processes were rather distinct in the Central-Eastern macro-region where traditional family farms began to polarise into economically viable specialist holdings, seeking to strengthen their market positions, and entities mostly oriented towards subsistence production, with family members obtaining income mainly from

non-agricultural activities. Such trends were reinforced both by programmes aimed to promote the modernisation and investments in agricultural holdings launched within the framework of the CAP and by the economic conditions in the macro-region in question. On account of the fact that two large agglomerations are located there (those of Warsaw and Łódź), the situation in the labour market in the macro-region was relatively favourable, which encouraged more rural residents to commute. Furthermore, it should be noted that this macro-region is characterised by relatively the highest share of agricultural land covered by the early retirement scheme (i.e. nearly 4% of the total UAA in the macro-region in question).

The developments in the Central-Eastern macro-region confirm the notion that structural change in agriculture is closely related to off-farm employment opportunities. Bearing in mind the need to speed up agricultural transformation, it will involve an estimated number of approx. 1.5 million new non-agricultural jobs for rural dwellers over the next dozen years or so.

Non-agricultural economic activities of the rural population are increasingly determined by local entrepreneurship initiatives. A major role in such undertakings is played by institutions serving rural and rural-urban municipalities. Thus far, such institutions have contributed to local development particularly through projects aimed to enhance the quality of human capital in local communities. It follows from the surveys and analyses that such actions mainly concern training, advisory services as well as improving occupational skills and competence. Therefore, as institutions are increasingly involved in endeavours targeted to enhance human capital, they play a growing and ever-more significant role in animating rural areas. Institutional support for rural initiatives for local development and greater efficiency of such efforts are necessary, which makes it particularly important for individual institutions to accurately identify the needs of specific groups of the population. Furthermore, it is becoming vital to activate local communities since their actions might strengthen the institutional sphere and diversify the sources of financing educational services. Considering the available EU funds, a considerable part of which are used with a view of providing equal education opportunities and combating social exclusion, institutional support for such undertakings offers a real possibility to accelerate the improvement in human capital in the countryside. It is a very important task, not only for many years of the civilisational backwardness of rural dwellers, but also on account of the development potential of rural communities.

Nearly 40% of Poland's total population lives in the countryside in landless households representing as many as 57% of rural inhabitants. In recent

years, the farming population has distinctly rejuvenated as there has been a rise in the share of the youngest persons (i.e. less than 15 years of age).

Even though only 37.7% of Poland's working-age population is represented by rural dwellers, the rural population continues to account for growth in the total number of persons in this age category. Between 2004 and 2008 the working-age population increased by more than 400,000 in the countryside, whereas it dropped by 84,000 in urban areas in the period in question.

The rural and urban population still markedly differed in the educational level, although rural as well as urban dwellers had ever-growing educational aspirations. Despite a distinct improvement in the educational level in the countryside in 2007, as in previous years, rural areas – in comparison with the cities – were characterised by almost half the share of persons with at least secondary education and less than one-third of the proportion of those with a university degree. Such disparities stem not only from more difficult access for rural youth to higher-level educational establishments, but also from fewer, less diverse and financially attractive job opportunities in the countryside than in towns and cities. Those are the most important reasons for outward migration from rural areas, to urban areas or to foreign countries.

The analysis of the demographic characteristics of outward rural migrants shows that they tend to be young and well-educated. In 2005, nine out of ten persons leaving the countryside represented the mobility working age, and six out of ten had at least secondary education. In the case of both farming and landless families, more women than men left rural areas, they were also better educated, which determined a relatively high educational level of outward migrants.

Although migration processes slow down the improvement in the quality of human capital in rural communities, the outflow of rural dwellers may have a favourable effect on the countryside from the point of view of gradual reduction in agricultural overpopulation. Not infrequently, migrations result from better use of labour in farms, thus excluding redundant persons from agricultural production. Furthermore, one should bear in mind that some migrants return to the countryside having raised their qualifications and gained work experience, whereas financial transfers to home villages may contribute to enhancing the economic situation of rural families, increasing investments in agricultural holdings or starting non-agricultural business activities.

As far as farmers are concerned, the findings from field surveys demonstrate that between 2000 and 2005 this occupational group showed an

improvement in the quality of human capital, measured by the level of education (both general and agricultural) and by the frequency of using professional advisory services. In the period in question, the most rapid growth was observed in the share of farm managers with secondary or higher education periodically using agricultural advisory services. The analysis of the collected data confirmed the existence of a positive correlation, if still rather weak, between the variables describing human capital and the value of market output of the surveyed agricultural holdings. Among the variables selected for examination, the strongest effect on market output was found in the case of the frequency of cooperation between the farm manager and the advisor. There were significant differences between farmers broken down by level of (general and agricultural) education and by using agricultural advisory services in the average value of sold agricultural production. In spite of the above-mentioned relationships, the fact remains that Polish agriculture has insufficient human capital (the education attainment level, participation in training), far below actual needs.

Increasing competition and frequent changes in agricultural markets will impose greater demands on farm managers. Economic success will involve ever more comprehensive knowledge and skills beyond agronomic education. For many farmers, this will mean the need to participate in training systems. Such efforts will be promoted by programmes targeted at investment in human capital in agriculture, incorporated into the EU and national rural development policies for 2007–2013.

The analysis of the EAFRD appropriations allocated to individual Member States has shown that between 2007 and 2013 relatively the most funds to implement measures for upgrading human capital will be expended in Poland. The aid intensity of policy instruments aimed at enhancing human capital in Poland was 17%, against the EU-27 average of 7%. In reality, however, it was only indirectly related to the role of human capital measures included in the Polish programme PROW, and mostly resulted from the adopted structural pension scheme. The aid intensity of instruments directly aimed to strengthen human capital in agriculture (training, advisory services, the dissemination of information) remained limited, roughly the same as the EU average.

It should be pointed out that in the following years, as the concentration processes in agriculture intensify, skills will play an increasing role in determining the position of Polish agriculture in internal and global markets.

At present, structural limitations pose the main barriers to the improvement in the competitiveness of Polish agricultural holdings. However, as demonstrated by the surveys, the quality of human capital will be of growing importance also

to the transformation of agricultural structures, e.g. for its influence on the ability to exploit stable and well-paid job opportunities outside agriculture, a prerequisite for reducing farm employment and accelerating concentration processes in agriculture. It is indispensable to speed up such changes since, according to estimations, a mere half of agricultural land is utilised efficiently, taking account of holdings held by both natural and legal persons. It should be attributed to the still marginal number of highly commercial family farms.

The survey findings suggest that the introduction of market rules in family farming triggered the formation of a group of entities actively adjusting their economic activities to the new conditions. This category included holdings with significant means of production, capable of obtaining agricultural income equal to or greater than the average wage in non-agricultural sectors. According to estimations, there were approx. 230,000 such farms. Although the number of highly commercial holdings has jumped by 59% since the beginning of transition, and their share in the total number of family farms has gone up from 6% to 12%, they are still too few to effectively strengthen the competitiveness of Polish agriculture in the European Union and global markets.

The inclusion of Polish agriculture in the CAP primarily expanded opportunities for the modernisation of agricultural activities. The launch of various support programmes for farming boosted the investment activity of highly commercial entities relatively soon.

Highly commercial farms proved to be capable of competing in the domestic and international markets, and employment in such holdings is increasingly attractive. In 2005, the average agricultural income per full-time worker in this group of entities was PLN 46,800, nearly 2.5 times higher than the average net wage in the whole national economy.

The rise in the number of highly commercial holdings was accompanied by relatively intensive processes of concentration of production resources in this category of entities. According to the surveys, in the group of highly commercial farms structural changes were much faster in 2000–2005 than in the previous period. Such processes clearly prove the favourable contribution of Poland's integration into the EU and inclusion in the CAP to the strengthening of the segment of highly commercial family farms. The application of the CAP to Polish agriculture resulted not only in increased requirements, but also in an improvement in the economic conditions for farming and in greater opportunities to benefit from various EU funds fostering the modernisation of agricultural activities. The above-mentioned factors stimulated the investment activity of managers of highly commercial holdings. Between 2000 and 2005,

their projects aimed to increase fixed assets accounted for nearly 40% of all productive investments implemented in family farming and for 72% of the expenditure involved. For comparison, in the previous five-year period the respective proportions had been 18% and 45%.

