INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

# Proposals for CAP 2013+ and competitiveness of food sector and rural areas

no 61.1
Warsaw 2012

MULTI-ANNUAL PROGRAMME 2011 - 2014

COMPETITIVENESS OF THE POLISH FOOD ECONOMY UNDER THE CONDITIONS OF GLOBALIZATION AND EUROPEAN INTEGRATION

# Proposals for CAP 2013+ and competitiveness of food sector and rural areas

INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

# Proposals for CAP 2013+ and competitiveness of food sector and rural areas

MULTI-ANNUAL PROGRAMME 2011 - 2014

COMPETITIVENESS OF THE POLISH FOOD ECONOMY UNDER THE CONDITIONS OF GLOBALIZATION AND EUROPEAN INTEGRATION

Warsaw 2012

The publication was prepared within the Multi-Annual Programme **"Competitiveness of the Polish food economy in the conditions of globalization and European integration"**

The purpose of the study is to analyse the proposals concerning the Common Agriculture Policy. The authors of chapters focus on the possible consequences of the future shape of CAP, particularly for the food sector and rural areas in selected European countries.

Reviewers:
*Prof. dr hab. Włodzimierz Rembisz, University of Finance and Management*
*Dr Zbigniew Floriańczyk, Institute of Agricultural and Food Economics – National Research Institute*

Editors:
*Prof. dr hab. Andrzej Kowalski*
*Dr Marek Wigier*
*Michał Dudek*

Proofreaders:
*Joanna Gozdera*
*Michał Dudek*

Foreword and chapters: 1, 5, 7, 10, 11, 13 translated by *Contact Language Services*. Chapter 15 translated by *Centrum Tłumaczeń AGIT*.

Individual authors of chapters shall be responsible for any possible errors.

ISBN 978-83-7658-307-5

*Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej*
*– Państwowy Instytut Badawczy*
*00-950 Warszawa, ul. Świętokrzyska 20, skr. poczt. nr 984*
*tel.: (22) 50 54 444*
*faks: (22) 50 54 636*
*e-mail: dw@ierigz.waw.pl*
*http://www.ierigz.waw.pl*

## Contents

# Foreword

The negotiations concerning the level of funding EU multiannual financial framework are entering a decisive phase. We are witnessing a clash of various interests of both individual Member States and the EU itself as an international organisation. This multi-threaded and passionate debate is not enclosed in the rigid framework of the next, 2014-2020 financing period. Once again, fundamental questions are being settled about the purpose of co-operation between European countries and the ways to achieve them. This monograph fits perfectly in this debate. It addresses many important topics of the discussion on the prospects of one of the most important areas of European integration – the agricultural policy. The book consists of 15 chapters prepared by representatives of 10 of the following research centres: Institute of Agricultural and Food Economics National Research Institute, Warsaw, Poland, Food and Agricultural Policy Research Institute University of Missouri at Columbia, USA, Humboldt University of Berlin, Institute of Agricultural Economics and Social Sciences, University of Kiel, Germany, Research Institute of Agricultural Economics, Budapest, Hungary; The Federal Institute of Agricultural Economics, Vienna, Austria; Agriculture Faculty, University Banjaluka, Bosnia and Herzegovina and Agricultural University, Plovdiv, Bulgaria. The authors of respective chapters are focused in particular on the CAP reform from the perspective of the competitiveness of the food sector and rural areas.

The study opens with the chapter by prof. Andrzej Kowalski. He analyses changes in the world economy in the context of current crisis. According to the author, despite the common opinion the recovery expected in 2013 is highly uncertain. Assessing the proposals of packages supporting the return to global economic growth path, prof. Kowalski presents three objectives for the future economic policy, which the richest countries should take into account.

Prof. William H. Meyers and dr Jadwiga Ziółkowska analyse the evolution of the CAP from the perspective of global economic conditions. The study provides an overview of the current reforms, as well as evaluation of the currently proposed revisions of this policy in the context of the changes taking place in global markets and international politics. It lists and describes the key internal and external factors currently affecting the changes in the CAP, including: budget constraints, the condition of the natural environment, climate change, large variations in the level of direct payments, as well as the level of agricultural prices on world markets. The authors also consider the impact on the future shape of the CAP on the EU trade balance in the next ten years.

The next chapter provides a critical assessment of the European Commission's proposals for changes in the shape of the first pillar of the CAP. Prof. Ulrich Koester focuses on the assessment of the arguments which legitimise the functioning of the most expensive instrument of this policy – the direct payments. Author shows why, in his opinion, justifications of the use of direct pay-

ments related to the necessity to secure the income of farmers ignore the current situation in agricultural markets, and are contrary to the fundamental principles of EU law and social policies of the Member States.

In addition to providing an adequate level of income, the CAP is considered often as an instrument for stabilising the level of food prices. Indeed, the sectoral policy instruments can be targeted to mitigate the negative and violent economic phenomena. These include adverse effects of price volatility and price risks occurring in the agri-food markets. The problem in the context of future changes to the CAP is central to the considerations of prof. Szczepan Figiel and dr Mariusz Hamulczuk. Researchers show the historical volatility of the prices of agricultural and food products in Poland and in the world, trying to answer the question of whether in fact we now have to deal with the formation of a new regime of price of agricultural raw materials. In addition, they try to examine the potential relationship between the probable shape of the CAP and the volatility of prices of agri-food products and the related price risk.

The question about the nature of the CAP and its quintessential component – the direct payments, is considered by prof. Renata Grochowska. The author shows the true extent of this policy in relation to the purpose and its transnational character. In addition, the text describes the main factors preventing introduction of fundamental reforms in this area of EU activities and points out three possible scenarios for their conduct.

Dr Norbert Potori, Gergely Papp and Mate Kovacs assess the impact of the European Commission's proposed system of direct payments on the Hungarian agriculture. Using simulation models based on the data of the Hungarian paying agency and the FADN, they calculate the cost of the introduction of selected instruments of the first pillar of the CAP and their economic effects. The analysed proposed changes to the CAP include: "green" component of direct payments, new payments for young farmers, for LFA and for small farms, and new opportunities for linking support with production. Researchers from Hungary show the potential changes resulting from the reform of the CAP and related to the level of income of the Hungarian agricultural producers, crop production results and the structure of crops and livestock.

Proposals for changes to the CAP are also associated with its second pillar – rural development. In his study "Rural Development Programme 2014-2020 and the development of Polish food economy", dr Janusz Rowiński is considering the optimal, in his opinion, shape of the future domestic RDP 2014-2020 in the context of the likely reduction or upholding of the level of support to the Polish countryside and agriculture from EU funds. The considerations relate in particular to the issues of purpose, structure and determination of the category of beneficiaries of the future RDP in the agricultural sector and the food industry. Selecting one of the two possible options outlined by the author for the future RDP: development (modernisation) and development-socio-environmental, determines adoption of specific solutions in the design of this document for policy makers.

Experiences with the previous editions of the Rural Development Programme also induce to form conclusions for other documents of this type. According to Karl Otner from Austria, one of the important tasks of agricultural economists is to determine the costs and effects of government intervention in the agricultural sector and rural areas, as well as to inform the public about their findings. The recommendations, discussed in detail in the text, that result from the interim evaluation of the Austrian 2007-2013 RDP, relate inter alia, to: the appropriate method for determining the objectives of the programme, distinguishing the changes from the effects resulting from the intervention, taking into account the possible emergence of the latter in the long term, the significance of net effects of support and difficulties in estimating them. Nevertheless, assessing the quality of state intervention in agriculture and rural areas, according to the author, should take into account its effects not only for the beneficiaries, but also for other market participants, as well as its contribution to the public purposes.

The proposed reform of the CAP may have an impact on the competitiveness of agriculture and rural areas in countries which only apply for membership in the EU. Any candidate country needs to align its legislation with the EU regulatory system. This task is facilitated by the Instrument for Pre-Accession Assistance (IPA). However, in contrast to the EU structural and agricultural policy for 2014--2020, whose projects are already known, the future shape of the IPA remains unknown. The possible effects of the CAP reform in the field of rural development, which may affect the shape of the assistance to candidate countries under the IPA scheme as exemplified by Bosnia and Herzegovina is analysed by Gordana Roković. The author compares the various proposals for changes in the CAP with the structure of the IPA for Rural Development (IPARD), one of the components of the IPA. It turns out that the featured instrument of EU assistance to candidate countries does not take into account some of the new priorities of the CAP. The text ends with the author's proposals for the future shape of the EU's support for the candidate countries in the field of agriculture and rural development.

The chapter by prof. Jacek Kulawik and dr Barbara Wieliczko presents a description of the major theoretical models to achieve competitive advantages in agriculture. The authors distinguish four types of competitive advantage: effectiveness-productivity advantage, based on innovation and entrepreneurship, based on corporate social responsibility (CSR) and associated with the creation of common economic and social values (CSV). Analysis of these models allows the assessment of their adjustment to wide range of instruments of the CAP designed for 2014-2020. On this basis the paper indicates the optimal strategy of competition for European and domestic agriculture, and specifies the opportunities and challenges of its implementation.

The implementation of each of the strategies to achieve competitive advantage entails incurring certain expenditures. In the case of European agriculture, one of the tools of its implementation can be an instrument of cross-compliance, which requires farmers to respect good agricultural culture, public

health, animal welfare and the environment. The study by prof. Wojciech Józwiak, dr Grażyna Niewęgłowska and Konrad Jabłoński is an evaluation of the cost of implementing the EU principle of cross-compliance into Polish agriculture and its impact on the added value generated by the sector. Estimates pertain to the period 2008-2010 against 2001-2003. Considerations are complemented by the forecast of added value of Polish agriculture for 2013.

Impact of the CAP on the development of agriculture in Bulgaria is discussed in the chapter prepared by prof. Nelly Bencheva and dr Emilia Rancheva. The authors describe the main advantages and disadvantages that should be associated with the CAP introduction to the Bulgarian agriculture, based on the research questionnaire conducted among experts. This study deserves attention due to the fact that, according to prof. Bencheva and dr Rancheva, so far there was no scientific assessment of the said subject, and in particular on the impact of the CAP on the survival and development of farms. The results described in the text are an attempt to fill this gap.

One of the CAP most regulated agricultural markets is the milk market. One of the policy reforms in the coming years will consist in the abolition of the administrative system, limiting supply, i.e. the milk quotas. Dr Piotr Szajner presents the implications of the withdrawal from this mechanism on the Polish dairy sector. The author analyses the impact of the liquidation of milk quotas inter alia, on the efficiency and competitiveness of the sector, the level of product prices and farmers' incomes.

In the next chapter, prof. Georgy Bogoev and dr Teodora Stoeva evaluate the status and prospects of development of vegetable production in Bulgaria. Due to the favourable agri-climate conditions and the presence of certain traditions, such crops have great potential and can be an attractive market. However, as stressed by the representatives of the University of Plovdiv, in this case, there are numerous limitations. They include inter alia: strong standing of the agents and existence of serious external competition, unfavourable agricultural reforms introduced in the past, as well as inadequate attitude of producers with low level of self-organisation, lack of specialisation and of appropriate marketing actions. In response to the crisis prevailing in the sector, the authors of the study reply to the key question of how to stop the decline in the production of vegetables in Bulgaria.

The volume concludes with a chapter on food security. As emphasised by dr Mariola Kwasek and Agnieszka Obiedzińska it is an issue which is one of the important topics of the debate about the future of the CAP. The authors analyse the level of Polish food self-sufficiency and describe food security risks in the European and global scale, such as: growth of world population and increasing demand for food, water shortages and shortages in agricultural land, climate change, declining biodiversity, emerging diseases of plants and animals, speculation in the markets, increases in energy and food prices, waste and losses of the latter. According to the authors, the CAP will not disregard these challenges. The shape of the policy

should be oriented at improving the competitiveness of agriculture, but at the same time ensure food security and sustainable production of high quality food.

We hope that the publication on the current results and proposals for future developments in the Common Agricultural Policy after 2013 and their implications for the food sector and rural areas, answers some questions about the competition. We are aware that we failed to provide answers to all the questions pertaining to the title of the publication. We also know that despite the extensiveness of the study, we have not exhausted the list of questions related to the issue under consideration. Thus we will have the possibility to continue this serious discussion. Such a possibility is available to us because of the multi-annual programme implemented in 2011-2014 by the Institute of Agricultural and Food Economics – National Research Institute under the title "Competitiveness of the Polish food economy in the conditions of globalisation and European integration". The discussion on the issue will be continued on the platform of seminars and scientific conferences organised by the Institute, as well as in a publishing series Multi-Annual Programme reports. Thus, we encourage all readers to follow the results of our research and scientific discussion, for instance, via the Institute's website: www.ierigz.waw.pl.

Editorial Committee

Prof. dr hab. Andrzej Kowalski
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 1. Global challenges and the future of the CAP

The crises, which affect or may affect the economies of individual countries have long ceased to be their internal problem. The globalisation level of the contemporary world economy and the intensity of ongoing globalisation processes makes individual countries prone to "infecting" each other with the virus of crisis phenomena. Thus for the needs of describing the phenomena of rapid spread of the crisis beyond the borders of one country the term "contagion effect" has been adopted.

The mechanism of external conditions impact on the economic development of a given country consists of four elements:

- external stimulus (e.g. recession or a significant acceleration of the pace of development in countries acting as the economic partners);
- transmission path (mainly the interconnected international movement of products and production factors);
- direct effect for the national economy of a given country (changes in the status of the analysed national economy);
- adjustment reactions understood as processes caused by changes in the economic policy and in the area of real national economy of the analysed country.

The past historical experiences – also Polish – clearly show that the transfer of external cyclical stimuli on economic development of a given country, takes place, especially, in case of mobile, in international terms, production factors, in particular the loan capital. This was and still is the case, not only in Poland. Since capital always aims at profit and/or maximisation of rate of profit in a long-term perspective.

## 1.1. Changes in the global economy at the turn of the 1st and 2nd decade of the current century

The global crisis revealed the scale and pace of the long-standing economic changes taking place in the world and the growing political role of the new economic powers that during the global breakdown of economic activity significantly increased their share in the global economy.

The process of revitalisation and recovery of the economy and the international exchange after the recession recorded in the first decade of the current century, which in 2010 gained a global, but double-track and unsteady character, has slowed down significantly in 2011. In 2011, the recovery of global produc-

tion weakened considerably. The gross world product after growing by 5.3% in 2010, has increased by 3.9%, including in economically developed countries by only 1.6% (i.e. less than half of the value noted in the previous year). In countries with emerging economies and developing countries the decrease in the GDP growth rate (from 7.5% to 6.2%) was not that significant, but still noticeable in many countries.

Moreover, there has also been a sudden slowdown in the recovery of global trade turnover in goods and services: the growth rate of the turnover volume (5.8%) was by half lower than in 2010 (12.9%).

In 2012, the high unemployment rate, inflation rate and, above all, the high debt of the public finance sector in relation to the GDP in the economy of euro area and some other countries, resulted in the re-appearance of recession or stagnation tendencies. The economic recovery of 2010-2011 is similarly characterised by two-speed macro-economic changes taking place in the main groups of countries, more or less developed in economic terms. The growth of developing countries and countries with emerging economies, which is more rapid than the global average, already in the first decade of the 21st century became the distinguishing feature of the global economy, and in the beginning of the new decade it consolidated and gained a structural character. Contrary to the previous recessions, the drop in production or decrease in its growth rate in 2008-2009, and next in the last quarter of 2011 and first half of 2012, has most severely affected some of the highly developed countries, and to the lesser degree – the largest, rapidly developing countries with emerging economies, in which only a short-term slowdown in economic growth was noted. But still, some of them – the ones with the highest debt and those most dependent on the level of export and prices of energy and raw materials – have been severely affected by the drop of demand and prices on the global market, the slowdown of the inflow of foreign investments and deteriorating loan conditions on the international financial market, and subsequently the effects of re-awakened inflation.

In the period of financial and economic crisis and in the subsequent years, the role of the regular growth drivers was taken over by China, India, Brazil and other large and dynamic in respect to economy developing countries and countries with emerging economies. It should be noted that in 2010 India, for the first time since 1990 has reached a slightly higher GDP growth rate (10.6%) than China (10.4%).

The situation in the European Economic Area is dynamically changing. Not all countries have fully recovered from the effects of the financial and economic crisis, and they already have to face another danger: fiscal crisis. The public finances in the most of the EU countries are unbalanced, and in some of them the public debt is so high that it poses a threat not only to the smooth operation of the economy, but also the entire State. Greece and Cyprus face bankruptcy. The countries that are most at risk of the crises include Ireland, Portugal, Spain, Italy. This raises serious doubts as to the future of the euro area. The situ-

ation of the single currency area seems dramatic in the political discourse. The common threat for the development perspectives and socio-economic stability, as well as the main challenge for economic policy of the euro area and the EU Member States, including Poland, will consist in the unfavourable combination of internal and external risk factors related to the dramatic situation of public finances as well as political and economic impasse in Greece, Cyprus, Portugal and Italy, debt crisis and recession in other euro area countries, and also low economic growth rate and high structural unemployment, as well as high public finance debt in many other European Union Member States.

As a result of the global financial and economic crisis the issues of financial imbalance have become the main focus of politicians, economists and financiers, as well as the public opinion because it has threatened the foundations of the socio-economic life, questioning not only the further development, but even maintenance of the achieved level of welfare. The uniqueness of the 2008-2010 crisis consists also in the fact that is was especially severe in most of the countries belonging to the group of developed countries. Moreover, it turned out that its impact was most severe in the peripheral Member States of the Economic and Monetary Union. The events taking place in the euro area in May and November 2010 and the second half of 2011, not only undermined the international position of the single European currency, but they also highlighted the disastrous condition of the public finances, deep payments deficit and rapidly growing debt of many countries worldwide. In a short-term perspective, to overcome the today's chronic condition of the global financial imbalances it is necessary to continue the tightening of fiscal policy, especially in developed countries. In a long-run the anti-crisis policy comes down to structural and institutional changes in individual national economies, especially on the labour market, that aim at increasing their flexibility, innovativeness and international competitiveness.

The developments in the euro area in 2010 and 2011 validate the theses that the debt crisis is not only a crisis of economically weak peripheral countries, but a structural crisis of the entire euro area. As a result of weak financial discipline in the public sector of almost all euro area countries and excessive debt of the private sectors, an imbalanced financial system has been created in this area.

According to the forecasts of the International Monetary Fund (IMF), 2012 in the global economy will be a period of weak GDP growth (ca. 3.5%), including in economically advanced countries – only 1.4%. The countries with emerging economies and developing countries, whose share in the global production will soon exceed 50%, may achieve in the same 2012 a four-times higher growth rate (5.7%). Moreover, in 2012 the real growth rate of global trade will also decrease (to ca. 4%).

The forecasts for 2012 expect further slowdown in the growth rate of the world turnover trade from 6% in 2011 to 4%, i.e. to the level by 1.5 percentage point below the average growth rate in the last decade. This slowdown covers most of the countries, but it will be greater in the group of developing countries

than in the group of countries with emerging economies. The import demand in developed countries will drop by 2.5 percentage points (including in euro area countries by as much as 4.2 percentage points), while the decrease in the countries with emerging economies will be significantly smaller (by 1.2 percentage point). On the other hand, export in developed countries will decrease by 2.8 percentage points (including in euro area by 4.2 percentage points), and in the group of countries with emerging economies by 1.4 percentage point. It is also forecast that there will be a significant slowdown in the growth rate of global trade prices from 9.5% in 2011 to 2.5% in 2012 and 1.5% in 2013.

The rather widespread expectations that in 2013 the global economic situation will modestly improve are highly uncertain. What is more, new challenges and shocks have emerged under the world economy, such as: devastating volcanic eruptions (Iceland), earthquakes, powerful tsunamis and nuclear accidents caused thereby (Japan), or the violent social unrest, revolutions and warfare (in North Africa and the Middle East) of serious regional and global consequences. As a result of these events, the earlier forecasts of economic growth for this decade, and especially for 2011-2015, were lowered. Also the margin of error and uncertainty for them has increased. Although in case of the global trade volume in 2013 many forecasting institutions expect a return to the potential – i.e. 6% growth rate, but these forecasts are at very high risk of downward corrections. There are many causes for this risk.

First of all, the possible escalation of the debt crisis in the euro area and breakdown in the import demand may have a strong negative impact on the global trade. According to the World Bank calculations, if the crisis covers only smaller euro area countries, then the global trade in 2012 will decrease by 1-2 percentage points as compared to the previous year. However, if the crisis affects several larger European economies then its effects will be much more severe, i.e. ranging from 4 to 6 percentage points.

Secondly, the sensitivity to the effects of the slowdown in the euro area is different in individual regions of the world. Regions strongly linked to the European Union both in terms of geographical proximity, as well as cultural and trade preferences will be the ones most affected. These are mainly countries of the Eastern Europe and Central Asia, as well as the Middle East and North Africa. Over 40% of export in each of these regions is allocated to the EU market. The countries of Latin America are relatively less dependent on trade with Europe – only 18% of their export is targeted at the EU market.

Thirdly, the regional sensitivity to the economic slowdown in Europe depends not only on the share of the EU market in export from these countries, but also on the commodity structure of the export. For example, the Asian countries export to Europe textiles and clothing, i.e. goods that are highly sensitive to the change in the economic situation and consumer demand. The effects of economic slowdown in Europe that are in the form of drops in prices will also affect exporters of raw materials, i.e. countries extracting metals for industrial produc-

tion, e.g. copper, as well as exporters of crude oil and gas. The negative income effect and loss of some part of proceeds in foreign currencies following from a reduction in prices of export goods, may constitute a significant factor of considerably slower growth rate in national demand and GDP in many developing countries and regions worldwide.

Fourthly, under the conditions of increased risk and uncertainty, the investors and consumers postpone their capital expenditure. This means a reduced demand for processed goods and in case of countries, which largely base their growth on production of processed goods, such as e.g. China, Thailand, also a reduction in the volume of their export.

Fifthly, a separate problem and risk follows from the channels of financing trade turnover. Even if the bank sectors in the developing countries are loosely integrated with the bank sector of the euro area countries, they may be negatively affected by the slowdown in Europe in an indirect manner through the foreign trade financing channels. This is dangerous since the European banks play the key role in the financing of the global trade. According to Dealogic, in the third quarter of 2011 large euro area banks accounted for at least 36% of global trade financing, while the Japanese and American banks represented 4 and 5%, respectively. In the same period the French and Spanish banks provided 40% of trade loans for the countries of Latin America and Asia. Most of these loans are short-term nature and expire rapidly, thereby their place is taken by new loans. This follows from an increased control of access to trade loans, which means difficulties in transaction financing in the nearest future.

Sixthly, the next problem and risk is the risk of increasing protectionism in the global trade. It is, in fact, a general rule that at times of economic slowdown the use of protective measures in international trade intensifies. According to the WTO data, in the period from April 2009 to February 2010 (11 months) the number of new trade restrictions increased by 175 of applied protective measures. As of the second half of 2011, this phenomenon has even strengthened. In line with the opinion of Global trade Alerts the number of solutions hindering global trade development has increased by 12.5% in the third quarter of 2011 (quarter-on-quarter).

The accession of the Russian Federation to the World Trade Organisation (WTO) constitutes an important event of 2011-2012 period in the field of international economic relations, which is especially significant for the economy and foreign trade of the European Union and Poland. Just like other countries accessing the organisation, also Russia undertook commitments in system issues, as well as within the scope of access to goods and services market. They followed, mainly, from the provisions of WTO agreements, and additionally from the demands of certain members of the organisation, including the European Union, presented during the accession process. The greater stability, transparency and predictability of conditions for economic cooperation with that country will be one of the most vital consequences of the Russian membership in the WTO.

In a short- and medium-term perspective the EU and Poland will be able to benefit from binding and general reduction of the Russian customs duties. Due to the increased stability of the policy on foreign capital and liberalisation of access to the majority of service sectors the trade in services should also increase. However, a lot will depend on the rate at which Russia will introduce the necessary changes in the legislation and next in the administrative practice.

### 1.2. Causes of the global financial and economic crisis

A combination of a variety of reasons lies at the root of the current financial crisis and these cannot be thoroughly explained in terms of conventional economic theory. It is necessary to differentiate between significant and superficial causes, as well as avoid assigning any ideology to the problem. This, above all, follows from the fact that the current crisis is a result of a complicated array of factors. The economic system, which encompassed almost the whole world after the fall of communism, is defined as a market economy system. However, the system fails to fully implement the market economy rules. It covers the elements, which prevent smooth functioning of the market system. But the system evolves and it is less and less similar to the market economy based on the principles of ownership, economic freedom, decentralisation and competition. Despite the technical progress and development of science the general global situation is not improving. In the face of such an extensive and severe crisis, we cannot continue to believe that this crisis, just like the former ones, is only a part of the correction process in the capitalist economy system and that it has a healing nature. The crisis points to serious weaknesses in the economy model based on the doctrine of neoliberalism. It seems that the era of the doctrine, which assumed full freedom of movement of risk capital and financial innovations comes to an end and the Western world drives at economic policy, which uses intervention of the State to a wider extent than before. In fact, the issue here is to maintain the right proportions of the market mechanism and interventionism. This, of course, does not mean that the governments are able to steer the economy in the long-run. However, it is also a common fact that proper regulations are required in order to prevent financial institutions from becoming big and „wild" investment funds, which invest the financial resources entrusted to them in increasingly risky operations.

In many analytical studies and public discussions various theses are being formulated to explain the roots of the present crisis. The proponents of neoliberalism voice the view that the primarily responsibility for crisis phenomena does not lie with the financial markets, but with the actions of public authorities in the USA, as well as the greed and incompetence at the highest levels of financial corporations. The highlighted activities primarily cover mild monetary policy run by FED and abandonment of basic supervision over financial institutions. The causes of the crisis are inherent in the policy of

governments and central bank, and not in the failure of financial markets. Moreover, a view is expressed that the current crisis is just like the previous ones a process of "self-healing of capitalism", which eliminates inefficient enterprises and strengthens the stronger ones.

Another position, corresponding to the aforementioned view, emphasises the key significance of the pathological mechanism of cooperation between numerous institutions of the American financial system and State administration. A symbolic beginning of this cooperation is dated back to 1938, when the Federal National Mortgage Association was established (Fannie Mae in short). This institution was to support commercial banks as regards provision of loans for building homes. In 1968, the US administration decided to privatize a mature and profitable Fannie Mae in order to get funds for financing of the Vietnam war. Politicians have rather quickly realised their mistake and in 1970 they have established Federal Home Loan Mortgage Corporation (Freddie Mac in short), but that also has been privatized soon after. Although Fannie and Freddie are private institutions they still use State loan guarantees. It is estimated that the total value of loans guaranteed by these institutions exceeds USD 5 trillion, which equals one-third of the GDP in the USA.

Fannie and Freddie are not banks, which allows them to repurchase from commercial banks home equity loans, merge them into packages and change into securities, which are subsequently resold to other financial institutions. Homes, which from the guarantee of the mortgage loans, constitute a collateral of these securities. In 1977 the United States Congress has adopted the Community Reinvestment Act, which obliges the commercial banks to provide loans to persons with low credit worthiness. Banks did not want risky loans in their portfolios, so they resold them to Freddie and Fannie.

Another element of the interdependency network are credit rating agencies, affiliated and supervised by the United States Securities and Exchange Commission. These agencies (Moody's Fitch and S&P's) estimate the risk related to securities. It should be noted that almost all securities issued by Freddie and Fannie had the highest ratings. After assigning the credibility clause the securities they were sold to commercial financial institutions. This procedure additionally supported with the cheap money policy conducted by FED caused inflation of the speculative bubble.

According to a well-known economist J. Bhagwati, representing the free market approach, today the centre of power in the USA comprises of the combination of finance with the Department of the Treasury, i.e. "Wall Street - Treasury Complex" closely cooperating in the International Monetary Fund. This is evidenced by the personal consistency between Wall Street and Department of the Treasury. During B. Clinton's presidency an influential Wall Street figure – R. Rubin, was the secretary of the department, while during the presidency of G. W. Bush the post was taken by H. Paulson – former president of a financial corporation Goldman-Sachs. As a result, the opinions of the Wall Street repre-

sentatives can become the dominant ones in the financial policy of the US government.

Many economists demonstrate the relationship of the present financial and economic crisis with the nature of the contemporary capitalism, which is predominated by the spectacular growth of the role of risk capital. The term "global casino" is used, which was introduced to the literature by an American futurist and political scientist A. Toffler. On the other hand, G. Soros considers the expansion and domination of financial markets in the contemporary economy as the most important feature of globalisation. According to him these markets had an absolute freedom of action, which together with their inherent tendency to fall into speculative crises has to result in global financial shocks. The 1980s and 1990s witnessed a real explosion of stock exchange transactions and rapid growth of the financial sector accompanying them. At the turn of the centuries, the daily transactions on the financial markets reached a huge amount of one trillion dollars.

Similar views are expressed by J. Stiglitz, winner of the Nobel Prize in the field of economy and the former chief economist of the World Bank. He states that the financial environment feels "disgust" towards the financial markets regulation by states and lobbies for self-regulation. This resulted in de-regulation of the financial markets, which according to J. Stiglitz disagrees with fair competition and interests of the investors.

Maybe the roots of the financial crisis are buried even deeper - in the specific mentality and culture of the Western societies, and especially the American one. According to a French philosopher – A. Gluckmann, the problem does not come down to some sort of financial technique, but the general state of mind, which led to a frenzied development of a speculative technique.

### 1.3. Proposals of packages supporting the return to global economic growth path

Plans and rescue packages prepared in many economies are the subject of controversy regarding the evaluation of their effectiveness in stimulating the economy. Neoliberal economists are sceptical about government intervention, although they do not preclude the budget cuts, which, after all is also an intervention. Some of them point out that increased government spending will result in the crowding out effect. On the other hand, proponents of intervention believe that following the neoliberal line in the anti-crisis policy would be reckless, because unregulated markets bring their own fall.

One can express the view that in the current crisis situation, no solution based on coherent ideological vision will work, P. A. Samuelson argues that the cure for the crisis is reasonable, centrist economic policy, combining intervention (in the form of huge expenditures of the State budget), with appropriate stimulation of market mechanisms (increase in the financial market transparen-

cy, correct valuation of risk assets). This means rejecting the notion that markets are reliable and State regulation is always harmful.

Modern economy is based on a giant debt pyramid of countries, banks, enterprises and households. Debts that are based on each other. To illustrate the enormous size of debts it is enough to give an example of the United States. In 1998 the internal debt was estimated at about 3,000 billion dollars, and the debt of households and businesses was 11,000 billion dollars. Since then, these debts have increased significantly.

In today's capitalism, stock markets, which in a market economy are a factor of stability and rational decisions regarding the allocation of capital, became a factor of destabilisation. This is due to excessive speculation. Risk capital movements are called unjustifiably investments, and speculators are investors. Daily turnover of risk capital is much higher than the turnover of global trade. This huge speculation is possible owing to modern methods of creating money through a loan, which is a structural defect in the present system. Speculation based on a loan allows for: "Buying without paying and selling without owning". Risk capitals are of such size and move so fast, that within a few hours they can destroy the currency of a medium-sized country. This situation justifies the statement that the funds are used primarily to finance finances.

In a properly functioning market economy, income differences are something normal, associated with the regime. In today’s system, there is a tendency that causes the formation of a small group of richer and richer entities (people, countries) and a growing group of progressively poorer ones. Various studies have shown that differences in income are very high and are rapidly increasing. Often these are differences that have no economic or social justification. To paraphrase Winston Churchill saying: never was so much owned by so few for so little.

It has long been said that there is a need for a new international monetary system. The current system is characterised by instability in balance of payments, exchange rate volatility, unprecedented speculation (trade in money), contradictions between the free movement of capital and the decisions of sovereign states.

In the rich countries of Western Europe there are around 20 million unemployed, and the number of people with unstable financial situation is estimated to be 50 to 70 million. Extremely high and growing unemployment causes social and political crises. Existing programmes to combat unemployment have failed.

These problems point to the ineffectiveness of the modern economic system. We need fundamental reforms, amending the basic functioning of the economic system. The reform of the financial system is to increase the efficiency of the market economy and to ensure equitable sharing of benefits. The tax system and the banking system must contribute to the increase in management efficiency and to ensure equitable sharing of benefits. The reform aims to create conditions for sustainable economic growth and eliminate undeserved income. It must

be subordinated to the principle that the good of the individual is the primary goal and not the good of the state. These demands are quite widely accepted, it is much more difficult to identify and obtain the approval for institutional changes, and to evaluate the effectiveness of their implementation.

Actions taken in the European Union may be used to exemplify of these difficulties. The proposed changes in the functioning of the Economic and Monetary Union (EMU) are based on two pillars: the programmes of fiscal consolidation and the establishment of the European Stability Mechanism (ESM) as a guarantor of financial solvency of the Member States. Therefore, restoring financial stability in the euro area depends not only on the effectiveness of the ESM, but also on the degree of implementation of national recovery programmes. This in turn is derived from the costs of economic reforms and the strength of public opposition to the necessary changes. A lot depends on the still unclear changes to regulations and supervision of the financial sector. In a situation of high dependence of all sectors on the access to credit, maintaining the current system means the risk of another loan cycle, this time with a much higher saturation of all sectors of the economy with debt.

The global financial crisis exacerbated the controversy about the limits of State aid. Provision of State aid in the EU is subject to strict rules set out in the Treaty. Any aid granted by a Member State or from State resources is fundamentally incompatible with the principles of internal market. However, there are some exceptions allowed by law or by decision of Community bodies. The authority that upholds these rules, and at the same time – with broad powers under the Treaty – can adapt them to new political priorities, is the European Commission. At the spring summit of 2005, the European Council called on Member States of the European Union to gradually reduce the general level of State aid, while responding to market failures. State aid control was to play an important role in achieving the objectives of the revised Lisbon Strategy. State Aid Action Plan for 2005-2009, adopted in June 2005 by the European Commission, assumed that State aid would be "smaller and better targeted".

Since 2008, however, we see an opposite tendency. State aid is expected by more and more industries and sectors – financial institutions, automotive industry, shipbuilding industry, airlines, tourism industry, farmers. Broad powers allowed the Commission to quickly adjust the State aid rules to the crisis that occurred in 2008, first in the financial sector, and then in the real economy. The aim of the European Commission was not only to counteract the effects of the economic crisis, but also – through the creation of a legal basis for the action of Member States – to preserve the integrity of the single market and to prevent harmful competition and shifting the costs between Member States (beggar thy neighbour policy). Temporary Framework for State aid measures to support access to finance in the current financial and economic crisis, adopted in December 2008 – as part of the anti-crisis remedial plan – have been amended several times, creating additional opportunities and facilities for State aid in the real

economy. In the early days, the State aid instruments pertained to banking liabilities and included: a) government guarantees for interbank loans and new debt securities issued by banks, b) recapitalisation of financial institutions in a difficult situation, including capital injections and loans and advances, c) expanding the coverage of insurance protection of retail deposits. Since the beginning of 2009, State aid has focused on the assets of banks due to the high degree of uncertainty of valuation of assets and the risks associated with adjustments and write-downs of assets. At the end of October 2009 – in connection with the crisis in the milk market and growing difficulties in obtaining credit by farmers – the European Commission has introduced a separate, limited amount of aid to primary agricultural producers. Member States could provide one-time aid by the end of 2010 for each farm in the form of subsidies of up to EUR 15 thousand, in addition to other general anti-crisis measures.

Another change concerned the maximum loan amount under the guarantees. Under the guidance of December 2008, this amount could not exceed the total annual salaries paid by the beneficiary in 2008. The limit, which would prevent the unnecessary distortion of competition turned out to be too restrictive during the economic crisis. It could in fact impede the investment process, especially in Member States with low labour costs. To simplify access to funding and to support long-term investments, in December 2009, the Commission concluded that the basis for determining the maximum amount of the loan may also be the annual average labour costs in the EU, established by Eurostat. The Commission, aware that support for the financial sector is temporary, prepared solutions for gradual return to the State aid rules before the crisis in this sector, i.e. the Community guidelines on State aid for rescuing and restructuring firms in difficulty. An important element of the so-called exit strategy are plans for bank restructuring. In April 2009, Poland notified the programme to support financial institutions, which was approved by the Commission in September 2009. The programme included six categories of financial institutions seated within the Polish territory: banks registered in Poland, registered insurance companies, brokerage houses, investment funds, pension funds and co-operative savings and credit unions, to be recognised by the Polish authorities as solvent entities. There are two types of support: associated with the guarantees of the Treasury, or Treasury securities. Although the original programme did not support any financial institutions, in November 2009, Poland notified the European Commission to extend the duration of the programme until the end of June 2010. It was supposed to contribute to the stability of the financial system in Poland. In February 2010, the Commission confirmed that the funds under the programme are deemed compatible with the internal market.

The overall level of State aid in 2008 increased almost five-fold as compared to 2007, reaching 2.2% of GDP for the EU-27. Three-quarters of this amount were anti-crisis measures allocated to the financial sector (EUR 212 billion, or 1.7% of the GDP of the EU-27). For comparison, in 2003-2007, the

overall level of State aid amounted to about 0.5-0.6% of the EU GDP. Since the beginning of the crisis to April 2010, the Commission approved a total of over 160 decision to support the financial sector (in the form of aid schemes or ad hoc aid) for a total of more than EUR 4,131.1 billion (25% of the EU GDP), of which 3/4 was allocated to assistance in the form of government guarantees. The rate of absorption of aid by banks (referred to as the actual use of the measure in relation to the approved amounts) was considerably lower (according to the Commission report of August 2009, it was ca. 33% for guarantees and ca. 55% for recapitalisation).

Crisis support for the real economy using Temporary Community Framework began to be given only in 2009. Its size, estimated by the Commission on the basis of questionnaires sent by the Member States, will be announced in the autumn review of State aid (Autumn Scoreboard).

In the project of the new economic strategy announced in March 2010 (see paragraph 1.5 of the European Union Strategy Project – "Europe 2020"), the European Commission announced a return to the old, strict State aid rules and presented the principles for withdrawing emergency measures. Stimulus packages would be withdrawn in the first place from the industrial sector due to the high cost to the budget and interference in the functioning of the single market, and only at a later stage from the labour market. Discontinuation of support for the financial sector will depend on the condition of the economy and the stability of the financial system. Supporting access to finance should be continued until there is evidence that economic conditions have completely returned to normal.

The steps taken by the European Commission are assessed in different ways. The European Commission was accused of contradictions between the relaxation of State aid rules and tighter requirements for the budget deficit for the euro area countries introduced by the Lisbon Treaty (see Article 136 TFEU). It is emphasised that budget deficits have increased significantly and returned to the levels of 2000. According to European Commission forecasts they will reach on average 6% of GDP in 2009 and about 7% of GDP in 2010.

In the opinion of the European Central Bank, support for the banks puts a significant burden on public finances. It is estimated that in 2008-2009, the total impact of stabilisation operations on the level of debt of the general and local government units in the euro area (including the repayment of capital support in some countries) amounted to 2.5% of GDP, with a small share in the deficit in the sector. It should be noted that in addition to the direct impact on deficits and public debt, bank rescue operations pose other risks to public finances. Fiscal risk (contingent liabilities, impact of government support to the banking sector on the size and structure of the balance of the State budget) may be conducive to a deterioration of the balance of public accounts in the medium- and long-term perspective. The budgetary cost of supporting the banking sector was partially offset by dividends, interest and fees paid by banks to the Treasury in exchange for the financial support. The authors of the ECB report stress that the

net budgetary costs associated with providing government support for the banking sector should be estimated in view of more than one year in which the aid is actually provided. It is important to take into account the wider impact of this form of support on the balance of the State budget.

Critics of softening the restrictive EU rules on State aid point to little effectiveness of such a policy on the example of Germany and France – countries that despite the generous stimulus packages, recorded weak economic performances.

Solving development problems on a global scale – in addition to typical management problems – faces the barrier, which is the lack of sufficient funds. The expected annual transfers of 0.7% of GDP to these targets by developed countries are not reflected in practice. The literature and discussions on financing global development mention many proposals. One of the most famous is the tax on all international financial transactions, the so-called Tobin tax. There are different variants, such as a tax on trading in bonds or derivatives transaction tax. Often there are proposals to introduce other turnover taxes such as general tax on international trade, taxation of trade in fuel, weapons, postal services and telecommunications, or mark-up on national taxes (usually in the form of a progressive income tax) or a specific part of the national taxes, such as on luxury goods.

### 1.4. Summary

The current economic crisis does not mean that market economies do not work.

Administrative actions of the richest countries in the new conditions should be based on three priorities. First, it is necessary to improve the effectiveness of supervision over financial institutions, in order to reduce "juggling" of financial instruments. In a situation where financial institutions continue to perform off-balance sheet operations and many large financial companies are not subject to any supervision, no one fully controls the risks to the financial market. Financial supervision should be counter-cyclical, that is based on regulations that do not stimulate the economy, which is in the expansion phase.