As a result of more buoyant investment activity, there was an improvement in the competitiveness of highly commercial family farms. It was reflected, among other things, in an increased production potential, measured by the economic size. In 2005 the average economic size of highly commercial holdings was ca. 33 ESU, whereas previously it had been 10 ESU. Moreover, the share of sales by highly commercial farms in the total commercial production in family farming grew to 62%. At the same time, this category of entities held 38% of the utilised agricultural area.

It follows from the surveys that support instruments launched within the framework of the CAP provided considerable assistance particularly to this group of farms which as early as the pre-accession period had been distinguished by greater productive assets and the farmers' efforts to attain the strongest possible market position.

The difficulties in entering the group of highly commercial farms by new entities were reflected in the figures on those which were included in this category for the first time in 2005. They were characterised by a large utilised agricultural area (an average of 30 ha), a high share of the so-called specialist holdings (55%) and relatively stable market links (40% had an established purchaser of their agricultural products). The productivity of production factors was several times higher in such farms than in the whole group of commercial holdings. For instance, in 2005 the average sales per ha of utilised agricultural area in such entities amounted to approx. PLN 7,000, as much as 80% more than in other commercial farms. Furthermore, it should be emphasised that farmers engaged in such holdings were distinguished by a much more favourable demographic structure and a higher level of general and agricultural education in comparison with the rest. It was particularly true of farm managers. In the case of new highly commercial farms, as many as 34% of farm managers held a university degree.

The above figures clearly show how difficult it is, considering current land fragmentation and the limited production potential of the majority of Polish family farms, to develop a competitive position in the agricultural market. It needs to be stressed that the number of such holdings varies between regions. Most of them are situated in central-western Poland (in the Wielkopolskie and Kujawsko-Pomorskie voivodships), i.e. in areas which have been long

distinguished by relatively the highest agricultural condition and the greatest economic power of agricultural holdings. In the macro-region in question, as many as 30% of family farms represented highly commercial entities (in terms of income obtained from commercial agricultural production), which was the highest proportion in Poland. At the same time, in the south-eastern regions agriculture was characterised by the lowest share of highly commercial farms. In this macro-region such holdings were not only relatively the least numerous, a mere 7%, but their number showed a mild decrease between 2000 and 2005. It should be mainly attributed to the specific features of the South-Eastern macro-region. Compared to other parts of Poland, it is characterised by particular land fragmentation and rather widespread non-agricultural gainful activities (both paid employment and self-employment) of farm holders. In the macro-region in question, for the majority of owners of agricultural holdings the property mostly serves as a dwelling, and agricultural activities primarily represent subsistence production. On account of the relatively small area of agricultural land, commercial farms are usually engaged in less traditional types of farming which typically involve significant capital. The example of the South-Eastern macro-region confirms that the agrarian factor continues to play a relatively important role in the development of the economic situation of Polish agriculture.

To recapitulate, it should be emphasised that stimulating the processes of efficiency-driven agricultural restructuring, forced by the competition in the domestic and foreign markets, will entail the liquidation of a certain part of holdings. It follows from the surveys conducted that the freeing of the area of agricultural land necessary to increase the production potential of Polish agriculture would require a reduction in the number of farms at least by half, which implies the creation of non-agricultural jobs for approx. 66% of persons presently engaged in farm work. Under the current economic conditions, the primary objective of the agricultural policy should be the intensification of instruments fostering the diversification of economic activities of the farming population. Institutional efforts aimed at improving the quality of human capital in rural communities are indispensable to the implementation of such measures.

Economic results of selected agricultural products in 2005–2008

Introduction and methodology

The research referred to in this chapter was based on empirical data collected and processed according to the rules of the AGROKOSZTY system. The surveys covered farms located across Poland and engaged in the activities selected for activity surveys. Those farms rank among economically stronger agricultural holdings, with output above the national average for family farms. For this reason, the results obtained should not be directly translated into national average results. But multi-annual surveys indicate that the calculations carried out provide a reliable picture of the income situation in groups of farms (with a specific scale of production), correctly reflect cost trends and can be used to examine interrelations between production profitability and its main determinants.

In the calculations of standard gross margins, the data were processed according to the methodology adopted for the AGROKOSZTY system, in line with the EU requirements. As regards accounts enabling the computation of income from activity, the level of particular components of indirect costs was determined on the basis of data provided by the Polish FADN. This methodological approach is applied to unit cost accounts performed at the Agricultural Accountancy Department of IERiGŻ-PIB.

A simplified method for calculating the standard gross margin and income from activity is presented below¹:

$$\begin{aligned} \text{Standard gross margin} &= [(\text{value of production} - \text{specific costs}) = \\ &= \text{standard gross margin without subsidies}] + \\ &\quad \text{subsidies}^2 \end{aligned}$$

$$\begin{aligned} \text{Income from activity} &= [\text{value of production} - (\text{specific costs} + \text{indirect costs}) = \\ &= \text{income from activity without subsidies}] + \text{subsidies} \end{aligned}$$

¹ For a more detailed description of the methodology adopted, see Multi-annual Programme Report (*raport PW*) No 140, “Production, costs and standard gross margins of selected agricultural products in 2008” (*Produkcja, koszty i nadwyżka bezpośrednia wybranych produktów rolniczych w 2008 roku*) and the publication “Economic results of selected agricultural products in 2008” (*Wyniki ekonomiczne wybranych produktów rolniczych w 2008 roku*), IERiGŻ-PIB, Warsaw 2009.

² Subsidies exclude the single area payment.

Obtaining relatively high income represents an important economic objective for the farmer. The level of income is the result of a number of factors, particularly the stock of production resources and the method for using them, the level of production inputs, prices at which the farmer sells his agricultural products as well as prices for production inputs and services purchased for production purposes. The ability to exploit the opportunities offered by European integration is also of significance. The survey results indicate that it is a real possibility for improving the income situation of farmers.

The period in question (2005–2008) witnessed major changes in external conditions for farming, both economic and climatic. Furthermore, there were changes in farming intensity and fluctuations in the profitability of production in particular agricultural activities. In order to show the scale of such developments, the surveys covered selected activities of considerable economic importance carried out in conventional farms, i.e. winter and spring wheat, winter rye, oats, winter rape, sugar beet, potatoes for human consumption, fattening pigs (i.e. pigs for slaughter) and dairy cows.

With the view of demonstrating the trends of production costs and income from activity, two selection methods were applied. Data collected from the so-called “holdings recurring in survey years” served as the basis for a comparative analysis. Thus, the results obtained were not subject to deviations resulting from changes in the population of farms. The second method of grouping agricultural holdings was based on an economic criterion, i.e. the standard gross margin without subsidies from the surveyed activities. The results were presented for quartiles of farms, as average values for the selected farms broken down into three groups: the best, the average and the weakest units. In this case, the analysis identified factors determining the value of production and the examined categories of income, as well as the relationship between specific costs and total costs, and between the standard gross margin and income from activity.

The survey results

The surveys conducted continuously in 2005–2008 indicate development-oriented changes in the farms covered by the AGROKOSZTY system. It is assessed that decisions made by farm managers were largely influenced by several years of Poland’s inclusion in the EU structures and by support in the form of subsidies. First and foremost, they increased the utilised agricultural area as well as improving fixed assets used in production, farmers invested particularly in tractors, agricultural machinery and tools. The rise in the value of fixed assets per ha of agricultural land ranged from several to over ten percent. It frequently resulted in reduced labour input, which enhanced labour productivity.

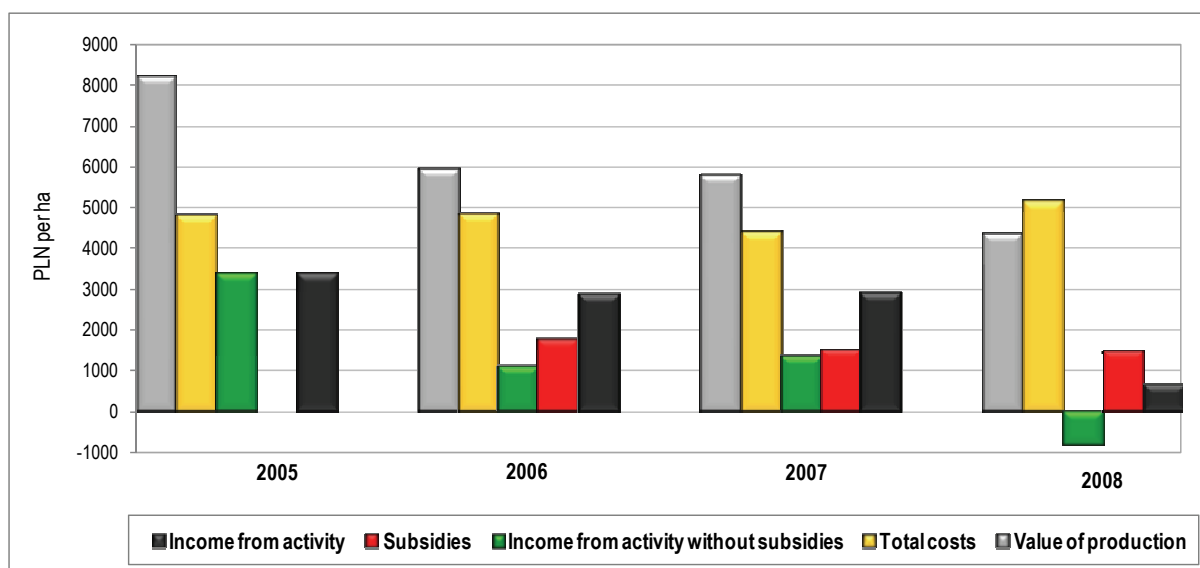
As regards changes in agricultural inputs in survey years, in the case of cereals the amount of NPK fertilisers per ha remained basically unchanged. At the same time, in the subsequent survey year increased fertilisation was reported by producers of sugar beet – by ca. 5%, potatoes for human consumption – by approx. 15%, and winter rape – by ca. 28%. There were also changes in the consumption of concentrated feedingstuffs per kg of weight gain in pig farming, in 2008 it dropped by 15% (3.95 kg against 4.65 kg) on 2005. Although it continued to be rather high, the downward trend indicates producers' decisions aimed to cut production costs.

The economic results of the surveyed activities were also influenced by the level of output, the production and price results obtained and cost intensity. But support in the form of subsidies ultimately played a role, at times farmers only avoided a loss thanks to financial aid. In the years in question, the economic results of the surveyed crops (i.e. sugar beet, potatoes for human consumption, spring wheat, oats, winter wheat, rye and winter rape) should be assessed as profitable in terms of income from activity. Nevertheless, in 2008 in the case of sugar beet and oats this income was only realised thanks to subsidies, i.e. the sugar payment and the supplementary payment, which compensated for the loss, and the surplus generated income.

On account of changing production and price conditions as well as cultivation costs, there were disproportions in income from activity per ha of area under specific crops. As regards the sole exception, namely potatoes for human consumption, this income was rather stable, the years 2007–2008 were definitely the most favourable, with income per ha at PLN 3,547 and PLN 3,432 respectively (provided that the whole output was sold). Potatoes are excluded from support in the form of the supplementary payment, therefore income is exclusively determined by the market situation, weather conditions and farmers' efforts.

The growing of sugar beet also provided rather stable income in 2005–2007. But the most favourable year in this respect was 2005, i.e. before the reform of the sugar market, whereas sugar beet planters reported the worst results in 2008, i.e. the third year of the reform. There were several contributory factors such as a further fall in the purchase price for roots, a lower sugar payment and a significant rise in prices for agricultural inputs. As a consequence, a dramatic decrease in the profitability of sugar beet growing was observed, the value of production per ha only covered the costs involved in 85%. The loss was compensated by the sugar payment, which also generated income from activity – PLN 662/ha, over 5 times lower than in 2005 (Figure 1). It should be added that income per dt of roots was a mere PLN 1.29 in 2008, whereas it amounted to PLN 5.10 in 2007, PLN 5.49 in 2006 and PLN 6.88 in 2005.

Figure 1. Production, costs and income from the growing of sugar beet in 2005–2008



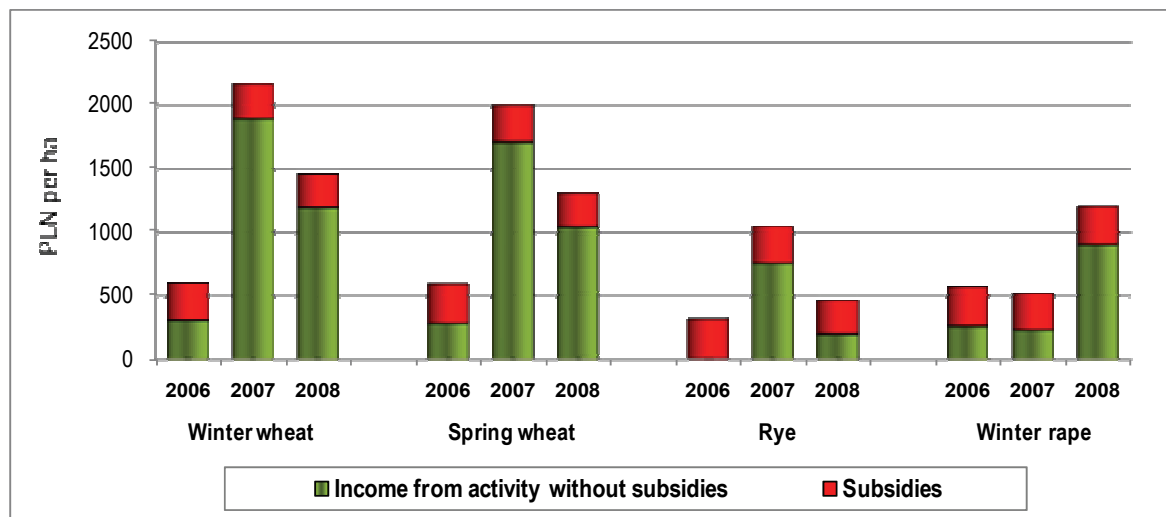
When analysing the economic results of the growing of cereals, it should be pointed out that the annual trends of income from activity per ha of area under cultivation were identical for all the cereals in question (i.e. spring wheat, oats, winter wheat and rye). The most favourable year was 2007 when, in comparison with 2006, the rise in the value of production per ha ranged from 86% for rye to 104% for oats. It was mainly determined by an surge in the selling prices for grain (by ca. 56–58%), but also by increased yields (by approx. 19–31%). In 2007 total costs (i.e. specific and indirect costs) per ha were 8–12% higher. Therefore, income from activity significantly exceeded the 2006 level (3 to 3.6 times). 2008 saw a marked decline in this income, but it was still higher than in 2006 – Figure 2.

Another factor to have an effect on income from activity was the supplementary payment, which proved to be the most significant support for rye producers: it ranged from PLN 62.60 to PLN 0.39 per PLN of income from activity without subsidies in 2006 and 2007 respectively. At the same time, in the case of winter wheat this factor played relatively the least important role – ranging between PLN 0.96 in 2006 and PLN 0.15 in 2007.

In contrast cereals, the growing of winter rape ensured the most favourable results in 2008. It was contributed to by higher yield (by 19.1%), but even to a greater extent by a rise in the selling price for seed (by 33.4%). Consequently, the growth rate of production exceeded that of cultivation costs by 24.7 percentage points. As compared to 2007, income from activity went up by 131%, to PLN 1,203/ha (Figure 2). Income per dt of seed amounted to PLN 38.61, nearly double the 2005–2007 level. The supplementary payment also played a much less important role as in 2006, 2007 and 2008 rape producers

received PLN 1.20, PLN 1.28 and PLN 0.34, respectively, per PLN of income from activity without subsidies.