We should move away from the current model, in which the State is the guarantor of any highly risky venture of financial companies. This creates the conditions for taking excessive risk in financial operations, which in the long-run has a negative impact on capital flows. Banks must act within the market system. It cannot be that at a period of prosperity banks have huge profits, and in the crisis they are saved at the expense of the taxpayer.

Decisions must take into account the dilemma of whether the losses resulting from the disintegration of welfare, traditional models of life, are greater than the benefits of growth? Are tomorrow benefits from the processes of creative destruction more important than the losses of those who have lost in modernisation?

Prof. William H. Meyers,
Co-Director, Food and Agricultural Policy Research Institute and Professor of Agricultural Economics, University of Missouri at Columbia, USA

Dr Jadwiga R. Ziółkowska
Humboldt University of Berlin, Chair for Agricultural Policy Institute of Agricultural Economics and Social Sciences Berlin, Germany

# 2.The CAP from a global agriculture perspective

**Abstract**

A vast transformation has taken place in EU policy over the last three decades that has changed the global perspective of the Common Agricultural Policy (CAP) dramatically. That was a process of adjustment to changing conditions and pressures. Now the question is whether changes in the next financial framework will gradually move along the same path or whether there may be another major shift in direction. Since policies generally evolve in a political economy context in response to internal and external pressures, it is interesting to ask whether these pressures are continuing along the same path or are likely to change in a way that will alter the path of policy evolution for the CAP. We begin with a review of past developments then look at proposed reforms and prospects for CAP changes in the context of likely changes in the global market and policy environment over the next decade.

## 2.1. Evolution of the CAP – a historical overview

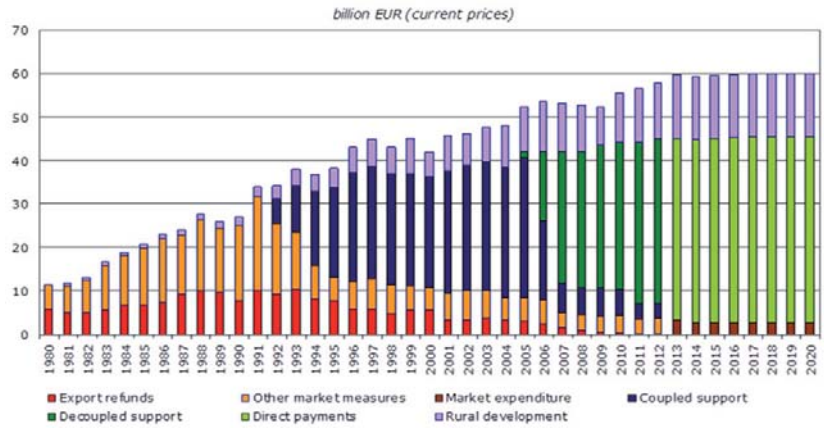
Many of you will not remember the days when there was little challenge in conducting price analysis in EU markets, since prices were mostly determined by government policy. Research in the EU might have focused on why prices in France and Germany deviated from the policy prices, while those in the US studied the impact of EU policies on US and world prices. That day is long gone, but for many of us it was challenging to evaluate the effects of this policy on the external markets. It is amazing today to look back on early work, for example, on price transmission [Bredahl et al. 1979] and realize how much of the world market was isolated from external price movements.

The EU was often the target of US and other exporter criticism during the Uruguay Round trade negotiations because aside from destabilizing world markets, the success of its domestic support had generated large surpluses and growing export subsidies. Awareness of the growing costs and trade concerns led to the first major EU-funded policy reform analysis [European Commission 1988] and many other studies of the global impacts of changing these policies [Westhoff et al. 1992, Meyers et al. 1998]. Meanwhile, decoupled support policies were gaining ground on both sides of the Atlantic [Phipps et al. 1990] and

became an integral part of the Uruguay Round Agricultural Agreement (URAA). Continued enlargement of the EU as well as growing production put increasing pressures on the EU budget and stimulated further policy reforms.

Clearly the policies of the EU have evolved significantly over time and were influenced by many domestic political, economic and cultural factors as well as by international agreements such as the URAA. As is well known, the URAA and subsequent implementation of WTO disciplines encouraged countries to convert support programs to less distorting measures and to reduce the levels of support by specified measurable amounts. In case of the EU, the most distorting measures were the domestic price supports and export subsidies. These have been reduced to almost insignificant shares of the total expenditure (figure 1) and were largely replaced by direct payments and more recently by decoupled direct payments based on historical support levels. Meanwhile, expenditures on rural development programs have been gradually increasing over time, though they have stabilized at about 20 percent of total expenditures. Total expenditures have increased over time, partly due to enlargement of the EU, but have been just slightly over 50 billion Euro (in 2007 constant prices) for more than 15 years.

Figure 1. Historical and projected evolution of CAP measures and expenditures



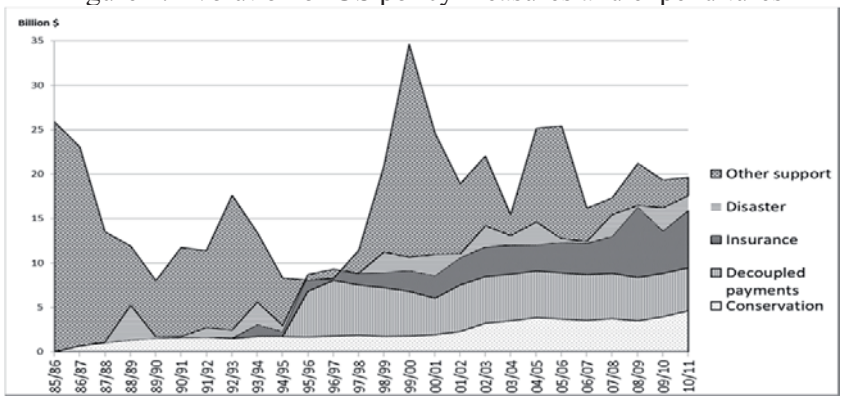

*Source: [EU Commission 2011].*

We take a brief detour to somewhat similar changes in the United States. The pattern of change in US policy measures is different but also shows significant change since the early 1990s (figure 2)[1]. First of all, costs of US programs are substantially lower but vary much more widely than the EU costs, because

[1] Note that the figure is a rough approximation of the annual costs but is not exact because of combining fiscal year and crop year data and because payments for some programs span more than one fiscal year. Nevertheless, the figure captures the changing pattern of program expenditures.

the EU operates with a fixed budget, while the US has had programs that cost much more when prices were low and much less or nothing at all when prices were high. The largest shift in program design and cost came with the introduction of decoupled direct payments in 1996, but subsidized insurance programs were introduced about the same time and their growth in cost has been another major change in expenditures. Conservation programs, which are dominated by the long term conservation reserve program, have also been growing gradually, but they are more likely to decline than to grow in the high price situation that currently exists. The number of programs with highly volatile costs is decreasing and will be almost irrelevant as long as prices remain high.

Figure 2. Evolution of US policy measures and expenditures




*Source: Calculated by authors from USDA data.*

Pressures for change in US policy have a strong budgetary aspect, because of the high priority to reduce the growing Federal budget deficit. There has also been growing interest among many farm and commodity groups to shift emphasis from decoupled payments to risk management programs and this is a central feature of the 2012 "Farm Bill" currently working its way through the US Senate [FAPRI-MU 2012b]. However, the political gridlock in Washington, DC, has made it difficult to pass any new legislation, so expectations for change that can be passed by both the Senate and the House of Representatives are relatively low.

Neither the US nor the EU are strongly pressured by WTO negotiations at the moment, partly because negotiations are stalled and also because prices are so high that it would be relatively easy to comply with the proposed cuts in support and protection that are in the latest proposals for discussion. In the next section we will explore some of the key pressures for change in the CAP.

## 2.2. Current pressures for change in the CAP

The pressures to change EU policy in the next financial framework (from 2014-2020) include budget constraints, interest in strengthening environmental

measures, and desires to reduce the disparity in direct payment levels among EU Member States. Changes in decision-making procedures with the enhanced role of the EU Parliament, the full participation of the Post-2004 new Member States and a Commissioner of Agriculture coming from one of the new Member States and the current and expected strong prices in world markets may also be factors influencing the outcome. The impacts of the continuing Eurozone crisis and increased price volatility in global markets has yet to be seen, but are likely to be important as well.

### 2.2. a) Budget constraints

Budgetary pressures are stronger than in the past, in part because the CAP budget was decided in concert with the overall EU budget rather than being set before the overall budget was decided, as has often been done in the past. Not permitting the sequential "CAP first" budget process is possibly a sign of weakening of the agricultural/rural interests relative to other claimants to the EU budget.

### 2.2. b) Greening of the CAP

With the MacSharry reform in 1992, environmental protection in agriculture was defined as one of the relevant goals of the Common Agricultural Policy. In the subsequent CAP reforms, environmental protection measures have been integrated in rural development programs covered by the 2$^{nd}$ pillar of CAP. Since then, the CAP has played an important role in maintaining sustainable agriculture in EU Member Countries and the relevance of environmental protection in rural areas has been growing rapidly. The reason for this development was, among others, the pressure and negative impact of farming practices on the environment and animal and plant health, which have been experienced through depleting soil fertility, increasing greenhouse gas (GHG) emissions, increasing inputs of fertilizers and pesticides etc. and has led to water pollution and loss of biodiversity [EC 2011a].

The relationship between agriculture and the environment has two components: a potential to provide amenities in rural areas (provided by the rural development schemes) and a risk of damaging the environment (regulated by the directives on nitrates, water pollution, pesticides etc.). A bridge between those two components has been established by the cross-compliance measures, providing a production subsidy to farmers under the condition of their complying with environmental standards [Bureau and Mahe 2008], while the process of incorporating environmental services in agricultural policy has been called 'greening the CAP'.

Several measures have been undertaken to date in the process of 'greening the CAP', among others, cross-compliance, modulation, direct support for bioenergy with rural development programs. However, the Common Agricultural Policy is facing new challenges due to, for instance, climate change, technological change and limited funding. According to the recent executive plans of the EU [Euractiv 2012], in the process of greening the CAP, the following measures will be given more importance in the new post-2013 policy:

a) Extending biodiversity protection and reducing GHG emissions,
b) Supporting crop rotation as a way to reduce pesticide and fertilizer use,
c) Preserving at least 7% of the land for focus areas (buffer zones, permanent grassland) to reduce GHG emissions.

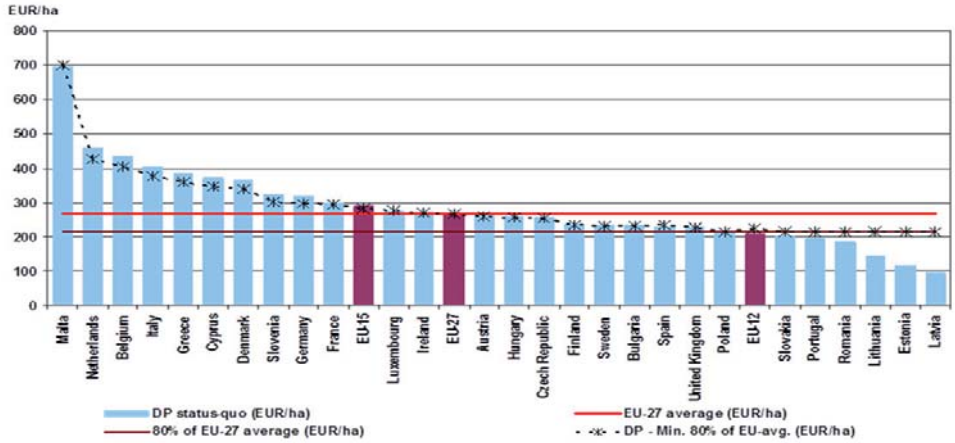
**2.2. c) Modulation**

Modulation is less of a pressure point than in the past. It has already shifted a share of CAP funding from Pillar I to Pillar II over time and this seems unlikely to be used as a budget shifting tool in the future. From the late 1990s to 2010, modulation shifted about €5 billion from commodities to rural development (figure 1) and it is projected by DG Agri to increase by another €5 billion from 2010 to 2013 but not to increase further during the next financial framework. Instead, measures in Pillar I are more likely to be changed so as to increase the greening of the CAP as discussed above.

**2.2. d) Realignment of payments**

A more notable pressure in this reform arises from the differences in the direct payments across countries, which now range from €100 per hectare in Latvia to €466 in Netherlands, disregarding the even more obvious outlier Malta (figure 3).

Figure 3. Difference of direct payments across countries and the '80% method' of realignment




*Source: [EU Commission 2011].*

Despite the fact that these payments have historic roots that reflect land quality, commodity mix, land use intensity, production value and whether the historic or regional payment model was used, there is still a perception of inequity in such large differences. Different options for modifying these are considered, including setting a minimum payment of 80 percent of the average.

### 2.2. e) Climate change

Several challenges can be specified for the agricultural sector related to climate change. The impacts of climate change on agriculture have a multidimensional character and can be determined for agricultural resources (water, soil, and air), branches (agricultural production, output management, consumer demand, and agricultural technology system) and different agricultural regions in Europe.

The challenge for agriculture in terms of climate change is the mitigation and adaptation to climatic change. As climate change is one of the most relevant issues in EU rural development policy, the policy responses require a direct engagement of the government and collaboration with farmers. The new post-2013 CAP will continue with supporting measures reducing GHG emissions in the agricultural sector, e.g., farm modernization (energy-efficient equipment and buildings), training and advisory services, providing support for biogas, compensation for the extra costs incurred by farmers who voluntarily help protect the environment (agro-environmental schemes). Farmers can directly contribute to adaptation measures by changing the crop rotation to make the use of water resources most efficient, adjusting sowing dates according to temperature and rainfall patterns, using crop varieties more resilient to heat and drought, planting hedgerows or small wooded areas on arable land that reduce water run-off [EC 2012].

Another related 'solution' to climate change adaptation is the reduction of agricultural production in the EU. However, an international agreement would be necessary to monitor emissions while reducing the EU agricultural production capacity in order to assess positive effects on the global level. According to the EC [2009], the agricultural production in the EU has already reached high levels of productivity in many regions and should not be intensified beyond environmental sustainability levels. Instead, the CAP should create an approach for a globally more sustainable farming. Such a planned reduction of production would imply reduced exports or increased imports, depending on the product affected.

### 2.2. f) Renewable energy

Agriculture can play a very important role in reaching renewable energy goals as it can provide biomass for energy in heating, cooling, and electricity production processes as well as biofuels. However, crop production used for energy purposes should not replace the crop production for food and feed purposes. Together with biomass from forestry and organic waste, agricultural biomass currently provides around 7% of final energy consumption in the EU-27 in the three energy sectors (transport, heating and electricity).

The future of renewable energy is promising, though plagued by several uncertainties and controversies, especially the food vs. fuel tradeoffs. Due to the increasing support for renewable energy generation as well as new emerging technologies, the bioenergy market is expected to grow fast in the coming years. A challenge for the CAP in the long-term will be to integrate energy and climate

change policies and measures on the one hand, and ensure market equity in food and fuel production [Summa n.d.].

### 2.3. Global perspective on the current reform proposals

It is useful to ask how the proposed reforms may influence trade or how it will impact other countries. This was always a major focus of concerns in the United States and other major trading countries in the past when EU policy reforms were proposed and undertaken. It may be surprising to some, but it has been demonstrated in past studies [OECD 2010] that past reforms, including reduction of price supports and export subsidies have increased not decreased EU exports as well as imports. The type and scale of changes in CAP being proposed for the next financial framework are quite small in terms of market effect compared with changes that were made in the past reforms. One could expect the 'greening the CAP' provisions could reduce production and exports and possibly others could increase production and export, but in either case these would be quite small in comparison with the changes and impacts that were realized in the past [EC 2011b].

#### 2.3. a) Market context for policy in the next decade

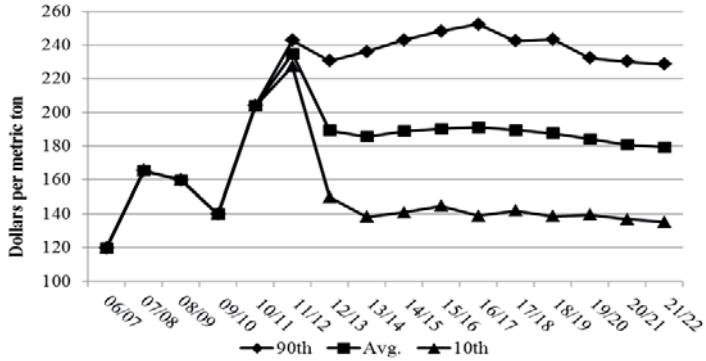
The likely market context in which post-2013 CAP policies will be employed is also important. Ever since the price surges of 2007/08, there has been a growing consensus among analysts that price levels and price volatility will be quite different in the future than in the last decade or so before this price surge. So far, market prices have continued to be high and volatile compared with pre-2005 behaviors, and most projections of market prices indicate a continuation of this picture. The FAPRI [2012a] average maize price projections for the next decade, as an example, hover around levels that are even higher than what was seen in 2007/08 (figure 4).

It would, however, be a mistake to think that prices will not fall lower or go higher in some years. FAPRI shows this by doing stochastic analysis that allows a number of important factors to randomly vary from their means, and in this case generate prices that are sometimes much higher or lower than seen in the smooth average price projections (figure 5).

This is not the time or place to do a detailed market outlook discussion, but the fact is that FAPRI, USDA, OECD, FAO and EU and other forward looking analyses of markets all concur that we should expect the higher average price levels and higher price volatility we have experienced since 2007/08 to continue in the near to medium term. These assessments also agree that there are two important new factors that will continue to influence the direction and variance of commodity prices. These are the closer linkage to energy prices through the growing influence of bioenergy in crop demand and the higher frequency and severity of weather events due to climate change. Though studies differ on

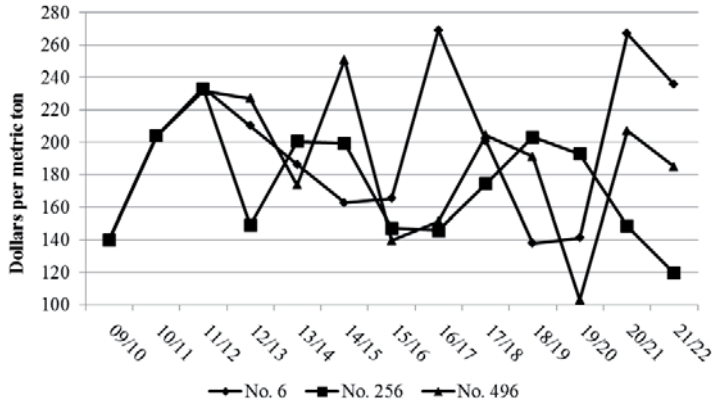
the size of impacts, the financialization of commodity markets may also increase the short-term volatility of agricultural prices.

Figure 4. FAPRI projection of price distribution for US maize in projection period




*Source: FAPRI-MU Jan. 2012 stochastic baseline [2012a].*

Figure 5. FAPRI projection of US maize price in 3 of the 500 outcomes

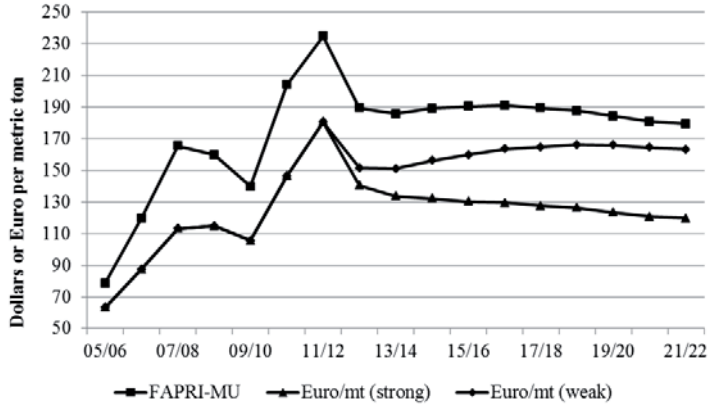



*Source: FAPRI-MU Jan. 2012 stochastic baseline [2012a].*

**2.3. b) Euro crises and impact on CAP**

The issue of the Euro crisis is closely linked to the market price outlook but also to the issue of budget constraints. Of course, as the Euro has weakened by about 15 percent in the last year, largely due to the Eurozone crisis, it has also impacted commodity prices. So if the Euro were to weaken further when USD prices fall as expected in the 2012/13 marketing year, Euro prices would not fall as much as US$ prices. For future years two Euro lines are drawn (figure 6) to illustrate the extremes of the Euro gradually moving to $1.5/€ and $1.1/€ to show the different price implications of alternative outcomes.

Figure 6. FAPRI projection of US maize price in US$ and alternative Euro/$ exchange rates



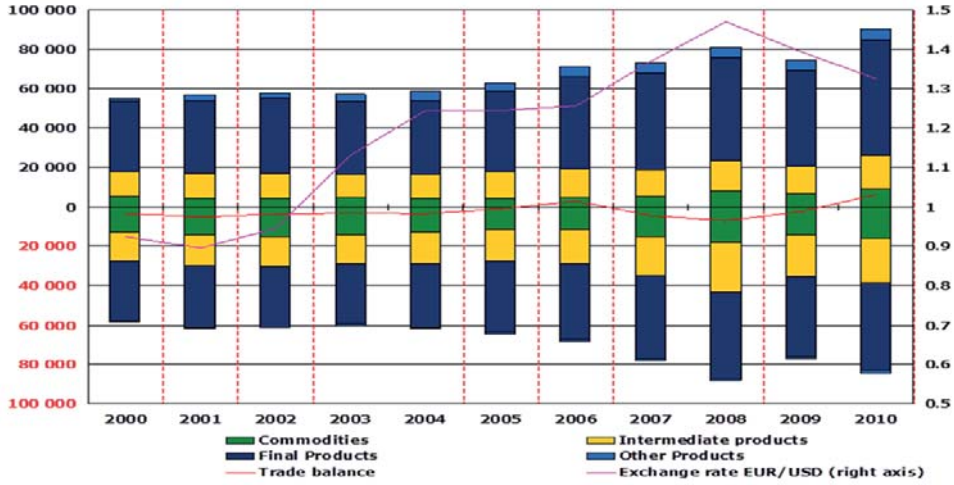

*Source: Author's calculation based on FAPRI 2012 baseline.*

Essentially, the volatile exchange rates add another layer of commodity price risk to the already volatile market price situation. At the same time, the pressures to devote increased resources to the Eurozone financial crisis may exacerbate budget constraints both in the EU and in national budgets of EU members. So farmers may be facing increased financial risk at the same time that reduced resources are available. This context calls for increased prudence in the allocation and use of budget resources and in the design of measures that can be more cost effective. Moreover, if prices do fall to levels that would trigger intervention, the increased cost would directly impact farmers through a reduction in direct payments.

### 2.3. c) Trade growth prospects

Agricultural exports and imports have both grown substantially in the last decade as EU policies have become more market oriented and most notably since the 2004 enlargement (figure 7). And this occurred during a time when the Euro was mostly appreciating, though the net trade position remained very close to zero most of the time. The EU is clearly a major player in international markets, about equal to the US in terms of export value and higher than the US or any other country in terms of import value. It is clear that market oriented policy reforms have improved its trade performance and it seems likely to continue in the future. The near-term future may have some rough spots due to the Euro crisis, though a weaker Euro should lead to increased exports and a more positive trade balance. The stagnation of WTO negotiations is somewhat offset by continued active pursuit of bilateral and FTA agreements that could promote trade growth.

Figure 7. EU Structure of agricultural trade (1999-2011)




*Source: [European Commission 2011b].*

## 2.4. Conclusions

We have concluded that the kinds of reforms being introduced for the next financial framework are not likely to have large trade impacts in either direction. The measures that increase production cost or slow the rate of technology adoption, such as increased environmental conditionality, can be expected to slow the growth of exports and/or increase the growth of imports. The magnitude of these impacts, of course, will depend on how soft or hard these environmental constraints would be. It seems likely that trade growth will be more significantly influenced by world demand growth and new or expanded bilateral or multilateral trade agreements than by changes that occur in the CAP.

**References**


1. Bredahl, M.E.; Meyers, W.H.; Collins, K.J., (1979), The elasticity of foreign demand for U.S. agricultural products: the importance of the price transmission elasticity. American Journal of Agricultural Economics 61(1), pp. 58-63.
2. Bureau, J.C.; Mahe, L.P., (2008), CAP reform beyond 2013: an idea for a longer view. Notre Europe: Brussels.
3. Commission of the European Communities, (1988), Disharmonies in EC and U.S. Agricultural Policy Measures, ECSE-EEC-EAEC, Brussels.
4. EC, (2011a), Commission staff working paper impact assessment Common Agricultural Policy towards 2020, Brussels, XXX SEC(2011), 1153.
5. EC, (2011b), Impact assessment: Common Agricultural Policy towards 2020, Commission Staff Working Paper, SEC (2011), 1153.
6. EC, (2012), Agriculture and climate change, EC: Brussels.

7. EC (European Commission), (2009), The role of European agriculture in climate change mitigation, Brussels, 23.7.2009. SEC(2009) 1093 final.
8. Euractiv, (2012), Efficacy of EU's 'green' CAP reform questioned, Accessed on 03/26/2012.
9. FAPRI-MU, (2012a), FAPRI US Baseline Briefing Book, FAPRI-MU Report #01-12, March 2012.
10. FAPRI-MU, (2012b), Impacts of selected provisions of the agriculture reform, Food and Jobs Act of 2012, FAPRI-MU Report #03-12. May 2012.
11. Meyers, W.H.; Helmar, M.; Hart, C., (1998), Modelling the outcomes of CAP reform. [in:] Ingersent, K.A.; Rayner, A.J.; Hine, R.C. (eds.): The reform of the Common Agricultural Policy, Macmillan Press, London.
12. OECD, (2010), Evaluation of agricultural policy reforms in the European Union. OECD, TAD/CA/APM/WP(2010)26/FINAL.
13. Phipps, T.T.; Rossmiller, G.E.; Meyers, W.H., (1990), Decoupling and related farm policy options. [in:] Allen, K.: Agricultural Policy in a New Decade, Resources for the future, Washington, DC, pp. 101-123.
14. Summa, H., (n.d.), Energy crops and the Common Agricultural Policy. EC, Brussels.
15. Westhoff, P.; Hayes, D.J.; Meyers, W.H.; Helmar, M.D., (1992), An analysis of the European Community Commission Plan for Common Agricultural Policy reform. [in:] Becker, T.; Gray, R.; Schmiz, A. (eds), Improving Agricultural Trade Performance Under the GATT, Wissenschaftsverlag Vauk, Kiel, pp. 288-307.

Prof. Ulrich Koester
University of Kiel, Germany

# 3. The CAP after 2013: an assessment of the Commission's proposals for changing Pillar I

## 3.1. Direct payments are the most important budget outlay

EU expenditure on Agriculture and Rural Development makes up a high share of total EU expenditure. The share was – according to official information – 41 per cent of total EU expenditure in 2011 and amounted to €55.269 billion. The position 'Direct Payments' was the most important budget outlay during the present Financial Framework with €39.771 billion in 2011; it made up a share of 72 per cent of the total expenditure on Agriculture and Rural Development. This budget item came into existence in 1993 as the Council of Agricultural Ministers had decided in 1992 to reduce the intervention prices for grain by about 33 per cent and also to reduce the support price for oilseeds. It was a widely held agreement in 1992 that farmers should be fully compensated for the income loss incurred from the price cut. This item grew over time as institutional prices for other agricultural products had to be reduced due to international pressure. However, the income loss incurred by farmers due to these additional price cuts was only partly compensated by additional direct payments. Thus, the first group of farmers was treated better than the following groups.

## 3.2. Direct payments were originally justified with the compensation argument

Even if there was the agreement that farmers had to be compensated, there was a widely held understanding that a) it was compensation for the income loss due to reduced institutional prices and b) the compensation had to be tapered off over time. The importance of the development of market prices can be illustrated for the case of wheat. Figure 1 shows the development of intervention and market prices for wheat and the attributed direct payments. It is obvious that market prices did not decline as much as intervention prices; but the latter had been taken for the quantification of the income loss. Moreover, market prices in recent years have even been higher than the prices prior to the price cut. Most likely, prices will stay above the former price level in the coming years[3]. Moreover, independent of the development of market prices, direct payments cannot be justified anymore by the need of adjustment aid. That part of EU agriculture (the Old Member States) which suffered from price reduction has had nearly 20 years for adjust-

[3] See the projections by OECD and FAO [OECD – FAO 2011].

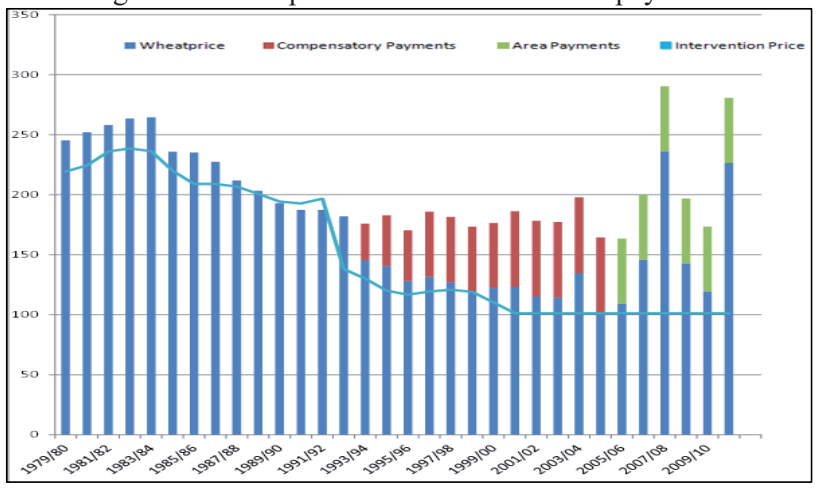
ment and thus, sufficient time to adjust. It has to be noted that a large part of EU agriculture (the New Member States) has never been hit by a price cut. In contrast, farmers in the New Member States generally enjoyed a higher income due to EU membership for 10 New Member states in 2004 and the other two in 2007.

### 3.3. The original justification does not hold any more; a new rationale has been proposed by the Commission

One may wonder why the EU Commission, in spite of the evidence, still sticks to the continuation of direct payments. Official statements clearly convey that the Commission is trying to put forward a new justification. It is amazing that the budget request for expenditure based on the new justification is practically identical with the past actual expenditure. The Commission seems to know that exactly the same amount of money is needed even if used to serve different purposes. The Commission proposes two payment parts:

- Basic income support through granting basic decoupled direct payments, providing a uniform level of obligatory support to all farmers in the Member States (or in a region) based on transferable entitlements that need to be activated by matching them with eligible agricultural land, plus fulfilment of cross-compliance requirements.
- A mandatory "greening" component to support environmental measures applicable across the whole of the EU territory.

Figure 1. Wheat prices and attributed direct payments




*Source: EU Commission.*

It is stated: "The necessary adaptations of the direct payment system relate to the redistribution, redesign and better targeting of support, to add value and

quality in spending. There is widespread agreement that the distribution of direct payments should be reviewed and made more understandable to the taxpayer. The criteria should be both economic, in order to fulfil the basic income function of direct payments, and environmental, so as to support for the provision of public goods" [Communication from the Commission 2010].

The statement clearly supports the suspicion that the change is not primarily based on a diagnosis of the present situation and on the identification of market or policy failure. Instead, it is trying to convince the taxpayer that the exact amount of money which has been used to serve one purpose has to be used to deal with another supposed problem. Nevertheless, the new concept pretends to be able to improve the targeting of support. In the following we limit the discussion to the rationale provided for basic payments.

### 3.4. The rationale of basic direct payments is in conflict with social support in the member countries

The Commission argues that the income of farmers is on average lower than the average income of other sectors (see figures 2 and 3) and, hence, income support is needed. The taxpayer – even with little education in economics - may ask the following questions:

- Is it the task of the EU to provide for income support of specific sectors?
- Is the proposed EU policy measure compatible with national social policies?
- Can the need for social support be based only on a comparison of average incomes?
- Are there adequate data available for efficient policy measures?

### 3.5. Is it the task of the EU to provide for income support for specific sectors?

The Treaty of Rome and all the other following Treaties did not mention that the EU has to provide income support for farmers. The Treaties only state as the first two objectives: "The objectives of the common agricultural policy shall be:

- to increase agricultural productivity by promoting technical progress, the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour,
- **thus** (bold introduced by the author) to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture" [Treaty of Rome, Article 39].

It should be noted, that the EU has – according to the Treaty – first of all to contribute to higher agricultural productivity and second, the increase in productivity should ensure a fair standard of living. The ranking of the objec-

tives is pronounced by the word 'thus'. Clearly, the Treaties do not mention that the EU should be in charge of securing a 'basic income' for farmers.

Indeed, it seems strange that the Community should be responsible for securing a basic income for a specific sector in the member countries. A policy which aims at securing a minimum (basic) income is obviously part of social policy. But social policy is generally in the realm of the member countries and not of the EU. Nevertheless, the EU Commission is putting forward a recommendation to implement social measures at the EU level. **This proposal is not in line with the principle of subsidiarity.**

It should also be noted that the proposed payments will slow down structural change and an increase in productivity as compared to a situation without any payments. The marginal producers, i.e. those who are going out of production if revenue declines, will stay in production for longer, leading to inefficient use of resources. Disguised inefficient use of resources in the agricultural sector will continue.

### 3.6. Is the proposed EU policy measure compatible with national social policies?

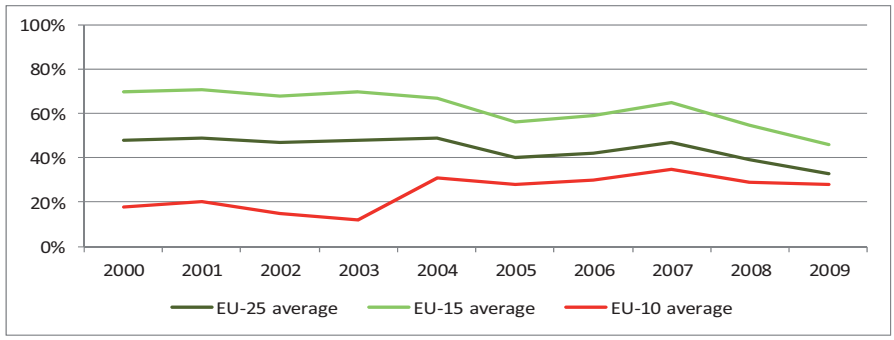
The individual member countries of the EU have established social security policies. These policies do not provide support for specific sectors, but for people who suffer from poverty. In general, applicants for social assistance have to provide information about their household income and, in addition, on the value of their property. Applicants who own property which can be sold are not considered poor. The EU proposes a completely new criterion for social assistance. All farmers qualify for basic payments, independently of their income. As the payment is related to the area of land cultivated by the individual farmer, owners of large estates will be entitled to higher payments than farmers who cultivate smaller estates. Hence, basic payments increase disparities within the agricultural sector. Moreover, some farms are managed by legal entities. Even these entities would be qualified for basic direct payments. One has to know that the average payment for legal entities amounted to € 385,000. Where in the world are legal entities entitled for social payments? The EU seems to be exceptional. This policy measure is not targeted at all. It is in serious conflicts with national social policy measures.

### 3.7. Can the need for support be justified by a comparison of average incomes?

It is absurd to justify the basic income payments by a comparison of average incomes of sectors and to even support farmers who are considered to be well off by the societies in the member countries. It is known that farm incomes vary significantly across farms in the individual member countries and even more among farms in the EU. It is strange to justify the basic income support by

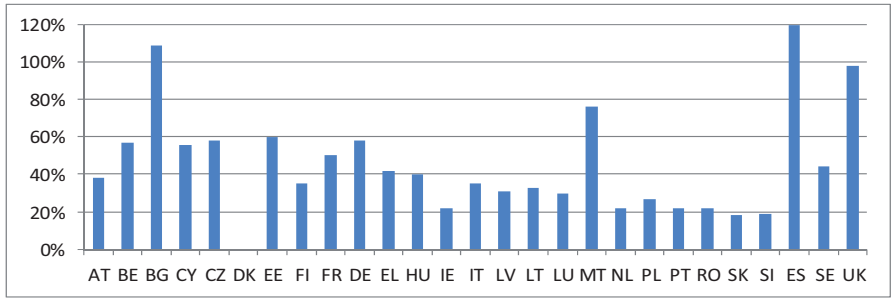
a comparison of average incomes. If this criterion were applied for the population in a country half of the people were qualified for basic payments as their income would be below the average income in the country under consideration.

Figure 2. Evolution of agricultural income as a share of average income on the economy




*Source: http://ec.europa.eu/agriculture/cap.../graph 3_en.pdf.*

Figure 3. Agricultural income as a share of average income in the country per Member State (2008-2009)




*Source: http://ec.europa.eu/agriculture/public/app-briefs/01_en.pdf.*

### 3.8. The proposal for basic payments is in conflict with the proposal to align payments across the EU member countries

The Commission proposed gradual alignment of direct payments across the EU member countries. This proposal is in conflict with the rationale presented for basic direct payments. If these payments should provide a minimum income for farmers, as argued by the Commission, the amount of money transferred to farmers in the individual countries should differ, as overall income and social assistance differs across the countries. It might be that even more money had to be spent for basic income support farmers in the Old Member States than is available so far as the gap between average income and farm income may be larger in the Old than in the New Member States. However, the Commission

does not have any data. Therefore, **basic income support contradicts the gradual alignment of basic payments across member countries**.

### 3.9. Do we actually have information on total labour income of the farming population as compared to that of people working in other sectors of the economy?

The Commission presented information comparing average incomes in agriculture with average incomes in other sectors (see figures 2 and 3). Such comparisons are highly misleading. First, we do not have exact information on agricultural labour income, as most farmers do not have to submit a tax declaration[4]. We have on the EU level only information on agricultural value added, including the income of all factors of production, i.e. labour, capital and land. EUROSTAT calls the value added per work unit as labour income. However, not all of total factor income accrues to farm households. Tenants may have to pay rents to non-farmers and farmers may have to pay interest to non-farmers. Calculating this income one may derive a low income for labour, but the farm household may be well-off due to income from capital and land employed outside the agricultural sector. Hence, the calculated income does not inform about the income of farmers and, thus, on the need for financial assistance from the point of view of society at large. It has to be added that even accurate data on the income of farmers do not inform about the living standard of farmers as compared to the non-farming population. Farmers pay fewer taxes than non-farmers for the same amount of nominal income. Moreover, farmers generally own houses and do not have to pay rent. Finally, many of them own land and capital. Consequently, most farmers do not qualify for social security in their home country due to their income and due to the value of their property. What a strange situation: if the Commission's proposal is accepted, persons who are not qualified for income support (social security) in their home country will be qualified to receive basic income support from the EU. Can that really be? Is that acceptable?

### 3.10. Do we have information on agricultural labour input?

Calculating income per Work Unit as done by EUROSTAT and accepted by the Commission to support their reasoning, raises some additional problems. EUROSTAT provides information on value added at factor cost and agricultural labour input. Labour input is measured in work units where part-time and seasonal labour is aggregated in full time equivalents[5]. Even if EUROSTAT had fairly accurate information on agricultural value added, it has no such accurate

[4] It is reported in Agra Europe, Germany, from March 12, 2012 that the German regulation which exempts farmers up to a specific size from submitting a tax return will be reconsidered.
[5] The use of work unit is justified if information about productivity is needed.

information on the actual labour force and on that part of the labour force which relies on income from agriculture only. It is known that the share of part-time farming is fairly high in some countries; hence, the information on labour income per person employed is highly misleading. Take for example the case of a full-time off-farm worker who owns a small farm cultivated by his wife. He may have a high income, but she may have a low income, even if much above the opportunity costs part-time farmers which work with one third of their time on the farm. According to the methodology of EUROSTAT the income of the husband is neglected and the income generated by the wife is multiplied by one third. Consequently, according to this methodology the wife earns an income below that in other sectors. Obviously, the derived information does not inform on the living standard of the family. Needless to say, that this household would not qualify for social security in any of the EU member countries.

Moreover, it is misleading to compare average income if the variance of income in the sectors compared is very high as in agriculture. According to the Commission's data, 20 per cent of farmers in the EU receive 80 per cent of the present direct payments. Obviously, internal disparity is very high. How can the Commission propose providing for a basic income support for all farmers if some – or even many – have an income which is much higher than the income of the average person in our societies? One should recall that these payments have to be financed by the ordinary taxpayer. The Commission stated that the policy should become more targeted than in the past. The new proposal leads to high conflicts with this objective.

### 3.11. Direct payments and financial stability of farms

The share of direct payments in farm income is fairly high in some countries. The Agricultural Report of the Federal Republic of Germany highlights that the share of direct payments in farm income (profits and paid wages) amounted to 85.2 percent in 2009/2010. Based on this figure policy makers and members of the Parliament argue that most farms would go bankrupt without payments. Hence, they conclude that payments secure sustainability of farms. However, this conclusion is not well-founded. The calculated share is misleading. It is implicitly assumed that without payments the available income of the farms would be only 14.8 percent. It is overseen that there is a huge difference between the amount paid to the recipients and what is transferred to the actual beneficiaries. It is well known that a high proportion of the payments – mainly because it is tied to agricultural land – and therefore increase land rental prices are handed over to the land owners. Hence, a high share of the payments leads to higher farm expenses. How important the transfer of the payments to landowners is can be highlighted with the situation of the feed farms in Germany in 2009/2010. The share of direct payments in farm income (profit and paid wages) amounted to 126.6 percent. The share can only be higher than 100 percent if

a part of the payments had been transferred from recipients to beneficiaries (landlords). Hence, it is not adequate to conclude from the share of payments in income on the profitability or sustainability of the farm. The share of rented land in arable land is about 50 percent on average in the EU, but varies significantly across EU member countries (see table 1); it is generally higher for larger full-time farms than for smaller part-time farms and increases over time as average farm size increases. The rental prices have increased significantly since the introduction of the direct payment system [D'Artis Kancs and Swinnen 2010].

Table 1. Distribution of EU states according to the share of rented land in 2007

| Share of rented land | State of the EU |
|---|---|
| 15-30% | Ireland (16.5%); Poland (27.5%); Denmark (28.3%) |
| 30-45% | Austria (31%); Slovenia (31.8%); Portugal (31.8%); Spain (33.6%); Finland (34.8%); Italy (38.8%); Netherlands (40.3%); Romania (41.5%); **Great Britain (42.6%);** Greece (43%); Latvia (44.6%) |
| 45-60% | Luxembourg (50.7%); **EU (52.5%)**; Sweden (53.4%); Estonia (59.8%) |
| 60-75% | Lithuania (60.1%); Cyprus (64%); Hungary (67.2%); **Germany (70.5%);** Belgium (74.1%) |
| 75-90% | Malta (81.2%); **France (84.5%);** Czech Republic (87.9%); Bulgaria (89%) |
| above 90% | Slovakia (96.3%) |

*Source: [Střeleček, Lososová, Zdeněk 2011].*

### 3.12. Is the CAP too expensive?

The EU Commission answers this question clearly. 'No, CAP expenditure on the EU level is only a small share of GDP. The CAP is the only supranationalized policy and the value generated for the money spent is high' [European Commission 2011]. Whether a policy is too costly or not depends, first of all, on how policy measures are targeted; the less targeted they are the less efficient they are. A policy is well targeted if it heals a market or policy failure more efficiently than any other policy measure. If the original justification of a policy has become obsolete, a continuation of the same policy is too costly. It is a widely held agreement that a continuation of the present direct payments system cannot be justified with the original arguments. Hence, this policy is too costly. The new justification of changing direct income payments to basic direct income payments clearly shows that a) there is no justification of such a policy measure and b) the justification presented by the EU Commission is based on inadequate information.

### 3.13. Summing up

The EU Commission's proposal to introduce changes in direct payments is based on the perception that a new rationale for these payments is needed. The

new justification for direct payments proposed by the Commission is not convincing. This new instrument would not contribute to the officially stated agricultural objectives laid down in the Treaty of Rome and which have not been changed; just the opposite, the effects of the new payments would hold back growth in productivity which is the first objective mentioned in the Treaty.

The Commission justifies the proposed basic income payments with the need to secure a basic income. Hence, the instrument could be part of social policy. However, so far the individual member countries of the EU have been in charge of social policy. The introduction of the new instrument would not be in line with the principle of subsidiarity.

The new instrument would be in strong conflict with the principles of social policy in the member countries. Social policy is generally based on information about household income and also takes into account the value of the property. In contrast, the proposal aims at providing basic support to all farmers independently of their actual income and their wealth. As the transfer is proposed to be related to the area used by the individual farms, the transfer to well-off farmers would be higher than for farmers with little land area. Disparity in agriculture would be higher than without these transfers.

The new justification put forward by the Commission is based on a comparison of average labour income in agriculture with labour income in the overall economy or in other sectors. Such a comparison can hardly be accepted for justifying socially motivated transfers. Such a policy has to be based on information about household income. Moreover, there is no accurate information on labour income of farmers in the Member States and the Commission does not have adequate information about the labour income of full-time farmers in the EU. The conclusion is that the present Commission's proposal cannot be accepted.

**References**


1. Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz, Agrarpolitischer Bericht der Bundesregierung, (2011), BMELV, Bonn.
2. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, (2010), The CAP after 2013: an assessment of the Commission's proposals for changing Pillar I, Brussels, p. 8.
3. D'Artis Kancs, P.C., and Swinnen, J., (2011), EU Land Markets and the Common Agricultural Policy, Centre for European Policy Studies, Brussels. European Commission, (2011), Is the CAP an expensive policy?, Section 5 [in:] European Commission, The CAP in perspective: from market intervention to policy innovation, Agricultural Policy Perspective Briefs, Brief no. 1. January 2011, Brussels, p. 10.
4. Gewinnermittlung nach Durchschnittssätzen auf dem Prüfstand, (2012), Agra Europe, Germany, March 12, p. 33.

5. Koester, U., (2012), The CAP in disarray: EU Commission proposes basic direct payments to EU farmers, Intereconomics - Review of European Economic Policy, Newsletter, Volume 47, http://www.intereconomics.eu.
6. OECD – FAO, (2011), Agricultural Outlook 2011-2020, Rome and Paris.
7. Střeleček, F., Losová, J., Zdeněk, R., (2011), Farm land rent in the European Union, Acta univ. agric. et silvic, Mendel. Brun., LIX, no. 4, pp. 310.
8. Treaty of Rome, Article 39.
9. http://ec.europa.eu/agriculture/cap.../graph 3_en.pdf.
10. http://ec.europa.eu/agriculture/public/app-briefs/01_en.pdf.

Prof. dr hab. Szczepan Figiel, dr Mariusz Hamulczuk,
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 4. Price Volatility and Price Risk in the Agro-food Markets and the Future Development of the Common Agricultural Policy

## 4.1. Introduction

Volatility of agricultural commodity prices has recently become a subject of increasing public interest worldwide due to potential negative impacts on both food producers and consumers [World Bank 2007, World Bank 2009, Prakash 2011]. Number of studies mostly aimed at identifying causes of this phenomenon have been already conducted motivated mainly by the 2008 price spike and relatively high price levels of major agricultural commodities such as corn, rice and wheat after 2009, e.g. Abbot et al. [2008], Dong et al. [2011], Cooke and Robles [2009], Ghosh [2010], Gilbert [2010a, 2010b], Mayer [2009], Mitchell [2008], von Ledebur and Schmitz [2009] and Wu [2011]. However, because of complexity of changes the factors underlying demand and supply reasons for increasing volatility of the world agricultural prices cannot be easily identified. As presented in some FAPRI and IFPRI studies as well as in the OECD-FAO Agricultural Outlook 2007-2017 the recent trends on the international commodity markets should be viewed as a structural break which will create tensions on the markets and most likely increase the volatility of commodity prices for the next 10-15 years [Blein and Longo 2009].

As presented in the literature the factors responsible for this tension, and consequently contributing to an increase in volatility of agricultural commodity prices, are the following:

- impacts of climate change on agriculture;
- world population growth and increasing urbanization;
- increasing and more inelastic food demand;
- growing demand for land in developing countries;
- transmission of price volatility from energy to agricultural markets;
- low inventories and the slow rate of restocking at the household, state, regional and international levels;
- exchange rates and currency movements by affecting domestic commodity prices;
- speculative influences related to the interests of financial investors; and
- short-sighted agricultural public policies in response to food price increase (protectionism, trade restrictions, etc.).

Arguments supporting the view that an increase in agricultural prices volatility should be treated as a fact seem to dominate [European Commission

2009], however some authors point out that evidence for this is rather weak [e.g. Gilbert and Morgan 2010]. No matter, how strong is the assumption that agricultural commodity markets will exhibit greater price volatility in near future there is growing concern about stability of farm incomes and food prices, which leads to calls for policy actions. This raises a question about potential role of policy in mitigating negative consequences of agricultural prices variability. Although there is no consensus regarding acceptable level of commodity price variability, it is rather agreed that price variability unmanageable with existing risk management tools can destabilize farm income, inhibit producers from making investments or using resources optimally, and eventually drive resources away from agriculture [Schnepf 1999]. Considering current debates especially interesting is the future shape of the Common Agricultural Policy (CAP) and its possible impact on volatility of agricultural and food prices and related price risk. In this context our objectives are as follows:

- illustrate historical price volatility at various levels and time perspectives trying to find out whether we are really experiencing a new price regime in agricultural commodity markets; and
- discuss briefly assumed changes in the future CAP and make an attempt to analyze potential interactions between the future CAP and volatility of agricultural and food prices and related price risk in the agro-food markets.

### 4.2. Understanding and measuring price volatility and price risk

Market agents are constantly facing various types of risks such as: business risk, market risk, inflation risk, interest rate risk, credit risk, liquidity and derivative risk. In a globally competitive environment with instant communication cultural and currency risks become also important [Hirschey 2003]. In this context price risk is inherent to market risk and becomes especially evident when price volatility exists. In general, increasing price volatility translates into greater price risk exposure. Therefore, appropriate measurement of price volatility and assessment of related price risk become very important for the market participants interested in mitigating negative impacts of price changes.

The accurate measurement of the price volatility may also contribute to proper policy decisions regarding the possible implementation of commodity price stabilization tools. When policy decisions are based on overestimated or inaccurately measured risk, the implementation of policies with the aim to reduce volatility or its implications may be at costs greater than the benefits associated with such policy actions. Hence, an accurate measurement of price volatility is very important [Jordaan et al. 2007].

To measure price volatility and estimate related risk exposure several approaches can be applied. Although there is a lack of consensus about the best solution for measuring risk and uncertainty connected with price changes, the

choices which have to be made include decision in the following areas [Moschini and Hennessy 2001, Moledina et al. 2003, Figiel and Hamulczuk 2010]:

- use price levels or price returns in the analysis (what is the basis for volatility measures);
- separate predictable and unpredictable components of price series, or not;
- distinguish negative and positive price movements, or not;
- treat variability as time invariant or time varying.

As to the first problem it needs to be realized that calculating price volatility with the use of price levels ($P_t$) means that all price movements are treated as signs of instability. This approach is unsatisfactory for a number of reasons, however, the most important one is the fact that in reality we cannot not assume that market agents do not form any price expectations (i.e. behave naively). Thus, instead of the price levels price ratios over a period of time are used as a basis for volatility assessment. In practice, due to numerical reasons (aggregation and symmetry issues) logarithmic ratios (called rate of returns) are used. Logarithmic rate of return for a period $t$ is calculated as follows: $r_t=ln(P_t/P_{t-1})$, where $P_t$ and $P_{t-1}$ are price levels in periods $t$ and $t-1$, respectively. Such a rate of returns constitutes an appropriate basis for further steps in the analysis.

The second important issue is an assumption regarding predictability of price changes. It seems reasonable to assume that market participants can distinguish regular movements in price behaviors such as seasonality, or trend. In other words they are able, at least to some extent, to predict price changes on the basis of the past patterns and ex-ante knowledge. So, log return movements (or prices) can be written as $r_t = (predictable\_component) + (stochastic\_component)$. In this formula only stochastic (unpredictable) component of the price process is considered as appropriate for volatility measurement.

Decomposition of a price series and identifying its predictable and unpredictable components can be made with the use of econometric approaches (e.g. ARIMA, ARMAX, congruent models). Among time series components being at least to some extend predictable are trend, cyclical and seasonal variation. All of them should have some kind of representation in a model. This is because lack of separation of predictable components in price series (or in log returns of price series) may lead to overestimation of the degree of price risk.

Long term price developments such as trends cannot be treated as indications of risky situations. This is because market participants have time to adjust to such changes described as technological trends. From the statistical point of view, a trend component of a price series can be classified as either deterministic or stochastic. The first one represents a smooth line (e.g. linear or exponential trend), the second does not imply existence of a monotonically increasing or decreasing function, but simply the lack of a constant mean. A phenomenon described by stochastic trend can change its direction in a random way. Removal

of the stochastic trend of a given commodity series is basically done via calculating log returns.

Cyclical component (which is to some extend a stochastic trend) is included via lagged values of price series or log return of series. The regulars intra-year fluctuations are treated as seasonality. It is difficult to envisage that for example farmers do not have any idea about existence of such fluctuations. Seasonality is identified with the use of deterministic variables called seasonal dummies or via seasonal autoregressive and moving average parameters in ARIMA models [Engle 1982].

Some authors argue that for farmers a risky situation is associated only with decrease in prices of commodities. On the other hand processors for whom wheat is a part of the production costs would consider positive returns as indication of risk. Accepting such reasoning only one kind of returns (negative or positive) should be analyzed in order to measure price risk. However, market agents change their positions on a spot market what constitutes a complication in appropriate capturing the real risk.

Another important issue is treating price volatility as constant or time varying. When observing price behaviors very often there appear to be periods of higher and lower price volatilities. In a time series of returns we can see so called volatility clusters. It simply means that large price movements are followed by movements of the same nature and the same apply to small kind of movements. In such cases instead unconditional standard deviation (or other time invariant measures) we need to use nonparametric or parametric measures like GARCH family models [Bollerslev 1986].

Our analysis was performed on the basis of log returns of monthly price series. Such attitude is reasonable for the reason that analyzed prices series include unit root, which is an indicator of stochastic trend existence. Calculated indicator of price instability assume time varying (conditional) volatility based on the log returns. We do not decompose total variability into predictable and stochastic components as our analysis is aimed at comparison of price volatility under different regimes. Results based on analysis of the stochastic component would show lower level of volatility in the whole period (mostly due to reduction of seasonal volatility as trend was eliminated through differencing) hence, transformation of data would not have a significant effect for the conclusions to be drawn.

One of the simplest measures of conditional historical volatility is a moving standard deviation. Based on monthly price series historical volatility in a period $t$ based on changes during last year $\sigma_t$ can be measured as follows [Figiel et al. 2012]:

$$\sigma_t = \sqrt{\frac{1}{k-1} \cdot \sum_{t-k+1}^{t} \left( r_t - \bar{r}_{\in \langle t-k+1;t \rangle} \right)^2}$$

where:

$k$ – length of moving average, k=12,
$r_t$ – log return of price series in a period $t$, $t \in (2,3...n)$,
$\bar{r}$ – average of log returns in the last 12 month.

Usually market decisions are made for a given period. In agriculture (for farmers) one year is the most frequently assumed decision horizon (from production decision till output). Multiplying $\sigma_t$ by square root of the time period length (T=12 months) we obtain so called annualized standard deviation as a measure of expected price volatility in the 12 month horizon: $\sigma_T = \sqrt{12} * \sigma_t$.

### 4.3. Historical volatility of the world and Polish agricultural and food prices

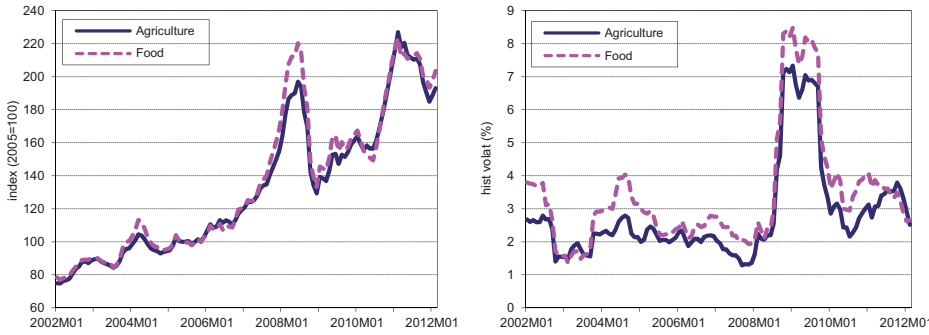
For a visualization of the discussed price movements historical price volatility was depicted in the graphs. Such an approach, apart from statistical analysis, may be also efficient in detecting different regimes of price volatility in a historical period.

As mentioned earlier last several years are regarded as a period of increased volatility of the world agricultural commodity prices. Taking into account last 10 years (from January 2002 till February 2012) sharp upward movements of the world agricultural and food prices indexes as well as an increased volatility of these prices can be easily noticed (figure 1).

In this period agricultural and food prices more than doubled. A sharp increase in their volatility, particularly for 2008-2009, is also very visible. However, examining the world agricultural commodity price developments from a longer term perspective, namely in the period 1961-2011, it can be seen that recently observed price surges and related volatility are neither unprecedented nor unusual (figure 2). Comparing behavior of agricultural and petroleum prices it can also be seen that the latter ones exhibit much greater volatility. Nevertheless, repeated occurrence of a relatively high volatility is especially evident in the case of grains, oilseed and rice, and less so in the case of beef.

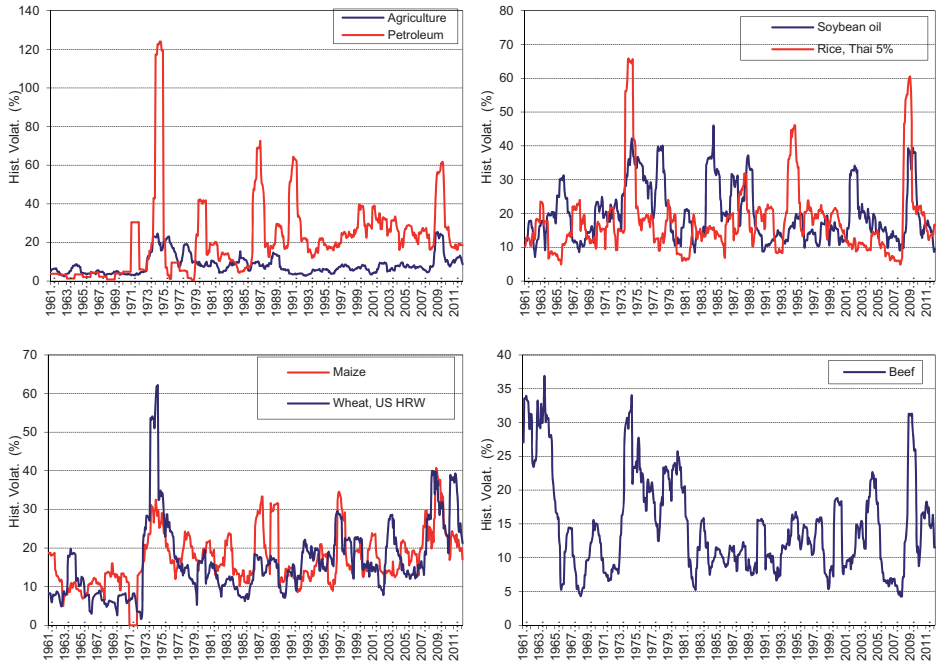
Even more interesting picture emerges when fluctuations of corn and wheat prices are evaluated going back to the last quarter of the 19th century (figure 3). Clearly, prior to 1950s both the levels and amplitudes of these prices volatility were higher than in later years. Also, price instabilities observed in these markets seem to be cyclical.

Figure 1. Indexes of the world agricultural and food prices (2005=100)and their historical annualized volatility in 2002-2012, $\sigma_T$ (%)



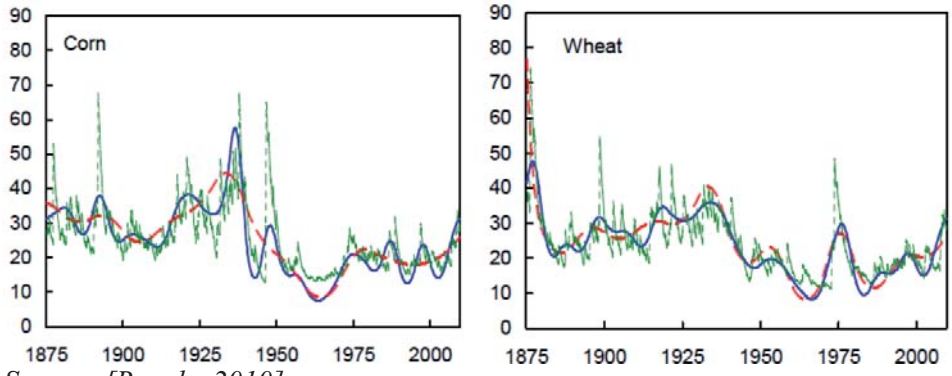

*Source: own calculations based on the World Bank commodity price data.*

Figure 2. Historical annualized volatility of the selected world commodity prices in 1961-2011, $\sigma_T$ (%)




*Source: own calculations based on the World Bank commodity price data.*

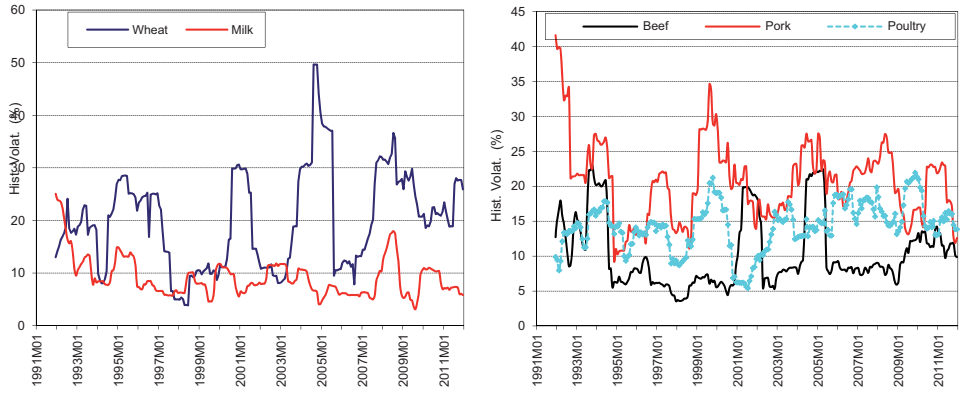
Figure 3. Long run historical annualized volatility of the corn and wheat prices, $\sigma_T$ (%)




*Source: [Roache 2010].*

As far as volatility of Polish agricultural commodity prices is considered, the main observation which can be made is that its level and range in the period 1991-2011 were comparable with the discussed volatility of respective world prices (figure 4). The highest volatility refers to prices of wheat. Prices of animal products were less volatile. This is understandable due the fact that not all feed price changes are fully transmitted, hence, reflected in the price levels of the animal products.

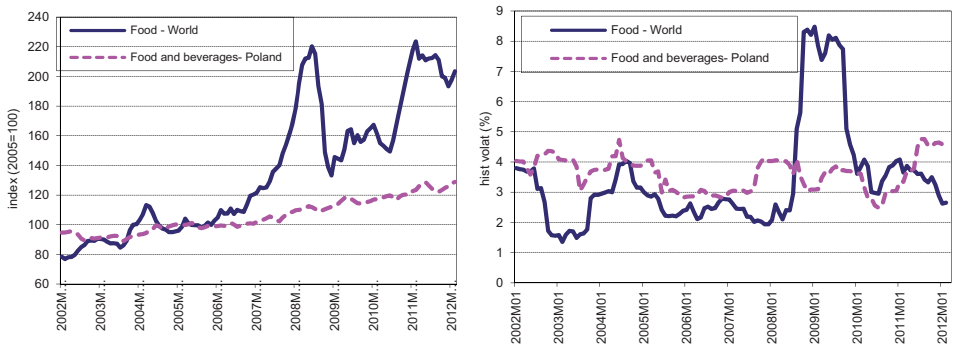
Figure 4. Annualized historical volatility of selected Polish agricultural prices in 1991-2011, $\sigma_T$ (%)




*Source: own calculations based on the Polish Central Statistical Office data.*

Figure 5 shows that in the period 2002-2011, unlike the case of agricultural commodities, much lower were both the extent of the increase and volatility of the Polish food prices than the world ones. In this context, the risk associated with volatility of the Polish food prices can be considered as being lower than the risk related to the same world prices.

Figure 5. Indexes of the world food product prices and Polish food consumer prices (2005=100) and their historical annualized volatility in 2002-2012, $\sigma_T$ (%)




*Source: own calculations based on the World Bank and Polish Central Statistical Office data.*

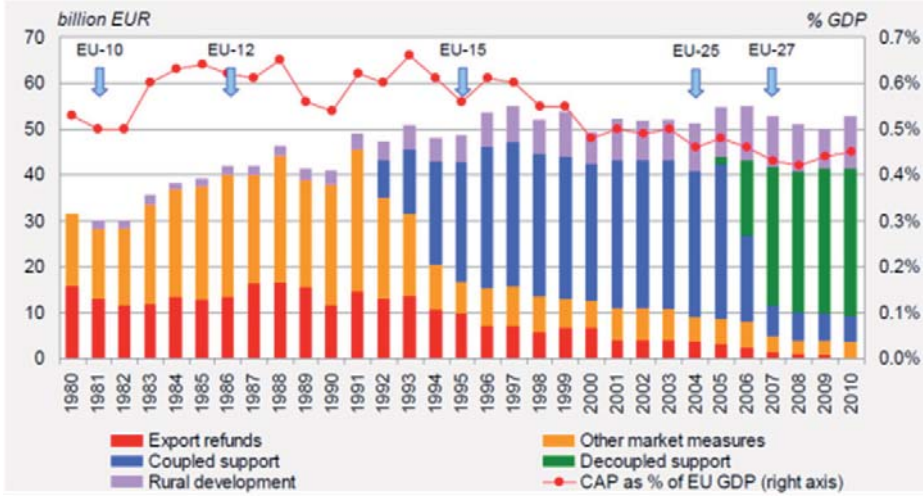
## 4.4. The CAP and price volatility

The original goals of the CAP in brief were the following: increase in productivity of factors used in agriculture (mainly labor), improvement of farm incomes, stabilization of agricultural markets, assurance of agricultural products provision meeting the society food needs, and guarantee reasonable prices to the consumers. The main instruments used to achieve these goals were based on market interventions and included guaranteed (intervention) prices, threshold prices and target prices. However, the CAP evolved over time very considerably due to such reforms and policy corrections as the McSharry reform of 1992 introducing direct payments, Agenda 2000, Mid-Term Review in 2003, and Health Check in 2008.

Changes of the CAP have been reflected in the level and structure of expenditures allocated for its implementation (figure 6). In the last three decades the percentage share of the total CAP expenditures in the EU GDP has shown a tendency to diminish. More importantly, the CAP budget structure has been fundamentally changing towards elimination of export support as well as drastic reduction of other market measures and introducing instead, such policy tools as coupled and decoupled direct payments and rural development programs.

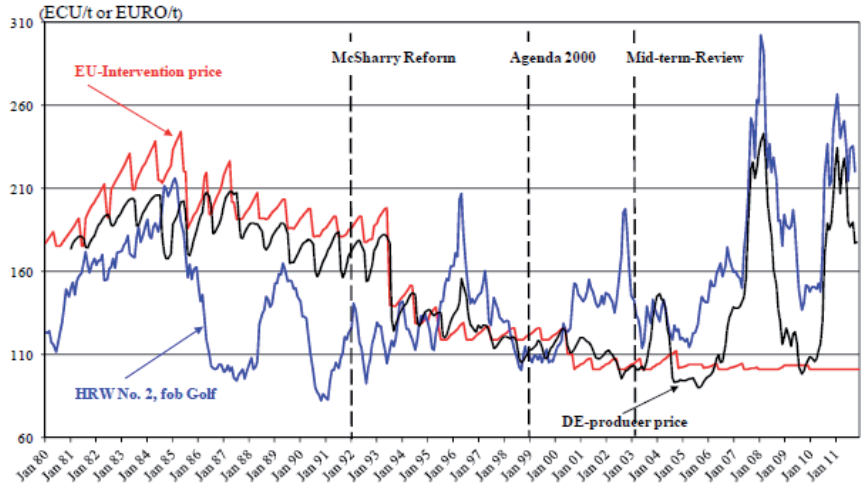
Because of the complexity of factors influencing price volatility and price risk in the agro-food markets is extremely difficult to separate impact of policy changes on behavior of agricultural and food prices. Nevertheless, some interesting insight into this problem can be gained by looking at the variability of wheat prices in Germany in the period 1980-2011 in comparison with the EU intervention price levels and world export market prices (figure 7).

Figure 6. Evolution of the CAP expenditures (2007 constant prices)




*Source: The European Commission.*

Figure 7. The CAP reforms and variability of the German Wheat Prices




*Source: [von Ledebur, Schmitz 2012].*

It is quite obvious that a very high intervention price can drive domestic price above world market levels. This was the case in years before the McSharry reforms were implemented. Afterwards there seems to be less and less of a coincidence between the CAP policy and volatility of the domestic prices, which eventually started to follow the world market prices. This is an example that agricultural policies may considerably influence development of agricultural prices, especially if they are focused on market interventions distorting freely estab-

lished market equilibrium [Anderson and Signe 2012]. Still, under a high price volatility regime expectations that agricultural policies should provide solutions for stabilization of agricultural markets, and hence farm incomes, become stronger both among the producers and consumers including food security concerns. Therefore, if the volatility of agricultural prices persists an interesting question to answer is how the future CAP may influence or mitigate undesired consequences of this phenomenon.

The presumed allocation of the CAP 2014-2020 budget is the following: direct payments – 72%, development of rural areas – 24%, and market instruments – 4%. So, it can be said the future CAP will be very much in line with its recent expenditures profile with very little share for market intervention. The main changes, although not radical, refer to such modifications of the policy tools as:

- greening, modulation and capping in relation to the direct payments;
- removal or reengineering of certain types of support and introduction of risk management package (insurance, mutual funds, etc.) within the rural development part; and
- crisis management instruments including market intervention within the part called organization of markets.

Based on relevant theoretical knowledge and the past experience related to the observed effects of various agricultural policies an attempt can be made to evaluate potential impact of the future CAP on the volatility of the agro-food prices. As to the first type of changes it seems plausible to expect that they will have no significant impact on behavior of agricultural prices. However, depending on the world food demand, a negative effect may appear as they tend to reduce incentives to intensify agricultural production. The second type of changes can be considered neutral with regard to price volatility as it is mostly income support oriented, although, it is supposed to help mitigate negative consequences of exposure to agricultural risks including price risk. Finally, the third part of changes seems also to be neutral with some possibility to mitigate negative effects of unpredictable price shocks. Summarizing, we can claim that both the budget allocation and the proposed changes of the CAP for 2014-2020 are not supposed to have any significant impact on the volatility of agricultural prices and related price risk in the agro-food markets.

### 4.5. Conclusions and recommendations

Historical volatilities of agricultural commodity and food prices vary over time and recently seem to be little dependent on agricultural policies. The "new CAP" is unlikely to have a significant impact (neutral to slightly negative effect) on the volatility of agricultural prices as other factors may dominate commodity price movements. The likely key drivers of agro-food price volatility and related price risk include:

- prices of other non-agricultural commodities, especially energy (volatility is positively correlated across different commodities);
- variations in exchange and inflation rates; and
- the changing world food demand.

At the most, the tools available within the CAP for 2014-2020 may help mitigate negative consequences of the agricultural prices volatility, but not to reduce this volatility itself. Based on that reasoning at least two important policy recommendations can be formulated. Firstly, enhanced market transparency and removal or reduction of policy distortions, especially in the area of international trade, are essential to moderate volatility of agricultural prices. Secondly, establishing safety nets and adoption of risk management strategies should be considered as necessary in order to mitigate negative effects of the discussed price volatility and the inherent price risk in the agro-food markets.

**References**


1. Abbott P.C., Hurt C., Tyner W.E., (2008), What's driving food prices?, Oak Brook, IL: Farm Foundation.
2. Anderson K., Signe N., (2012), Trade Barrier Volatility and Agricultural Price Stabilization, World Development vol. 40, no. 1, pp. 36–48.
3. Blein R., Longo R., (2009), Food price volatility. How to help smallholder farmers manage risk and uncertainty, Discussion Paper for Round Table 1, Thirty-second session of IFAD's Governing Council, 18-19 February 2009, Palazzo dei Congressi, Piazzale J.F. Kennedy 5 (EUR), Rome.
4. Bollerslev T., (1986), Generalized Autoregressive Conditional Heteroscedasticity, Journal of Econometrics, no 31, pp. 307-327.
5. Cooke B., Robles M., (2009), Recent food price movements: a time series analysis, IFPRI Discussion Paper, 00942, Washington.
6. Dong, F., Du, X and Gould, B., (2011), Milk Price Volatility and its Determinants, Paper prepared for presentation at the Agricultural & Applied Economics Association's 2011 AAEA & NAREA Joint Annual Meeting, Pittsburgh, Pennsylvania, July 24-26, 2011.
7. Engle R., (1982), Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of UK Inflation, Econometrica no 50, pp. 987-1008.
8. European Commission, (2009) Historical price volatility, Directorate-General for Agriculture and Rural Development, Directorate L. Economic analysis, perspectives and evaluations, L.5. Agricultural trade policy analysis.
9. Figiel S., Hamulczuk M., (2010), Measuring Price Risk in Commodity Markets, Olsztyn Economic Journal no 5(2), pp. 380-394.
10. Figiel S., Hamulczuk M., Klimkowski C., (2012), Price volatility and accuracy of price risk measurement depending on methods and data aggregation: The case of wheat prices in the EU countries, Paper prepared for the 123rd EAAE Seminar, Dublin, February 23-24, 2012.

11. Ghosh J., (2010), Unnatural Coupling: Food and Global Finance, Journal of Agrarian Change, January, pp. 72-76.
12. Gilbert C. L., (2010a), How to Understand High Food Prices, Journal of Agricultural Economics no 61, pp. 398-425.
13. Gilbert C. L., (2010b), Speculative influences on commodity futures prices 2006-08, UNCTAD Discussion Paper, No. 197, Geneva.
14. Gilbert C. L., Morgan C. W., (2010), Food price volatility, Phil. Trans. R. Soc. B 365, pp. 3023-3034.
15. Hirschey M., (2003), Managerial Economics, South-Western, Thomson Learning, pp. 564-567.
16. Jordaan H, Grové B, Jooste A, Alemu ZG, (2007), Measuring the Price Volatility of Certain Field Crops in South Africa using the ARCH/GARCH Approach, Agrekon, vol 46, no. 3, pp. 306-322.
17. von Ledebur O., Schmitz J., (2012), Price volatility on the German Agricultural Markets, Paper prepared for the 123rd EAAE Seminar, Dublin.
18. Mayer J., (2009), The Growing Interdependence Between Financial and Commodity Markets, UNCTAD, Discussion Paper no. 195.
19. Mitchell D., (2008), A note on rising food prices, Policy Research Working Paper 4682. Washington, DC: World Bank, Development Prospects Group.
20. Moledina A.A., Roe T.L., Shane M., (2004), Measurement of commodity price volatility and the welfare consequences of eliminating volatility, Paper Presented at the AAEA Annual meeting on August 1-4, 2004, Denver.
21. Moschini G., Hennessy D.A., (2001), Uncertainty, Risk Aversion, and Risk Management for Agricultural Producers, [in:] Gardner, B. and Rausser, G. (eds.) Handbook of Agricultural Economics, volume 1, Elsevier Science B.V., pp. 88-153.
22. Prakash A., (2011), Safeguarding food security in volatile global markets. Food and Agriculture Organization of the United Nations, Rome, pp. 3-23.
23. Roache S. K., (2010), What Explains the Rise in Food Price Volatility. IMF, WP/10/129.
24. Schnepf, R., (1999), Assessing Agricultural Commodity Price Variability, Agricultural Outlook, October 16-21, Economic Research Service/USDA.
25. World Bank, (2007), World Development Report 2008: agriculture for development, Washington, DC.
26. World Bank, (2009), World development report 2010: development and climate change, Washington, DC.
27. Wu, F., (2011), Testing for Volatility Changes in Grain Markets, Selected paper prepared for presentation at the Agricultural & Applied Economics Association's 2011 AAEA & NAREA Joint Annual Meeting, Pittsburgh, Pennsylvania, July 24-26, 2011.

Prof. dr hab. Renata Grochowska
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 5. Is the Common Agricultural Policy still common? Effects of reallocation of direct payments to Member States

## 5.1. Introduction

Successive reforms of the fifty-year-old Common Agricultural Policy (CAP) give the impression that this policy is really changing. Mostly, the shift of the emphasis from support for agricultural markets to direct support to farmers, and decoupling direct payments from production can be observed. However, just like many years ago the market support instruments dominated and put a significant strain on the EU budget, the same happens to direct payments, whose share in the budget stands at 84%[6] now. Changes in the instruments applied have permitted the continuation of the actual objectives of the CAP, i.e. support from the EU budget to the richest regions and agricultural holdings, as well as agricultural land owners who are the beneficiaries of public funds without any obligations.

The EU's agricultural policy, although it is one of the oldest policies, is less and less treated as "common" – its formation only allegedly lies within the competence of the Community. In fact, it is a bargaining card in negotiations of Member States over the financial perspectives. The national envelopes of direct payments for individual countries, which were determined on historical basis, undergo only slightly modifications, although the role of the payments, aimed to compensate farmers for reductions in intervention prices in agricultural markets, is obsolete now.

It would seem that the current economic crisis in Europe is an excellent opportunity to carry out valiant reforms of the EU budget, including the agricultural policy. However, while the Member States, notably the net contributors, treat CAP as a redistributive policy, no significant changes will be made. This is evident in the latest European Commission proposal on the future of the CAP after 2013, which serves to maintain the *status quo* and legitimize high expenditure on agricultural policy of the European Union (EU) [European Commission 2011].

This paper presents some obstacles that hamper carrying out fundamental reform of the CAP, with particular emphasis on the reasons why the Member States are reluctant towards new redistribution of direct payments and the effects of reallocation of payments between countries.

[6] Data for 2009.

## 5.2. New environment of the Common Agricultural Policy

The functioning of the CAP in coming years will be subject to a number of new factors that will play a pivotal role in the decision making process on the shape and level of financing of the EU's agricultural policy.

### 5.2. a) Institutional changes in the EU

The institutional changes in the EU should be considered as the most important factors. The Treaty on the Functioning of the European Union, commonly called the Lisbon Treaty[7], gives the EU competence in the field of agriculture shared with Member States, which allows a greater impact of the latter on the decisions. The role of national parliaments grows and they will be able to forward opinions to the EU institutions on the compatibility of a given draft legislation in the field of agriculture with the principle of subsidiarity.

An important change is the recognition of co-decision procedure as an ordinary legislative procedure of the CAP (so far the consultation procedure was applied), which strengthens the role of the European Parliament in decision-making process. Due to the lack of clear demarcation of the legislative powers of the Parliament and the Council in the field of agriculture, there may be legal and political problems, if there is no institutional arrangement, which provides an explanation of the decision-making structures and levels as regards legislation related to agriculture.

In line with the new Treaty, there are also changes on the executive level in the field of agriculture. A legislative act may delegate to the European Commission the powers to adopt non-legislative and general acts to amend or supplement certain elements of the legislative act (the so called delegated acts). Furthermore, the Treaty provides for the granting of powers to the Commission or the Council where uniform conditions are necessary for implementing legally binding EU legislation. This leads to further confusion in the field of interpretation, what will be treated as a delegated act, and what – as an executive act.

The new Treaty introduces significant changes to the financial issues that will have consequences for the expenditure on agriculture. Division into compulsory expenditure (so far within the competence of the Council) and optional expenditure (so far within the competence of the Parliament) is abolished. Currently, the European Parliament together with the Council decide on all budget spending, including agriculture, which greatly simplifies the procedure for establishing the annual budget. Another simplification is the replacement of the two readings of the preliminary draft budget with one reading. Also a special legislative procedure was introduced, which allows the adoption of a regulation determining the annual ceil-

[7] [Consolidated Version of the Treaty on the Functioning of the European Union].

ings and formalises the content of the financial framework based on the categories of expenditures, adjusted for the main lines of the EU.

The above changes indicate an increase in the powers of the European Parliament, but also strengthen the European Commission under the comitology procedure. So far, the Member States could reject the decisions of the Commission by a simple majority of votes. According to the Treaty this now requires a qualified majority.

**5.2. b) Participation of the 27 Member States in financial negotiations**

For the first time the negotiations over the future of the EU and the structure and size of the EU budget will be open to all Member States. The new countries before accession to the EU had no influence on the decisions concerning the level of financial resources granted to them from the EU budget. For example, the envelopes of direct payments under the first pillar of the CAP were set in 2003, i.e. before the accession of new countries to the EU. Currently, 27 Member States participate in the ongoing negotiations over the next financial perspective 2014-2020. One should expect a difficult compromise because of the enormous socio-economic differences between the EU Member States, and consequently, divergent national interests.

**5.2. c) Deepening crisis in the EU**

The deepening economic crisis in the EU contributes, in addition to inhibition of growth of the EU economy, to the increasing public debts of the Member States. Therefore, it is expected that the fight against the crisis will become the main issue for the next financial perspective for 2014-2020 and all the objectives and priorities, which were placed before the EU [Europe 2020], will be subject to it. Probably, special emphasis will be put on the changes of the structure of the EU budget expenditure, i.e. changes in the Common Agricultural Policy and the Cohesion Policy – the policies that take up two thirds of the EU budget (respectively, 42.5% and 35.6% in 2007-2013) [European Commission 2012].