Figure 2. Income from activity obtained from the growing of winter and spring wheat, rye and winter rape in 2006–2008



In the period in question, the conditions for pig farming were not very favourable. First and foremost, growing production and supply was accompanied by a fall in prices for pigs for slaughter, coupled with a dramatic rise in prices for feedingstuffs, particularly cereals. Between 2005 and 2007 the purchase price for pigs for slaughter showed a steady decline, whereas in 2008 there was an increase by 20.1%. The survey findings indicate that in 2005 the value of production per 100 kg of live weight covered the costs incurred, but in the following years it only covered production costs in part: 95% in 2006, 83% in 2007 and 85% in 2008. As a result, income from activity was negative and it deteriorated further in the subsequent survey years, the farmers suffered a loss. In 2008, owing to a considerable rise in the selling price, income declined at a much lower rate than a year before.

Between 2006 and 2008 milk production was profitable, but in 2007 the results obtained were the most favourable; it was primarily due to a 16.2% increase in the milk price. In farms with an average of 20 dairy cows income from activity per cow amounted to PLN 2,677, and income per litre of milk was PLN 0.48. In 2008, despite higher milk yield per cow (by 2.1%), a decrease in the milk price (by 5.2%) had a downward effect on income. Income per cow was PLN 2,008, i.e. 25% lower than in 2007 and nearly 7% lower than in 2006. The difference between the milk price and unit production cost was PLN 0.23 in 2006, PLN 0.34 in 2007 and only PLN 0.21 in 2008. Thus, the presented data point to a marked deterioration in the profitability of milk production.

In the case of all the surveyed activities except pigs for slaughter, in 2005–2008 income from activity per hour of family labour ensured full remuneration of the labour input of the farmer at the parity rate. The ratio of this income to the parity rate of labour remuneration (in PLN/hour: 8.66 in 2005, 9.02 in 2006, 9.81 in 2007, 10.74 in 2008) varied between activities, there were also differences between survey years. It was influenced by two factors, i.e. income per ha of area under cultivation or per dairy cow and the labour intensity of production.

As far as 2009 is concerned, it was a difficult year for farmers. The results of the estimation account indicate that there was a considerable deterioration in the profitability of the surveyed cereals, rape and milk. It was primarily caused by a fall in the selling prices for the products in question. Income from milk production per dairy cow was the lowest from 2006. Income from the growing of potatoes for human consumption remained similar to the previous year's level. At the same time, there was an improvement in the income situation of sugar beet planters, owing to better production and price results than those obtained in 2008 as well as to a higher sugar payment (due to a more favourable exchange rate). Producers of pigs for slaughter also had reasons to be more content with the improved price situation. Provided that the depreciation of fixed assets used in production was covered in part, there might be a certain level of income since the price for pigs for slaughter covered the unit production cost.

The survey findings revealed a positive correlation between the production and price results of particular activities and income from activity. It is confirmed both by the analysis of the tabular data and by evaluations based on statistical methods. However, farmers' efforts should be aimed at improving the production performance as they have rather little scope for manipulating the selling prices for their products. It is assessed that this course of action is the most advantageous with regard to the improvement of the profitability of production. The years covered by the analysis saw the same trends of two income categories, i.e. the standard gross margin and income from activity. In most cases, this pattern also concerned specific costs and total costs. These data are evidence that specific costs play a vital role, thus having a significant effect on total costs, which is related to the share of this cost category in total costs. In the case of crop production, it ranged from 40% to 60%, for dairy cows it was 55–58%, whereas for pigs for slaughter it hovered at as much as 80-81%. Considering the particular characteristics of specific costs, it would be advisable to take action aimed to make the most rational possible use of production inputs and to apply their optimum levels. In the case of crop production, it mainly

applies to the rate of NPK fertilisers and crop protection products, whereas for livestock production it concerns the feed ration of animals.

The assessment of the economic results obtained by farms broken down into the best, the average and the weakest holdings has shown that income from activity considerably varied. It stemmed from different rates of change in production and price conditions as well as in production costs of particular agricultural products. However, this method for the categorisation of farms revealed certain trends reflected in the economic results of the surveyed activities.

The surveys demonstrated that the best units, as compared to the weakest holdings, were usually much better equipped with modern instruments of labour (tractors, machinery). As a consequence, in such farms the depreciation of fixed assets per ha of area under the crop in question or per dairy cow was much higher. A different situation was observed in pig holdings, characterised by similar machinery and tools at their disposal (as reflected in roughly the same depreciation of fixed assets per ha of agricultural land). Most probably, it is attributable to the fact that the scale of production of pigs for slaughter in all the groups of farms was relatively large, which entailed similar production equipment.

The survey results showed that in the case of all the crop production activities in question (i.e. sugar beet, potatoes for human consumption, spring and winter wheat, oats, winter rye and winter rape) in the subsequent groups of holdings, i.e. in the best, the average and the weakest units, there was a distinct downward trend of yield and the selling price for products. But production performance differed to a greater degree than the price results. Thus, yield was the key factor to determine the value of production. Potatoes for human consumption were the only exception as the effect of the selling price was much greater than that of yield. It is assessed that in the case of potatoes for human consumption early harvest and outlets (purchasing centres, marketplaces) represented the main factors to differentiate the price. Such a situation hardly concerned sugar beet and rape, and cereals to a very limited extent, therefore differences in the selling price between growers were much narrower. As a result of movements in yield and the selling price for products, the value of production per ha of area under cultivation substantially varied. This situation was crucial for the level of income from activity.

With regard to total (specific and indirect) costs per ha, in the survey years and in the extreme groups of holdings, in the best farms those were almost always higher than in the weakest units; the greatest difference was found in the case of rye and spring wheat in 2008 (1.5-fold). It should be pointed out that in the subsequent

groups of holdings, i.e. in the best, the average and the weakest farms, characterised by decreasing production and standard gross margins without subsidies per ha, there was a downward trend of indirect costs of particular activities. At the same time, in the case of specific costs no distinct trend was observed in the subsequent groups of holdings.

Falling indirect costs resulted from a number of factors, mostly lower depreciation of fixed assets used in production. It is related, among other things, to a lower value of modern machinery and equipment at the disposal of the weakest units, both total and per hectare. Furthermore, farmers in the weakest holdings reported much lower expenses, mainly on repairs, services and fuel.

The analysis of total costs per ha of area under particular crops leads to the conclusion that in the best holdings they were usually higher than in the weakest farms, but also accompanied by greater production. It proves that higher costs, in comparison with the remaining groups of holdings, were justified.

In the subsequent groups of farms (i.e. the best, the average and the weakest units) total production showed a downward trend, as well as the standard gross margin and income from activity. The analysis of the tabular data revealed the same trends of the two income categories and a clear correlation between them. It is an interesting observation, particularly from the point of view of assessing the income situation of agricultural activities at different stages of the economic account. It was evaluated using statistical methods; the analyses proved that these factors were correlated and that the relationship was statistically significant. It means that there is a significant positive correlation between the standard gross margin and income from activity.

The surveys also demonstrated a significant positive correlation between the production and price results of particular activities and the level of income. It signifies that the downward trend of income in the subsequent groups of farms was determined by decreasing production.

Income from activity varied considerably. In the weakest holdings it was sometimes negative; such a situation was observed for potatoes for human consumption and oats in 2008 as well as for rape in both survey years (i.e. 2006 and 2008). In several other cases, in the weakest farms income from activity was only realised thanks to subsidies. Except for the situations where calculations could not be performed due to negative incomes, the difference in income between the extreme groups of holdings (i.e. the best and the weakest units) ranged from 2.7-fold in the case of sugar beet in 2007 to 56.5-fold for spring wheat in 2008, naturally to the advantage of the best farms.

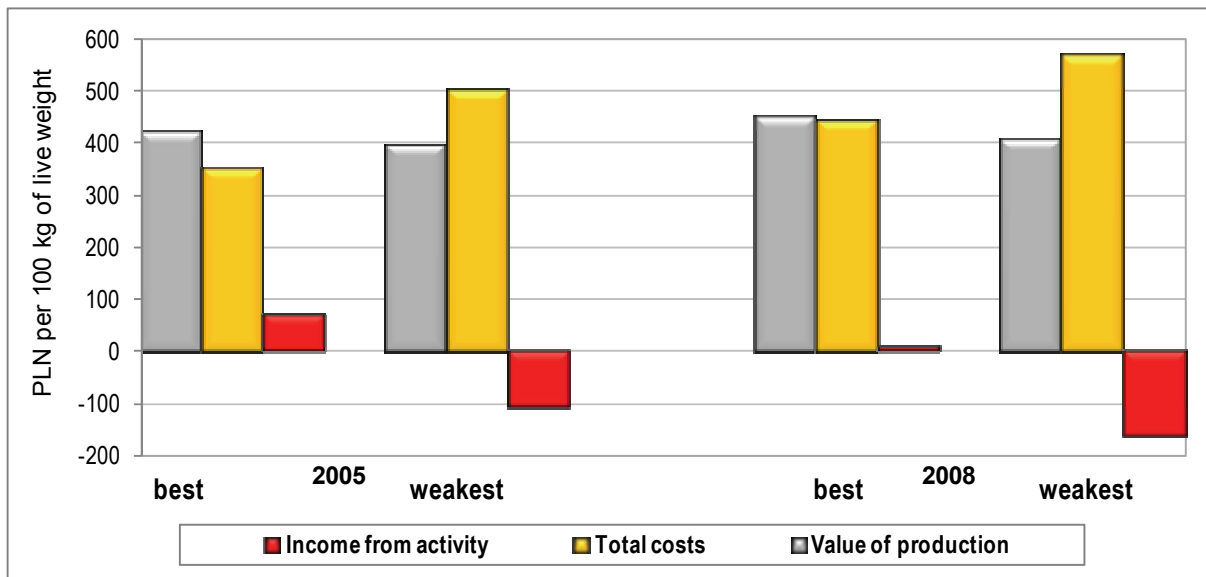
The conditions for economic results from pig farming were somewhat different than in the case of crop products. Although the selling price for pigs for slaughter showed the same (i.e. downward) trend in comparison between the weakest and the best units, it was not the main determinant of income. The surveys demonstrated that production costs represented the prime factor to differentiate the level of income and to determine the economic power of pig producers. In the subsequent groups of holdings production (specific and total) costs showed a steady increase. Total costs primarily depended on specific costs (accounting for 75% to 82% of total costs), which were in turn mainly influenced by the cost of livestock replacement and of feedingstuffs.

The varying cost of feedingstuffs largely resulted from significant differences in the consumption of concentrated feedingstuffs per kg of live weight gain. In the best, the average and the weakest farms the consumption of feedingstuffs showed an upward trend. It signifies that in holdings which incurred the highest losses on pig farming (i.e. the weakest units) the consumption of concentrated feedingstuffs per kg of weight gain was also the highest; as compared to the best farms, it was 39.2% (i.e. 1.16 kg) higher in 2005 and as much as 59.9% (i.e. 1.82 kg) higher in 2008.

The subsequent groups of holdings showed an upward trend of production costs and a downward trend of the selling price for pigs for slaughter, the standard gross margin and income from activity. The correlation between the standard gross margin and income from activity, as in the case of crop products, was very distinct.

Pig farming was only profitable in the best farms. Those were units where farmers obtained relatively the highest price for pigs for slaughter and incurred the lowest costs. At the same time, in the groups of the average and the weakest farms pig producers suffered a loss, the value of production covered the costs only in part, in 95% and 79% respectively in 2005 and in 83% and 71% respectively in 2008. As a consequence, income from activity was negative, and it dropped even further in 2008 – Figure 3.

Figure 3. Production, costs and income obtained from pig farming in the best, the average and the weakest holdings in 2005 and 2008



It is very important to identify the factors stimulating or hampering the economic performance, for both informative purposes and practical application. However, bearing in mind the specific characteristics of particular production activities, the combination of such factors significantly varies between them, as indicated by the numerical data on the next activity, i.e. dairy cows.

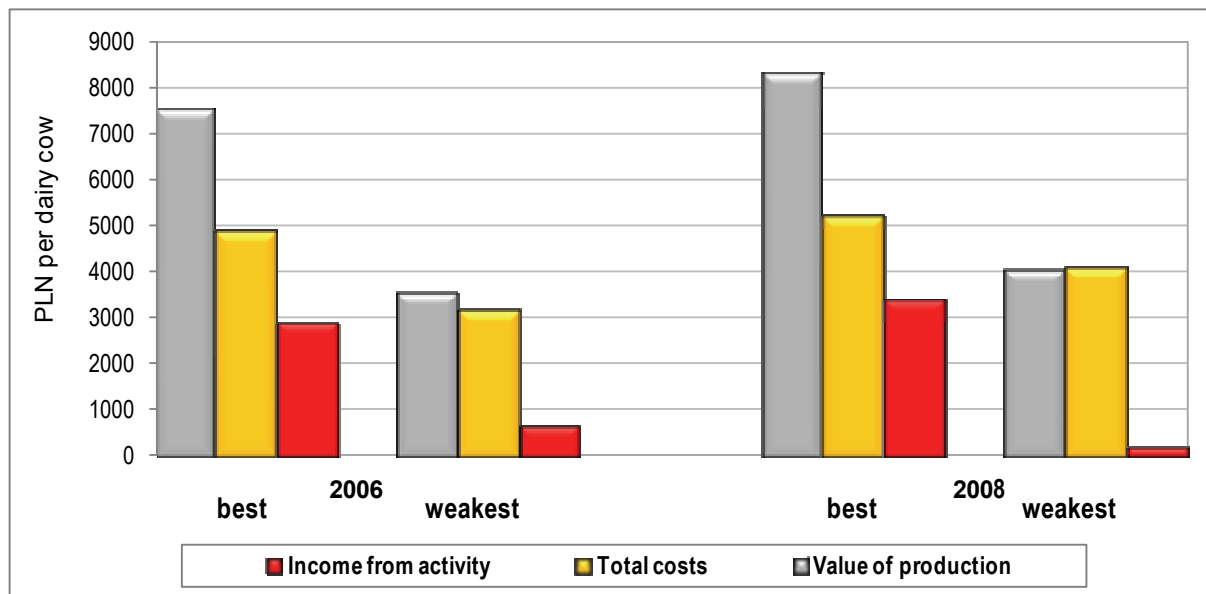
The farms included in the survey sample, broken down by an economic criterion, i.e. the standard gross margin without subsidies per cow, differed primarily in the number of livestock. The best holdings had an annual average of nearly 32 cows, whereas the weakest units – a mere 9. It is assessed that the herd size represents a factor to determine the trends and relationships in the production process.

The decreasing number of dairy cows per holding was accompanied by a downward trend of milk yield per cow and the selling price for milk. However, milk yield per cow dropped more sharply than the price. When comparing the results in the weakest farms with those obtained by the best units, in 2006 in the former group milk yield per cow was 46.8% lower and the milk price – 21.9% lower, whereas in 2008 these indicators were 44.2% and 20.9% lower respectively. Thus, milk yield per cow was the main factor to differentiate the value of production.

Another pattern revealed in the surveys was a clear downward trend of total costs of dairy cattle farming. In terms of total costs per dairy cow, the difference between the extreme groups of holdings was 1.5-fold in 2006 and 1.3-fold in 2008. It was contributed to by both specific and indirect costs, but the latter had a greater impact.

As in the case of the activities discussed above, the survey results point to the same trend, in the subsequent groups of holdings, of the standard gross margin and income from activity. It should be noted that the differences in income per dairy cow were very significant between the extreme groups of holdings, 4.6-fold in 2006 and as much as 21.3-fold in 2008 (to the disadvantage of the weakest units) – Figure 4.