It should be recalled that contributions from the Member States to the EU budget are determined on the basis of objective criteria (such as gross national income of individual members of the EU), while the distribution of these funds is based on political consensus. Consequently, each country seeks to shape the policies and other EU actions so as to recover as much funding inserted into the budget (the principle of fair return [*juste retour*]). The Common Agricultural Policy and the Cohesion Policy, for many years regarded as redistributive policies, serve this purpose. Their multiple reforms do not lead to more efficient spending of the EU funds, but to legitimisation of the dominant share of these policies in the EU budget.

### 5.3. Mechanisms of distribution of direct payments between Member States

As regards the CAP, the possibility to return the contributions of the Member States to the EU budget is ensured by direct payments – a simple redistributive mechanism, financed in 100% from the EU budget (as opposed to the second pillar of the CAP) and allocated to farmers on the basis of simple distribution criteria.

The current national payments envelopes are determined based on historical payments, i.e. countries producing highly subsidized crops and meat (mostly beef), received and still receive the largest amount of payments. Countries with a smaller agricultural sector or producing or specialised in less subsidized products, such as vegetables and fruits, are the losers in this system.

The biggest beneficiaries of direct payments include France (20.07%), Germany (13.76%), Spain (12.14%), Italy (10.03%) and the United Kingdom (9.48%). Among the new Member States the biggest beneficiary is Poland (5.23%). If we take into account the size of the contributions of individual states to the EU budget, it appears that Germany, Italy and the UK pay more for the budget than they receive from the first pillar of the CAP (table 1).

Table 1. National envelopes – the first pillar of the CAP and EU budget contributions of selected Member States in 2010 (%)

| Country | Share in the envelope of direct payments | Share in the envelope of contributions |
|---|---|---|
| France | 20.07 | 18.00 |
| Germany | 13.76 | 19.59 |
| Spain | 12.14 | 9.60 |
| Italy | 10.03 | 13.87 |
| Great Britain | 9.48 | 10.41 |
| EU-15 | 86.33 | 92.15 |
| Poland | 5.23 | 2.67 |
| Hungary | 2.26 | 0.77 |
| Romania | 1.74 | 1.17 |
| EU-12 | 13.67 | 7.85 |

*Source: [Zahrnt 2011].*

It is worth noting that while the EU-15 get 86.33% of payments, they incur the largest expenditure for the maintenance of the EU budget (92.15% share of contributions to the budget).

Gain and loss ratio looks different if we consider how much the individual Member States benefit under the first pillar of the CAP for every euro paid into the budget (table 2). For example, for every euro Belgium receives 47 cents in direct payments, Germany 70 cents, and the United Kingdom 91 cents. Thus, these countries pay more to the EU budget than they get from the payments. In turn, France receives 1.11 euros in payments, Poland 1.96 euros, and the biggest beneficiaries are Ireland and Greece (2.54 and 2.33 euros respectively).

The countries that benefit thanks to the current principles of payments distribution will be interested in preserving the *status quo*. While those that lose will seek to change these rules or they will seek compensation in other policies, such as the Cohesion Policy. The more so because the estimates for 2013 show a deepening of the negative net balance of some countries, notably Germany, Italy, the Netherlands and Belgium [Zahrnt 2011].

Table 2. Ratio of return in direct payments for Member States for each euro paid to the EU budget (data for 2010)

| Net contributors | Return on 1 euro | Net beneficiaries | Return on 1 euro |
|---|---|---|---|
| Germany | 0.70 | France | 1.11 |
| Italy | 0.72 | Spain | 1.26 |
| Great Britain | 0.91 | Poland | 1.96 |
| | | Hungary | 2.92 |
| Belgium | 0.47 | Romania | 1.49 |
| the Netherlands | 0.51 | | |
| Finland | 0.82 | Ireland | 2.54 |
| Sweden | 0.83 | Greece | 2.33 |

*Source: [Zahrnt 2011].*

New Member States are beneficiaries of direct payments (except Cyprus, Malta and Slovenia). However, the envelope at their disposal is significantly lower (13.67%) as compared to the EU-15. They have, in turn, significant share in the envelope of the second pillar of the CAP, requiring co-financing from the national budgets (table 3). Therefore, they postulate alignment of payment rates paid to farmers per hectare of arable land (flat rate) across the EU. The main losers of such a move would be the Netherlands, Belgium, Italy, and France and Germany (figure 2). It should therefore be considered as unrealistic that the CAP can become a mechanism to transfer funds to the new EU Member States, allowing them to offset disparities in the amount of direct payments between countries in the EU.

Table 3. The share of agricultural payments in the EU Member States divided into first and second pillar of the Common Agricultural Policy according to the European Commission's financial report for 2009 (%)

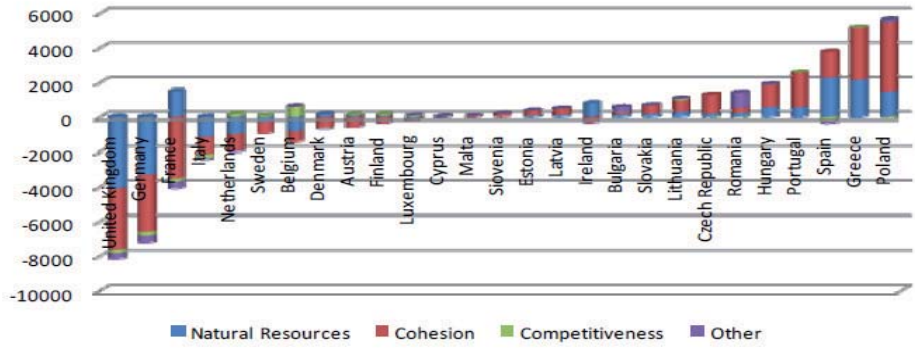
| | First pillar of CAP | Second pillar of CAP |
|---|---|---|
| EU-15 | 87.5 | 12.5 |
| Northern States | 85.8 | 14.2 |
| Central States | 87.3 | 12.7 |
| Southern States | 88.4 | 11.6 |
| EU-12 | 56.1 | 43.9 |
| EU-27 | 82.4 | 17.6 |
| Total EU | 84.1 | 15.9 |

*Source: [Scotte 2011].*

Changes in the rules of distribution of direct payments between Member States are deeply linked with changes in the Cohesion Policy, which is also redistributive, just like the CAP. Both policies play a major role in equalizing the balance of payments for the beneficiaries and the net contributors to the EU budget (figure 1).

In the coming years, some states of the EU-15 will likely lose their ability to support their poorer regions under the Cohesion Policy. Thus they can exert pressure to maintain or increase the current national envelope of the CAP payments to offset the losses. The new Member States will be confronted with a choice – do they want to preserve more funds under the Cohesion Policy in support of the less prosperous countries and regions, or they are in favour of a new division of the distribution of resources under the CAP and bringing together the amounts of payments paid per hectare across the EU.

Figure 1. Net balance of the Member States on the basis of their participation in various EU policies (average for 2007-2009)

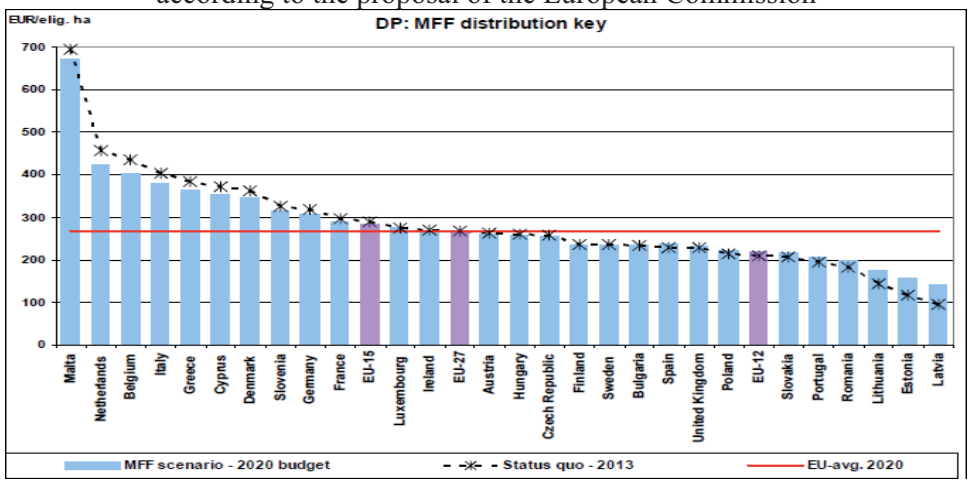



*Source: [The CAP in the EU budget: new objectives and financial principles for the review of agricultural budget after 2013 2011].*

## 5.4. Effects of changes in reallocation of direct payments to Member States after 2013

The European Commission's proposals presented in 2011, concerning the future of the EU budget and the agricultural policy after 2013 clearly indicate the pragmatic approach to potential reforms and preserve the existing *status quo*. Proposed amendments to the principles of distribution of direct payments between Member States are minor (figure 2) [A Budget for Europe 2020; Legal proposals for the CAP after 2013]. Countries that receive payments of less than 90% of the EU average per ha of agricultural land (mainly Latvia, Lithuania, Estonia), can get more by 1/3 of the difference between their current level and 90% of the EU average. The Commission is undoubtedly aware that proposal with a significant redistributive effect between Member States will not find a qualified majority in the Council. Current beneficiaries would be the biggest losers.

Figure 2. Redistribution of direct payments between Member States after 2013 according to the proposal of the European Commission




*Source: [Impact Assessment Report 2011].*

If we were to analyse the results of voting in the Council on the proposal made by the European Commission we could conclude that it would not have obtained the support of the Member States [Arovuori K. and Niemi J.]. It would only get 162 votes to 255 needed (table 4).

However, it should be noted that the calculations assume a very mechanical approach, it is enough that a country will lose even one euro, and already it is regarded as contrary to the Commission proposal. Introduction of the 5% threshold of tolerance, i.e. 5% of the loss or gain within the payment envelope significantly alters the results – the proposal of the Commission obtains a qualified majority (280 votes). The vote of each Member State depends on how the proposal will affect their balance of payments into/withdrawal from the EU budget.

A simple analysis shown by Arovuori and Niemi points out how difficult it will be to carry out a fundamental reform of the CAP through the process of decision-making in the Council. Large Member States have enough votes to block any unfavourable solution. France, Germany and Italy – the beneficiaries of the CAP, by forming a coalition with Spain and Portugal – beneficiaries of the Cohesion Policy, may impede any reform. It can be assumed that only the change in the structure of the entire EU budget spending could lead to real reform of the EU policies and efficient spending of public funds, i.e. focusing on spending resources where they are most needed and maximizing value added. New solutions must be supported by several large Member States. Probably, it would be in their interest to carry out fundamental reform of the CAP. One wonders what role will be played in this process by the European Parliament. The concept of the net balance as a tool for assessing the financial costs and

benefits of the EU membership, adhered to by the Member States, does not matter in the Parliament. Perhaps this European institution could carry out the actual structural changes in the EU.

Table 4. Losers and winners of the redistribution of direct payments proposed by the European Commission and the number of received votes in the Council

| Member State | Number of votes in the Council | Gain/Loss | Gain/Loss (5% threshold of tolerance) |
|---|---|---|---|
| Belgium | 12 | - | - |
| Bulgaria | 10 | + | + |
| Czech Republic | 12 | - | + |
| Denmark | 7 | - | - |
| Germany | 29 | - | + |
| Estonia | 4 | + | + |
| Ireland | 7 | - | + |
| Greece | 12 | - | + |
| Spain | 27 | + | + |
| France | 29 | - | + |
| Italy | 29 | - | - |
| Cyprus | 4 | - | - |
| Latvia | 4 | + | + |
| Lithuania | 7 | + | + |
| Luxembourg | 4 | + | + |
| Hungary | 12 | - | + |
| Malta | 3 | - | + |
| The Netherlands | 13 | - | - |
| Austria | 10 | - | + |
| Poland | 27 | + | + |
| Portugal | 12 | + | + |
| Romania | 14 | + | + |
| Slovenia | 4 | - | + |
| Slovakia | 7 | + | + |
| Finland | 7 | + | + |
| Sweden | 10 | + | + |
| Great Britain | 29 | + | + |
| Total | 345 | 162 | 280 |
| Qualified majority | 255 | | |

*Source: [Matthews 2012].*

From the arguments presented earlier one would conclude that the current approach to the CAP as a redistributive policy and the distribution of powers between Member States, are not conducive to taking effective reforms of rules governing the distribution of direct payments. So what would be possible solutions to this situation?

### 5.4. a) Revolutionary solution

The logic of compensation which was justified in 1992, related to the lowering of intervention prices for agricultural products and the potential drop in agricultural income is no longer legitimized. Therefore, one should move away from assessing payments based on historical data. The next step should be to introduce new criteria for the distribution, e.g. based on provided public goods.

The solution, though often quoted on various EU fora, seems least likely, due to lack of support from Member States treating direct payments as a redistributive mechanism.

### 5.4. b) Evolutionary solution

It would be profitable to return to the former direction of changes in the proportions between the I and II pillar of the CAP in favour of the latter and reintroduce the modulation. Second pillar seems to be more consistent with the EU strategy, because it puts emphasis on the environment (sustainable development), is oriented towards small and medium-sized enterprises, integrates the sectoral and territorial goals. The granting of the EU funds requires farmers to meet specific requirements at a given time.

This solution raises resistance among Member States because of the need of co-financing from national budgets. However, it is feasible, although some modifications of the CAP second pillar are required (lighter principles of co-financing, less administrative bureaucracy, better consistency between the axes, new programs and instruments aimed at innovation).

### 5.4. c) Other

One should also consider the introduction of a completely new approach to the CAP, and perhaps depart from the current division into two pillars. However, this requires detachment from the previous ways of thinking.

The beginning of the new solutions can be the European Commission proposal for the creation of reserve for crises in agriculture and the possibility of using the Globalisation Fund. These measures are intended to operate outside the annual agriculture budget and would be launched in crisis situations, which increases flexibility and speed of use. According to Mahé [2011] one could gradually transfer funds allocated for direct payments to such funds, so that the relationship between payments and national envelopes would be abolished.

## 5.5. Conclusions

Direct payments are treated as a simple mechanism of redistribution of funds from the EU budget to Member States, used by the EU's net contributors in accordance with the principle of *juste retour*, to preserve the balance of contributions to/withdrawals from the EU budget.

Only the change in the structure of the entire EU budget spending could cause that it would be in the interest of one of the large Member States to vote for a fundamental reform of the CAP and change the rules of redistribution of payments between countries.

**References**


1. Consolidated version of The Treaty on the Functioning of the European Union (Official Journal of the European Union C 115/49) http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:115:0047:0199:pl:PDF (date of viewing: 03.07.2012).
2. European Commission, (2010), Europe 2020. A European strategy for smart, sustainable and inclusive growth, COM(2010) 2020, Brussels.
3. European Commission, (2011), A Budget for Europe 2020 – Part I – Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Part II - Policy Fiches, COM, (2011) 500 I, II final, Brussels, 29.06.2011.
4. European Commission, (2011), Legal proposals for the CAP after 2013., Brussels,12.10.2011,http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm (date of viewing: 03.07.2012).
5. European Commission, (2012), The budget explained, Brussels, http://ec.europa.eu/budget/explained/budg_system/fin_fwk0713/fin_fwk0713_en.cfm (date of viewing: 03.07.2012).
6. European Parliament, (2011), The CAP in the EU budget: new objectives and financial principles for the review of agricultural budget after 2013, Study, Policy Department of Structural and Cohesion Policies, p. 70.
7. Impact Assessment Report, (2011), Annex 3- Direct payments, Commission Staff Working Paper, SEC(2011) 1153 final/2, Brussels, p. 23
8. Matthews A., The political feasibility of CAP redistribution, http://capreform.eu/the-political-feasibility-of-cap-redistribution/ (date of viewing 13.06.2012).
9. Scotte F., (2011), The CAP and the EU budget. Do ex-ante data tell the true? (presentation) at the 122nd EAAE's Seminar, February 17th-18th, 2011, Ancona, Italy.
10. Zahrnt V., Financing the Common Agricultural Policy: Which member states pay for the waste of the public money?, ECIPE, 2011, p. 3. http://www.reformthecap.eu/sites/default/files/CAP%20net%20payers%20ECIPE.pdf (date of viewing: 12.06.2012).

Dr Norbert Potori, Gergely Papp, Máté Kovács
Research Institute of Agricultural Economics, Hungary

# 6. CAP 2014-2020: an impact assessment of the proposed direct payment scheme in Hungary

## 6.1. Methodology

The calculations made by the Research Institute of Agricultural Economics (AKI) of future direct payment rates and the distribution of these payments are based on direct payments data received from the Hungarian paying agency (ARDA) for 2010, and the moving average data from the Farm Accountancy Data Network (FADN) operated by AKI.

To examine the structural effects of the proposed new system of direct payments, AKI developed a simulation model that in the broad sense belongs to the family of general equilibrium models [see e.g. Arrow and Debreu 1954] since prices, supply and demand are all determined in the model endogenously. The model cannot be classified into the family of applied or computed general equilibrium (AGE/CGE) models [Mitra-Kahn 2008] since AKI's approach was substantially different: agents may be heterogeneous (their objective functions, initial states, or even their choice paradigms may differ). Decisions were modelled at the micro-level and macro-outcomes were modelled as the consequences of these micro-level decisions. As an epilogue to the modelling process, several important economic variables were derived from the simulation results.

For the modelling process, data were retrieved from the FADN database [Keszthelyi and Pesti 2010]. Each data provider was regarded as an individual decision maker representing a group of similar decision makers in the real economy. The properties of these agents were derived directly from FADN data. Our study covered 14 sectors: wheat, barley, maize, sunflower and rapeseed production, as well as broiler, turkey, duck, goose, slaughter pig, sow, sheep, beef cattle and milk production.

The operation of the model can be simply described in the following steps:

- 1) Loading and construction of data and agents (producers, consumers, sectors).
- 2) Equilibrium search:
  - a) based on the initial prices, every agent determines its supply and demand of every produce;
  - b) the 'auctioneer' (function) calculates the excess supply vector;
  - c) prices are modified so that the Euclidean norm of the excess supply vector decreases;
- 3) Equilibrium-state conditions (prices and production) are saved, and the effects of the equilibrium state are calculated.

The optimum problems were solved by using the COBYLA algorithm [Powell 1994]. We sought to replicate the CAP regulations precisely in the model which led to 'badly behaving' objective functions and boundary condition forms. There are several commonly used methods for equilibrium search [e.g. Scarf 1967]. Because of the problems above, the equilibrium search was transformed into an optimum problem which was then solved using the COBLYA algorithm again. The Euclidean norm of the excess supply vector was minimised.

We assumed that all producer agents optimised their objective functions. The demand side was assumed to be represented by demand functions. To help interpret the results, the outputs were given as annual moving indices. The base year was considered to be 2013 which was equated to 2010.

## 6.2. Impacts on stakeholders

### 6.2. a) Greening of Pillar I

In the EC proposal [EC 2011*a*, Title III, Chapter 2], payments for agricultural practices considered to be beneficial to the climate and the environment will account for 30% of the Pillar I funds, which would amount to about EUR 390 million a year for Hungary. This green component of the direct payments will equate to around EUR 80 per hectare a year, but this depends on how many farmers would prefer the Small Farmers' Scheme (SFS) (see below). Those farmers will receive a fixed sum and will not be eligible for any other Pillar I payment.

To evaluate the effects of greening, costs and opportunity costs were calculated. These primarily apply to the ecological focus area (EFA) as no agricultural activity is allowed on these. The results show that 101.9 thousand farms should have at least 7% of their land as EFA. However, for 80% of these the expected loss in earnings due to compliance with the EFA measure may not exceed EUR 20 per hectare (Table 1).

Table 1. Farms affected by the EFA in different categories of loss in earnings

| **0 EUR/ha** | | **0>10 EUR/ha** | | **10≤20 EUR/ha** | | **20≤40 EUR/ha** | | **>40 EUR/ha** | |
|---|---|---|---|---|---|---|---|---|---|
| applicants | area (000 ha) | applicants | area (000 ha) | applicants | area (000 ha) | applicants | Area (000 ha) | applicants | area (000 ha) |
| 10,360 | 385.0 | 3,119 | 739.2 | 68,325 | 3,244.9 | 2,082 | 132.4 | 18,057 | 205.1 |

*Source: Department of Agricultural Policy Research, AKI.*

The affected farmers pursued agricultural activities on 4,706.7 thousand hectares in 2010. Of this, 7% equates to 329.5 thousand hectares, but the newly designated EFA may be less, as part of the area was formerly set-aside and grassland.

In 2010, 86.4 thousand farms cultivated more than 3 hectares of arable land, and on 34.9 thousand of these (with an average area of 12.6 hectares) only one or two different crops were grown. In order to meet the diversification criteria, these farmers would be required to change their production structure. Primarily maize growers may be affected: in 2010, 92.7 thousand farms produced

maize on 1,145.8 hectares, of which 27.2 thousand (with a total area of 272.8 thousand hectares) grew maize on more than 70% of their land (amounting to 240.4 thousand hectares). According to our calculations, 11.6 thousand of these farmers would opt for the SFS, while the others may need to reduce their maize production by a total of 38 thousand hectares.

It is important to underline that for those holdings where a small area of extremely high value crops is produced (e.g. potato seed, Jerusalem artichoke, poppy seed, etc.), and usually only one crop is grown, the EFA and/or the diversification of production may cause losses in earnings which are not compensated for by the green component. This applied to around 300 farms in 2010, with an average area of 22 hectares.

### 6.2. b) Payments to young farmers

One of the major problems in EU agriculture, including in Hungary, is the unfavourable age structure of farmers, i.e. the small proportion of young farmers. The Young Farmers' Scheme (YFS) proposal [EC 2011*a*, Title III, Chapter 4] states that farmers under the age of 40 who had started their business within last five years will be eligible for an additional payment. The maximum eligible area per farm, however, can only be 25 hectares in the case of Hungary. The EC impact assessment [EC 2011*b*] shows that, because of this limit, only a tenth of the potentially available resources for this payment may be used in Hungary. In addition, the local circumstances dictate that a viable business usually has a cultivated area of more than 25 hectares.

In Hungary, based only on the age and farm size criteria, less than 9500 farmers would apply for the YFS. Of these, 76% have less than 25 hectares of cultivated land (having a total of 77.3 thousand hectares), while the other 24% together have 160 thousand hectares. Owing to the upper limit of 25 hectares, less than one third of these 160 thousand hectares would be eligible for the YFS. If the upper limit could be increased to 50 hectares, an additional 38 thousand hectares (about 1,000 farms) would be eligible, while with a 100 hectares limit, a further 70 thousand hectares (400 farms) may qualify. With an upper area limit of 25 hectares, only up to 0.7% of Pillar I funds may be needed to support the potential funding needs of young farmers, while a 100 hectares area limit would require only l% of the total. To make maximum use of this support option, the territorial limits should be revised and it is suggested that all applicants under 40 years of age should qualify for the subsidy, not just those who started their farms within the last five years.

### 6.2. c) Payment for areas with natural constraints

Hungary has a small share of naturally less-favoured areas compared to the EU average. As farmers in such areas can also benefit from a similar but different conditional grant as a part of Pillar 2, Hungary would prefer not to use

funds from Pillar I for this purpose, as it would reduce the amount available to be spent on the basic payment.

### 6.2. d) Voluntary coupled support

In recent years, it has been suggested several times that Hungary adopts the Single Payment Scheme (SPS) to ensure that more aid is given to dairy, beef cattle and sheep farmers. Since according to the draft proposals [EC 2011*a*, Title IV, Chapter 1] ruminants will be eligible for voluntary coupled support between 2014 and 2020, the introduction of the SPS in 2013 is not essential. In the case of Hungary, the voluntary coupled support can be up to 10% of the total of direct payments, and this is sufficient to replace the subsidies currently linked to production. The ruminant sectors may use 85% of the funds for coupled support (table 2), which is more than is currently available except for milk producers. It is important to remember, however, that coupled support may only contribute to maintaining the current level of production, so it is a key question how much livestock a farm will have at the end of 2013 or early 2014.

Table 2. The estimated amounts of coupled support schemes for ruminants in 2014 in million EUR

| Suckler cows | Beef cattle | Milk production | Ewes |
|---|---|---|---|
| 25,535 | 9,961 | 54,546 | 19,699 |

*Source: Department of Agricultural Policy Research, AKI.*

### 6.2. e) Small Farmers' Scheme

The SFS [EC 2011*a*, Title V] is a new option that is consistent with the ideas of agricultural policy makers in Hungary. Smallholders may apply for a lump sum payment entitlement with a value between EUR 500 and EUR 1,000. Since the average of Pillar 1 funds per farm would be above EUR 1,000 in 2014, the amount of the SFS support may reach the EUR 1,000 upper ceiling in Hungary. Using EUR 1000, a significant share of farmers would prefer to opt for this lump sum payment option. These farmers would exclude themselves from other direct payment entitlements. The SFS entitlement cannot be transferred, only inherited, therefore this regulation may hinder land concentration.

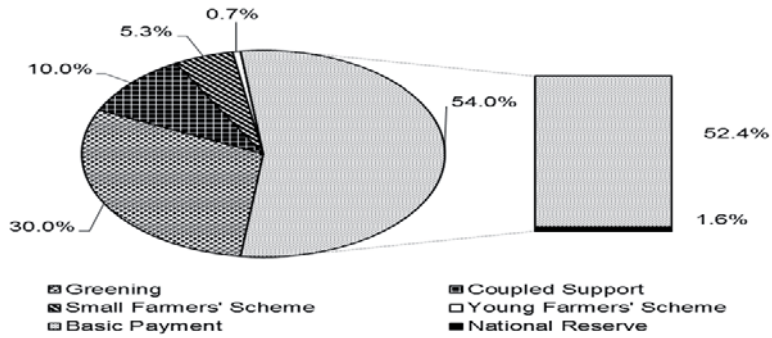
According to our model, 39% or 69 thousand of the farmers currently eligible for direct payments may prefer the SFS. Their total land area is 160 thousand hectares (just over 3% of the total eligible area). The SFS allows these farmers to get around EUR 32.6 million more funding (EUR 470 per farm on average), i.e. twice the amount of subsidy compared to 2013.

### 6.2. f) Basic payment

For each Member State, the basic payment [EC 2011*a*, Title III, Chapter 1] envelope depends on which of the mandatory and optional direct payment components they choose, and the proportion allocated to the national reserves.

We estimate that in Hungary, 54% of the total Pillar I funds will be used for basic payments (including a national reserve of 3%-points), which is approximately EUR 0.7 billion per year. If 69 thousand farmers indeed opt for the SFS, the basic payment may be around EUR 143 per hectare. The consequent division of Pillar I is illustrated in figure 1.

Figure 1. The possible share of Pillar 1 payment schemes in Hungary




*Source: Department of Agricultural Policy Research, AKI.*

In Hungary, besides the SAPS, there are complementary national direct payments (CNDPs), and 10% of the direct payments are allocated to certain agricultural sectors according to Article 68 of Council Regulation (EC) No 73/2009. Until 2011, these funds were earmarked primarily for livestock and labour-intensive crop production, and together amounted to almost EUR 180 million. The CNDPs granted under the Copenhagen agreement are gradually being reduced to zero between 2011 and 2013. So whereas until recently only approximately 60% of the available Article 68 funding has been spent, in order to maintain the differentiation in the subsidies between sectors, now all of the funding is being used. This money funds a special support for dairy farmers and the rice sector, the restructuring programmes for the tobacco, beef and sheep, and fruit and vegetable sectors, and the support for insurance premiums.

Beyond coupling 10% (approximately EUR 130 million) of the direct supports to production, only the national reserve would offer an opportunity to maintain the 2011 status quo but, according to the proposal, this would amount to a maximum of EUR 20.5 million in Hungary. To allocate payment entitlements to farmers in areas subject to restructuring, it is therefore appropriate to suggest that the national reserve should not only be 3% of the basic payment ceiling but up to even 5% of the Pillar I funds, otherwise the margin of flexibility is very narrow.

### 6.2. g) Capping of direct payments

According to the proposal [EC 2011*a*, Article 11], the payment cap will be triggered when a farm's direct subsidies (excluding the green component),

less the wages paid to workers, as well as the tax and social contribution burden, exceeds EUR 150 thousand. Calculating with a EUR 143 per hectare basic payment, data from the ARDA and the FADN suggest that the reduction will affect only a small fraction of mixed farms larger than 760 hectares and a small share of the arable farms with more than 1,400 hectares under cultivation (Table 3).

Table 3. The progressive reduction and capping of direct payments in Hungary

| Amount of direct payments above which reduction is applied | Percentage of reduction | No. of potentially affected farms | Amount of total reduction in million EUR |
|---|---|---|---|
| 150,000 | 20 | 209 | 1.44 |
| 200,000 | 40 | 107 | 1.57 |
| 250,000 | 70 | 61 | 1.82 |
| 300,000 | 100 | 40 | 6.87 |

*Source: Department of Agricultural Policy Research, AKI.*

The proposal will most likely lead to an increase in the declared levels of wages and employment thereby encouraging the 'whitening' of the economy. In the most extreme case, capping may affect only 209 farms and EUR 11.7 million would be transferred to Pillar 2. Realistically, the abstracted amount will be less. Hungary will use this money without national co-financing in the European Innovation Partnership programme primarily to fund innovation projects that focus on productivity and sustainability.

### 6.3. Modelling results

In the current uncertain economic environment, it is difficult to establish a modelling framework that faithfully represents the economic context of the CAP between 2014 and 2020. Since the high volatility of the various price indices increases the instability of the calculations, recent events were regarded as a unique shock. We modelled the impacts of the new direct payment system in an economic environment defined by the constant exchange rate of HUF 300 per EUR. By assuming a constant economic environment, the impacts were almost identical for each of the years between 2014 and 2020. (The intertemporal structure is relevant when modelling specific shocks).

Although crop production growth could slow down because of the 'greening' of Pillar 1, the allocation structure is unlikely to change. Maize and oilseeds will become more widely grown at the expense of grains and other crops. This is driven by global and regional supply and demand factors [Potori 2011; Potori and Popp 2010].

In the case of the livestock sectors, changes in livestock numbers were modelled in different economic contexts (Table 5).

Table 4. Modelling results: annual percentage changes in the area and output of the major arable crops

| Sector | Area | Output |
|---|---|---|
| Wheat | 0.98 | 0.98 |
| Maize | 1.02 | 1.02 |
| Barley | 0.93 | 0.93 |
| Rapeseed | 1.02 | 1.02 |
| Sunflower | 0.99 | 0.99 |

*Source: Department of Agricultural Policy Research, AKI.*

Table 5. Modelling results: annual percentage changes in livestock numbers

| Sector | Livestock numbers |
|---|---|
| Broilers | 1.00 |
| Turkey | 0.96 |
| Ducks | 1.05 |
| Geese | 1.00 |
| Slaughter pigs | 0.95 |
| Sows | 0.97 |
| Beef cattle | 1.01 |
| Milk production | 1.00 |
| Ewes | 1.02 |

*Source: Department of Agricultural Policy Research, AKI.*

Previous trends [c.f. Potori and Popp 2009] will mostly continue in the medium term in the livestock sectors in Hungary as well. In the poultry sector, stagnation or contraction seems likely, except for the duck sector, where the profitability of production could increase leading to a moderate upturn. The pig sector, which is also excluded from direct payments, will continue to decline even further regardless of the economic environment or subsidy structure. The ruminant sectors can be stabilised by coupled subsidies, so a modest increase in output is expected. Coupled subsidies do not directly induce growth but can improve the profitability of beef production.

### 6.4. Conclusions

To summarise, the proposed new system of direct payments would not significantly affect the real agroeconomic variables of Hungary. The changes would primarily affect the amount of income and income distribution. The former would decrease by 3% because of the land withdrawn from production, while compared to the SAPS in 2013 an additional EUR 32.6 million would be allocated to subsidise the smallest farmers.

It is clear that the changes in the CAP are important for farmers, but it is by far not the only factor that will shape the future. Since Hungary is an open economy, improving efficiency can have a much greater impact on the profitability of agricultural production in the period 2014-2020. Other factors, such as world oil market prices, the performance of emerging economies, the frequent occurrence of local weather extremes and the trade distorting market interventions of some of the major exporting countries, as well as fluctuations in currency exchange rates, or the activity of index traders and macroists in commodity futures markets, to name but a few, will also have a role to play.

**References**


1. Arrow K.J. – Debreu G., (1954), Existence of an equilibrium for a competitive economy, Econometrica no 22, pp. 265-290.
2. EC, (2011a), Proposal for a regulation of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the Common Agricultural Policy. COM(2011) 625/3.
3. EC, (2011b), Impact Assessment – Common Agricultural Policy towards 2020. Commission staff working paper, SEC(2011) 1153.
4. Keszthelyi Sz. Pesti Cs., (2010), Results of FADN farms 2009, Budapest, Agrárgazdasági Kutató Intézet.
5. Mitra-Kahn B.H., (2008), Debunking the myths of computable general equilibrium models, SCEPA Working Paper 01-2008.
6. Potori N., (2011), Sok tényező összjátéka, Magyar Mezőgazdaság 2011/41, pp. 14-15.
7. Popp J. Potori N., (2010), Nemzetközi agrárpiaci kilátások 2010, Budapest, Földművelésügyi és Vidékfejlesztési Minisztérium – Agrárgazdasági Kutató Intézet.
8. Popp J., Potori N., (eds.), (2009), A főbb állattenyésztési ágazatok helyzete, Agrárgazdasági Kutató Intézet (Budapest).
9. Powell M.J.D., (1994), A direct search optimization method that models the objective and constraint functions by linear interpolation, [in:] Advances in optimization and numerical analysis, Gomez S. and J-P. Hennart (eds.), Kluwer Academic (Dordrecht), pp. 51-67.
10. Scarf H.E., (1967), The approximation of Fixed Points of a continuous mapping, SIAM Journal of Applied Mathematics no 15, pp. 1328-43.

Dr Janusz Rowiński
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 7. RDP 2014-2020 and the development of Polish food economy

## 7.1. Current negotiations of the EU budget for the years 2014-2020 (total budget and founds allocated to the agriculture)

A year has passed since public disclosure by the European Commission (in this text referred to as the Commission) of the first draft of multiannual budget for 2014-2020 [EC 2011]. The Commission proposed to support the development of the food economy and rural areas (in the text abbreviated to DFERD) in 27 Member States by the European Agricultural Fund for Rural Development (EAFRD) with the amount of EUR 89.9 billion (in fixed prices of 2011). This amount is close to the one provided for this purpose from the EAFRD for the 2007-2013 period, which totalled to EUR 88.3 billion in current prices (approved version of the commitment, without small, additional resources transferred later). Of course, the amount in fixed prices for 2011 cannot be directly compared with the amount in current prices for 2007-2013. After being taken to the common denominator, the amount proposed by the Commission to support DFERD in 27 Member States from the EU budget for 2014-2020 is less than the amount in 2007-2013, but the difference probably does not exceed EUR 2-3 billion.

The quoted amount is, however, only the Commission proposal and during subsequent works on the multiannual budget it is likely to be reduced or stay on the same level (the best possible solution for Poland). The multiannual budgets of the European Union (EU) have always been the subject of sharp debate. States which pay more to the budget than they receive (net contributors) tend to seek to reduce the amount of the budget, while those paying less than they receive (net beneficiaries) seek to maintain the Commission proposals, or even increase the budget. The discussion on the amount of the future multiannual budget is not therefore something new (even Margaret Thatcher demanded to return the money paid to the budget by Great Britain, and she secured the "British rebate"), but it will be held in a different political and economic situation of the EU states and the whole Community. All previous multiannual budgets were prepared in conditions of economic growth of Member States. Currently, all EU members are struggling with economic problems, especially severe in the euro area, whose existence in the present composition is endangered. It is thus expected that this time the discussion about the amount of multiannual budget will be more difficult than before. One may be surprised at so violent efforts to reduce the multiannual EU budget (cuts greater than EUR 100 billion over seven

years are unbelievable), while simultaneously amounts, at least several times higher, have already been allocated to rescue the economic situation of some members of the euro area. Surprise, however, does not change reality. We can expect that with lower multiannual budget than in the current programming period, also the total amount of support for DFERD in all 27 Member States could be by several billion lower in 2014-2020 in comparable prices than it was in 2007-2013. However, it should not fall below EUR 75 billion.

In 2007-2013 Poland is the Member State that received the largest amount of the EU funds to support DFERD (EUR 13.2 billion without additional measures, which accounts for ca. 15.0% of the total DFERD; Poland is followed by Italy – EUR 8.3 billion, and Germany ranked at third position with EUR 8.1 billion)[8]. It is far from certain that Polish share in the EAFRD in 2014 – 2020 will be similar. The current share is almost twice higher than the Polish share in the EU agricultural area (8.2%). Much depends on the allocation algorithm, which can be changed, since two "agricultural" countries joined the EU on 1 January 2007 – Bulgaria and Romania. The former was favourable for Poland.

We must therefore reckon with the fact that in the 2014-2020 period Poland will have at its disposal lower amount of the EU funds for DFERD than in the current budget period. Mikołaj Dowgielewicz, until recently the main Polish strategist as regards the EU affairs, said in *Gazeta Wyborcza* daily that Poland would rather try to ensure that the amount of the Cohesion Fund at its disposal is not reduced (and if it is impossible, Poland should try to ensure that reduction is as small as possible) [Gazeta Wyborcza 2012]. Much less is said about defending funds earmarked for financing the Common Agricultural Policy. Furthermore, it appears that, if necessary, reduction will apply to funds allocated to DFERD (the so-called pillar II), and funds provided for direct payments and market policy (the so-called pillar I) will be protected. The European Commission published financial proposals relating to direct payments in the subsequent multiannual budget in much greater detail than those relating to the financing of DFERD. The European Commission even presented a proposal to split up the total amount of direct payments between Member States [EC 2011a].

### 7.2. EU budget cofinancing CAP and RDP 2014-2020

To conclude – although we do not know what will be the amount of the EU funds granted in 2014-2020 to Poland from the EAFRD for DFERD cofinancing, but most likely it will not be less than EUR 10 billion. These funds will be, undoubtedly, the most important, though not the only source of funding the next rural development programme – the RDP 2014-2020 (in the text abbreviated to RDP-2020). The other, also having a considerable impact, will be as

[8] Details of allocation of RDP 2007-2013 between the Member States, e.g. in: [Rowiński 2008].

before the Polish budget, preferential and commercial bank loans and own funds of those receiving support.

Now, while there is still time for calm discussion, we must consider whether or not the RDP-2020 should be only a slightly adjusted continuation of previous rural and agricultural development programmes, or its objectives and structure should be corrected. This is particularly important because most likely, the second half of this decade will be the last period in which Poland will have at its disposal still major, though lower than today, EU funds supporting DFERD. 2020 will be the seventeenth year of Polish membership in the EU and implementation of the programme for restructuring and modernisation of Polish agriculture with the help of the EU funds (in fact the EU co-financed DFERD even in the pre-accession period, but the scope and extent of support were small in comparison with the period of our membership). Seventeen years is a very long period in which it is possible, though very difficult, to transform agriculture in a well-functioning and competitive sector not only on the EU market. To this end it is necessary to base our agriculture on agricultural holdings that are the sole or, at least, the main source of income satisfying the needs of the farmer and his family ("satisfactory income") and allowing expanded reproduction. In the economic literature, such agricultural holdings are defined as "viable". When programming the structural transformation one should consider not only the current viability, but also viability in a very long or at least long period since the level of satisfactory income changes over time, but increases at times of economic growth.

The minimum amount of income that must be generated by the agricultural holding classified as viable, is the amount that should be the subject of detailed economic calculations. Without it, we cannot determine the minimum economic size (threshold) of a viable agricultural holding. Meanwhile, although in Poland the notion of a viable agricultural holding was introduced into agricultural policy, *inter alia,* as one of the criteria predetermining the decision whether an agricultural holding receives public funds as investment aid, I do not know of any plausible calculation of the threshold.

It should be noted that the rules governing the conditions and procedure for granting aid from the measure "Modernisation..." under the RDP 2007-2013 (in the text abbreviated RDP-2013) do not mention the notion "viable agricultural holding" but only the criterion of "minimum economic size". According to the Ordinance of the Minister of Agriculture and Rural Development (Article 2(1) point 1) assistance may be granted to an individual who: "is a sole or dependent owner of an agricultural holding under the Civil Code, with an area of agricultural land of at least 1 ha, or a property used for production in the special branches of agricultural production within the meaning of provisions on social insurance of farmers, hereinafter called "the agricultural holding"; economic size of this agricultural holding is at least equal to 4 ESU (European Size Unit)" [Ordinance of the Minister of Agriculture and Rural Development]. However, on the websites of the Ministry of Agriculture and Rural Development, the in-

formation for measure "Modernisation..." contains a phrase "Agricultural holding to which the investment pertains is economically viable (economic size is at least equal to 4 ESU)". Similar information can be found on the website of the Agency for Restructuring and Modernisation of Agriculture. It entitles the view that in Poland, 4 ESU economic size is the threshold for a viable agricultural holding. Hence we should consider the consequences of such a situation.