Figure 4. Production, costs and income obtained from dairy farming in the best and the weakest holdings in 2006 and 2008



The decreasing income from activity in the subsequent groups of holdings should be attributed only to the falling value of production since the costs of dairy cattle farming went down as well. In 2008 in the weakest units income was so low that the farmers did not incur a loss only thanks to subsidies; the value of production per dairy cow covered the costs involved in 99%.

The analysis of production activities in the best, the average and the weakest farms demonstrated significant differences in the results obtained. At a further stage of the economic account, such differentiation resulted in a varying degree (or lack) of the remuneration of production factors involved. The farmer has the right to expect obtaining not only sufficient income to cover production (specific and indirect) costs, but also the remuneration of labour, land and capital as well as of his knowledge, enterprise and risk entailed in farm management.

The cost and income accounts play a prominent role in farming, methods applied in agricultural production should ensure the highest possible farming efficiency. The differentiation of incomes from particular production activities is necessarily reflected in the economic performance of the holding as a whole.

Development and application of advanced analytical methods for *ex-ante* and *ex-post* evaluations of the effects of changes to the common agricultural policy and macroeconomic conditions

1. Introduction

The underlying assumption was the recognition that further changes to the common agricultural policy (CAP) were practically inevitable and that the macroeconomic environment represented a very important source of conditions for the functioning of Polish agriculture and the whole food sector. In the light of the above assumption, the main objective of the research conducted was to apply advanced analytical methods in order to answer key questions concerning the real conditions for growth in output in the agri-food sector, the impact of potential changes to the CAP and the resulting implications for the national agricultural policy, and the possibility to stabilise agricultural producers' income under conditions of increased price risk following reduced protection measures and growing liberalisation of international trade.

The basic research tools used in the study included various mathematical and econometrical models, namely: a mathematical model of production growth in the agri-food sector, a partial equilibrium model, a dynamic stochastic general equilibrium model, time series analysis and linear programming models and an n-person game model based on the game theory.

The most important determinations and practical conclusions from the research resulted from theoretical and empirical analyses focused on the following issues: the conditions for production growth and income allocation in the agri-food sector; possible applications of dynamic and stochastic general equilibrium models in analyses and evaluations of the agricultural policy; the prospects for and effects of potential changes to the CAP; price and income risks in the main agricultural markets; possible stabilisation of income obtained by agricultural producers.

2. Determinants of growth in agricultural production

The main determinant of growth in agricultural production, thus in income in the agri-food sector, is consumer demand for food. It results from the derivative nature of demand for agricultural raw materials and from the

dependence of the agricultural producer's equilibrium on the agri-food processor's equilibrium which in turn depends on the utility-maximising consumer's equilibrium. Therefore, the rate of change in consumer demand for food is contingent on the rate of change in population and in unit consumption. The former causative factor has not been driving food demand in recent years; on the contrary, it has had a downward effect (through a minor but clear fall in population). The demographic outlook for Poland indicates that in the coming decade the population situation may be even less favourable.

As regards changes in the unit consumption of food products, those are determined by the growth rate of the average disposable income and by the income elasticity of food demand. The potential growth in income, resulting from economic growth, should stimulate food demand. It should be remembered, however, that a possible increase in income will translate into a rise in food demand much less than proportionally, owing to a relatively low, and diminishing with growing wealth, income elasticity of food demand. This relationship is reflected in statistics on the domestic consumption of main food products as compared to GDP changes between 2000 and 2008.

Although GDP growth (at constant prices) by 38.3% was accompanied by a similar, or even slightly higher growth rate of food expenditure, at the same time the unit consumption of the main food products showed stagnation, or a downward trend in the case of certain articles (e.g. potatoes, bread and milk). It means that the marked rise in food expenditure (ca. 40%) noted in the period in question was caused by an increased demand for quality and processed food products rather than for quantity in their initial form as produced by agricultural producers.

In addition to domestic demand, export sales can also be an important source of revenue for the agri-food sector. One should bear in mind, however, that such income may be reduced by demand for imported products. Thus, for forecasting purposes or in order to examine various scenarios of growth in food demand, it is possible to assume that under equilibrium conditions the rate of change in food demand is the sum of the rate of change in population and the rate of change in unit consumption adjusted for the impact (positive or negative) of trade balance. Such an analytical approach can be used for assessing a possible increase in the revenues of the agri-food sector which in turn determine a possible rise in the income of agricultural producers. The latter also depends on income allocation between stages of the marketing chain. This allocation is reflected in the so-called price spreads, i.e. the difference between the retail price for a food product and the purchase price of the agricultural raw material used in its production.

In general, increasing price spreads accompanied by rising consumer expenditure on food products have unfavourable income implications for agricultural producers as their share in income generated in the agri-food sector as a whole decreases. The analysis of price spreads in markets in the main agricultural raw materials and food products covering the years 1996–2008 demonstrated no clear pattern. Firstly, such spreads, measured by the share of purchase prices in retail food prices, vary widely between types of agricultural and food products and depending on the degree of processing. In the case of cereals and the main cereal products, e.g. flour and bread, the average share of purchase prices for cereals in retail prices for such products reached ca. 20% in the period in question, whereas the average share of purchase prices for pigs, cattle and poultry for slaughter in retail prices for the main meat products exceeded 30%. The lowest level was recorded for the average share of purchase prices for milk in retail prices for the main milk products (approx. 13%). It should be emphasised that with regard to all the markets in question there was a very distinct correlation between the degree of product processing and the price spread (the higher the degree of processing, the wider the spread).

Secondly, the analysed price spreads were characterised by different patterns in the period in question. As regards the markets in cereals and cereal products as well as the markets in pigs, cattle and poultry for slaughter and the main meat products, price spreads showed an upward trend (particularly steep in the markets in cattle for slaughter and beef). At the same time, a downward trend was noted in the markets in rape and rapeseed oil as well as in milk and the main milk products.

Thirdly, the analysed price spreads differed in structure (the processor/retailer breakdown) as well as in changes observed in the period in question. In the marketing chain of cereals and cereal products the retailer's share in the price paid by the consumer was an average of ca. 60%. With regard to the marketing chains of all types of meat and of the main meat products, the respective figure was much lower (up to 16%). In such marketing chains, the link characterised by the highest share in the retail price of a given product was the processor (on average, ranging from 44% in the case of poultry to 61% for beef). The share of processing in the price paid by the consumer was also relatively high (an average of 60%) in the marketing chain of milk and milk products.

It was common for all the analysed price spreads to fluctuate widely in the period in question, reflecting the lack of immediate and full transmission of price impulses along the marketing chain. This process, thus movements in price spreads over time, depends on the competitiveness of market structures and on the distribution of market power in the marketing chain, as demonstrated by the

findings from surveys of price responses of agri-food processors to changes in raw material prices. The surveys covered a total of 91 enterprises based in the north-east of Poland and operating in the following industries: the manufacture of feed (12), the cereal and milling industry (9), the baking industry (17), the processing of red meat (21), the processing of poultrymeat (15) and the dairy industry (17). According to the results obtained, the importance of factors shaping the price behaviour of processing businesses as well as the rate and scale of changes in prices for final products as compared to raw material prices vary greatly, depending on the market type, the market power of suppliers and that of buyers. The elasticity of price responses of companies is also determined by the competitiveness of the organizational structure of a given market. In this context, the most significant implication of the price behaviour of agri-food processors for the process of price transmission, thus for price spreads in the long term, proved to be the transmission of price pressure, dependent on competition and consumer demand, from the retailer to the agricultural producer.