Table 1 shows the results of the estimate made by the Central Statistical Office (in the text abbreviated to CSO) on the number of agricultural holdings in Poland in 2010 in the various classes of economic size. The estimate was made using the new Community typology for agricultural holdings[9], whose foundation is the Standard Output (SO) in EUR. The SO is the sum of crop and animal production (main products and by-products in the net prices "loco agricultural holding", excluding VAT) less the cost of replacement of herd[10].

Table 1. Agricultural holdings in Poland, according to SO economic size classes (classification ES6) in 2010

| Class of agricultural holdings | Number |
|---|---|
| Not classified: SO less than EUR 4,000 | 1,267,615 |
| Very small: SO equal/more than EUR 4,000, less than EUR 8,000 | 305,883 |
| Small: SO equal/more than EUR 8,000, less than EUR 25,000 | 326,065 |
| Medium - small: SO equal/more than EUR 25,000, less than EUR 50,000 | 72,658 |
| Medium - large: SO equal/more than EUR 50,000, less than EUR 100,000 | 21,601 |
| Large: SO equal/more than EUR 100,000, less than EUR 500,000 | 10,338 |
| Very large: SO equal/more than EUR 500,000 | 1,528 |
| Total | 2,005,88 |

*Source: Central Statistical Office, Department of Agriculture and Environment Statistics based on population of agricultural holdings surveyed in the National Agricultural Census in 2002; the classification using SO 2004; exchange rate 1 euro = 4.3177, as cited in: [Wyniki standardowe 2011].*

Classification of agricultural holdings on the basis of a new typology differs from the previous one, which was based on the Gross Standard Margin (GSM). It was the sum of the value of crop and animal production, plus the payments for production and less direct costs. Due to the different share of direct costs and subsidies in the production of various agricultural products, SGM to SO conversion coefficients are differentiated[11]. Based on the coefficients mentioned in footnote 8, one can assume that the SO amounting to EUR 2,000 is equal to 1 ESU.

[9] New typology was introduced by Commission Regulation (EC) No 1242/2008 of 8 December 2008 establishing a Community typology for agricultural holdings (OJ L 335, 13.12.2008).

[10] Details of both typologies in: [Goraj et al. 2011] and [Goraj, Olewnik 2011].

[11] Average arithmetic relationships of SO to SGM coefficients calculated for example for the ten activities for Poland, range from 0.63 (tobacco) to 17.25 (laying hens), and after rejecting extreme values: from 1.16 (potatoes) to 2.04 (vegetables, strawberries grown under cover). [Goraj et al. 2010]. The arithmetic mean for the eight activities (without extreme values) is 1.54 and therefore for this group the SO value corresponding to 1 ESU is EUR 1,200 x 1.54 = EUR 1,850.

Table 1 shows that when 4 ESU is taken as a threshold for a viable agricultural holding (that is, SO amounting to EUR 8,000), only the smallest agricultural holdings (so small that they are not classified due to small share in the total agricultural production not exceeding 10%), and very small agricultural holdings are not considered viable agricultural holdings (SO in the first group could not be higher in 2010 than about PLN 17.3 thousand and in the second – higher than about PLN 34.5 thousand). The remaining 432 thousand are viable agricultural holdings. From the above it follows that the Polish agriculture has no structural problems. This is obviously a false picture of Polish agriculture. Indeed, Poland has one of the worst structures of agricultural production in the EU, but certainly better than it was several years ago (only Bulgaria and Romania were ranked lower in 2010; due to fragmentation of agricultural holdings the both countries were obliged to cover also agricultural holdings with SO of at least EUR 2,000 with FADN accounting). The income from an agricultural holding with SO not higher than about PLN 35 thousand per year, certainly does not provide an adequate standard of living in the Polish conditions, even if we consider that it is supplemented with direct payments and other subsidies for the production[12].

When searching for an economic size of agricultural holding, which should be taken as the threshold for a viable agricultural holding in the long run, it should be noted that in six EU countries (Belgium, France, Holland, Luxembourg, Germany and Great Britain) FADN studies pertain to agricultural holdings reaching SO of at least EUR 25 thousand (nearly PLN 110 thousand)[13]. Perhaps even in a very long period Polish agriculture will not reach such production structure. However, the structural policy in agriculture is the policy of "long march". Therefore, the proposed threshold of viable agricultural holdings of EUR 25 thousand of SO (or about 12 ESU according to the old but still used SGM typology) is a formulation to be pursued in the long or very long term. This proposal does not exclude the less ambitious targets, which should be regarded as transitional. It would be therefore possible in the next few years to establish the threshold at a level lower than EUR 25 thousand of SO, but not less than EUR 15 thousand (about 7 ESU).

About threefold higher than in force threshold of viability is not synonymous with total blocking of access to aid for smaller agricultural holdings. Same as before, the agricultural holdings that are below the threshold should be able to obtain investment aid, provided however, that at the end of the programme they reach SO of not less than EUR 25 thousand (or in the next few years, EUR 15 thousand).

[12] Subsidies may be interpreted as payment for public services (public goods) performed by the farmers, as well as a compensation for agricultural commercial production which is priced very low by the market as a result of a weak bargaining position of farmers.

[13] In the Netherlands and Luxembourg on their whole area, and in the four other countries only in some regions, cf. [Goraj, Olewnik 2011].

The proposal to move the threshold of viability up is not a new proposal[14]. For several years now, agricultural economists opted for its increase. Recently conducted study works examine the feasibility of introducing into the RDP-2020 legal regulations that will differ from the current governing access criteria and procedures for granting aid. The Ministry of Agriculture and Rural Development has commissioned two such studies [Józwiak et al. 2012; Poczta et al. 2012]. W. Poczta, co-author of the first recommends adoption of the two criteria (1) based on the area (minimum 20 ha of agricultural land) and alternatively (2) based on economic size (at least EUR 25 thousand of SO). Agricultural holdings that meet the criterion of area and not the criterion of economic size would be required to achieve a minimum SO within a specified period. Much more complicated system was proposed by the authors of the second study, who differentiate access criteria and the range of support depending on the type of agricultural holding. However, one of the eligibility criteria is always the economic size. The authors, apart from the threshold (it usually amounts to EUR 25 thousand of SO; the exceptions are agricultural holdings of a "mixed" type, with easier access – the threshold is set at EUR 8 thousand of SO, or about 4 ESU, and of a "grazing animals" type – the threshold is set at EUR 100 thousand of SO) also suggest placing a ceiling. Agricultural holdings larger than the ceiling "do not require support" according to the authors. Ceilings typically amount to EUR 50 thousand of SO, exceptions are agricultural holdings of a "mixed" type and "grazing animals" type – the ceiling is EUR 100 thousand of SO and of a type "granivores animals – pigs", investing in sow piggery – the ceiling is EUR 500 thousand of SO. In addition, agricultural holdings, specializing in crop production, apply the "surface" thresholds and ceilings (except for the type of "horticulture" in which there is only one threshold and ceiling, expressed in SO), and in type "grazing animals" threshold and ceiling are expressed in livestock units (LU) (the threshold of 27 LU – the ceiling of 70 LU).

The proposed changes are primarily a "revolution on paper". ARMA is required to assess the substance of the application for investment aid, including to determine whether the proposed project is economically justified. As shown by completed and settled investment projects co-financed under "Modernisation of agricultural holdings" (table 2), this is not a formal control.

Table 2 shows that the agricultural holdings of economic size below 4 ESU did not practically use the investment support. Also the number of agricultural holdings of economic size of 4.01-15.99 ESU that received aid is relatively small, given the total number of holdings of the group. The dominant group are the agricultural holdings with size of 16.00-39.99 ESU, therefore for Polish conditions (and for conditions of many other Member States) these are of significant

[14] The author already in 2010 proposed a threshold of viability at 12 ESU, not deviating from EUR 25 thousand of SO and supporting only those agricultural holdings that have submitted a credible plan to increase the economic size to that level, cf. [Rowiński 2010].

economic size (minimum SO in 2010 amounted to almost PLN 140 thousand). Agricultural holdings with an economic size of at least 16.00 ESU received in the years 2007-2011 about PLN 2.7 billion of investment support, which is about 2/3 of total support. These figures indicate that measures of "Modernisation..." are directed primarily to agricultural holdings that have already reached the proposed threshold of viability (SO of EUR 25 thousand), or have the ability to quickly reach the threshold. Therefore, most projects co-financed under measure "Modernisation..." support the creation of a group of strong economically effective agricultural holdings. In this situation, changes proposed in this part of the paper can be interpreted as a proposal to adapt the existing legislation to the practice adopted by ARMA.

Table 2. RDP 2007-2013 The projects settled and co-financed under "Modernisation of agricultural holdings". As at the end of 2011

| Class of economic size unit (ESU) | Number of agricultural holdings | Total public funds (PLN thousand) | Funds of those receiving support (PLN thousand) | Total value of investments (PLN thousand) |
|---|---|---|---|---|
| up to 4 | 7 | 550 | 698 | 1,248 |
| 4.01 – 5.99 | 3,131 | 291,799 | 382,345 | 674,144 |
| 6.00 – 7.99 | 2,310 | 228,779 | 311,846 | 540,625 |
| 8.00 – 11.99 | 3,971 | 425,106 | 581,839 | 1,006,945 |
| 12.00 – 15.99 | 3,441 | 403,523 | 563,435 | 966,958 |
| 16.00 – 39.99 | 10,287 | 1,603,936 | 2,275,080 | 3,879,016 |
| 40.00 – 99.99 | 3,654 | 776,805 | 1,202,310 | 1,979,115 |
| 100.00 – 249.99 | 944 | 237,716 | 411,878 | 649,594 |
| 250 and more | 354 | 95,234 | 188,727 | 283,961 |
| Total | 28,099 | 4,063,448 | 5,918,158 | 9,981,606 |

*Source: [Report on the implementation 2011]. Report on the implementation of the Rural Development Programme for 2007-2013. Annual Report 2011. Report No. 5/2011. The Ministry of Agriculture and Rural Development. Vol. II. Annexes.*

The position of the food economy in the country's economy depends not only on agriculture but also on other parts of the "food chain". Of these the most important and constantly gaining in importance is the agri-food industry. Its modernisation and expansion in the period before accession was supported by public funds, including the EU funds (SAPARD programme). After Poland's accession to the EU the possibilities of granting assistance to the agricultural industry from programmes co-financed by the EU budget has increased several times. This is unique, since the Treaty on the Functioning of the European Union, in principle, prohibits the granting of State aid which distorts competitiveness, supporting only certain undertakings or the production of certain articles[15].

[15] Article 107(1) of the Treaty provides: "Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market". Although paragraph 3 of this Article mentions a situation in which aid is

We must therefore maximise the unique opportunity to promote its development with public funds, including the EU, because, as R. Urban notes, the success of the Polish food economy in the period of transition was and still is preconditioned on agri-food industry [Urban 2012]. Although, as follows from the previous considerations, it is worth adjusting the detailed rules governing the access criteria for agricultural users to public funds, in the case of agri-food industry and wholesale trade of agri-food products, the changes are not needed.

### 7.3. RDP 2014-2020 and agriculture support programmes until 2013

It appears from previous observations that the primary purpose of the RDP-2020 should be the modernisation of agriculture, agri-food industry and wholesale agri-food trade. The answer to the question in Part I, whether RDP-2020 can be only slightly adjusted continuation of previous rural and agricultural development programmes, or should its objectives and structure be different, requires a detailed analysis of the programmes completed and in the final stage of implementation. It shows that the programmes implemented the following five objectives: (1) Development of the food economy; (2) Development of other branches of the economy; (3) Environmental protection; (4) Income protection and social support; (5) Other objectives. Shares of funds allocated to the specific objectives in the total funds are given in table 3.

The adopted division into five objectives is different from that imposed by the Council Regulation No 1698/2005 for division of RDP-2013 into three basic axes and one additional with a mandatory assignment of a group of measures for each axis[16]. It was recognised that the division made by the Council not only prevents proper characterisation of the programmes, but even falsifies them, as the names of the first two axes do not fully capture the economic and social essence of measures included therein. It is not right if the measure of a distinct social character (early retirement) is classified under the axis of "Improving the competitiveness of agricultural and forestry sector", and the measure primarily aimed at supporting farmers' incomes (Natural handicap payments in mountain areas and payments in other less favoured areas (LFA)) under the axis of "Improving the environment and the countryside".

Of the four completed or nearly completed programmes, the first one – SAPARD – had a different character from the rest for at least three reasons. First, it had significantly fewer financial resources, secondly, it was a programme to prepare Polish food economy to the membership, and thirdly, its

permissible, but it does not appear it can be referred to in case of providing assistance to Polish agri-food industry on such a large scale.

[16] According to the official nomenclature, the programme consists of measures, which in reality are major sub-programmes, implemented in accordance with the provisions laid down by the Council and Commission Regulations, and ordinances of the Minister of Agriculture and Rural Development.

structure was different, because much of its resources was earmarked for infrastructure investments, which in the period of membership were funded from other programmes. After their exclusion, it appears that the sole purpose of SAPARD was to promote the development of food economy. It is therefore worth noting the importance SAPARD attached to adjusting some branches of the agri-food industry to the EU sanitary, veterinary, environmental and animal welfare standards. These measures helped the dairy, meat, fish and fruit and vegetable industries to make the necessary investments and allowed access to the EU market of most of Polish enterprises at the day of accession[17]. Good preparation of the food industry was the primary reason for success of Polish food exports to the single European market.

In 2004-2006 implemented programmes[18] primarily supported the development of the food economy (group A). Expenditure on this accounted for almost half of the total funds. However, too large resources were allocated to finance the "soft" investments, such as counselling and training, or activities that do not have much sense (support to semi-subsistence agricultural holdings). Too little resources were allocated to support investments in agri-food industry. The advantage of the programme was that nearly a quarter of total funds was intended for "hard" investments on agricultural holdings (separate issue is the limited range of supported investments). At the same time, the programme designed to serve the development had also a social nature.

Almost EUR 2.2 billion was earmarked for measures to support income and social measures (group D). Of this amount, EUR 678 million was the expense over which the authors of the programme had no influence, since this amount covered the commitments made to the farmers, recorded in the Accession Treaty. By contrast, support for farming in less favoured areas and early retirements were granted far too many resources (total of 27.5% of funds in the programme).

The basic mistake made by politicians who decided to allocate resources under rural development programmes implemented in 2004-2006, was the recognition that the EU funds, plus mandatory funds from the Polish budget, are so large that their major part can be spent on income support for farmers and for social purposes . This was a view which not only distorted the nature of RDP-2006 and SOP "Agriculture"-2006 but also RDP-2013 . The people that programmed RDP-2013 had to provide funds to cover the commitments undertaken in the previous programming period.

[17] Polish agri-food industry also involved very serious own resources. Many adaptation investments were financed without the SAPARD funds.

[18] In 2004-2006 Rural Development Programme for 2004-2006 was implemented (in the text abbreviated as RDP-2006) and the Sectoral Operational Programme "Restructuring and modernisation of the food sector and rural development" (in the text abbreviated SOP "Agriculture"-2006). In table 3, measures of both programmes were joined for analytical purposes.

Table 3. Financial structure of SAPARD, RDP-2006, SOP "Agriculture"– 2006 and RDP-2013

| Measure | SAPARD | RDP-2006 and SOP "Agricul-ture"-2006 | RDP-2013 |
|---|---|---|---|
| **A. Measures to promote the development of the food economy** | | | |
| Modernisation of agricultural holdings | 13.5 | 11.6 | 10.7 |
| Adjustment of agricultural holdings to the EU standards | - | 11.8 | - |
| Adding value to agricultural and forestry products (support for agri-food industry and wholesale trade in agri-food products) | 29.7 | 8.6 | 5.4 |
| Setting up of young farmers | - | 3.3 | 2.4 |
| Other measures | 0.6 | 13.4 | 9.9 |
| Group A in total | 43.8 | 48.7 | 28.4 |
| including: agriculture | 14.1 | 40.1 | 23.0 |
| food industry and trade | 29.7 | 8.6 | 5.4 |
| **Group B: Measures to promote other sectors of the economy** | | | |
| Basic services for the economy and rural population | 48.6 | - | 8.8 |
| Establishment and development of micro-enterprises | - | - | 5.9 |
| Diversification into non-agricultural activities | 7.5 | 1.4 | 2.0 |
| Group B in total | 56.1 | 1.4 | 16.7 |
| **Group C: Measures to promote environmental protection** | | | |
| Agri-environmental programme (agri-environmental payments) | - | 3.9 | 13.3 |
| Afforestation of agricultural and non-agricultural land | - | 1.9 | 2.9 |
| Restoring forestry production potential damaged by natural disasters and introducing appropriate prevention instruments | - | 0.2 | 0.6 |
| Other measures | | 2.1 | 3.5 |
| Group C in total | - | 6.0 | 16.8 |
| **Group D: Measures to promote income and social measures** | | | |
| Natural handicap payments in mountain areas and payments in other less favoured areas (LFA) | - | 17.6 | 14.1 |
| Early retirement | - | 9.9 | 14.6 |
| Complementing area payments | - | 12.6 | - |
| Group D in total | - | 40.1 | 28.7 |
| **Group E: Other** | | | |
| Group E in total | 0.1 | 3.8 | 9.4 |
| **Total** | **100.0** | **100.0** | **100.0** |

*Source: Author's own elaboration based on various sources. Details in [Rowiński 2010].*

Table 3 also shows that RDP-2013 is not a programme whose primary purpose is the development of Polish food economy. This is a programme in which public funds were divided between the development of food economy (28.4%, of which only 5.4% for the development of agri-food industry and wholesale trade in agricultural products), support for agricultural income and early retirement (28.7%), environment protection (16.8%) and the development of other sectors of the economy (16.7%). Therefore, it should rather be consid-

ered as a programme in which social and environmental issues were no less important as development of food economy.

### 7.4. Conclusions and final remarks

The answer to the question whether the RDP-2020 should be only a slightly altered continuation of the previous rural and agricultural development programmes, or should its structure be different, depends on whether the politicians decide to use it to speed up the creation of an economically strong group of agricultural holdings and development of agri-food industry (first variant), or consider that it would be better solution would be to maintain a developmental-social-environmental nature of the programme (second variant). Adoption of the second variant means the same structure as in RDP-2013 with modifications, arising from amendments introduced by Council and Commission Regulations. Thus recommendations in this case are unnecessary. On the other hand RDP-2020 according to the first variant requires:

- (1) allocating the highest possible amount of funds for the development of agriculture, industry and wholesale trade of agri-food products, or (using the terminology of the RDP-2013) for the "modernisation and restructuring of agricultural holdings" and "increasing added value of basic agricultural and forestry production" (funds for other measures should be minimised and result solely from commitments made during the RDP-2013 period and obligations imposed by the Council and Commission Regulations on all Member States in 2014-2020);
- (2) raising the threshold of viability of agricultural holdings to EUR 25 thousand of SO (one should consider whether in the first four years of the RDP-2020 it should not be lower – EUR 15 thousand of SO);
- (3) accepting the principle that agricultural holding must achieve SO at least equal to the threshold of viability after completing investment project supported by public funding;
- (4) introducing changes in the supporting structure for the modernisation of agricultural holdings (reducing the share of funds to support mechanisation, increasing the share of construction investments).

The implementation of points 2-4 depends solely on the Polish decision. Also the wording of Article 18 of the Proposal for a Regulation of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development[21] suggests that it will be possible to

[21] Proposal for a Regulation of the European Parliament and of the Council on Support for Rural Development by the European Agricultural Fund for Rural Development (EAFRD). COM 2011/0627 final – 2011 -2011/0282 (COD). In this case, Article 20(1)(b) provides that "Support under this measure shall cover business start-up aid for non-agricultural activities in

support agro-industry and wholesale trade in agri-food products from the funds under the RDP-2020. Any other decision would be extremely unfavourable for Poland. Therefore, one of the primary tasks of the Polish government and MEPs in the next phases of work on the rules governing the Common Agricultural Policy in 2014-2020, should be to explain the existing misunderstanding.

It is pointless to make even small allocations of funds under the RDP--2020 on support for the development of small agricultural holdings, provided for in Article 20(1) (a) (iii)[22]. There is a proposal to include in the programme a measure similar to support for subsistence agricultural holdings, financed from funds under the RDP 2004-2006. This measure was deemed ineffective, and in the currently implemented programme the only commitments made in 2004--2006 are financed.

In conclusion it should be noted that the list of measures that can be funded by Member States from the RDP-2020, that was proposed by the European Commission does not include early retirement. If the Regulation is enacted in the version that is compatible with the Commission's proposal it will only be necessary to ensure funds under the RDP-2020 to cover pension obligations undertaken in 2007-2013. In addition, uniform criteria will be introduced for all Member States as regards delimitation of less favoured areas (draft design criteria are given in Annex II of the Regulation). The purpose of standardisation is undoubtedly to reduce subsidies for agriculture in less favoured areas.

Funds "saved" by cancelling measure "Early retirements" from the RDP-2020 and introducing the new LFA delimitation rules should increase the total funds of measure "Modernisation of agricultural holdings". Finally, it should also be considered whether to cover further holdings with some of the agri-environmental programmes, including in particular the programme for converting traditional agricultural holdings to organic agricultural holdings. But first we should check how such holdings behave after a five-year period of conversion. It is possible that many of them will return to the traditional system of farming when they no longer receive subsidies to compensate the costs of adjustment.

**References**

1. EC, (2011), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and

rural areas" and the second paragraph, third line "Support under Paragraph 1 (b) shall be granted to non-agricultural micro- and small enterprises in rural areas and to farmers or members of the farm household.".

[22] Polish translation of the part regulating the issue is as follows: „Wsparcie w ramach tego środka obejmuje pomoc na założenie nowego przedsiębiorstwa na rzecz rozwoju małych gospodarstw". This is not an understandable translation, because in this context one cannot translate "business start-up aid for" as "założenie nowego przedsiębiorstwa". I would strongly recommend hiring better translators!

the Committee of the Regions. A Budget for Europe 2020, COM(2011)500 final, 29.6.2011. Part I.
2. EC, (2011a), Proposal for a Regulation of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy, COM/2011/0625 final – 2011/280 (COD).
3. Gazeta Wyborcza, (2012), W sprawie negocjacji budżetu UE Polska nie odpuści, Interview with Mikołaj Dowgielewicz by Jacek Pawlicki, 12 May 2012.
4. Goraj L., Osuch D., Cholewa M., Płonka R., (2010), Analiza skutków zmian we Wspólnotowej Typologii Gospodarstw Rolnych, IAFE-NRI. Warsaw, p. 21.
5. Goraj L., Olewnik E.. (2011), FADN i Polski FADN, IAFE-NRI, Warsaw, p. 10.
6. Józwiak W. et al., (2012), Koncepcja ukierunkowania wsparcia gospodarstw rolnych w perspektywie lat 2014-2020, IAFE-NRI. May, p. 48.
7. Ordinance of the Minister of Agriculture and Rural Development of 17 October 2007 on detailed conditions and procedure for granting aid under the measure "Modernisation of agricultural holdings", covered by the rural development programme for 2007-2013. Dz.U. of 2007, no. 193, item 1397.
8. Poczta W. et al., (2012), Koncepcja ukierunkowania wsparcia gospodarstw rolnych w perspektywie 2014-2020, typescript, Poznań. p. 59.
9. Report on the implementation of the Rural Development Programme for 2007-2013, Annual Report 2011, Report no. 5/2011, The Ministry of Agriculture and Rural Development, vol. II. Annexes.
10. Rowiński J., (2008), Program Rozwoju Obszarów Wiejskich na lata 2007-2013 (Analiza zatwierdzonej wersji programu i pierwszych lat realizacji), Multiannual Programme 2005-2009, no 118, IAFE-NRI, Warsaw, p. 25 and passim.
11. Rowiński J., (2010), Wpływ funduszy współfinansowanych ze środków Unii Europejskiej na rozwój rolnictwa i regionów wiejskich, Final report, Multiannual Programme 2005-2009, no. 178 IAFE-NRI, typescript. Warsaw p. 34, 26-28.
12. Urban R., (2012), Ocena spójności procesów rozwojowych rolnictwa i przemysłu spożywczego, Zagadnienia Ekonomiki Rolnej no. 1. pp. 3-17.
13. Wyniki standardowe uzyskane przez gospodarstwa rolne uczestniczące w Polskim FADN w 2010 r, IAFE-NRI, Warsaw 2011.

Karl M. Ortner
The Federal Institute of Agricultural Economics, Vienna, Austria

# 8. Lessons from the mid-term evaluation of the Austrian Rural Development Programme

## 8.1. Objectives

Agricultural policies exist to meet expectations and objectives of the population to a higher degree than would be the case in their absence. Accordingly these policies should bring about a situation which is preferable over a situation without them. But preferences differ between individuals, and assessments of what kinds of changes constitute improvements and what levels of changes in particular directions constitute equivalent improvements are necessarily subjective. The policies implemented are the result of bargaining processes between (groups of) individuals and their representatives who strive to enhance their welfare. They are contestable and the subject of on-going political debate and scientific scrutiny. In the pursuit of improvements of situations the focus may be either on the determination of appropriate targets for conflicting objectives, i.e. the appropriate goals of government intervention (including the appropriate levels of taxation), or on the means by which these objectives might be accomplished, i.e. the most appropriate policy measures to pursue these goals. The role of agricultural economists in both these areas of contention is to identify the costs and results of policy interventions and to inform decision processes in this respect.

Evaluation has become a standard procedure in connection with the introduction of new or changes in existing policy measures. Even more challenging is the task to analyse the existing agricultural policy system in order to identify changes which will enhance its effectiveness and efficiency. This is the task of the evaluation according to the regulations concerning rural development of the Common Agricultural Policy (CAP) of the EU and according to the guidelines and suggestions of the EC and its Help Desk. The Common Monitoring and Evaluation Framework (CMEF) is an attempt to align the various objectives of agricultural policy into a coherent structure and to use this structure for the assessment of achievements of policies and of the programme overall. This is a most challenging task and, as I am going to demonstrate, crucial for the assessment of policies.

Do the prescribed indicators of the CMEF really reflect policy objectives? There is no doubt that the objectives mentioned in the various regulations are in conflict with each other and in need of interpretation. A most obvious example is the conflict between labour and leisure. Working too much or too little will affect your quality of life negatively. A balance must be found which reflects our personal preferences. Similarly economic growth is worthwhile to pursue as long as it does not consume too much of our time and effort. In short, there is a

trade-off between different goals, and advances in one direction may be detrimental in other directions. The CMEF tries to reflect these dimensions with 59 baseline indicators (23 context related, 36 target related) target indicators (target values), input indicators (public payments), output indicators (beneficiaries, projects, ha, livestock units, investments, …), 16 result indicators (revenues, gross value added, jobs created, …), 7 impact indicators, additional indicators.

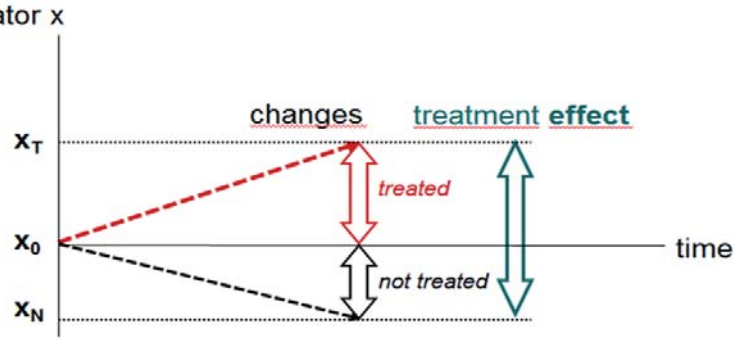
The management authority of a rural development programme (RDP) specifies the level of target indicators which it hopes to achieve with the help of the programme. In reality, targets are often missed because most indicators are influenced by many factors, and some of these factors impacts are much more important than those of the programme. However, if other factors help to achieve policy targets, the programme or some of its measures may be dispensable. The first lesson from evaluation of RDP is therefore: Targets must be specified taking account of the impact of other intervening factors on these targets. Since forecasting these impacts accurately is impossible, targets will be missed. This should not lead to major revisions of programmes but to an adjustment of their targets.

### 8.2. Changes versus effects

Changes can be observed: They reflect the difference between situations at different points in time, where the situation is represented by data (observations). The causes for changes can be manifold: GDP may increase because better production technologies have been introduced, labour productivity has increased, more labour has been employed, less input has been used, inputs have become cheaper, output prices have risen, etc. RDP measures may have an effect on GDP growth, i.e. they may have contributed to these changes over time. A method to identify their contribution is to compare the extent by which the situation of groups of similar beneficiaries (treated) and non-beneficiaries (non-treated) of a measure have changed over time. The average treatment effect on the treated (i.e. with support) is largely independent of the changes overall; it depends on the difference between changes of different groups (Figure 1).

In practice, however, it is difficult to find groups which are similar in all respects except participation in a measure because beneficiaries usually satisfy certain eligibility criteria by which they are different. Some measures are specifically designed to address all or almost all farmers to participate, e.g. compensatory allowance payments to farmers in areas with handicaps. In such circumstances it will not be possible to find a group for comparison. An alternative is to set up multiple regression models which explain how much various factors contribute to an overall change, and to estimate their parameters. These models are based on a theory which accounts for various factors to influence an outcome. The so-called intervention logic of the CMEF is a subset of this theory because it reflects only the relationship between an intervention and its effects on indicators but not the contributions of other factors to the changes of these indicators.

**Figure 1**.




In the evaluation guidelines of the European Commission, the distinction between changes and effects is ambiguous, as can be seen from the following definition of result indicator 2: "This indicator measures the increase in gross value added (GVA) of agricultural, food or forestry holdings/enterprises that are supported. Important is that we measure the gross effect. This means that it can be possible that a change in GVA over different years can also be explained by other factors than the received support. To measure the GVA of the supported holdings/enterprises, we use the following proxy: the average profit after taxes of assisted holdings/enterprises = turnover – costs whereby …This indicator needs to be compared over different years to see its evolution." [European Evaluation Network for Rural Development, 2006]. As explained, this comparison does not yield the effect of support but the effects of all influences, in particular price volatility and weather fluctuations.

The second lesson from evaluation of RDP is: Do not confuse changes with effects. Changes can be observed; effects have to be estimated by comparing observations with counterfactual (hypothetical) situations. Changes and effects coincide only in the (unlikely) case that the situation for recipients (or non-recipients) of support through a measure remains constant.

### 8.3. Effects over time

The effect of an intervention plays out over time. For many measures of the RDP considerable time elapses before their effects materialise. Consider agri-environmental measures as an example: their effects on soils, biodiversity, water quality etc. are real but difficult to establish because the measures have to be applied for a long time to accumulate effects which are statistically significant (discernible) but which usually peter out over a long time. Similarly an investment in buildings or infrastructure, such as in a road, may have little effects in the short term, but these effects usually continue to appear over a long useful life. The same can be observed in the case of investments in education, vocational training and research. The magnitude of their effects depends on the time for which they last and for which they are calculated, and on the shape of their variation over time,

from the start of an intervention to the points in time when its effects are estimated, to the way they diminish after a certain time limit has been reached.

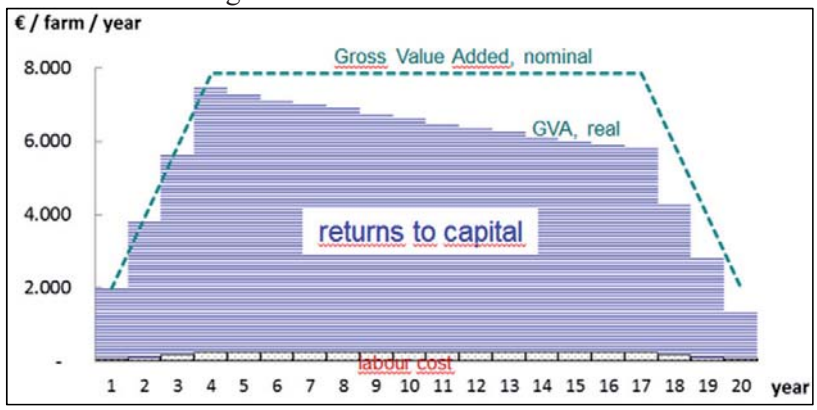
A distinction must be made between transitory, longer-term and dynamic effects. Transitory effects are directly linked to the implementation of a project, e.g. the construction of a building or a road; they cease when the project has been implemented. Consider the construction of a road. It requires inputs: labour, machinery and materials whose production involves also labour, giving rise to an additional employment effect. The wider effects which follow from the production of inputs can be captured by multipliers, but following this approach amounts to adding up transitory effects over an infinite horizon in the past. Doing so blows up the numbers but does not change the nature of the effects; they remain transitory: once the road is built, they disappear. Secondly, the labour that has been spent on manufacturing the inputs, and the labour spent in the wake of constructing, are both accounted for in the costs of the structure. Labour is part of investment costs, and labour is part of an investment.

While a government intervention motivates people to invest and thus to employ labour and increase labour input, this is not the real objective of an intervention. Its ultimate objective cannot be to boost investment costs for the sake of achieving temporary employment effects. Rather it is to achieve and harvest the benefits that accrue by the use of the investment over time. The effects that we should be interested in are the returns on investment and non-market benefits that follow from its being in place or being used, e.g. lower transport costs, better accessibility, less pollution, better leisure opportunities, higher quality of life etc.

In the case of private farms, the major incentive for an investment is that it will produce returns in the future that exceed its costs. Of course, producing these returns requires other inputs, in addition to the capital invested, such as materials and labour, whose costs must be taken into account. Producing these returns is equivalent to generating longer-term effects. They initially accrue to the owners of the factors of production, which in the case of capital is the beneficiary of support, not the government and neither the taxpayer who provided the funds for support. However, the beneficiaries of support are using their returns, in turn, for consumption, taxes and investment, thus producing additional effects which can be accounted for depending on the stages and time span that one wants to cover in the analysis. Multiplying direct effects with long run multipliers yields accumulated direct and indirect future effects throughout the various actors and sectors of the economy, including the government, over an infinite horizon.

On top of that one can assume dynamic effects which are based on the idea that if you push something it will advance faster than something else that did not get the push, i.e. it will have an advantage. Propelled by this advantage it will get ahead faster and let others behind. These effects are often considered to be substantially larger than the conventional ones. They were offered as an argument in the debate about Austria's accession to the EU. But their size is subject to speculation.

Figure 2. Effects of participation of a farm in investment support (M121) on gross value added and labour cost




*Dottet line: effect on GVA, columns: GVA value at base year ($t_0$), subdivided into a) remuneration of (effect on) labour and b) returns to capital = remuneration of investment costs ($t_0$, lined area).*

For the MTE, we considered the direct longer-term gross effects on beneficiaries of support for farm modernisation. We compared the development of dairy farms in Austria which did not receive support with the development of similar farms which invested, with support, some 52.000 € on average in the years 2003 and 2004. The effect of having invested with support from this scheme was an increase of Gross Value Added (GVA) by 7 863 EUR on average per farm four years after the investment [Dantler et al. 2010]. This effect corresponds to the one presented in figure 2 above.

Concerning the longer-term effects, we assumed that the investment yields the same results over a useful life of 17 years, spread over 20 years as shown in figure 2. Accordingly the effect on Gross Value Added over the useful lifetime will be +134 000 € in nominal terms and 111 000 € in real terms (using an interest rate of 2% for the deflation of future returns). Since it turned out that the investment hardly had an effect on labour input, almost all the GVA generated by the investment remunerates capital inputs. These have been paid for partly by the government: its financial contribution to the investment amounted to 11 000 € per farm on average. The effect of supported investments on GVA was clearly positive; they produced benefits (returns to capital) which exceeded their costs 2.1-fold on average. Lesson 3: The time it takes for an intervention to yield effects must be taken into account. The time for which an effect is estimated is an important qualification. The interest rate used to deflate future benefits modifies the outcome significantly.

### 8.4. Gross and net effects

The effect estimated in the previous chapter is a gross effect; it overstates the true effect because it assumes that farmers would not invest in the absence of

intervention. Obviously there are farmers who would have invested anyway while other farmers who did not invest considered that it is unprofitable to invest even under conditions when the government pays for part of the investment costs. This distinction is not taken into account when we place farms participating or not participating in the farm modernisation scheme in different groups. In that respect the groups of farms are still dissimilar. It is likely that some farmers expect their investment to be profitable even in the absence of government support. They would invest independently of the level of government support, maybe substituting part of the funds contributed by the government with own funds, or investing at least part of their own funds in the absence of government support. The effects of these investments are included in gross effects because farmers take the support if it is available. But the gross effects generated by these investments which would have occurred in the absence of support – the so-called deadweight effects – are not due to the intervention and cannot be attributed to it.

The size of the deadweight effect or the share of it in the gross effect depends on the profitability of projects. Profitability depends for the most part on the situation and future development of the markets, i.e. on observed data – now and in the future, and, to some part, on government support. There is a fundamental difference between actual changes in the markets and estimated effects: the latter result from a comparison of factual and hypothetical counterfactual situations, as has been demonstrated in Figure 1. Changes in markets indicate the continuous search for balance between supply and demand of tradable goods through adjustments of prices; these prices provide the information on which investments in private goods should be based. Contrary to effects, prices can be observed.

In a similar vein, there is a fundamental difference between profit – the balance between revenue and cost of a project – on the one hand and the balance between benefit and cost of an intervention on the other hand. Profit is a phenomenon that can be observed while benefit is an estimate of the effects of an intervention. Although the effect of investments supported by the farm modernisation scheme on GVA was positive, the profitability of the same investments can be positive or negative. Lower producer prices in the future reduce the profitability of an investment but not its effects. In an economic downturn farmers may not invest even if they could collect investment support. On the other hand, if investments are expected to be profitable even in the absence of investment support, farmers will invest and collect the support for the investments which they would undertake anyway.

Lesson 4: Gross and net effects have to be distinguished; only the latter can be attributed to support payments. Net effects depend on the profitability of investments in the market; they diminish as market conditions become more favourable for investments. On the other hand, if market conditions do not warrant investments, government intervention may render them profitable nonetheless. Positive expectations increase deadweight effects and diminish the net effects of

support, and negative expectations decrease deadweight effects as the investments to be analysed would not have occurred without support. Investment support partly substitutes for market signals as a determinant of investments. If the additional private goods produced by an investment do not pay for it, an additional benefit in the form of a public good has to be reaped in order to justify the investment and the contribution of the government to it.

### 8.5. Incentive effect and net effect

In the previous chapters we considered the effects of an investment overall, irrespective of who paid for it. In order to elaborate how to distinguish between the effects of privately and publicly financed shares of an investment, it may be easier to refer to the incentive effect of support. An incentive effect exists if government support leads beneficiaries to invest more than what they would have invested in the absence of support. According to this definition, deadweight effect and incentive effect refer to the same phenomenon, namely the motivation for the privately financed share of an investment. This share is partly due to profitability and partly due to government support. The incentive effect relates to the latter and allows for a more intuitive interpretation as will be demonstrated in Table 2 [see also Ortner 2011].

The incentive effect of investment support depends on the profitability of the investment which changes continuously over time with market conditions. To estimate the incentive effect under conditions of price volatility is cumbersome or next to impossible. However if net effects are to be estimated, which is necessary because only net effects are the true effects of an intervention, at least an assumption is required with regard to its incentive effect.

The assumption in Table 2 is that the incentive effect of government support is 1, meaning that the beneficiaries would have invested 1 EUR less than they did for every 1 EUR of support they received. Accordingly the receipt of 11 000 € support led them to invest 22 000 € more than originally planned. Thus, without support, they would not have invested 52 000 € as actually happened but only 30 000 € on average[23]. Presumably they would have implemented the most profitable investments and abandoned the least profitable ones, but here we assume constant marginal returns for simplicity of the exposition, i.e. we assume that average returns to capital prevail throughout the investments.

Under these assumptions, the net effect of 11 000 EUR of government support was to boost GVA in real terms by 46 000 EUR and returns to capital by 45 000 EUR. The net effect of government support is thus to increase returns to capital more than 4 EUR for every EUR of public funds spent. In fact, as has been demonstrated by Ortner [2011], if the incentive effect were twice as high as the support payment, the benefit of support would triple in the comparison to the

[23] This amount gives rise to the deadweight effect.

benefit of the investment overall. This exposition is meant to show how sensitively the results of an estimation of net effects react to the underlying assumptions. Tyler et al. [2009] find a wide range of deadweight effects in their survey of more than 250 evaluations.