3. Evaluation of the effects of changes to the CAP on the Polish agri-food sector

Important fields of study included the modelling of potential changes to the CAP and macroeconomic conditions for the purposes of evaluating the effects of such changes on the Polish agri-food sector as well as the assessment of the usefulness and possible applications of various types of equilibrium models, e.g. dynamic stochastic general equilibrium models (DSGE), as tools supporting the formulation of guidelines for the national agricultural policy. The main rationale for conducting such research was the ongoing debate on the need for reshaping the CAP in the context of the adequacy of its objectives and instruments, against the backdrop of social expectations and international competition requirements. A vital thread in the discussion has also become economic efficiency, or even the validity of various forms of intervention and support, which resulted in opinions questioning the very sense of the existence of the CAP and proposals that it be entirely eliminated, referred to as renationalisation.

The current annual cost of the implementation of the CAP approximates EUR 55 billion, representing 40% of the EU's total budget. Critics of the CAP regard this amount as excessive and poorly utilised, particularly in the light of alternative uses, e.g. research conducive to the development of an innovative economy. At the same time, advocates of the CAP indicate that it merely accounts for less than 0.5% of the EU's GDP, i.e. a weekly cost of ca. EUR 2

per capita. There are also comments that the CAP must be preserved and continued virtually in an unchanged form as it has a favourable impact on the economic condition of agriculture and rural areas, particularly observed in new EU Member States such as Poland.

The importance of benefits obtained by Poland in the form of CAP transfers mainly results from the fact that agricultural activities, generating ca. 4% of GDP, account for nearly 15% of the total employment. Consequently, the share of payments in farm income (according to FADN) is an average of approx. 50%. Therefore, the position of Poland on the CAP, finally adopted by the Council of Ministers on 12 June 2009 as an unambiguous view that the financing of this policy should be maintained at least at the current level, understandably reflects the natural wish to retain the benefit of EU transfers. However, the existence and the future shape of the CAP will be ultimately determined by the positions of all EU Member States, not necessarily consistent with Poland's approach.

The discrepancy of views on the usefulness of the CAP taken by different significant opinion-forming circles primarily results from the varying degree of social and political acceptance of the current state of affairs between Member States (supporters and opponents), largely dependent on net benefits or net costs at national level (beneficiaries and payers). Bearing in mind the inevitable differences in the perception of the CAP, its future shape can be predicted as one determined by a wide range of opinions, from those advocating for the maintaining of the *status quo* to suggested reforms (more or less radical) to those giving reasons for the abolition of the CAP (renationalisation).

In an attempt to assess the impact of potential changes to the CAP, the first step was to answer the question as to how likely such changes were and how far-reaching they might appear. To this end, the authors used a mathematical n-person game model developed as part of the research conducted within the framework of the topic. The basic assumption of the model is that the misalignment of interests between the parties concerned (players) will lead to the formation of coalitions whose members commit themselves to holding a common position, making a uniform decision in order to pass a specific policy. Each coalition member has negotiated, in bilateral agreements, the costs to be borne in favour of the other player as well as the benefits to be obtained from the other player. It is assumed that benefits of one player constitute costs of the other player. The perception and valuation of costs and benefits depends, on the one hand, on the sectoral interest, mostly resulting from the significance of agriculture and rural areas in individual Member States, and

on the one hand, on the general economic and political interest combining other national goals beyond the sectoral approach.

According to simulations, the likelihood of changes to the CAP is subject to variation over time, determined by the dynamics of the balance of power as well as of economic and political interests (pressure for change vs. resistance to change), and depends on the possible scope of changes (the relative unlikelihood of either no changes or of dramatic and far-reaching changes). The analysis of potential solutions in this context showed that the most likely outcome was a compromise between the two extremes, i.e. the CAP remaining unchanged on the one hand and the abolition of the CAP on the other hand. Thus, the assessment of economic effects of potential changes to the CAP could be reduced to comparing the results of the maintenance and continuation of the current solutions (the so-called baseline scenario) with the effects of possible changes.

Theoretically, the effects of the existence of the CAP, either in the present or changed form, could be examined from different points of view. In the short and long term, they include potential market and income shocks (short- or long-term) as well as structural changes related to the reallocation of production factors with a significant impact on employment or the area structure of agricultural holdings. In microeconomic terms, such effects may concern the scale of agricultural production, the level of agricultural and food prices or the sectoral trade exchange. At the same time, from a macroeconomic perspective, they can be evaluated in the context of their influence on GDP growth, unemployment, inflation and the exchange rate. Another significant area of assessment is the impact of the CAP on the competitiveness of the agri-food sector and of the entire economy.

The greatest interest has been aroused by analyses of changes which could have an adverse effect on Polish agriculture and the agri-food sector as a whole. It is worth pointing out that, in spite of appearances, it is not tantamount to a negative influence on the overall economic well-being of the population since one cannot reject out of hand the thesis that the funds allocated to the CAP might be utilised more efficiently if assigned to other forms of public intervention, improving the competitiveness of the Polish economy. But this notion is usually excluded from analyses as those primarily take a sectoral approach to the CAP. For this reason, in an attempt to conduct a comprehensive impact assessment of the CAP and of potential changes on the functioning of the agri-food sector and of the whole economy, the analyses performed used three different model, namely:

- AGMEMOD – a recursive, dynamic, partial equilibrium model of EU agriculture with national policy models as building blocks, taking account of international links, applied in several European centres;
- MODROL – a sectoral, econometric model of the main domestic agricultural markets, designed and developed in cooperation with the Systems Research Institute of the Polish Academy of Sciences (*Instytut Badań Systemowych PAN*) in Warsaw;
- A DSGE structural model of Poland’s economy, calibrated directly to Polish data, developed at the Institute for Structural Research (*Instytut Badań Strukturalnych*) in Warsaw.

The AGMEMOD model was used for the assessment of potential effects of changes to the CAP resulting from the so-called Health Check (HC)¹ and from a possible discontinuation of direct support for agricultural producers. The comparison of the results for the baseline scenario (no changes to the CAP) simulated with the AGMEMOD model to the results for the Health Check scenario indicates only a minor impact of the reform on demand and supply relationships in the main domestic agricultural markets, with the exception of the market in milk and milk products. The production and collection of milk projected for 2010 are distinctly higher than those for the baseline scenario (by 5.4% and 7.4% respectively). An increased supply of milk will be accompanied by a fall in purchase prices for milk by 5.9% and a rise in the output of milk products, particularly cheese (over 7%) and butter (ca. 6%). Consequently, there will be a decline in prices for such products (with the most significant decrease, exceeding 12%, observed for butter) and an augmentation in their consumption by an average of approx. 1.5%.

Furthermore, the simulations performed also show that, as in the case of the HC reform, the elimination of direct payments would result in shifts in the structure of demand and supply in agricultural markets, although they would vary in scale and direction. The main reason for such differences is the nature of modifications to the CAP. The essential amendments to the agricultural policy instruments within the framework of the HC mainly concerned the market in milk and milk products, with a lesser impact on meat markets and crop production. However, in Poland the discontinuation of direct payments would

¹ The HC reform concerns changes to the application of direct payment schemes (the SPS and SAPS), the decoupling of direct payments from production, modulation, i.e. reducing direct payments in the case of holdings receiving over EUR 5,000, the abolition of the set-aside obligation as well as increasing milk quotas by 1% annually between 2009 and 2014) and their elimination in 2015.

primarily affect markets directly related to land, i.e. the markets in cereals and other crops. Certain direct effects could materialise in markets in livestock products as a result of removing payments in respect of meadows and pastures, but most changes in the meat and milk markets would be secondary, with a much lesser scope than in the case of crop products.

The elimination of direct payments could result in a decrease in cereal production by an average of 0.6–0.7% between 2014 and 2020. The sharpest decline in output would be observed with regard to rye, barley and wheat. At the same time, a rise in production could be expected in the case of rape (by 1.1–2.0%) and potatoes (by 2.0–2.6%). Growing domestic prices for the majority of crop products, mainly resulting from the EU-wide effects of the reform, would mitigate the impact of the discontinuation of direct payments on agricultural income per production unit. A reduction in the area under cereals could be conducive to a certain intensification of cultivation, which might be also contributed to by the above-mentioned price rise. Potential changes in livestock production are far less significant than shifts in crop production. By 2020, a limited increase in output could be expected in the case of pigmeat (0.1–0.2%) and crude milk (approx. 0.3%), thus for the majority of dairy products. At the same time, the production of beef and poultrymeat would show a slight decline (0.1–0.2%). In general, the results of the simulations based on the AGMEMOD model demonstrate that under conditions of ongoing globalisation amendments to the EU agricultural policy instruments will have a much lesser impact than the world demand and supply situation and its price consequences. In many world markets in raw materials the European Union is a rather minor player, and Poland's role is naturally lesser.

The results of simulations and calculations obtained on the basis of the MODROL model allow to draw the conclusion that the introduction of direct payments was not indifferent to the volume and value of domestic cereal production following EU accession, although their hypothetical absence did not necessarily have an adverse effect on the volume and value of this production in each year of the period in question. There was a marked positive influence of the instrument not only on the income of cereal producers, but also on the volume of output, which to some extent contradicts the idea of decoupling this form of agricultural support from production.

According to the results of estimations of relationships in the markets in animals for slaughter and meat products, Poland's accession to the European Union also had a considerable impact on the volume of output and purchase prices, thus affecting income. It should be pointed out that such changes followed developments in the EU market rather than representing a direct

consequence of the introduction of direct payments. The calculations based on the MODROL model show that Poland's integration into the EU pushed up purchase prices for poultry by an average of nearly 20% in comparison with the non-integration scenario. It was also reflected in a minor increase in the production of poultrymeat. The growth in the market income of producers, resulting from movements in prices and output, ranged from 5% in 2004 to approx. 23% in 2006. Another consequence of integration, between 2004 and 2006 there was a rise in purchase prices for pigmeat by several percent, accompanied by a fall in 2004–2006 output by ca. 3.3%. But the market income of pig producers, resulting from changes in both prices and production, went up by approx. 4.8%. As regards the beef market, the results of modelling indicate that external impulses had a far greater impact than in the case of the markets in pigmeat and poultrymeat. After Poland's joining the EU the situation in the Polish beef market came to be determined by export demand. As a result, the following price rise was as much as 50%. In the first two years of EU membership it drove up purchases of cattle and primarily the weight of bovine animals slaughtered, which was directly reflected in increased production and proportionally greater growth in the income of beef producers than the price rise.

Bearing in mind the scale of the CAP as a form of public intervention, one can consider its implications to go beyond the agri-food sector. It is corroborated by the results of simulations performed on the basis of the DSGE model, showing that the CAP can generate strong effects on the labour market as it encourages rent-seeking behaviour among its beneficiaries. Contributing to increased economic inactivity in agricultural holdings, it may hamper the movement of workers from agriculture to other sectors. Investment subsidies should stimulate capital formation in agricultural production, but the concurrent slowdown in the outflow of labour to other sections of the economy may result in a fall in total productivity of production factors in the agricultural sector, thus reduced competitiveness. According to the simulations, although direct payments in agriculture have an undoubtedly positive influence on household income (particularly on farm household income), wages and domestic product, their impact on non-agricultural employment is unambiguously negative. A relative – to the long-term downward trend – growth in employment, resulting from the introduction of direct payments, could only be observed in agriculture, at the cost of reduced incentives to modernise agricultural holdings by replacing labour with capital, as reflected in a decline (relative to the trend) in the investment ratio in the agricultural sector. Simultaneously, even though the effect of the first pillar of the CAP on GDP generated by agriculture and the energy sector linked to agriculture through the flows of inputs and outputs is

favourable, this is not the case for the remaining economic sectors. Direct payments exert a particularly negative influence on industry since it loses out on higher prices for capital goods and energy, without benefiting from increased domestic consumer demand to a degree comparable with other sectors, less export-oriented, e.g. the power sector and services. Therefore, it seems that from the point of view of structural change in agriculture a reduction in or the abolition of direct payments would serve the entire economy, accelerating short-term reallocation of labour and capital to non-agricultural sectors (particularly services and industry), and in the case of the CAP component aimed to subsidise agricultural employment also stimulating investment in this sector, currently squeezed out by “free” (i.e. not requiring capital formation for the future) private consumption.

4. Summary and conclusions

Changes in the conditions for the functioning of the agri-food sector caused by Poland’s accession to the EU and the inclusion of agriculture and rural areas in the CAP resulted in increased economic links and trade with other Member States, followed by a rise in the income of domestic agricultural producers. But the CAP has been evolving towards limiting market intervention, which means that Polish agriculture must face the challenges of the global market to a greater extent than before. Reduced protectionism and market liberalisation may involve increased price and income risk for agricultural producers. Hence, it seems necessary to adjust mechanisms for curbing the effects of price volatility and to take measures aimed at stabilising agricultural income. It can be attained through the identification and development of instruments limiting market risks, a real alternative to certain functions of the CAP. This was the main focus of the research conducted within the framework of the topic, including the following issues: the sources and level of price risk in agricultural markets, the prospects for changes in income risk, the role of analyses and forecasts as well as the possible use of insurance and market-based instruments in price and income risk management.

According to the findings, prices for the main agricultural products in Poland are subject to considerable volatility resulting in price risk. The highest level of such risk is noted in the cereal and pigmeat markets, mostly due to cyclical fluctuations. At the same time, periods of either relative price stability or increased volatility are characteristic of all agricultural markets. The research conducted also confirms that domestic prices are increasingly determined by the level of EU and world prices. Thus, production decisions of agricultural producers should take account of the global situation in relevant raw material

markets. Furthermore, an important role in price transmission is played by exchange rates, thus agricultural producers are exposed to exchange rate risk. Movements in exchange rates also determine fluctuations in prices for agricultural inputs and affect the level of direct payments. In general, Poland's accession to the EU did not result in reduced price risk in the main agricultural markets. In most cases, however, the income of agricultural producers became less sensitive to price movements, owing to the introduction of direct payments and other CAP instruments. When analysing potential changes to the CAP and their effect on price and income risk, it should be stressed that a further liberalisation will contribute to increased volatility of prices and agricultural income. Farms with the lowest economic power will be the first to be hit by negative consequences of a liberalised CAP. Nevertheless, it should also produce certain favourable changes for the economy as a whole, as a result of increased concentration in Polish agriculture and greater farming efficiency.

Considering the very real prospect of increased price risk under conditions of ongoing globalisation and liberalisation of the agricultural policy, market-based instruments of risk management will play an ever-growing role. Agricultural producers should individually and actively choose suitable strategies and instruments to reduce market risk, thus limiting the uncertainty over the realisation of their income goals. But it should not be assumed that all operators need to apply price risk management instruments. Firstly, it is not always necessary to fully cover price risk. Secondly, on the basis of own assessments and forecasts, a given operator may regard the application of such instruments as unprofitable. Under conditions of uncertainty, analyses and projections may serve as substitutes of other measures for reducing the risk involved. An important role in this respect is played by market information systems, increasing market transparency and facilitating individual decision-making.

The basic risk management method applied by agricultural producers is appropriate farm organisation and the application of correct farming techniques depending on natural conditions. A proper diversification of production has a similar effect. Such measures are of significance to reducing production risk. Insurance represents another important form of limiting production risk, thus income risk. However, on account of problems related to information asymmetries and moral aspects, insurance companies have been less inclined to enter into such contracts. Public support for the insurance market usually fails to solve such problems, although the level of insurance protection for farmers has been improving.

Price risk management may also involve standard derivatives, e.g. futures or options. Such instruments allow agricultural producers to cover the risk of a fall in selling prices (hedging) by stabilising those prices at the level of a given operator under conditions of natural market volatility. Since the conclusion of such agreements is only possible at a commodity exchange, their practical application in price risk management requires the establishment of a national institution or facilitating broader access to the EU-wide LIFFE. Despite the unquestionable advantages of derivatives, it seems that forward contracts may be more widely used in price risk management. Since they are directly related to the commodity market, they meet the expectations of most agricultural producers in respect of covering price risk as early as the stage of production planning.

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