Table 1. Calculation of net effects of investment support per holding

| Effects (changes) per holding (€) | gross effect | | farm level | without support | | net effect |
|---|---|---|---|---|---|---|
| GVA nominal | 134 000 | | | | | |
| **GVA real** (2 %) | **111 000** | | 111 000 | | 65 000 | **46 000** |
| labour costs real | 3 000 | | | | | |
| **returns** to capital real (benefit) | **108 000** | | **108 000** | | 63 000 | **45 000** |
| **Investment** (cost) | **52 000** | | | | | |
| of which **government** | | 11 000 | | | | **11 000** |
| Private | | | **41 000** | | | |
| of which because of support* | | | | 11 000 | | |
| Anyway | | | | | 30 000 | |
| **benefit / cost** | 2.1 | | 2.6 | | 2.1 | 4.1 |

* Incentive effect.

Lesson 5: It is next to impossible for evaluators to determine the net effects of an intervention if markets are volatile. Under reasonable assumptions for more or less stable markets, the benefits attributable to government support under the farm modernisation scheme may be substantial. They are likely to exceed the benefits of direct payments fourfold. However, the benefits accruing to support for farm modernisation are not based on market signals. Rather, they motivate farmers to invest and produce more than is justified by prevailing prices, boosting supply and depressing prices in the process.

### 8.6. Effects on whom or on what?

Government intervention has to be justified by objectives which cannot be achieved without it. These objectives refer to phenomena which are deemed unsatisfactory by politicians or the general population and deemed worthwhile to pursue (ideally following a needs analysis). Progress toward these sometimes conflicting objectives can be identified along various dimensions. First, progress occurs over time; any measurement of progress must be accompanied by the time or time span to which it corresponds. Second, progress has a quantity dimension – it involves an increase or a decrease of something (production, consumption, waste, housing, labour), and third, a quality dimension, i.e. an improvement of something (products, services, living conditions, the environment). Finally, to a considerable extent and often not clearly spelled out, the objective is or amounts to a redistribution of something: income, labour, housing, services etc.

Redistribution requires the definition of target groups: Who shall be the beneficiaries, who shall pay? In the case of rural development, there is a clear target region: rural areas are supposed to benefit. But can we neglect the effect of the redistribution of funds from urban to rural areas, or should we? Doing a partial analysis, i.e. looking just at the recipient side of an intervention, one must not claim to assess the effects of a programme on the national level. That can be accomplished only with a general equilibrium model that accounts for all sectors and regions of a nation or the world.

Do the effects at member state level add up at the EU level? A programme may be effective to attract tourists to rural areas of a member state. At the same time it will be effective to detract tourists from rural areas of another member state. At the EU level, its objective cannot be to shift tourists between member states, or is it? There, only the net effect counts as an addition to tourism in rural areas of the EU. Similarly, these tourists induce economic growth in their holiday destination but also a negative growth in the region of their residence or in the region which they might have visited otherwise. The same argument holds for a measure which induces consumers to buy local quality food; it confers a negative benefit on those who produce less local quality food. Can we neglect effects on the world level? If measures have an effect on production, quality and consumption, these effects will spill over into the rest of the world and feed back into the EU.

Lesson 6: An effect of a measure depends on many dimensions: The time, the domain for which it is estimated (target and other regions, target and other groups including providers of funds, sectors, markets and the economy overall) and the assumptions used in its estimation. The dimensions which an estimate of effects takes into account and those which it does not should be spelled out clearly in order to allow for its correct interpretation.

## 8.7. Conclusions

The foregoing analysis demonstrated that effects cannot be observed and measured but have to be estimated, in particular when market conditions are changing as they did between 2007 and 2009 for which the mid-term evaluations of European RDPs was to be presented in 2010. Since the CMEF is ambiguous in its definition, data provided as "result indicators" in the mid-term evaluations of the RDPs are likely to reflect changes rather than effects of the programme and its measures.

In order to estimate effects, a theoretical concept or model is required which assumes certain cause-effect-relationships, presumably in accordance with the intervention logic proposed by the CMEF for each measure but encompassing also other major factors which cause changes in the variables of interest. Assumptions about the types of relationships and the size of parameters used for the estimation of effects influence the outcomes considerably. In order to improve the reliability of the estimates of effects, these assumptions should be substantiated or

replaced with evidence obtained using appropriate statistical (econometric) methods and applied to data that has been observed in the relevant settings over time.

The assessment of effects of government intervention should be based on net effects. However, estimates of net effects and benefit-cost-coefficients derived from them can take a wide range of values, depending not only on assumed or estimated relationships and parameters but also on deadweight, substitution and multiplier effects. These are even more difficult to quantify accurately because their size depends crucially on the profitability of an investment in the marketplace. Market-oriented investments are driven by market forces in the form of expected returns from the production and sale of marketable goods. Effect-oriented investments are driven by government objectives. But the sizes of net effects in respect of these objectives still depend very much on the expected returns (profitability) in the market.

Positive effects on employment of a measure do not easily pass as beneficial from an economic point of view because they reflect additional effort or pains taken to generate the desired outcomes. Increased labour input must thus be compensated by commensurate wages or, in the case of self-employed labour, profit, to be financed by additional GVA. The appropriate level to compensate labour input (wage rate) is an issue. An increase in employment can reduce unemployment and save unemployment compensatory payments. It also generates income taxes for the public sector. These can be accounted for by using net wages for the valuation of labour costs and other benefits (i.e. returns to capital). The motivation for the high regard in which politicians hold bringing more people into the work force may be the desire to improve income distribution, inclusion into society and the self-esteem of the unemployed or to facilitate structural change. Agricultural policy is quite successful in respect of generating employment in the agricultural sector, particularly through agri-environmental measures and the compensatory allowance for disadvantaged areas [Neuwirth et al. 2009].

An increase in GVA normally comes about by an increase in the volume of production; it can also result from an increase in the quality of goods and a decrease in variable costs. The positive effect of a measure on production (supply) can be considerable; it causes c. p. decreases in the world market prices which benefit consumers worldwide and harm producers. The CMEF neglects these market effects which can be substantial at the EU and the global level. It also does not distinguish between national, EU level and global effects.

Public expenditures are expected to generate higher benefit-cost-ratios than private investments because they have to recoup the costs of collection and distribution of the taxes which finance them. The justification of public expenditures rests on the objective to produce larger quantities or higher qualities of public goods and services that are not produced under free market conditions by the private sector at volumes which are desirable economically. Investments with the aim to produce private goods are not something a government should pursue, except as a means to achieve progress in the provision of public goods, e.g. a more equal dis-

tribution of incomes. In addition to spending "public money for public goods", government interventions are justified if they correct market and policy failures.

Of the seven impact indicators of the CMEF, three refer to private (marketable) goods (GVA overall and agriculture, labour productivity) and four to public goods. This reflects the fact that private goods are easier to measure and communicate. But growth in the supply of private goods is not necessarily beneficial because its positive effects can be cancelled out by pollution, loss of natural resources, bad labour conditions etc. Nonetheless, in the political debate and EU regulations, growth appears to be the foremost objective of society, e.g. the Europe 2020 strategy calls for "smart sustainable and inclusive growth". Since the CAP is subordinate to this strategy, as shown in the intervention logic of the CAP for the programming period 2014-2020 [European Commission 2012]), it is expected to contribute to growth of GDP (i.e. GVA).

In contrast to this view, economists hold that the task of the government is to make sure that public concerns are respected and public desires fulfilled while the private sector tends to the demand for private (tradable) goods. If that view is correct it will be necessary to reflect more thoroughly on the goals government interventions which may reflect a hidden agenda behind the more obvious goals which they pretend to pursue. Economic analyses can help to inform this debate which cannot be circumscribed by evaluation guidelines for CAP policies. The evaluation of current RDPs refers to private goods and environmental public goods but is short on indicators concerning the quality of life of inhabitants. Research to address this lack of knowledge would be welcome and is being conducted [see e.g. http://wikiprogress.org/index.php/Main_Page, Quendler 2011].

Lesson 7: Government intervention is justified by the promotion of public goods and the correction of market failures. If the government intervenes in markets of private goods and services, there should be some public interest connected to this intervention. In fact, the public concerns which trigger an intervention should be spelled out in the first place for justification.

**References**


1. BMLFUW, (2010), Evaluierungsbericht 2010 – Halbzeitbewertung des Österreichischen Programms für die Entwicklung des ländlichen Raums, Wien, http://www.lebensministerium.at.
2. Breuss F., (2006), Austria and Switzerland - experiences with and without EU membership, Austrian Economic Quarterly, Wien pp. 13-39.
3. Breuss F., (2002), Benefits and dangers of EU enlargement, Empirica 29/3, Wien pp. 245-274.
4. Dantler, M., Kirchweger, S., Eder, M., Kantelhardt, J., (2010), Analyse der Investitionsförderung für landwirtschaftliche Betriebe in Österreich, Universität für Bodenkultur, Department für Wirtschafts- und Sozialwissenschaften, Institut für Agrar- und Forstökonomie, Wien. http://www.gruenerbericht.at.

5. European Commission, (2012), Technical paper for the joint CC and Ex-Co workshop on the 15th of March, Draft intervention logic for rural development post-2013, and possible associated indicators. Brussels, http://ec.europa.eu/agriculture/cap-post-2013.
6. European Evaluation Network for Rural Development, Evaluation of RDPs 2007-2013, Evaluation Guidelines, Brussels, http://enrd.ec.europa.eu/.
7. Ortner K. M., Neuwirth J., Wagner K., (2009), Economic effects of the Common Agricultural Policy on employment in Austria, Rural areas and development no 7, ERDN Conference vom 29 – 30 October 2009, Debrecen, http://erdn.ierigz.waw.pl., Presentation: http://erdn.ierigz.waw.pl, pp. 213-223. 7.
8. Ortner K. M., (2011), Evaluation of investment support in the Austrian RDP: comparison of results, 9th ERDN conference, 8-9 September 2011, Serbia. Presentation: http://erdn.ierigz.waw.pl.
9. Quendler E., (2011), Integrativer Ansatz für nachhaltiges, gutes Leben - ein Konzept, Agrarpolitischer Arbeitsbehelf Nr. 38, Bundesanstalt für Agrarwirtschaft, Wien, 2011. http://www.awi.bmlfuw.gv.at.
10. Tyler P., Warnock C., Brennan A., (2009), Research to improve the assessment of additionality. Department for Business Innovation & Skills. BIS Occasional Paper No. 1. London. http://www.bis.gov.uk.

M. Sc. Gordana Roković,
University Banjaluka, Agriculture Faculty, Bosnia and Herzegovina,

# 9. Impact of the CAP reform to the pre-accession countries – example of Bosnia and Herzegovina

**Abstract**

In the process of EU accession candidate and potential candidate countries are expected to align its policy of agriculture and rural development under the EU CAP. For this purpose, EU is providing so called pre-accession Instruments to facilitate the countries in transition process of adaptation. Support structure that will be financed from IPA funds is planned for the seven-year period as well as other EU budget transfers, including the CAP. It is expected that IPA will follow the EU CAP reform for the period after 2013. However, although the framework of the EU CAP reform and future policy directions is already known, the IPA after 2013 consultations have not yet been completed and the direction of future reforms is still unknown. In this situation, reforms in the candidate and potential candidate countries which are going in the direction of adapting to the current CAP can result in being without meaning if major reform is on the way. This paper will explore the possible consequences of the EU CAP reforms in the field of rural development on the future support for the candidate countries within IPA support scheme, using the case study of Bosnia and Herzegovina.

## 9.1. Introduction

Agriculture and rural development in the Western Balkans are facing with a dual challenge. The first is in providing food security and providing the main source of income for the majority of rural population in these countries. The second is to get closer to the EU standards in order to increase the competitiveness of their production on the open market and to fulfil requirements for agriculture payments within Instruments for pre-accession – IPA. Although these two challenges should be complementary and serve the same purpose, it is not always the case, and the reason why lays in different natural, economic and social conditions that characterize the sector of agriculture and rural development in these countries in comparison to the situation in the European Union.

BiH is one of the countries on the path to EU membership, which has signed the Stabilization and Association Agreement in 2008 and has since than taken over the obligation to harmonize their policies, economics, market and other segments, according to EU standards. European Commission Progress Report on Bosnia and Herzegovina – in a part dealing with agriculture and rural development stated that a little progress in terms of harmonization with the European standards in this area was made [European Commission 2011]. Furthermore the Report states that: the rural development policy coordination remained

weak, that no progress was made in terms of preparations for IPARD program, that the agreement on the institutional structures for decentralised payment system is outstanding, that the Office for Payment Harmonisation was established, but the Office is not yet operational, that the policy for providing subsidies is not aligned with the EU agricultural policy type of measures, and that the scope of support to rural development measures is at the rather low level. Broader framework of consultations conducted by the EC confirms the difficult situation of adaptation of EU standards in other beneficiary countries:

- Beneficiary countries lag considerably behind the EU, the gap to bridge is very wide;
- Insufficient knowledge, experience, institutional capacities to develop;
- Limited funds available to meet development needs;
- Clear need for external assistance.

In such a situation IPA Instrument seems to be a tool that should serve to improve the situation.

### 9.2. Results and discussion

IPA support can be achieved in a well-known five components: I - Institutional Building, II - Cross-border Cooperation, III - Regional development, IV - Human resource development, V - Rural Development. BiH as a potential candidate country currently has the right to use only the first two components. When it comes to agriculture and rural development – the fifth IPA component (IPARD) is specifically designed to help the sector to reach EU standards in this area, although first two components can also be used for institutional development in agriculture and for cross-border cooperation in the area of improving competitiveness in the rural area. For Bosnia and Herzegovina to be eligible for component V of IPA funds, the country must inter alia establish the so called Decentralized Management of IPARD funds.

Funds from this component can be used for measures selected by the candidate countries which are offered under three strategic objectives: improvement of market efficiency (Axis I), preparatory activities for agro-environmental measures and support to local development initiatives (Axis II), and promotion and development of rural economy (Axis III).

When analysing the objectives and priorities of agricultural policies we found that BiH has aligned their priorities with the currently applicable priorities at EU level, such as improving competitiveness, preservation of natural resources that are in function of agriculture, and improving quality of life in rural areas through improvement of infrastructure, availability of services and diversification of income sources (Table 1). In terms of analysis of the level of support that is available in national budgets of WB and EU countries, situation differs among countries (Figure 2).

Table 1. Is there a correlation between IPARD measures and national support scheme for rural development?

| IPA | Addressed within national supporting scheme |
|---|---|
| 1. Improving market efficiency and implementation of Community standards (Priority Axis 1); | |
| *o Investments in agricultural holdings to restructure and to upgrade to Community standards,* | Yes |
| *o Support for the setting-up of producer groups,* | Yes |
| *o Investments in the processing and marketing of agriculture and fishery products to restructure those activities and to upgrade them to Community standards.* | Yes |
| 2. Preparatory actions for implementation of the agri-environmental measures and local rural development strategies (Priority Axis 2); | |
| *o Actions to improve the environment and countryside,* | Partly |
| *o Preparation and implementation of local rural development strategies.* | Partly |
| 3. Development of rural economy (Priority Axis 3); | |
| *o Improvement and development of rural infrastructure,* | Yes |
| *o Diversification and development of rural economic activities,* | Yes |
| *o Improvement of training.* | No |
| 4. Technical assistance. | No |

In the process of harmonization and reform of the CAP, the EC has launched a process of on-line stakeholder consultation around the IPA post 2013. The most important reactions received can be summarized as follows [GHK 2011]:

- Good instrument for countries closer to accession but less optimal for some beneficiaries;
  - European standards could be too ambitious for some beneficiaries with more immediate competitiveness-related needs;
  - Mirroring of EU fund rules possibly premature in some countries;
- Improved strategic basis – but assistance still relatively broad, more focus needed;
  - Urge to spend the funds, not always financing the most important actions (but large projects with appropriate maturity);
  - Lack of appropriate underlying national strategies;
  - Lack of adequate beneficiary ownership and stakeholder participation;
- Limited focus on results, need to improve monitoring and evaluation;
- Beneficiaries are not necessarily fully equipped to manage the programme;
- Slow implementation and high administrative costs.

All of the above reasons are confirmed in the process of using IPA funds in BiH. When it comes to agriculture and rural development, the biggest stumbling block in the way of becoming eligible for the funds under component V of

IPARD for BiH is its decentralized organization. The fact is that BiH does not have a joint Ministry of Agriculture, there is no common agricultural policy and rural development, and that all policies conducted in this area are at the entity level (regions with a large autonomy). Coordination of the policy is trusted to the department of agriculture within the Ministry of Economic Relations and Foreign Trade at the state level. However, the EC advises the country to establish a unified management structure for all three regions at the state level. Thus, the establishment of decentralized implementation system in decentralized BiH became a process of centralization that for the entities that have a high degree of autonomy. This situation slowed down the reform process and lead to a situation that BiH is the last in the region at the level of preparation for the use of IPARD.

In addition to the management of IPARD funds, it is necessary to take into consideration the impact of future CAP reform. This paper is tempting to review these implications by comparing current IPARD structure with the new set of priorities identified in the new rural development framework presented in the publication of EC 19.10.2011.

Table 2. Are new CAP priorities for rural development recognized in the current IPARD scheme?

| EU CAP priorities post 2013 | Addressed in current IPA framework |
|---|---|
| Fostering knowledge transfer and innovation in agriculture, forestry and rural areas; | No |
| Enhancing competitiveness of all types of agriculture and enhancing farm viability; | Yes |
| Promoting food chain organization and risk management in agriculture; | No |
| Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry; | No |
| Promoting resource efficiency and supporting the shift towards a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors; | Yes |
| Promoting social inclusion, poverty reduction and economic development in rural areas. | No |

**Fostering knowledge transfer and innovation in agriculture, forestry and rural areas**

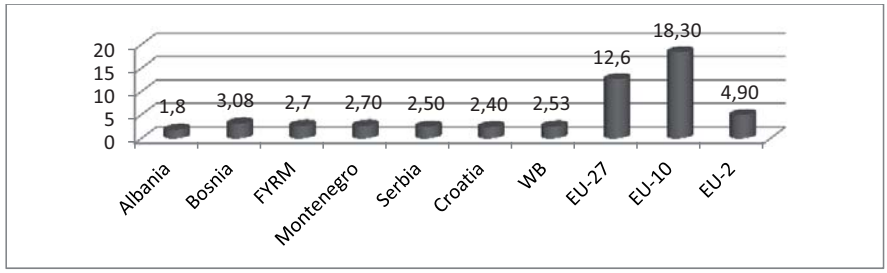
Transfer of knowledge and new technology is completely lacking in the existing structure of IPA support. Establishment of advisory services in BiH is, in truth, supported by the EU through the PHARE project, and strengthening of advisory institutions is addressed in the institutional development project financed by the World Bank. However, the transfer of new knowledge and technologies into practice, training, counselling employees, informing the user, remains outside the support of both national and international institutions. According to some research BiH currently has fewer than 70 extension consultants in relation to 500,000 households. According to other studies, 50% of rural households have never heard about extension service, do not know how to contact

them or do not feel the need for extension services. The links between research institutions, advisory services and the users are broken, are not supported by national funds and are taking place at sporadic and individual basis.

**Enhancing competitiveness of all types of agriculture and enhancing farm viability**

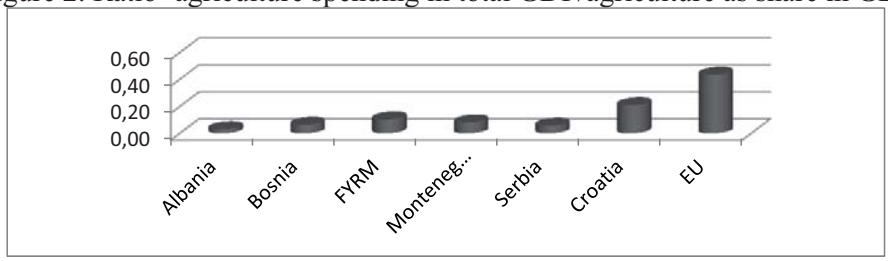
The competitiveness of BiH to the EU farmers' market is threatened on one side of the small average size farm in BiH (3.6 ha), fragmented parcels (9 parcels on average), and the height of financial incentives in the form of direct payments (among the lowest in the region).

Figure 1. The average farm size, Bosnia and other countries




*Source: [Rokvic et al. 2011].*

Figure 2. Ratio=agriculture spending in total GDP/agriculture as share in GDP




*Source: author's elaboration based on official data published by Ministries of Agriculture of relevant counties [Rokvic et al. 2011].*

Investment approach is one of the solutions for improving the competitiveness of the predominant number of small farms in BiH. Although this possibility is supported by national and IPA funds the access to investment opportunities of small farms is limited due to the inability of pre-financing. To solve this problem and allow the restructuring of agriculture in BiH small and medium-sized farms should be enabled easier access to investment opportunities.

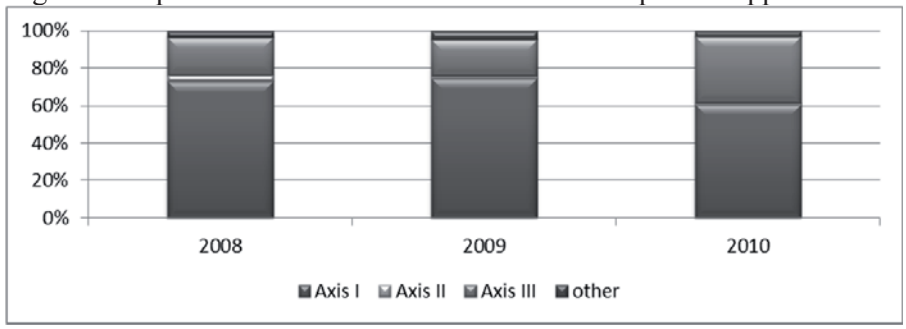
**Promoting food chain organization and risk management in agriculture**

This measure is not particularly addressed within the existing IPA regulations, nor is it supported by the current national system of support in BiH. Links between primary and secondary industries were broken during the war in Bosnia and were only partially able to establish through a reconstruction of processing capacities. The weak links in the chain are the producers' organization, a large number of intermediaries in the chain, unregulated market of agricultural products, unregulated partner's relationships, disordered market relations, fluctuations in market prices, and lack of competitiveness of domestic producers.

**Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry**

Although this type of support measures exist within the national support schemes and in the IPARD Programme, the amount of funds allocated for this type of measure is minor, and the current type of support in BiH is related only to organic production and sporadic conservation of genetic resources.

Figure 3. Importance of different axis in rural development support in BiH




**Promoting resource efficiency and supporting the shift towards a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors**

In the framework of national legislation at the state level there is no support to research on the impact of agriculture on the environment, nor special support measures to limit this effect. As already stated the candidate countries and potential candidates do not reserve significant resources under the IPARD program to address a problem of this type.

**Promoting social inclusion, poverty reduction and economic development in rural areas**

The problem of social inclusion is not associated with investments in infrastructure, providing access to services in rural areas or in the reconstruction of physical infrastructure. Issues of women in rural areas, elderly, youth and other vulnerable groups are not treated specially in the national strategic documents related to rural development and are not specifically supported in systems

support. In the system of the IPARD support measures there is no requirement to comply with social inclusion in investing in infrastructure.

### 9.3. Conclusion

Finally, we conclude that IPA funds represent a very important instrument for the candidate countries and potential candidates to reach EU standards in the field of agriculture and rural development. To achieve the structural reforms needed for countries such as Bosnia and Herzegovina, EU support should:

- achieve better coordination of national strategic documents and IPARD support;
- reform the structure of the IPARD support in relation to the new priorities of the EU CAP;
- accelerate the process of building capacity in the direction of using EU funds by reducing administrative requirements and acceptance of decentralized governance structures in BiH;
- achieving a better relationship between the individual components of the IPA;
- providing pre-financing in order to facilitate access to investment funds for beneficiaries in rural areas of BiH.

### References


1. Agency for Statistics of Bosnia and Herzegovina, (2010), Bosnia and Herzegovina in Figures.
2. European Commission (Eurostat and Agriculture and Rural Development DG), FAO and UNSO, http://ec.europa.eu/agriculture/agrista.
3. European Commission, (2006), Study on the state of agriculture in five applicant countries, Bosnia and Herzegovina-Country Report.
4. European Commission, (2011), Progress Report on Bosnia and Herzegovina, p. 40.
5. GHK, (2011), Technopolis group, Evaluation to support the preparation of pre-accession financial instruments beyond 2013, Stakeholder meeting, Zagreb, 10 May 2011.
6. Ministry of Foreign Trade and Economic Relations of BiH, (2009), Policy analysis in agriculture, food and rural development of Bosnia and Herzegovina.
7. Rokvic et al., (2011), Agriculture policy reforms in Western Balkans in relation to the EU, Agriculture Economics, vol. LVIII, SI-1(1-368), Belgrade.

Prof. dr hab. Jacek Kulawik, Dr Barbara Wieliczko
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 10. Financial considerations of competitiveness in agriculture

## 10.1. Introduction

Competitiveness is the ability of any economic system to function (last) effectively and develop under the conditions of the existing competition/competitiveness [Brandes 2000]. This is the process by which the system acquires the attributes of being competitive. This category is relative and gradable, but it also represents a certain status.

In the face of the growing globalisation of agricultural markets, increasing the competitiveness of the agricultural sector in Poland and across the European Union becomes an important task. The first step in this direction should be to accurately identify the problem of competitiveness in agriculture and the advantages of competitive European agriculture. At this point we should remember that financial considerations also have an impact on the competitive advantages of agriculture and those of the Member States.

The aim of this work is to present the most important theoretical models of competitive advantages in agriculture. Their analysis also allowed us to formulate conclusions on the competitiveness of the agriculture in the EU under the new budgetary perspective for 2014-2020.

## 10.2. Competitiveness of agriculture – key patterns

Competitiveness is a very complex phenomenon. It includes a number of elements which are mutually interrelated and create feedback, both positive and negative. One of the key categories here is the competitive potential (potential for competitiveness, ability to be competitive, *ex ante* potential competitiveness). This represents a value of a set of resources, skills, competences and relationships forming the basis for building a competitive advantage [Obłój 2007, Urbanowska-Sojkin et al. 2007, Urbanowska-Sojkin 2011].

The next category is the competition/competitiveness strategy. Generally speaking, it is a set of activities oriented at creating and possibly expanding, or at least maintaining an achieved competitive advantage, by exploiting the potential available to organisations and instruments used for competing [Gorynia, Łaźniewska 2010]. Instruments used for competing are competitive strategy components expected to attract the client/customer with a specific offer or allow us to acquire resources in the most favourable conditions [Daszkiewicz 2008]. These instruments

can be active when their purpose is to build and/or to increase a competitive advantage, or passive – if we focus on its protection and deterring competitors.

The next element is the competitive position (realised competitiveness (*ex post*)), i.e. the result/effect of the whole competing process, and thus the relative position of an enterprise in terms of economic and non-economic benefits provided to key stakeholders, with a primary focus on the clients/customers [Pawlak, Poczta 2011, Pierścionek 2007]. This is also the result of the use of competitive advantages compared to other offers.

The last of the key categories is the competitive advantage, which is the feature or set of features giving a market offer its unique value and more value for money in the eyes of customers/clients. This is also a relative and usually a volatile category [Polowczyk 2003]. Having a competitive advantage is no more than making something better than others or doing something that others cannot do. Its more synthetic example is achieving above-average results and, in particular, creating and appropriating economic rent.

According to E.M. Jagiełło [2005], quite generally and formally, competitive position (CP) can be described as a function of the competitive advantages of $P_i$, where $i = 1, 2, ..., m$:

$$CP = f(P_1, P_2, ..., P_m)$$

This formula opens the way to more formal analyses of competitiveness determinants, for example, using factor analysis or infinitesimal calculus.

The current state of knowledge of the nature, sources and relevance of competitive advantages for *ex ante* and *ex post* competitiveness evaluations can be consolidated in four points:

- A competitive advantage is determined by many elements; it simply has multiple sources.
- What counts more is a unique combination of strengths of the enterprise rather than a clear prevalence of one of its components.
- Competitive advantages are complementary to each other, rather than mutually exclusive.
- Sometimes it is very difficult to establish an unambiguous source of a competitive advantage. This is referred to as lack of competition and base. This is a very interesting situation, because it makes it more difficult for competitors to determine the sources of the company's success and to imitate it. It is therefore worthwhile to aim at such non-transparency, bearing in mind the negative implications of asymmetry of information for seeking capital on the financial market.

## 10.3. Competitive advantages in agriculture – proposal for the EU

A literature review helps us to distinguish four types of competitive advantages, which are: Effectiveness/productivity; Basing on innovation and entrepreneurship; Referring to corporate social responsibility (CSR); Basing on the concept of creating shared, economic and social value (CSV- Creating Shared Value). Below you will find a closer description of the above advantages.

**1. Effectiveness/productivity**

- this one comes from the positioning school in strategic management of organisations. It combines cost advantages/leadership and a differentiation strategy (being different) by M. Porter, also known as base advantages [Czupiał 2005, Misala 2011].
- this is the most economically fundamental competitive advantage, because it gives the company the freedom to make strategic choices, which competitors do not have.

**2. Basing on innovation and entrepreneurship**

This advantage is treated as separate, although we are aware that it can be construed as one of the determinants of achieving an effectiveness advantage and the two others. In essence, it can be described as follows:

- a competitive advantage is build based on a unique incorporation of resources and skills into the key competences of the company. However, the resources and skills must be: valuable, rare, irreplaceable and inimitable, and used effectively [von Alvensleben, Koester, Langbehn 2001].
- knowledge is a valuable resource to the organisation. It helps to invent, copy and implement innovation and innovative competing strategies. True, groundbreaking innovations are however rare. That is why for companies able to implement them, they are an opportunity to become exceptional.
- its entrepreneurs or "deviants" – as K. Obłój [2007] refers to them – have the special ability to capture the "fugitive" opportunities and chances as well as to implement and invent innovation. Entrepreneurship is impersonating a creative approach, capable of risk, ambitious and hard working. But entrepreneurship is also a process initiated and implemented by the entrepreneur based on creating and implementing wide-ranging innovations. Finally, entrepreneurship is about launching a project or/and its growth, which occurs through innovation, but respects the specified level of risk. Its source is Schumpeter's economic rent.

**3. Referring to corporate social responsibility (CSR)**

- in the newly emerging school of simple rules in strategic management of organisations, what is mentioned as one of the sources of recognising innovation is a return to the most traditional values, and thus a balance between

economic, social and environmental dimensions of economic activity [Krupski 2012, Obłój 2007].

- the existing empirical research results show that between enterprises which are actually CSR oriented and the traditional operators, statistically no significant differences exist in terms of effectiveness [Adamczyk 2011, Jedynak 2011, Marcinkowska 2010]. This means that adopting CSR is not equivalent to a "financial penalty". It may be even a distinct competitive advantage, as already described by L.S. Hart [Krupski 2012] in 1995.
- sustainable agriculture has been a priority of the EU for years and certainly will remain one as long as opportunities of financing such a model exist. As in other countries of the world this sustainability plays a much smaller role or is being neglected in general, the EU agriculture is placed in a disadvantaged competitive position (of course, when adopting a short term approach [Grote et al. 2001, Heissenhuber, Lippert 2000, Köhne 2001, , Langbehn 2000, von Witzke 2003]).

**4. Basing on the concept of creating a shared, economic and social value (CSV - Creating Shared Value)**

- this is a very fresh – one could even go as far as to say still "warm" - proposal of E. M. Porter and M. R. Kramer, presented at the beginning of 2011 in "*Harvard Business Review*" [Porter, Kramer 2011]. It is an attempt to overcome the weakness of CSR, and mainly a certain tension between financial and social performance and, to a lesser extent, also environmental performance. This is also an attempt to make more real and bring closer the CSR to the conditions of actual companies' operations. What is very important, CSV also refers to the external costs and effects of economic activities, and therefore penetrates in the market and organisations deeper than CSR.
- CSV seeks to find a balance between the objectives and values that are important for both the organisation and the society, while respecting appropriate efficiency of action and efficiency in the Pareto's sense and not sacrificing the essential meaning of key financial performance indicators and multiplying the shared, social and economic value.

Key elements of the CSV are as follows:

- the company must be well anchored locally,
- new products and markets need to be constantly created by very carefully comparing the needs, benefits and social costs,
- while redefining efficiency and productivity in the value chain, we need to use a variety of synergies, reduce energy consumption, use outsourcing, look after the local suppliers and develop micro-finance, which are particularly important for agriculture,

- we should create and promote the development of local clusters and be ready for cooperation, even with competitors, because this stimulates productivity and innovation. We must learn to share costs and benefits with partners. We must counteract poverty, because this creates demand and prevents degradation of the environment. The authorities should reasonably de-monopolise the economy, because this also stimulates the improvement of productivity,
- we should refer to the principle of positive feedback. By strengthening a cluster and therefore local demand we concentrate a value chain spatially. The new social needs, however, require appropriate adjustments in this chain. Finally, the new configuration of the chain creates demand for energy-efficient technologies, those to protect nature and those to make the life of workers easier [Meyer, Kirby 2012, Pindelski 2012, Polowczyk 2003].

In conclusion, CSV is an attempt to find an adequate response to the current crisis and criticism that it was serious distortions in the functioning of the enterprises that were one of its most important reasons. This is also a proposal to stop the negative impact of economic activities on the natural environment. We therefore have an attractive preconceived notion to improve capitalism as well. A proposal by Porter and Kramer [Porter, Kramer 2011] appears to be particularly attractive for the current phase of competition in the agri-food sector, in which primarily whole supply/demand chains compete, rather than individual companies/holdings and where vertical integration constantly progresses.

It is worth trying to assess the suitability of individual instruments of the common agricultural policy for the implementation of each of the highlighted competitive advantages. This assessment is presented in Table 1 and it shows that CAP instruments could potentially support the implementation of the greatest advantage based on creating shared value (CSV).

Table 1. The potential CAP impact after 2013 on competitive advantages in agriculture

| | Effectiveness/ productivity | Basing on innovation and entrepreneurship | Referring to corporate social responsibility (CSR) | Basing on the concept of creating a shared, economic and social value (CSV-*Creating Shared Value*) |
|---|---|---|---|---|
| **1st PILLAR** | | | | |
| Direct payments | - | - | - | - |
| "Greening" of direct payments | - | - | +/- | +/- |
| Intervention buying-in | - | - | +/- | +/- |
| Storage subsidy | - | - | +/- | +/- |
| Export refunds | - | - | - | - |
| **2nd PILLAR** | | | | |
| Modernisation of agricultural holdings | + | +/- | +/- | +/- |
| Support for the food industry | + | +/- | +/- | +/- |
| Setting up of young farmers | +/- | ? | ? | ? |
| LFA payments | - | - | + | +/- |
| Trainings | + | + | + | + |
| Agricultural consulting | + | + | +/- | +/- |
| Agricultural infrastructure | + | +/- | + | + |
| Early retirements | +/- | - | - | - |
| Agri-environmental programmes | - | - | + | + |
| Groups of producers of agricultural goods | + | + | + | + |
| Restoring agricultural production potential | + | +/- | + | + |
| Food quality systems | +/- | ? | ? | ? |
| Afforestation | - | - | +/- | +/- |
| Cooperation | + | + | +/- | + |
| Risk management | + | + | + | + |

Impact: "+" is positive; "-" negative; "+/-" – combined impact depending on the kind of ongoing projects; “?” difficult to say
Source: Author's own compilation.

## 10.4. Towards coopetition

The positioning school's limitations in strategic management of organisations, whose main representative is M. Porter with its base competitive advantages and the resources school, which sees their sources in the possession of critical resources, competences and skills, as well as observation of actually existing companies, beg us to ask the following question: is it possible to meaningfully connect the paradigm of competitiveness with the paradigm of cooperation? Some researchers and analysts believe that we can do that. Hence we have the term "coopetition" or "co-ompetition" as a combination of the words "competition" and "cooperation".

*Coopetition developed in particular within network links of organisations. Its essence is to strengthen own competitive position of the company by the ability to achieve greater economic rent, associated most often with an above-average profitability by a synthesis of two opposing categories: competition and cooperation. The success of coopetition is determined by:*

- creating fair and sustainable cooperation and competition based on the confidence of coopetitors and partners,
- lack of adequate and sufficient own or controlled resources to meet the new needs of customers,
- possession of absorbing capacity and transfer of new knowledge,
- identifying common objectives,
- precise division of powers, duties, responsibilities and powers of control,
- thorough preparation of the expected benefits balance,
- adequate identification of the nature and dynamics of market competition [Jankowska 2009, Krupski 2012, Macias 2008, Niemczyk 2011, Światowiec-Szczepańska 2012].

Syncretic rent as synthetic expression of coopetition and the impact of the network on its competitive advantage involves a combination of the four types of partial rents:

- internal (Ricardo and Schumpeter), resulting from sparse resources and the uniqueness of their use,
- relational (high focus on cooperation with low competing intensity). Its source is the so-called cooperative advantage, more often referred to as relational rent. This extraordinary joint gain based on a swapping relationship is impossible to achieve by each of the partners separately – its source are shared, specific investments. Its separation can, however, be the cause of a failed coopetition,
- due to network membership,

- for partners in the network. A weak position in the network may be followed by its significant leakage, which can substantially deplete the three types of rents above [Jankowska 2009, Rokita 2007, Światowiec-Szczepańska 2012].

Using insulation mechanisms against the leakage leads us in the same direction (depletion of rents). However, a strong organisation in the network may allow us to achieve a total rent equal to the sum of its four components.

Coopetition carries several risks:

- there is a possibility of undeserved rent takeover (opportunistic behaviour),
- transaction costs and the so-called switching costs are generated,
- a cooperant can become an even stronger competitor, because we may neglect our existing customers, which ultimately reduces our profitability,
- we can lose control over key resources,
- innovative and entrepreneurial attitudes may be weakened.

The pioneers of coopetition – Nalehoff and Brandenburger, Loebeck – back in the 1990s would still say that coopetition is "... rather about finding ways to enlarge the dough than fighting with competitors of the existing cake", so thanks to it we can pursue a win-win strategy [Światowiec-Szczepańska 2012]. However, economic life is much richer than that. Therefore, a reasonable coopetition strategy is one where we can:

- Primarily ensure innovation and entrepreneurship – achieve Schumpeter's rent by creating critical resources,
- Use critical resources as effectively as possible to achieve Ricardo rent,
- Judiciously engage in network systems, since by accessing non-possessed and uncontrolled specific resources we can achieve relational rent,
- Create insulating mechanisms before the leakage to other participants in the network, and therefore try to achieve the Chamberlin monopoly rent and improve own position within it.

The real problem is that the other coopetitors know these rules and may also use an identical strategy. Thus, for example, as much as 50-70% of strategic alliances (one of the forms of coopetition) fail [Rokita 2007].

## 10.5. Conclusions

Under the *ceteris paribus* assumption, the positive feedback mechanism causes improved financial potential to increase competitiveness and consolidate the competitive advantage related to it. A decrease in the said potential brings (through negative feedback) less competitiveness, and sometimes also leads to transforming a competitive advantage into a vulnerability. Furthermore, it may so happen that a competitive advantage, whose source is an above-average operating financial potential, transforms into a strategic trap. Indeed, routine behav-

iours lead to addiction paths, which restrict finding other new key competences, resources and opportunities.

Higher efficiency and productivity and innovation and entrepreneurship constitute the most durable, original, solid and timeless database of effective competition. This relationship becomes even more important in a period of economic difficulties and widespread budget problems. However, even then we must not forget that although multiplying equity in agricultural holdings, and hence its profitability, is one of the central measures of competitiveness, this may not be done at the expense of sufficient liquidity and financial stability. Also, we need to remember that the pursuit of higher efficiency, constant implementation of innovations and being more entrepreneurial forces all organisations to becoming more flexible and simple. At this point, tensions will appear again, which can be reduced only by constant improvement of implemented processes.

There is quite strong empirical evidence indicating that building a competitive advantage based on the concept of CSR, i.e. by reference to the model of sustainable and multifunctional agriculture, does not necessarily mean less financial and economic efficiency and productivity. In the long term, we can even expect simultaneous improvement of both of these advantages, and their complementarity. If so, the question arises whether or not higher sustainability of agriculture could not be achieved with less extensive subsidies. This would be a contribution of agriculture in alleviating budgetary tensions in most countries of the West.

Multiplying shared economic and social values, and thus a wider dissemination of the concept of the CSV, and coopetition are a very interesting proposal to overcome any unilateralities found in lively competitiveness, deformations caused by an excessive exposure of short-term financial efficiency and lack of real, wider use of the CSR model. Coopetition and CSV are, however, in the initial phase of their development. They also display certain idealism in the outlook on people, companies and national economies as a whole. Nonetheless, they represent interesting insights into the nature of operation of modern food chains. Their standardising value is unquestionable.

What should be considered worrying is that EU agriculture increasingly relies on subsidies. Also of concern is the fact that the increasing rate of subsidisation is often accompanied by a decline in financial and economic efficiency in the area of market-only transactions. Explaining this by saying that agriculture also creates positive external effects and delivers public goods, does not seem to be sufficient. What probably occurred was some kind of a deeper deformation and/or weakening of incentives to improve efficiency and competitiveness. We should not therefore be surprised that it is very difficult to identify among the CAP instruments those that would clearly and strongly lead to improving the four highlighted competitive advantages. These negative relationships cause concern, because:

- fiscal consolidation can also concern EU agriculture,

- macroeconomic conditionality will probably concern the 2nd pillar of the CAP, and it is probable that it will be extended to the 1st pillar as well,
- EU "agricultural budget" may need to compete with promoting growth in some EU countries, and investments in R&D, innovation and education,
- it is very difficult to introduce instruments which will also burden agri-food import to the Community from countries not complying with sustainability.

**References**


1. Adamczyk J., (2011), Działania normalizacyjne w zakresie społecznej odpowiedzialności przedsiębiorstw, Przegląd Organizacji no 12.
2. von Alvensleben R., Koester U., Langbehn C., (2001) Wettbewerbsfähigkeit und Unternehmertum in der Land- und Ernährungswirtschaft, Band 79, no. 2, Mai.
3. Brandes W., (2000), Wettbewerb in der Landwirtschaft aus Sicht der evolutorischen Ökonomik, „Agrarwirtchaft", Jg. 49, H. 8.
4. Czupiał J., (2005), Efektywność i inne elementy przewagi konkurencyjnej przedsiębiorstwa oraz jej źródła, [in:] Efektywność – rozważania nad istotą i pomiarem. Prace naukowe AE we Wrocławiu, Wrocław.
5. Grote U., Deblitz C., Stegmann S., (2001), Vollkosten, Umweltstandards und internationale Wettbewerbsfähigkeit – Fallstudienergebnisse für ausgewählte Agrarhandelsprodukte aus Brasilien, Deutschland und Indonesien, „Berichte über Landwirtschaft", Band 79, no. 2, März.
6. Heissenhuber A., Lippert Ch., (2000), Multifunktionalität und Wettbewerbsverzerrungen, Agrarwirtchaft, Jg. 49, H. 7.
7. Jagiełło M. E., (2005), Międzynarodowa konkurencyjność gospodarki Polski – wyniki analizy czynnikowej, Ekonomista no 1.
8. Jankowska B., (2009), Konkurencja czy kooperacja?, Ekonomista nr 1.
9. Jedynak P., (2011), Systemowe zarządzanie społeczną odpowiedzialnością organizacji, Przegląd Organizacjino 12.
10. Köhne M., (2001), Perspektiven der landwirtschaftlichen Betriebslehre, „Agrarwirtchaft", Jg. 50, H.4.
11. Gorynia M., Łaźniewska E. (red.), (2010), Kompendium wiedzy o konkurencyjności, Wydawnictwo Naukowe PWN, Warszawa.
12. Daszkiewicz N. (red.), (2008), Konkurencyjność. Poziom makro, mezo i mikro, Wydawnictwo Naukowe PWN, Warszawa.
13. Krupski R., (2012), Rozwój szkoły zasobów zarządzania strategicznego, Przegląd Organizacji no 4.
14. Langbehn C., (2000), Der landwirtschaftliche Unternehmer Anforderungen und Chancen bei zunehmendem Wettbewerb, Agrarwirtchaft, Jg. 49, H. 3/4.
15. Macias J., (2008), Nowe koncepcje przewagi konkurencyjnej współczesnych przedsiębiorstw, Przegląd Organizacji no 9.

16. Marcinkowska M., (2010), Społeczna odpowiedzialność przedsiębiorstw, Przegląd Organizacji no 12.
17. Meyer Ch., Kirby J., (2012), Runaway Capitalism, Harvard Business Review, January-February.
18. Misala J., (2011), Miedzynarodowa konkurencyjność gospodarki narodowej, Polskie Wydawnictwo Ekonomiczne, Warszawa.
19. Niemczyk J., (2011), Czy już nowy paradygmat, czyli o zmianach pola gry w zarządzaniu strategicznym, Przegląd Organizacji no 6,.
20. Obłój K., (2007), Strategia organizacji. W poszukiwaniu trwałej przewagi konkurencyjnej, Polskie Wydawnictwo Ekonomiczne, Warszawa.
21. Pawlak K., Poczta W., (2011), Międzynarodowy handel rolny. Teorie, konkurencyjność, scenariusze rozwoju, Polskie Wydawnictwo Ekonomiczne, Warszawa.
22. Pierścionek Z., (2007), Strategie konkurencji i rozwoju przedsiębiorstwa, Wydawnictwo Naukowe PWN, Warszawa.
23. Pindelski M., (2012), Etyka, CSR i CSV w orientacjach strategicznych, Przegląd Organizacji no 2.
24. Polowczyk J., (2011), Przewaga konkurencyjna – trwała czy tymczasowa?, Przegląd Organizacji no 6,.
25. Porter E. M., Kramer R. M., (2011), Creating Shared Value, Harvard Business Review, January-February.
26. Rokita J., (2007), Zarządzanie strategiczne. Tworzenie i utrzymywanie przewagi konkurencyjnej, Polskie Wydawnictwo Ekonomiczne, Warszawa.
27. Światowiec-Szczepańska J., (2012), Renta ekonomiczna a przewaga konkurencyjna przedsiębiorstwa, Ekonomista no 2.
28. Urbanowska-Sojkin E., Banaszyk P., Witczak H., (2007), Zarządzanie strategiczne przedsiębiorstwem, Polskie Wydawnictwo Ekonomiczne, Warszawa.
29. Urbanowska-Sojkin E. (red.), (2011), Podstawy wyborów strategicznych w przedsiębiorstwie, Polskie Wydawnictwo Ekonomiczne, Warszawa.
30. von Witzke H., (2003), Komparative Kostennachteile: Agrar – und Ernährungsgüterproduktion von Entwicklungsländern im internationalen Wettbewerb, Agrarwirtchaft, Jg. 52, H. 6.

Prof. dr hab. Wojciech Józwiak, Dr Grażyna Niewęgłowska, Konrad Jabłoński
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 11. Respect for the environment and animal welfare versus economic results in agriculture

## 11.1. Introduction

Polish society continues to be interested in the subsidies to farms offered since 2004 as part of the Common Agricultural Policy. This stems from one-sided perception of this phenomenon: beneficiaries pay attention to income on subsidies, while they overlook the related costs. Whereas, subsidies are, for instance, a form of remunerating farmers for specific services provided for environmental protection and other important goals.

Subsidies to farms provided in the European Union MSs did not come out of nowhere. In the 2nd half of the 20th century, pressure on plant production growth led to landscape depletion, biodiversity limitation, groundwater and surface water contamination, increase of soil erosion, etc. On the other hand, in animal production, animals have been provided with increasingly more artificial conditions, despite the fact that animals are not feed processing machines, but living beings with specific mentality and social life. There are also grounds to state that the pressure on agricultural production efficiency growth at the cost of the natural environment and animal welfare has started exerting unfavourable impact on the quality of products obtained. Therefore, for a dozen years or so, the European Union MSs have put additional emphasis on observance of the following standards in farms: the so-called good agricultural condition, respect for public health, animal welfare and environmental protection, etc. The standards are called the cross compliance to be observed by farmers – beneficiaries of direct payments, which leads to the increase of costs incurred.

Beneficiaries of states which acceded the Community on 1 May 2004 were and still are obliged to maintain agricultural land in good agricultural and environmental condition. Other scopes of cross compliance are regulated by Annex II to Council Regulation No 73/2009. They include: (A) identification and registration of animals as well as environmental protection issues, (B) public health, animal health, obligation to notify of certain diseases and plant health, as well as (C) animal welfare. In Poland, the requirements of area A have been in force since 2004, B – since 2011, and requirements of area C are to be implemented in 2013. Respective requirements are regulated by the *Act on payments under direct support schemes* of January 2007 and *Ordinance of the Minister of Agriculture and Rural Development on the number of points attributed to non-*

*compliance determined and percentage quantity of the decrease of direct payment, sugar payment or tomato payment* of 25 March 2009.

This study attempts to assess the costs of cross compliance implementation and their impact on outcomes measured by value added. The assessment covers Polish agriculture between 2008 and 2010 against the background of the period from 2001 to 2003 and, additionally, a forecast of the situation was produced for 2013.

## 11.2. Description of the method applied

Costs incurred by beneficiaries of direct payments in relation to the obligation to observe cross compliance are the starting point. Beneficiaries of payments in states which acceded the European Union in 2004 from the outset have been obliged to maintain land in good agricultural condition, and since 2009 they have been obliged to identify and register animals and meet the environmental protection requirements.

Ready numbers to characterise the impact of cross compliance implementation on income obtained in agriculture are non-existent, therefore the study refers to estimations prepared on the basis of a study [Niewęgłowska 2011]. Details of the estimation method are provided in that study. However, below a description of the scope and general rules of drawing up such estimations not specified in the study in question was provided solely.

Costs of observing good agricultural practices cover: periodic attestations of spraying machines and trainings related to their handling; purchases of containers and other equipment to store hazardous substances; cultivation of intercrops or fertilisation with animal manure, when the share of cereals in sowing exceeds the specified limit; cost of intercrops within areas at risk of erosion and depreciation costs of newly constructed silos for silage; as well as structures for the 4-month storage of animal faeces and/or manure.

Costs of animal identification and registration mainly include ear tags and related documentation.

Environmental protection in Natura 2000 areas involves the following additional costs: conservation of organic areas, cutting down fallow land and lost opportunities (opportunity costs). The latter relate to the necessity for beneficiaries to abandon the most intensive production lines and technologies. It is obviously necessary to observe the rules governing good agricultural practices and those in effect in areas at risk of excessive pollution caused by nitrates (Nitrate Vulnerable Zones – NVZ).

Beneficiaries of areas at risk of excessive pollution caused by nitrates (NVZ) incur additional costs of keeping appropriate documentation, drawing up fertilisation and plant protection plans as well as depreciation of structures to store animal faeces and/or manure for 6 months.

Meanwhile, costs related to respect for animal welfare cover: keeping appropriate documentation, labour related to partial keeping of animals on yards,

purchase of materials (mats and cow chains, boxes with yards for calves, new cages for poultry and farrowing crates for sows) and opportunity costs (alternative-use costs) resulting from the increase of surface area standards in buildings per animal, which resulted in the limitation of production volumes.

Own labour outlays related to keeping the documentation, driving animals to yards and back to buildings were assessed to reach circa 22 thousand fully employed persons. Their cost was calculated by assuming the average rate of hired worker remuneration in agriculture as the basis, and in large farms the average cost of hired worker remuneration in the national economy. The costs were calculated solely in months of peak demand for labour (from April to the end of November), which reflects the opportunity cost. Farms had to (or will have to until 2013) hire additional labour for that purposes or limit own labour outlays incurred to date for production.

The rule of opportunity cost was taken advantage of when assessing costs incurred by farms of beneficiaries when cutting down fallow land, applying treatment related to respect for organic areas, sowing intercrops in relation to preventing soil erosion and share of own labour of farmers in investment implementation and own materials, etc. The costs were calculated according to prices of the respective services.

Another remark refers to how the alternative costs borne by farms operating in the Natura 2000 areas were assessed. The costs were referred to only 18.5% of farms covered by those areas, because more detailed analysis showed that they differ only slightly from farms located outside the Natura network, and it is obvious that in Poland 18-19% of farms have competitive capacity or there is possibility of their achieving such capacity.

There is one more remark regarding the estimation of costs of cross compliance implementation, but it refers to the period of occurrence of outcomes of the respective projects it covers. Considerable part of costs of, e.g. ear tagging is borne at the time of performing this operation, yet it is not the case every time. Farms increasing the level of organic fertilization as part of good agricultural practice to at least the minimum level, may rely on favourable outcomes only in a year of drought in the vegetation period, while full outcomes (in the whole farm and not in one field) are noted only when all the fields are well-fertilised. To sum up, favourable outcomes of observing good agricultural practice will be noted only after several years. Specific delay between costs and their outcomes is also noted in animal production. Therefore, the described costs calculation in the long term should be corrected by the increase in outcomes following from delivery of projects aimed at cross compliance implementation.

Method to determine the expected (forecast or projected) amount of gross value added in 2013 should also be explained.

Forecasting [Zeliaś 1997] is a rational, scientific prediction of future occurrences. The main characteristic making the forecasts (predictions) different than prophecies, fortune telling or speculations is objective knowledge of cur-

rent progress of the phenomenon in question and of current state of the system [Zeliaś et al. 2003]. Thus, projections are used to predict future phenomena but in a more general sense than forecasting. It is a simplified transfer of the past image to the future [Stańko 1999].

Forecasts (predictions) and projections provide information on the possible future changes, which allows for directing attention to measures to meet the positive variant of events or to measures excluding the unfavourable variant.

Accuracy of predicting the future is determined, *inter alia*, by the time limit. In general, the longer the time, the more probability of occurrence of the predicted state decreases. On the other hand, reverse situation is noted for the depth of projection. The longer the period of observation of a given phenomenon in the future, the accuracy of forecast should be higher [Stańko 1999].

The selection of future forecasting method is most often determined by practical considerations – availability and quality of data regarding the past, possibility to prepare the forecast or projection quickly and easiness to interpret results [Sobczak 2008].

Prediction of economic phenomena uses, above all, econometric methods. Prediction with such methods involves extrapolations of regularities noted in the past into the future. This process requires knowledge about the values of explanatory variables in the forecasting period. Simultaneously, structural relations described by the model are assumed to be stable in time and extrapolations of regularities outside the statistical sample are allowed [Nowak 2009].

Further part of the chapter presents how to transfer the results of agriculture in Poland between 1993 and 2010 onto the period from 2011 to 2014. In this case it will be more accurate to use the projection term, rather than forecast, for the reason of simplified approach to analysis of phenomena in question.

Results of the whole agriculture in Poland were the starting point. Analysis of results took into account values of plant, animal and other production types, as well as production costs. Gross value added, calculated as difference of incomes without subsidies and costs, was assumed the basic result category to assess the outcomes generated. In addition, incomes and costs were divided into categories, depending on the type of production and costs. Harvest, product prices and area of cultivation models were used to calculate values of the respective categories in plant production, while for animal production: models of animal unit productivity, main product prices and size of production or livestock. Meanwhile, models of prices of the respective production means and outlays were used to describe cost items.

Data used related to subsequent years and originated from public statistics studies (CSO). Unfortunately, collection of all those useful data was impossible for various reasons. For example, information on prices and harvest of vegetables and fruit were lacking, therefore the tendencies in such cases were described only by the change of area of cultivation. Overall items, e.g. „other cereals" were de-

scribed by means of either a specific type of production (here: triticale) or any of the aggregated indicators, e.g. average prices of agricultural products.

Construction of models for the selected time series describing the respective categories was a subsequent step of projection preparation in order to obtain projections of their future value. Selection of analytical form of tendency function f(t), where t means time, forms the basis for construction of a classical growing tendency model. Five forms of this function were assessed each time: linear, quadratic degree polynomial, exponential, power and logarithmic, and model parameters were estimated by least squares method. Subsequently, the best function was selected according to specified criteria [Stańko 1999].

Theoretical values of dependent variable were calculated for each model, together with projected values for the projection range period, to select one model for further works. Coefficient of determination $R^2$ was used as the main selection criterion. The coefficient assumes values from 0 to 1 and informs of the level to which the model produced explains variability of phenomenon in question.

Due to data specificity the square model often turned out to be the most important coefficient of determination, yet forecasts obtained with this coefficient were not always reliable. Therefore, in several cases mechanical selection of a model with the highest $R^2$ was abandoned and it based on expert knowledge.

In the case of certain categories, models ordering the time series demonstrated small coefficient of determination. It was assumed that $R^2$ should be higher than 0.36 in order to recognise the model sufficient for further analyses. When the coefficient was minimally smaller, significance of function parameters for the respective models was verified by applying the t-*Student* test. Value of the level of significance of this test, set at 0.05, was then compared with the *p-value* indicator. The indicator is to be recognised as probability of obtaining the size of parameter based on estimation, if, in reality, it equals zero. Thus, when the size of *p-value* indicator was smaller than the critical value, a given model was considered in further arrangements. Otherwise, the model was abandoned. If the situation applied to all models of a given category, it was abandoned at further stages. It took place mainly in the case of harvest. In such cases it was assumed that average harvest will not change, which may obviously be true when harvest is recognised as average calculated on the basis of several subsequent years, yet projection of harvest in a given target year may vary considerably from the actual harvest level.

The case of producing models for prices of means of production was similar. Time lines used for their production were in form of percentage changes as compared to the previous year. On that account, considering one year as a starting point and one year for the period subject to projection, was a wrong approach as over-estimated data of the base year affected the projections. Therefore, when e.g. the change of the price of a given means was great in the base year (differed considerably from the average pace of changes), the projection for the target year was over-estimated.

Average of several years was taken into account in order to avoid the base year distorting the results of projection. Two periods were taken into account: three- and five-year. It is important whether the number is to be expressed in average prices of a given period or in fixed prices of last year. Simulations assisted the decision. They allowed for producing projections of results for agriculture in the previous years, when implementation of results could be observed, models prepared for future data projections were used for this purpose.

The first two models based on the average of the period from 2004 to 2006 in average prices of that period and in fixed prices of 2006 in order to produce projection of the next 4 years on that basis. The results were compared to average actual results for: 2005-2007, 2006-2008, 2007-2009 and 2008-2010. Subsequent simulations were produced analogically, with base periods of 2005--2007 and 1999-2003. In the latter case, the simulated outcomes of projection obviously covered five-year and not three-year periods. Average percentage relative error was used to compare actual data with the results of simulation. The most important values of these errors for simulations carried out are presented in Table 1.

Table 1. Average percentage relative errors of estimation for selected projection models for 4 subsequent years.

| Specification | Projection models for base years: | | | | | |
|---|---|---|---|---|---|---|
| | 2004-2006, with prices: | | 2005-2007, with prices: | | 1999-2003, with prices: | |
| | average | fixed | average | fixed | average | fixed |
| Total income | 8.1 | 8.7 | 6.0 | 4.7 | 1.9 | 8.2 |
| Total costs | 8.9 | 10.3 | 7.5 | 5.3 | 1.1 | 5.6 |
| Gross value added | 6.5 | 5.0 | 3.2 | 10.1 | 6.0 | 24.7 |

*Source: own findings based on numerical data from Economic Accounts for Agriculture and selected models for the respective categories allowing for the calculation of value added of Polish agriculture calculated without direct payments.*

Observation of simulated projection results and projection errors found on that basis lead to several conclusions. Firstly, conversion of results into average numbers from three- or five-year periods fails to eliminate errors completely. Simulated projection of income on sugar beet cultivation provides good example. For solutions with base years of 2004-2006 and 2005-2007 the greatest average errors occur namely for this kind of production. It was the result of higher than average prices of sugar beet in 2004 and 2005, which resulted in overvalued projection. Indicators applied to over-estimate the data for years covered by projection resulted from values calculated on the basis of the selected trend function, and the averaged trend of seventeen years failed to cover greater price decreases or increases. It is namely the greatest flaw of this projection method. Secondly, application as the base of five-year average levelled the data by eliminating impact of untypical observations, yet the projection results simulated

were also strongly averaged. Furthermore, it was difficult to explicitly determine which approach to output data gives lesser errors as base data originated from various periods of time.

Finally, projection was based on a variant assuming the adoption of output base as average of three years calculated in average prices. Projection based on this approach is not, however, able to take into account changes which may occur in specific years. Therefore, projection errors may be serious if exceptionally high variation of phenomena taken into account occurs within its time limit. However, the result of simulation demonstrates that this approach best describes the line of changes of total production value, total costs and gross value added in the line of projection, though not always makes it possible to predict the size of these changes for a specific year.

## 11.3. Changes of value added of Polish agriculture in eleven years between 2000 and 2010 and projection of this value for 2013

Value added is a significant measure of achievements of agriculture. Calculations used to determine its change between 2008 and 2010 as compared to three years between 2001 and 2003, drawn up in current prices on the basis of Economic Accounts for Agriculture calculations and estimated cost outcomes of cross compliance implementation, are presented in table 2. On that basis it turned out that value added increased by 18.1%. However, in the period in question prices of goods and services purchased for consumption purposes increased, meaning that real value of this measure (calculated in fixed prices of 2009) remained on nearly the same level.

Table 2. Estimated value of production, costs and value added of Polish agriculture between 2001 and 2003 as well as 2008 and 2010 calculated in current prices.

| Specification | Average prices (PLN million) in: | |
|---|---|---|
| | 2001-2003 | 2008-2010 |
| Calculation in current prices: | | |
| - value of production | 52,166 | 73,055 |
| - indirect consumption | 32,835 | 50,275 |
| - depreciation | 5,016 | 5,874 |
| Value added | 14,315 | 16,906 |
| Value added in fixed prices (of 2009) | 16,892 | 16.906 |

*Source: Own calculations based on Economic Accounts for Agriculture and estimations based on study [Niewęgłowska 2011].*

This situation resulted from at least two factors. Biological and organisational progress in agriculture was one of them. It is demonstrated below on the example of one selected plant product and one product of animal origin.

Wheat is an important cultivation plant. Considerable increase of harvest of this plant was noted in the period of analysis, which reflects considerable biological progress. Average pace of increase of harvest was circa 83 kg per annum, while it is known that increase of harvest creates favourable conditions for decreasing production costs. Harvest increase by e.g. 5.4 dt (from 38.5 to 43.9 dt of 1 ha) leads to decrease of unit costs by 6.3% [Augustyńska-Grzymek 2008].

Wheat harvest is correlated positively with area of cultivation. In the case of wheat cultivations with average area of e.g. 2.3 ha, harvest is smaller by 12.3% than for cultivation within six times as great an area [Augustyńska-Grzymek 2008]. Most probably, in such cases greater attention is paid to biological progress.

Other phenomena also contributed to harvest growth and limitation of unit costs of wheat production. In the years in question, area of this cultivation was limited and limitation by about a half of the area of spring wheat cultivation was nearly the sole reason for this phenomenon. Most probably, spring wheat cultivation was abandoned by farms in which large unit production costs typical of small plantations overlapped with outcomes of climate change. Otherwise it is known that spring plants are strongly prone to harvest decrease during droughts, which have occurred increasingly often in vegetation periods.

Situation of wheat production is analogous to that of milk production. In the period in question, milk yield of cows increased in average yearly pace by circa 82 litres per cow. The indicator could be greater, considering that only about 60% of cows were inseminated with semen of bulls of foreign dairy species or domestic bulls with above-average functional characteristics. There are grounds to maintain that biological progress is implemented to a greater extent in greater herds.

Similarly to wheat, greater milk yield of cows is visible on larger farms, therefore here - those with greater herds. In herds of 2-5 cows, the average of 3,409 litres of milk are obtained from one cow, and 6,295 litres in herds of 35-75 cows. In addition, it turns out that unit costs in larger herds are smaller on average by 13.5% [Skarżyńska 2008].

Decrease of the number of cows contributed to a small extent to the increase of their milk yield. Decreasing tendency in livestock was being hindered up to 2003, and in the years to come stabilizations of livestock of this animal group were noted. However, elimination of small herds was continued, and the number of animals in larger herds was increasing. This was the reason behind a more or less zero balance of changes in livestock, yet it led to the improvement in average domestic milk yield of cows and simultaneously to the decrease of unit costs of milk production.

Therefore, biological and organisational progress had a positive impact on value added of domestic agriculture [Józwiak et al. 2012]. If not for the costs of cross compliance implementation, outcomes of Polish agriculture would be far more favourable.

Full annual costs of cross compliance implementation expressed in prices of 2009 are presented in table 3. In 2009, however, only some of these costs (circa 72%) were attributed to costs of direct consumption and depreciation, since (as mentioned above) the rules governing animal welfare will become fully effective in 2013.

Table 3. Estimation of full costs of cross compliance implementation in Polish agriculture calculated in prices of 2009 (PLN million)

| Scopes of cross compliance | Animal ear tags, etc. | Labour costs for: | | Purchase of services | Labour performed with one's own equipment and own materials | Materials purchased | Depreciation | Opportunity costs | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | documentation | yards maintenance | | | | | | |
| Good agricultural practices | - | - | - | 200 | 318 | 21 | 584 | - | 1,123 |
| Animal identification and registration | 266 | - | - | - | - | - | - | - | 266 |
| NVZ | - | 43 | - | 8 | - | - | 19 | - | 70 |
| Natura 2000 | - | - | - | 13 | - | - | - | 91 | 104 |
| Animal welfare | - | 43 | 459 | 21 | - | 192 | 135 | 340 | 1,190 |
| Total | 266 | 86 | 459 | 242 | 318 | 234 | 738 | 431 | 2,753 |

*Source: own calculations based on numerical data from other study [Niewęgłowska 2011].*

About 43% of costs of cross compliance implementation in 2009 related to implementation of rules governing the desired state of animal welfare. Costs of implementation of good agricultural practices, with the share of circa 41%, were in the second position. Other items of costs of cross compliance implementation were of little significance.

Projection produced in current prices for the period between 2012 and 2014 points to a considerable increase in value added as compared to the situation between 2008 and 2010, since it increased by PLN 3,067 million, i.e. by 18.1%. Real increase (calculated in prices of 2009) will, however, be far smaller and will amount to PLN 1,013 million. It will, therefore, increase by as little as 6%, thus will fall within the limits of error.

Table 4. Value of production, costs and value added of Polish agriculture between 2008 and 2010 and projection for 2012-2014

| Specification | Average numbers (PLN million) | |
|---|---|---|
| | 2008-2010 | Projection for 2012-2014 |
| Calculation in current prices: | | |
| - value of production | 73,055 | 81,686 |
| - direct consumption | 50,276 | 55,771 |
| - depreciation | 5,874 | 5,942 |
| Value added | 16,906 | 19,973 |
| Value added in fixed prices (of 2009) | 16,906 | 17,919 |

*Source: own calculations based on Economic Accounts for Agriculture, estimations based on study [Niewęgłowska 2011] and own projection of the situation.*

## 11.4. Final remarks

Use of direct payments by agricultural producers depends on cross compliance implementation covering the rules protecting the environment and food consumer health as well as rules of humanitarian approach to stock animals. Estimations produced demonstrate that the costs of cross compliance implementation are great enough to have serious negative impact on the value added generated by the whole agriculture. It was found on the basis of numbers obtained that this value calculated in real terms did not increase between 2001 and 2010, whereas projection for 2013 points to a several per cent increase, yet within the limits of error. It should be underlined that economic outcomes of observing cross compliance in the first period of their implementation are in form of costs, and only production volume increase, resulting from observance of its standards, will in subsequent years result in increase of economic outcomes of Polish agriculture in real terms.

A significant conclusion is that changes of economic outcomes obtained by agriculture between 2014 and 2020 will not depend only on amounts of direct payments, but gradually, within some years, positive outcomes of various forms of

progress in Polish agriculture will become visible as well as implementation of good agricultural practices and improvement of animal welfare on farms, which will be beneficiaries of the Common Agricultural Policy.

If verification of method and numbers, used for the purposes of estimation of outcomes of cross compliance implementation in relation to amounts, will confirm preliminary remarks of this study, additionally:

- Economic Accounts for Agriculture calculations will probably have to be verified, starting from 2005,
- it will be possible to conclude if underestimated costs of implementation of projects related to cross compliance in Polish agriculture were one of the reasons for the productivity of total amount of intermediate consumption and Polish agriculture depreciation greater in 2010 by 11% than the EU average.

The assessment presented in this study should be treated as preliminary and both the method of verifying the estimations and numerical data used require verification. However, the issue is important enough not to be abandoned.

**References**


1. Augustyńska-Grzymek I., (2009), Pszenica ozima, [in:] Wyniki ekonomiczne wybranych produktów rolniczych w 2008 roku, (red. A. Skarżyńska), IAFE-NRI, Warsaw.
2. Józwiak W., Kagan A., Mirkowska Z., (2012), Innowacje w polskich gospodarstwach rolnych, zakres ich wdrażania i znaczenie; article approved for publication in the quarterly Problems of Agricultural Economics, IAFE-NRI, typescript, Warsaw.
3. Niewęgłowska G., (2011), Koszty spełnienia wymogów wzajemnej zgodności w polskich gospodarstwach rolnych, IAFE-NRI, typescript, Warsaw.
4. Nowak E., (2009), Zaawansowana rachunkowość zarządcza, edition 2, Warsaw.
5. Skarżyńska A., (2008), Krowy mleczne, [in:] Wyniki ekonomiczne wybranych produktów rolniczych w 2006 roku, (ed. A. Skarżyńska), IAFE-NRI, Warsaw.
6. Sobczak M., (2009), Prognozowanie. Teoria, przykłady, zadania, edition 2, PWE, Warsaw.
7. Stańko S., (1999), Prognozowanie w rolnictwie, edition 2, SGGW, Warsaw.
8. Zeliaś A., (1997), Teoria prognozy, edition 3, PWE, Warsaw.
9. Zeliaś A., Pawełek b., Want S., (2003), Prognozowanie ekonomiczne. Teoria, przykłady, zadania, PWN, Warsaw.

Prof. Nelly Bencheva, dr Emilia Rancheva,
Agricultural University, Plovdiv, Bulgaria

# 12. Impact of EU CAP on the Bulgaria's agricultural sector development: expert and statistic approach

**Abstract**

The purpose of this study is to make an expert assessment of the impact of EU CAP on the development of the agricultural sector in Bulgaria, by analyzing and evaluating the effects of its application for solving basic problems of development of agricultural holdings.

To revealing the impact of CAP on the key issues of the development of the agricultural sector data from questionnaire survey is used. From all who took part in the survey, 64.4% are growers. Of these 30.8% are representatives of private organizations (agro-firms). The share of the private owners and family firms is 15.3%. The processors of agricultural raw materials are 8.5%. The experts from national, regional and municipal agricultural offices are 20%. The representatives of consulting and trade offices are 5.1%. From the total number of the participants in the survey 15.3% are operative managers, 18.6% are functional managers, 42.4% are executive managers. The share of the specialists – experts is 23.7%.

According to expert evaluation the most important benefits of the inclusion of Bulgaria in the EU and its participation in CAP are related with the direct payments per unit area, greater opportunities for marketing as well as innovations and modernizations of farms.

The expert evaluation shows that from the problems related with the implementation of the CAP, with priority significance are the economic crisis (poor market environment), 53.8% of the participants reckon that the causes are the low protection of the domestic market of agricultural products, 52.3%.

## 12.1. Introduction

The accession of the country to the EU in 2007 brought new challenges to the agricultural sector: CAP, common market, common regulations and standards, high competitive environment, expanded access of the Bulgarian manufacturers to the EU market, as well as penetration of new and contemporary technologies in the agricultural holdings. Its practical implementation, aims for achieving better market orientation of the agricultural holdings, receiving better incomes of the employees in the sector and improving the quality and standard of living.

Despite the stabilization of the macroeconomic environment after 2007 and the implementation of CAP for relieving and improving of the rural areas, the social and economic results of the agricultural sector are far from the desired

and potential capabilities for effective use of productive resources and achieving high quality and competitive products for the domestic and international market [Bencheva 2012].

The results and effects of EU CAP impact on the development of the agricultural sector in Bulgaria during those five years, since Bulgaria is a member of the union, are a subject of increased research interest [Koteva and e.t.c 2008, Bashev 2012]. However, there is still lack of extensive research, on the impact and the effects of CAP on the agricultural sector and more specifically on solving the problems of surviving and development of the agricultural holdings.

The aim of this study is to make an expert assessment of the impact of CAP in EU on the development of the agricultural sector in Bulgaria by analyzing and evaluating the effects of its application for solving the basic problems of development of agricultural holdings.

## 12.2. Methodology and data

To reveal the impact of CAP on the key issues of the development of agricultural sector data from questionnaire survey is used. The expert evaluation was made in the period January-April 2012. The research took place with representatives of the agricultural sector in Plovdiv, Pazardzhik and Haskovo region. From the selected on random principle accurate poll card presented 91% of the participants. 64.4% of the respondents are agricultural manufacturers. 30.8% of them are representatives of private companies (agro-firms). The share of sole traders and representatives of family farms is 15.3%. Processors of agricultural raw materials are 8.5%. The experts of the national, regional and municipal agricultural offices are 20%. The representatives of the consulting and trading firms are 5.1%. From the total number of participants in the inquiry 15.3% are operative managers, 18.6% are functional managers, 42.4% are executive managers. The share of specialists-experts is 23.7%.

The questionnaire includes three kinds of questions: closed (non option) beforehand created options; dichotomy and semi-option questions with presented opportunity of presenting your own opinion. In the poll card there is the opportunity to choose more than one answer to the question.

The coding of the presented options is undertaken with the help of dichotomy method. For every option there is separate variable, and as a consequence in this specific research the variables are eleven. When the respondent chooses one variable, he receives code „1", and if not, he receives code „0" and so forth for the rest of the variables. In this case there are eleven variables with code values of 1 and 0. The code values are randomly chosen but for every answer they should be one and the same.

When processing the empirical data of the undertaken research, for each one of the variables, there are no code meanings that are missing.

The statistic approach of the processing of the data and the interpretation of the gathered empiric information includes the designing of cross-tabs which allow comparative analysis of the two-dimensional (joint) distribution of the frequencies of two or more of the examined variables.

In the following research to formulate more specific conclusions for statistically significant relationship (or independence) between every two of the examined values, testing of the non-parametric hypothesis of independence is achieved on the basis of the $\chi^2$ Pearson test. The advantage of the test is that it can be applied regardless of the type of the probability distribution of the variables. In other words, it does not require additional testing of the random variable for the normal or other distribution, which can elaborate the analysis [Todorova, Rancheva 2011].

For the correct application of the test in the enquiry the required conditions are provided, as follows:

- Random selection of the observations;
- Expected count in every cell is at least 5 (in accordance of the requirement, in the cells of the cross-table they should be no more than 20%);
- The totals by rows and columns of the table are larger than 0;
- For analysis and evaluation as the main positive effects of the CAP for developing the agricultural holdings in the inquiry the following are included:
- The direct payments for unit area;
- Greater opportunities for marketing;
- Innovations and modernizations of the farms;
- Support for the young farmers;
- Supporting the semi-subsistence farming;
- Creating of organization between the manufacturers;
- Developing the economy of the rural areas;
- Adding value to the agricultural and forest products;
- Support for creating and developing micro companies;
- Agro ecological payments;
- Increasing the competitive power.

## 12.3. Results and discussion

The frequency distribution of the positive answers of the enquired, regarding the most positive advantages of the influence of CAP on the agricultural economies is presented in the table 1:

According to the table 1, for the relative frequencies there are two different values presented. When defining the first percentage value, the computed value is compared to the number of positive answers for the specific examined

value, while when defining the second one – with the total count of the reliable answers (from the participants in the enquiry).

Table 1. Frequency distribution of the positive answers of the experts regarding the advantages of the impact of CAP

| Variables | Positive answers: | | |
|---|---|---|---|
| | Count | % of count of positive answers for each variable | % of the total count of the reliable answers |
| 1 | 38 | 19.0% | 58.5% |
| 2 | 29 | 14.5% | 44.6% |
| 3 | 29 | 14.5% | 44.6% |
| 4 | 21 | 10.5% | 32.3% |
| 5 | 12 | 6.0% | 18.5% |
| 6 | 11 | 5.5% | 16.9% |
| 7 | 18 | 9.0% | 27.7% |
| 8 | 4 | 2.0% | 6.2% |
| 9 | 4 | 2.0% | 6.2% |
| 10 | 14 | 7.0% | 21.5% |
| 11 | 20 | 10.0% | 30.8% |
| Total: | 200 | 100.0% | 307.7% |

*Source: Own calculations on the base of experts' attitude.*

With the bigger practical usefulness and more information is the percentage value of the number of reliable answers, which allows to evaluate the real behavior of the enquired, who chose more than one answer.

According to the evaluation of the enquired experts the most important advantages of the inclusion of Bulgaria in the EU and its participation in CAP are related to the direct payments per unit area, the greater opportunities for market realization and the innovations and modernization of the farms.

The comparative analysis of the two (hypothetic) contrary categories that the experts provided shows that 58.5% gave positive answer regarding the direct payments. The backing for better opportunities of market realization and innovations and modernization of the farms is 44.6%. With the smallest relative share of the valid answers (6.2%) is the benefit of the inclusion of the country in EU and its participation in CAP regarding the additional value to the agricultural and forest products and the backing for development and creation of micro-enterprises.

The cross-table reflecting the fundamental results of the valuation of the most important benefits from the participation of the country in EU and CAP is displayed in the table 2.

In the table 2, the frequencies for joint occurrence of the coded values for the two variables are reflected – the direct payments per unit area and the innovations and modernizations of the farms. The results show that positive answer for both variables is given by 21.5% of the experts.

Table 2. Cross-table of the fundamental results of the evaluation of the positives of CAP

| | | | Variable No. 3 | | Total |
|---|---|---|---|---|---|
| | | | 0 | 1 | |
| Variable No. 1 | 0 | Reliable answers total | 12 | 15 | 27 |
| | | Expected counts | 15.0 | 12.0 | 27.0 |
| | | % for variable No. 1 | 44.4% | 55.6% | |
| | | % for variable No. 3 | 33.3% | 51.7% | |
| | | % of the total count | 18.5% | 23.1% | 41.5% |
| | | Standardized residuals | -0.8 | 0.9 | |
| | 1 | Reliable answers total | 24 | 14 | 38 |
| | | Expected counts | 21.0 | 17.0 | 38.0 |
| | | % for variable No. 1 | 63.2% | 36.8% | |
| | | % for variable No. 3 | 66.7% | 48.3% | |
| | | % of the total count | 36.9% | 21.5% | 58.5% |
| | | Standardized residuals | 0.6 | -0.7 | |
| Total: | Count: | | 36 | 29 | 65 |
| | Expected counts | | 36.0 | 29.0 | 65.0 |
| | % of the total count | | 55.4% | 44.6% | 100.0% |

*Source: Own calculations on the base of experts' attitude.*

As it can be seen from the provided data, in table 2 there are no standardized residuals with values exceeding 1.65, which assumes independence of the two examined variables. The negative value of the standardized residuals is an indicator that shows that the expected counts of reliable answers are higher than the received.

With fundamental importance for the analysis in the presented cross-table is to test the hypothesis whether (or not) two variables – the direct payments unit area and the innovations and modernizations of the holdings, are related.

The computed value of $\chi^2$-statistic is 2.237. To conduct the $\chi^2$- test, we compare the computed value of the statistic with critical points of the $\chi^2$– distribution with degree of freedom: df= (r-1) (c-1), where: r- number of rows in the cross-table and c- number of columns. The critical point for 5% level of significance is equal to 3.84. Since the computed value of statistic does not exceed critical point, no reason to reject the null hypothesis, which means that the specific examined variables are independent. The observed significance level (p-value) is equal to 0.135 which exceeds the level of significance $\alpha$=0.05, which confirms the already formulated conclusion.

The contingency-table hypothesis test for a relationship (independence) between the variables: the direct payments for square unit and bigger opportunities for market realization, and also between the variables: broader opportunities for market realization and innovation and modernization of the economies, shows that in these cases the null hypothesis for independence of the variables has to be accepted.

For the first set of variables – the direct payments for square unit and bigger opportunities for market realization, the computed value of $\chi^2$-statistic is

equal to 1.073, with observed significance level, equal to 0.324 exceeds the level of significance $\alpha$=0.05. For the second set of variables – broader opportunities for market realization and opportunities for innovations and modernization of the economies, the value of the test statistic is equal to 0.001, with the observed significance level, equal to 0.975 exceeds the level of significance $\alpha$=0.05.

In this poll research the data is required for that how the experts view the problems associated with the application of CAP.

As most fundamental problems in the poll card are included:

- Small proportion of the direct payments per unit area;
- Small proportion of the national additional payments;
- Low protection of the internal market for the agricultural products;
- Support for young farmers;
- Difficult access to European programs;
- Lack of administrative capacity;
- EU hygiene requirements and standards;
- Economic crisis (poor business environment);
- High prices of forage, fuels, manure, chemicals etc;
- Lack of processing companies;
- Insufficient working force;
- Difficult access to credits

The frequency distribution of the positive answers of the enquired respondents regarding the most significant problems in result of the application of CAP, is presented in the table 3.

Table 3. Frequency distribution of the positive answers of the experts regarding the problems in the application of CAP Variables

| | Positive answers: | | |
|---|---|---|---|
| | Count | % of the number of positive answers for the variable | % of the total count of reliable answers |
| 1 | 18 | 9.0% | 27.7% |
| 2 | 16 | 8.0% | 24.6% |
| 3 | 34 | 17.0% | 52.3% |
| 4 | 5 | 2.5% | 7.7% |
| 5 | 23 | 11.5% | 35.4% |
| 6 | 9 | 4.5% | 13.8% |
| 7 | 15 | 7.5% | 23.1% |
| 8 | 35 | 17.5% | 53.8% |
| 9 | 13 | 6.5% | 20.0% |
| 10 | 17 | 8.5% | 26.2% |
| 11 | 7 | 3.5% | 10.8% |
| 12 | 8 | 4.0% | 12.3% |
| Total: | 200 | 100.0% | 307.7% |

*Source: Own calculations on the base of experts' attitude.*

The results of the survey show that the problems, related to the implementation of the CAP, which are of fundamental importance are the economic crisis (poor business environment), for 53.8% of the enquired, and the low level of protection of the internal market of agricultural products (for 52.3% of the enquired). With insignificant support are the variables: support of the young farmers (7.7% of the valid answers), the insufficient workforce (10.8%) and the difficult access to credits (12.3%).

The contingency table that reflects the joint distribution of the frequency of the variables with largest number of positive answers is shown in the table 4.

The results in the table 4 show that according to 27.7% of the experts the most critical problems, related to the application of CAP are: the economic crisis (poor business environment) and the low protection of the internal market of agricultural products. On the contrary, the relative big share of the enquired respondents (21.5%), reckon that neither of the two factors is of great significance.

Table 4. Cross-table of the evaluation of the problems related to the application of CAP

| | | | Variable No. 8 | | Total: |
|---|---|---|---|---|---|
| | | | 0 | 1 | |
| Variable No. 3 | 0 | Total: | 14 | 17 | 31 |
| | | % for variable No. 3 | 45.2% | 54.8% | |
| | | % for variable No. 8 | 46.7% | 48.6% | |
| | | % from the total count | 21.5% | 26.2% | 47.7% |
| | 1 | Total: | 16 | 18 | 34 |
| | | % for variable No. 3 | 47.1% | 52.9% | |
| | | % for variable No. 8 | 53.3.0% | 51.4% | |
| | | % from the total count | 24.6% | 27.7% | 52.3% |
| Total: | Number | | 30 | 35 | 65 |
| | % form the total count | | 46.2% | 53.8% | 100% |

Source: Own calculations on the base of experts' attitude.

Hypothesis testing for statistically significant relationship (or independence) with the application of the $\chi^2$–test shows that the variables used are independent. The value of the test statistics we find 0.023, and the observed significance level (p-value) is equal to 0.878, which exceed the level of significance $\alpha$=0.05.

## 12.4. Conclusion

The undertaken expert evaluation by applying statistical approach gives the opportunity to evaluate the real effect of the advantages and problems in the development of agricultural holdings in the conditions of CAP.

The evaluation of experts' attitude shows that the most important advantages of the agricultural holdings, as a result of the impact of the CAP, are related to the direct payments per unit area, the greater opportunities for market

realization, as well as innovations and modernization of the holdings. The observed significance level (p-value), equal to 0.135 exceeds the level of significance $\alpha$=0.05, which confirms the formulated conclusion.

The expert analysis shows that the problems, related to the implementation of CAP that are of top priority are: the economic crisis (poor business environment), for 53.8% of the participants in the study and the low protection of the internal market of the agricultural products (for 52.3%). Of little importance are the variables: support of the young farmers (7.7% of the answers), the insufficient work force (10.8%) and the difficult access to credits (12.3%).

**References**


1. Bencheva, N., (2012), State, problems and development of the agricultural sector in Bulgaria under the CAP, Agricultural sciences, vol. 4, issue 9, p.7-17.
2. Bashev, H., (2012), Assessment of impacts of EU CAP implementation on Bulgarian farms, Economics and management of agriculture, no 57, 1, p.14-29.
3. Koteva, N., M. Mladenova, M. Risina, H. Bachev, (2008), Problems and outlooks for the development of agricultural farms under the condition of CAP of EU, Economics and management of agriculture, no 53, 3, p. 17-25.
4. Todorova S., E. Rancheva, (2011), Expert evaluation of the priorities and problems in the activity of the producer organizations, Agricultural Economics and Management, vol. 6, p. 14-22.

Dr Piotr Szajner
Institute of Agricultural and Food Economics - National Research Institute, Warsaw, Poland

# 13. Impact of the abolition of the milk quotas and changes in the milk market regulations on the development perspectives for the Polish dairy industry

## 13.1. Introduction

The milk market is one of the most regulated markets in the food sector in the European Union. The administrative supply limitation system, i.e. milk quotas, plays the basic role within this scope. Production quotas show very strong interference of administration in market laws, and have considerable impact on the development of market conditions. The system of milk quotas has great significance for the entities of the sector, both at the level of production in agricultural holdings, and at the level of processing in daily industry, since it directly defines the industry's production and processing potential. In accordance with the Heckscher–Ohlin theorem [Hecksher, Ohlin 1933], the quotas may limit comparative benefits in the external markets. In accordance with Porter's model of competitiveness, the milk quotas clearly influence the five competitive forces and determine competitiveness and the strategy of competition in the sector.

In 2008 the European Commission under the Health Check decided to abolish milk quotas in 2015, which resulted in significant changes in the EU dairy industry. This decision will directly apply to the Polish sector, and since the moment of its taking it has been lively discussed by the trade and scientific environment [Baer-Nawrocka, Kiryluk-Dryjska 2010]. The controversial nature of the subject is confirmed by the fact that during the preparation of the reform there were considerable disparities in the positions of individual negotiating Member States. The European Commission appointed the High Level Expert Group that prepared the proposals for solutions and regulations in the milk market, and commissioned reports in order to assess the results of the withdrawal of milk quotas [Requillart 2008], [Jongeneel 2011].

## 13.2. System of regulations in the EU milk market

Milk quotas, i.e. administrative limitation of market production of milk, were introduced in 1984, aiming primarily at stabilisation of the difficult situation in the EU market [Dillen, Tollens 1989]. As a result of dynamically increasing production of milk there was a considerable advantage of supply over demand, which materialised itself in the form of large intervention stocks (e.g. "butter mountain") [Commission UE 2002]. In 1987, in the face of systematically increasing intervention stocks, the European Union decided to introduce radi-

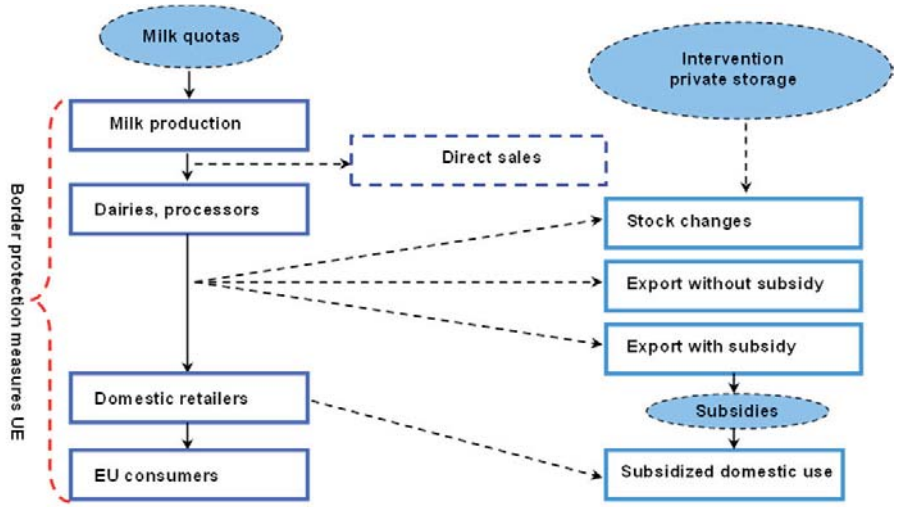
cal changes in the system of intervention since the production quotas failed to result in the expected decrease in supply [Malak-Rawlikowska 2006]. In other words, it turned out that limitation of supply is, as such, an inefficient instrument requiring strong connections with other market regulation instruments. Consequently, the EU system of market regulation was subject to regular evolution and underwent many reforms. The European Commission, in consultation with the Member States, assigned certain instruments with greater or smaller significance, depending on the market conditions. Lately, there has been greater focus on stimulating internal demand, and lesser focus on intervention purchase and subsidising.

In general, the system of regulations in the milk market includes the following elements:

- milk production (sales) quotas,
- direct support of farmers' income
- internal market support instruments:
  - stabilisation of the internal market:
  - intervention prices: butter and SMP,
  - intervention purchase,
  - additional payment to private storage of butter and cheese;
  - stabilisation of internal demand:
  - subsidising milk fat used in processing and direct consumption,
  - additional payments to SMP used for forage and processed to casein and its derivative,
  - sales of butter to non-profit and charity organisations,
  - subsidising milk consumption in educational institutions;
- instruments regulating foreign trade:
  - turnover monitoring through import and export licences,
  - consolidated system of internal market protection:
    - customs tariff,
    - preferential quotas,
    - non-tariff tools of market protection (e.g. veterinary standards);
  - export support compliant with the WTO requirements.

Currently, some of the instruments are not used (e.g. export reimbursement rates are defined at zero level). However, it does not mean that in the case of worsening economic situation in the external markets, they will not be restored (figure 1).

Figure 1. The EU milk market regulation




*Source: Own study.*

Any changes in the market regulations system specifically prove the strength of interference in the market. It has to be clearly stated, however, that since Poland had joined the European Union the value of the milk market support has decreased considerably as the EAGF expenses decreased from EUR 2.8 billion in 2004 to EUR 0.9 billion in 2007 [Szajner 2009]. At the same time, milk producers' support in the form of direct payments (decoupled from production) has increased. Most of these changes, except from the world market situation, were the result of negotiations at the WTO forum. In accordance with the WTO nomenclature, various forms of direct payments are qualified as blue box instruments (distorting international trade to a lesser degree) and green box instruments (not distorting international trade). Market support instruments are included in the amber box (distorting international trade).

Poland negotiated the milk quota in the amount of 9,380 thousand tons, including: sales to dairy industry of 8,500 thousand tons, direct sales of 464 thousand tons, and the restructuring reserve of 416 thousand tons to use since 2006/2007. The negotiated level of the quota is considered insufficient since it only amounts to 67% of the limit suggested by Poland. Other countries joining the EU in 2004 negotiated the average of 75% of the demanded quotas [Jeske 2005]. Negative effects result mostly from the difference between the milk production and the amount of the production quota. In Poland this difference amounted nearly to 28% and was the largest in the European Union. The European Commission presented its proposal of changes in the system of regulations in the milk market under the Health Check. The most important changes concerned the milk quotas that will be binding by 2015. Moreover, the reform con-

sisted in the gradual increase of the quota (*soft landing*): by 2% in 2008/2009 and 1% a year in 2009-2015. The gradual increase of the national milk quota to 10,056 thousand tons in 2014/2015 will contribute only to the insignificant improvement of relations between the limit value and the actual milk production. The production quota will constitute: ca. 80% of milk production, ca. 95% of balanced consumption and 80-90% of processing capacity of dairy industry.

## 13.3. Influence of the milk quotas system on the market and microeconomic efficiency

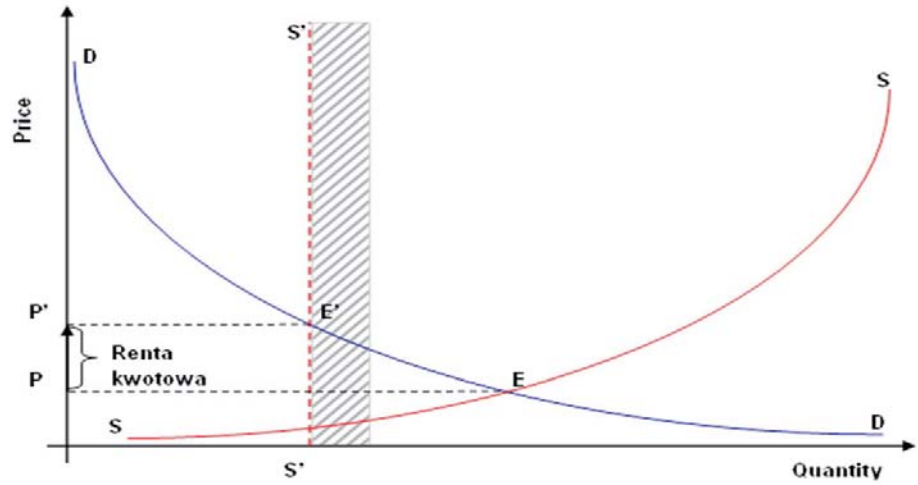
Limitation of market milk production in the European Union was a breakthrough in the CAP, which transformed from a policy with a perennial pro-production attitude to a policy of limiting surplus production [Malak-Rawlikowska 2006]. The principles of the policy of administrative supply limitation may be best illustrated by the example of supply and demand that is the basic law in the market economy. In the free market the supply curve *S,* and demand curve *D,* cross in the point of market equilibrium indicating the equilibrium price *P*. If the price level *P* is low and does not ensure production profitability, and supply at the level *Q,* is so high that it generates problems with the surplus management, the administration may decide to introduce supply limits (e.g. production quotas). Production quotas, in the context of the law of supply and demand, constitute the curve of supply *S*. Introduction of the appropriately lower production limits *Q*, should solve the problem of low prices and supply surplus since the quotas indicate the new point and the higher price of the market equilibrium *P*. In such a situation the phenomena of the so-called "quota allowance" (Polish: *renta kwotowa*) occurs (figure 2).

The economic reality, however, is much more complicated since sectors are not autarkic. Supply and demand situation in the internal market is notably influenced by the situation in the international market. Introduction of production quotas has economic significance only in the case of a very protectionist import policy, especially, when the world prices are lower than the domestic prices [Baer-Nawrocka, Kiryluk-Dryjska 2010]. This proves strong dependence of the efficiency of production quotas system on the additional market regulation instruments.

Production quotas cause many other problems that may be of fundamental significance in the context of efficiency in the management at the microeconomic level. In the field of the neoclassic efficiency it may be understood as maximising production resulting from the appropriate allocation of resources (labour and capital). In reference to the welfare concept, economy is considered to be efficient if it is impossible to increase the prosperity of an individual without worsening the economic situation of another person. The efficient allocation of resources is illustrated by the production frontier. The curve of production capacity in dairy industry SM presents the maximum production of the sector with

the available amount of production factors, and technical knowledge. The economic activity of the dairy industry is efficient if, for example, the increase in cheese production – S, requires decrease in milk production – M.

Figure 2. Supply and demand in the context of the production quota system




*Please note that "Renta kwotowa" means Quota allowance.*
*Source: Author's own study based on [Samuelson 2004].*

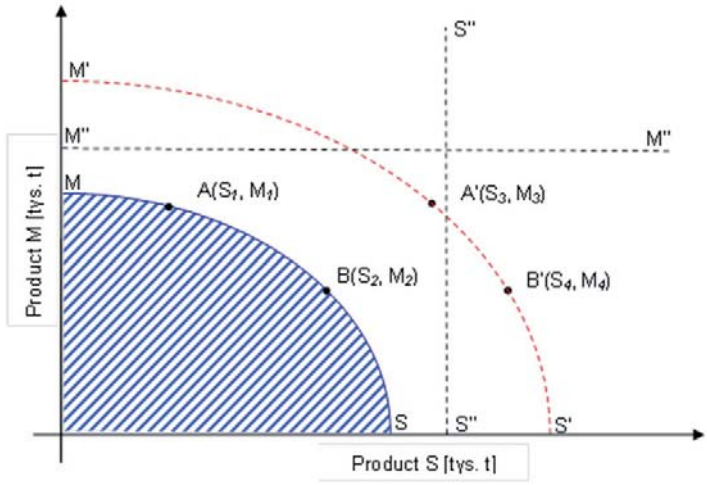
Increased cheese production requires higher input (resources, labour, and capital). As a result, there are fewer resources left that may be used in milk production. The economic development, technological progress and restructuration enable to move the production frontier (*S'M'*). Then, it is possible to increase production of all products thanks to using the previously unmanaged resources. However, this process may be limited, e.g. by imposing the administrative supply limits (*S'', M''*). The *S''* and *M''* straight lines illustrate that the entire milk quota was used for the cheese and butter production (figure 3).

Milk quotas specified at the lower level than the production frontier decrease the management efficiency and specify inefficiency areas. The sector entities, adjusting to the new market conditions, must conduct restructurisation – often complex and expensive, the results of which will be visible after a certain period of time. This may disturb the mechanisms and the market equilibrium causing conditions for the increase of imperfect competition. The sector's efficiency increases if relations in the market are close to the perfect competition. The increasing efficiency is the necessary, though insufficient, condition for being competitive and gaining competitive advantage [Kulawik, 2007].

Administrative supply limitation also generates additional costs related to the functioning of the whole system requiring the appropriate management and control whether the quotas have not been exceeded by the producers. Such a

problem becomes particularly important in the situation of public deficits and when it is necessary to introduce drastic budgetary savings. Agricultural holdings in the European Union are charged with the super levies for exceeding the milk quota and that has a negative impact on production profitability.

Figure 3. Production frontier and milk quotas



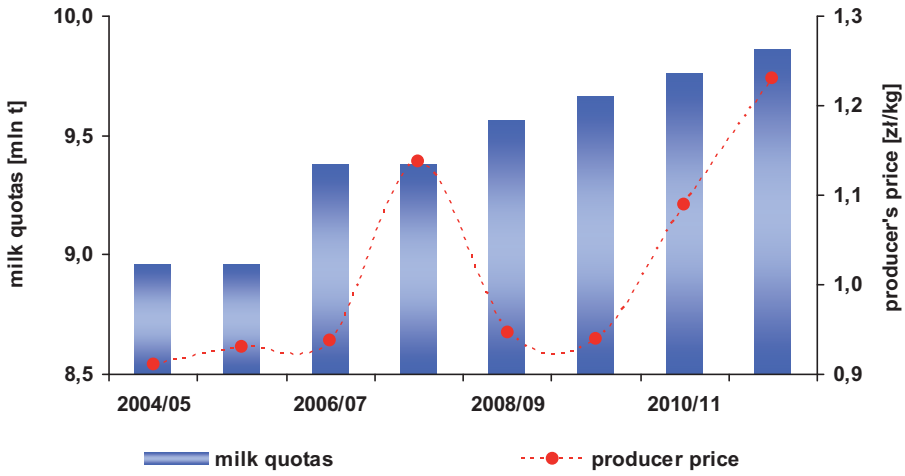

*Source: Author's own study based on [Samuelson, Nordhaus, 2004].*

Milk quotas decrease supply and may lead to a potential increase in prices. Increased prices should be gained by the milk producers, but also the consumers have to pay more. As a consequence, there is some disparity since the small group of producers profit from the higher prices while consumers must reconcile themselves with the increased prices [Samuelson 2004]. At present, ca. 155 thousand agricultural holdings in Poland have milk quotas and are protected by the system whereas milk consumers should be counted in millions. Therefore, the system of milk quotas may also be considered in terms of social justice. Analogical situation was observed in relation to regulations in the sugar market, the reform of which was introduced due to e.g. criticism for high prices in the internal market.

The popular argument in the discussion on the reform of milk quotas is that the abolition of the quotas will cause the decrease in the milk prices. Theoretically speaking, possible increase in supply should cause the decrease in prices. However, do the milk quotas actually guarantee the constant high level of prices? Decrease in milk prices does not have to mean drastic decrease in the farmers' income since as a result of concentration and modernisation processes, it will be possible to increase the scale of production.

As a result, it will be possible to reduce fixed costs and marginal costs. But the economic reality shows that it is not the case and the link between the quotas and milk prices has been broken a long time ago. Prices are determined most of all by the market situation. For example, in 2009 despite the functioning of milk quotas in the EU there was a sharp decrease in prices and profitability of milk production. In Poland, the buying-in prices decreased in 2009 to the level of 2005 leading to considerable decrease in milk production profitability in the situation of growing prices of production materials and inflation. The prices increased considerable only after the improvement of situation in the global market in 2010-2011 (figure 4). According to the results of the simple analysis of correlations, the buying-in prices and production quota are positively correlated (R=0.62). In other words, the increase in production quotas contributed to the increase in the buying-in prices. It should be remembered, however, that this is a simplified analysis, since prices are determined by a number of factors. Nevertheless, it is obvious that the increase in the milk supply as a result of the increase in quotas did not cause the fall of prices.

Figure 4. Buying-in prices and milk quotas in Poland




*Source: Own calculations, CSO data.*

## 13.4. Influence of milk quotas on competitiveness

Market is a "tool" for allocation of rare resources, and economics is the study of how societies allocate resources to produce valuable goods, and distribute them between individuals [Samuelson 2004]. The above-mentioned definition indicates the fundamental feature of the economy, i.e. deficiency of resources, and its two consequences. The first one, is the high competition for resources – the winners of the competition are referred to as competitive players.

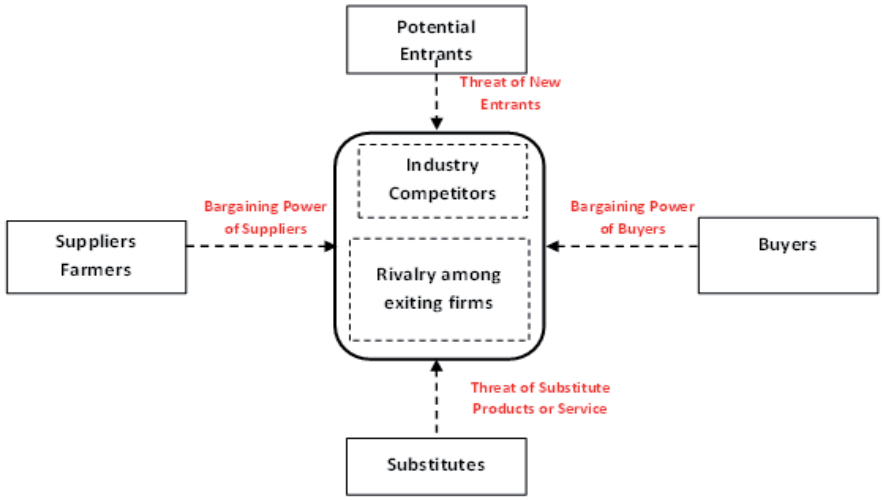
The other consequence, is the skilful management of resources for the economy or the social system made the best use of them. At this point, another key category of the economics emerges – efficiency. There is a cause and effect relationship between efficiency and competition.

Competition is the basic element of the market economy. In classical economics competition was considered to be the main driving force ensuring allocative efficiency of the use of rare resources (the concept of "invisible hand of the market"). Competition in economics is as basic category as gravitation in physics. The competitive pressure in the sector is not a coincidence. It results most of all from the economic structure and reaches far beyond actions of the competitors. Competitive pressure, according to M. Porter, depends on five competitive forces: intensity of competitive rivalry, bargaining power of suppliers, bargaining power of customers, threat of substitutes, and threat of new competition (figure 5). The concept of competitive forces clearly proves that the market competition goes far beyond the participants of the rivalry. Also suppliers, customers, substitutes and possible new entities entering the sector are the competition for the enterprises. The competitive framework and pressure are also determined by the administration sector policy, e.g. the system of market regulation in certain industries of food supply. The coefficient of the above-mentioned five forces determines sectoral competitive potential that may be measured with a long-term profit rate [Porter 2006]. The comprehensive assessment of the impact of all competitive forces enables multidimensional assessment of competitiveness.

Administrative supply limitation and other market regulation instruments may have influence on certain competitive forces. The milk quotas, most of all, make it difficult for the new business entities to enter the market. Agricultural holdings interested in commencing milk production must gain milk quota which is connected to considerable investment and organisational "effort". Analogical situation occurs in the case of agricultural holdings interested in increasing the scale effect which usually has positive impact on the marginal costs and production profitability. The same applies to dairy companies that plan to enter the market.

However, such enterprises must encourage farmers with higher prices to supply milk. Otherwise, they will have no raw material to process. The limited milk supply clearly intensifies competition in the field of dairy industry with the structure of monopolistic competition. In comparison, in the case of sugar industry, also having production quota, the market structure is oligopoly, specifying competition in the industry in a completely different way. It becomes particularly important if the dairy sector is characterised with the processing capacity surplus. The production capacity surplus is typical of the market economy in order to response to changes in the demand. However, too high surplus result in inefficiency, and, consequently, in the increase in costs and worsening of the economic situation. In the case of Polish dairy industry, processing capacity is used in ca. 80% since many plants were excluded from reduction, but the remaining plants increased their production potential [Nitecka 2003].

Figure 5. Competitive pressure in dairy industry




*Source: Study based on [Porter 2006].*

Milk quotas may increase the farmers' bargaining power in relations with the dairy industry since they constitute the farmer's ownership. The economic policy provides a number of examples of farmers deciding to change a dairy if they obtain better conditions for cooperation (mainly in terms of prices). In the national dairy sector there is a strong competition for raw materials since there are processing capacity reserves. The loss of several significant suppliers may have negative impact on the economic situation of the diary since it will be forced to increase the buying-in prices, and the costs not related to the resources will be higher [Szajner 2009].

Lower milk supply (milk fat and protein) also strengthens the market position of substitute products (e.g. vegetable fat and animal protein). High butter prices, partially as a result of the administrative supply limitation, decline its price competitiveness in comparison with hydrogenated vegetable fat, and competition in the fat market is very strong.

## 13.5. Summary

The system of the milk quotas, like production quotas in other food markets in the European Union, shows strong interference in the market laws. Decision of the European Commission on gradual abolition of the milk quotas in 2015 is a step in the right direction since liberalisation of the market will have a positive effect on the efficiency and competitiveness of the dairy industry. Most of all, it will stimulate structural changes in the countries characterised

with the fragmentation of agricultural holdings. Increased concentration of production will provide more scale effects' benefits, and enable better use of the potential of the sector.

Perfectly competitive market is the most efficient method of allocation of resources. The perfect competition, as a perfect vacuum in physics, is a completely theoretical concept illustrating certain market phenomena. Lessons learned in the recent years show that the administrative supply limitation may be an effective short-term solution requiring the application of more market regulation instruments. As a consequence, the entire market mechanism becomes inefficient, less effective, and it generates unnecessary costs. Abolition of the milk quotas will create completely new market conditions and until the creation of the new market equilibrium, some "shock" phenomena may occur. In the long-run, the withdrawal of the milk quotas will cause the decrease in the pressure of certain competitive forces affecting the sector, and, thereby, it may strengthen its competitiveness.

**References**


1. Bear-Nawrocka A., Kiryluk-Dryjska E., (2010), Konsekwencje zniesienia kwot mlecznych dla polskiego rolnictwa z uwzględnieniem zróżnicowania regionalnego, Zagadnienia Ekonomiki Rolnej no 2 (232), IAFE-NRI, Warsaw.
2. Commission of the European Communities, (2002), Report on milk quotas, SEC, 789, Brussels.
3. Dillen M., Tollens E., (1989), Milk quotas, their effects on agriculture in European Community, vol. 1, University Leuven.
4. Hecksher E., Ohlin B., (1933), Interregional and International Trade, Harvard University Press, Cambridge, MA.
5. Jeske E.V., (2005), The dairy sector of Poland: A country study, „Babcock Institute Discussion Paper", no 3, The Babcock Institute for International Dairy Research and Development, Madison.
6. Jongeneel R., (2011), Evaluation of CAP measures applied to the dairy sector (final deliverable), Brussels.
7. Kulawik J., Józwiak W., (2007), Analiza efektywności gospodarowania i funkcjonowania przedsiębiorstw rolniczych powstałych na bazie majątku skarbu państwa, IAFE-NRI, Warsaw.
8. Malak-Rawlikowska A., (2006), Kwotowanie produkcji mleka i jego skutki na przykładzie wybranych krajów Unii Europejskiej, Roczniki Nauk Rolniczych, SERIA G, vol. 93, b. 1.
9. Nitecka E., (2003) Polskie mleczarstwo. Raport o stanie branży i perspektywach jej rozwoju w poszerzonej Unii Europejskiej, praca zbiorowa, ZPPM, Warsaw.
10. Porter M.E., (2006), Strategia konkurencji. Metody analizy sektorów i konkurentów, MT Biznes, Warsaw.

11. Requillart V., (2008), Economic analysis of the effects of the expiry of the EU milk quota system. Final Report. Institut d'économie industrielle. Raport finansowany przez Komisję Europejską, Kontrakt: 30-C3-0144181/00-30, Brussels.
12. Samuelson P.A., Nordhaus W.D., (2004), Ekonomia, PWN, Warsaw.
13. Seremak-Bulge J., (2005), Rozwój rynku mleczarskiego i zmiany jego funkcjonowania w latach 1990-2005, praca zbiorowa, Multi-Annual Programme, Report no 21, IAFE-NRI, Warsaw.
14. Skawińska E., (2004), Konkurencyjność przedsiębiorstw inne podejście, PWN, Warsaw-Poznan.
15. Szajner P., (2010), Sektor mleczarski w Polsce – problemy i perspektywy, Przemysł Spożywczy no 7-8, Warsaw.
16. Szajner P., (2009), Perspektywy eksportu polskich produktów mleczarskich w zmieniających się uwarunkowaniach, Studia i Monografie no 146, IAFE-NRI, Warsaw.

Assoc. Prof. Georgi Bogoev, Dr Teodora Stoeva
Agricultural University – Plovdiv, Bulgaria

# 14. Development and prospects of field vegetable production

**Summary**

Field vegetable farming is a fast developing sector of the Bulgarian agriculture. Its condition and development is determined by the various natural and geographic conditions in the country and the experience in cultivating and farming vegetable crops, which are traditional for the Bulgarian population.

Currently, the vegetable farming is organized in individual private agricultural farms and agricultural farming cooperatives and is performed in small areas.

The crisis in the vegetable farming raised a lot of questions that need to be answered. It is necessary to overcome the decrease in vegetable production. This can happen by establishing efficiently operating organizational companies. The most important reasons for the reported decrease are the effects of the improperly conducted reforms in the agriculture industry which resulted in the deterioration of the economic condition of the sector. A serious flaw is that the farmers are selecting certain crop production without conducting any preliminary marketing and without any signed contracts for produce realization.

## 14.1. Introduction

Field vegetable farming is a fast developing sector of the Bulgarian agriculture. Its condition and development is determined by the various natural and geographic conditions in the country and the experience in cultivating and farming vegetable crops, which are traditional for Bulgarian population. Favourable soil-climate conditions determine the sector specialization allowing most of the vegetable crops to be farmed in the valleys and plains of our country.

Vegetable crops are a major part of the diet and have increasing importance for establishing healthy nutrition habits of the Bulgarian population. They are valuable agricultural crops due to their ability to be farmed in open areas or cultivation facilities and to be utilized in both fresh and processed condition. Development of the vegetable farming is a mandatory condition for the prosperity of agriculture. Different factors affect the condition of the sector – distribution and marketing channels, human resources, different leverages and mechanisms of statutory regulation, transport condition.

Currently, the vegetable farming is organized in individual private agricultural farms and agricultural farming cooperatives and is performed in small areas. Vegetable crops take approximately 3% of the country's area in crops and provide over 7% of the total plant-growing produce.

An important requirement for all open field vegetable farmers is to use the production resources more efficiently – land, equipment, labor and capital. Field vegetable farming is characterized with number of peculiarities that affect the efficient use of the above resources, more important of which are: choice of various vegetable crops with different production directions, which allows multiple options for production structuring; soil-climate factors that have significant effect on the produce quality, cultivation technology and the species composition of the vegetable crops; vegetable farming requires huge investments of manual labour, especially during harvest which constitutes between 50% and 70% of the total labour costs and significantly decreases labour productivity in this industry.

Those are the main reasons due to which industry condition, development and problems are subject of scientific interest. In their research regarding the vegetable farms production efficiency, organizational restructuring and problems, the authors [Hadzhieva et al. 2008] disclose the negative development preconditions and lay out some options in order to overcome them.

## 14.2. Materials and methods

To evaluate the condition of the field vegetable farming we take into account the extent of the harvested area, quantity and produce from one production unit and the production of the main vegetable crops.

The following evaluation methods are used:

- Comparative method – it enables us to determine the trend and dynamics of indicators by comparing reported data on area development, average yields and production by periods.

- Method of chain substitutions – this method establishes the quantitative influence of different factors on the modification of certain result index. The connection between the index and factors applied in any certain case is represented mathematically through formula as product of the area and average yields [Kuzmanov 2006].

  $П_Р = П * Д$

  where:

  $П_Р$ – production volume – thousand/tonne
  П – extent of area – thousand/daa
  Д – average yield – kg/daa
  The method of chain substitutions is used for factor analysis.

The evaluated period 2001/2005 is accepted as a basis and the second 2006/2010 is accepted as an index. The total deviation of the production volume is determined as follows:

$$ДП_P = П_{P1} – П_{P0}$$

The influence of the different factors on the total modification of the amount of produce is determined by using the following formulas:

- Influence of factor – extent of area – П

$$П = П_1 * Д_0 – П_0 * Д_0$$

- Influence of factor – average yield – Д

$$Д = П_1Д_1 – П_0Д_0$$

$П_0$ and $П_1$ is the extent of area for 2001/2005 and 2006/2010 periods, respectively;

$Д_0$ and $Д_1$ – average yield for 200/2005 and 2006/2010 periods, respectively.

## 14.3. Results and discussion

Until 1999 total vegetable crops area was approximately 158–168 thousand decares, and after that period it was between 900 and 1100 thousand decares, i.e. it decreased by 30-40%, which is definitely a negative trend. In comparison to the basic period 2001–2005, in 2006–2010 the area of the main vegetable crops decreased. Most obvious was the decrease in the harvested area of cucumbers – 4.37 times, tomatoes – 2.77 times, onion – 2.73 times, cabbage – 2.33 times, green pepper – 1.94 times, potatoes – 1.79 times, and melons – 1.70 times.

Table 1. Change in the production volume of main vegetable crops in Bulgaria under the influence of the area and average yield factors in the period 2001 – 2010

| CROPS | PERIODS | | | | | | Total deviation thou-sand/t | Incl. on the account of: | |
|---|---|---|---|---|---|---|---|---|---|
| | BASIS – 2001 – 2005 | | | 2006 – 2010 - INDEX | | | | | |
| | AREA Thousand daa | YIELD kg/daa | PRODUCE thousand/t | AREA Thousand daa | YIELD kg/daa | PRODUCE thousand/t | | AREA | YIELD |
| TOMATOES | 127.1 | 2 061.4 | 262.0 | 45.8 | 2 028.4 | 92.2 | -169.1 | -167.6 | -1.5 |
| CUCUMBERS | 33.7 | 2 092.0 | 70.5 | 7.7 | 2 001.0 | 15.4 | -55.1 | -54.1 | -0.7 |
| GREEN PEPPER | 110.4 | 1 303.4 | 143.9 | 56.9 | 1 623.1 | 92.3 | -51.6 | -69.8 | +18.2 |
| ONION | 40.4 | 866.3 | 35.0 | 14.8 | 932.4 | 13.8 | -21.2 | -22.2 | +1.0 |
| CABBAGE | 51.0 | 2 244.8 | 116.5 | 21.9 | 2 589.0 | 56.7 | -57.8 | -65.3 | +7.5 |
| POTATOES | 369.5 | 1 421.6 | 525.3 | 206.5 | 1 537.0 | 317.4 | -207.9 | -231.7 | +23.8 |
| WATERMELONS AND MELONS | 106.4 | 1 515.0 | 161.2 | 62.5 | 1 942.0 | 121.4 | -39.8 | -66.5 | +26.7 |

The second main factor determining the volume of the produce is the average yield level, which decreases insignificantly for tomatoes – 1.61% and cucumbers – 4.35%. For other vegetable crops a positive trend is observed which is represented by an increase of this index values for watermelons and melons by 28.18%, green pepper – 24.50%, cabbage – 15.33%, potatoes – 8.12%, and onion – 7.63%.

The level of the average yield is low and is inconsistent with the potential of the used varieties of vegetable species. Furthermore, there are various omissions in the application of used technologies.

The combination of both main factors – area and average yield, leads to decrease in production of vegetables, potatoes, watermelons and melons, as decisive is the negative effect of the first factor – yielded quantity from an area unit. For the 2006–2010 period the decrease of vegetable production in comparison to the basic period was 354.8 thousand t, for potatoes – 207.9 thousand t, and for watermelons and melons – 39.8 thousand t.

This shows the bad condition of vegetable farming industry.

From data presented in **table 1** it is clear that the total deviation in the production of all vegetable crops for the 2006–2010 period in comparison to 2001–2005, designated as basis, has a negative value. Most obvious is the decrease for tomatoes by 167.6 thousand t, followed by green peppers – 69.8 thousand t, cabbage – 65.3 thousand t, cucumbers – 54.4 thousand t, and onion – 22.2 thousand t. For potatoes, watermelons and melons the decrease is 23.7 thousand t and 66.5 thousand t, respectively. For all crops the most decisive for decreased production is the negative effect of the first factor – extent of area. The positive effect of the average yields also contributes for the reduction of tomatoes and cucumbers, as it is negligible and cannot compensate the negative effect of the first factor – extent of harvested area.

For watermelons and melons, potatoes, green peppers, cabbage and onion average yield positive effect on the amount and total deviation of production is present with 26.7 thousand t, 23.8 thousand t, 18.2 thousand t, 7.5 thousand t, and 1.8 thousand t, respectively.

The effect of this factor is negligible and cannot compensate the negative impact of the first factor.

The reasons for this condition are various. The main reason is the agricultural reform. The transition in the agriculture industry was conducted with haste and improperly, as it was wrongfully considered that returning the land to the owners is enough to activate all other mechanisms of the agriculture industry market.

Other considerable reasons are: failure to comply with the requirements of the applied technologies in order to save production resources; not all necessary treatment is performed in compliance with the modern agricultural techniques; fight with diseases, pests and harmful vegetation is very limited due to the high prices of plant protection agents; quality fertilization and irrigation is occasional; lack of specialized vegetable farming vehicles and equipment; pauperization of the population and decreased market demand; dictate by vegetable produce re-

sellers; competition with vegetable produce imported from Turkey, Greece, Macedonia, etc. [Bogoev and Paskalev 2008]

After the accession of Bulgaria in the EU the vegetable farming in the country is affected more and more intensely by the impact of the common European market. Therefore, it is required to follow the key factors that are most influencing on the market development prospects. In the EU the biggest vegetable producers are Italy, Spain, France and Poland. Although our country has favourable natural conditions, Bulgaria takes 13$^{th}$ place by volume of produced fresh vegetables.

The crisis in the vegetable farming raised a lot of questions that need to be answered. First, it is necessary to overcome the decrease of vegetable production. This can be achieved by establishing efficient functional organization forms. Another problem is the necessity to improve the system for access of vegetable farmers to cash resources. The market infrastructure of this industry should enable regulation of processes. The most important reasons for the reported decrease are result of the improperly conducted reforms in the agriculture industry as a result of which the economic condition of the sector is declining. A serious flaw is that the farmers are selecting certain crop production without conducting any preliminary marketing and without any signed contracts for produce realization. Farmers are looking for the market after production processs, under the pressure of a strong market competition.

Supply of fresh vegetables is determined by the import and production levels. Import increases with the decrease in domestic production.

Being a traditional exporter in the past, Bulgaria has become an importer, as the import includes major vegetable crops such as – tomatoes, cucumbers, carrots, onion, lettuce, cabbage, even spices as dill. We also import garlic and chives for direct sowing. Almost 70% of all imported vegetables come from Turkey, due to the country's better climate conditions, which in turn make produce cheaper [Bogoev and Paskalev 2008].

Establishment of specialized farms is a long and difficult process that should be started by establishing smaller farms – 10 to 50 daa. The subsequent establishment of medium-sized vegetable farms (50 to 200 daa) will provide full time occupation for farmer families and an income that can provide decent quality of life.

Establishment of specialized vegetable farms with capability to apply industrial production methods and limited manual labour is difficult at this point due to the limited capacity of canning industry. The problem with large-scale specialized vegetable farming is the necessity of starting capital in order to begin and maintain production. This circumstance makes it necessary to develop opportunities to use low interest bank credits and method for their deferral in case of bad climate conditions.

Vegetable farmers rarely insure their produce as it leads to decrease of income. A fair share of the production will be provided by agricultural cooperatives which require them to provide opportunities for properly scheduled crop rotation

and preliminary levelling and clearing of the land. The extent of the area provides opportunities for main operations to be performed by own means.

## 14.4. Conclusion

The following important conclusions can me made based on the conducted research:

- For all vegetable crops is present production reduction for the 2001–2005 period. The decrease is most evident for potatoes (207.9 thousand t), tomatoes (169.1 thousand t), cabbage and cucumbers – 57.8 thousand t and 55.1 thousand t, respectively.

- The most decisive factor for the overall vegetable production decrease is the Harvested Area Factor, while the second studied factor – Average Yield Factor – acted in opposite direction (except for tomatoes and cucumbers).

- In order to overcome the crisis in the vegetable farming it is necessary to establish specialized farms, and certain part of the vegetable production should be provided by agricultural production cooperatives, incorporated based on land private property and other production means.

**References**


1. Bogoev G., et al., (2002), Organization and management of agricultural production, Plovdiv.
2. Bogoev G., Paskalev, P., (1998), Agricultural cooperatives for vegetable farming – Agriculture Industry Economics and Management no 6 .
3. Bogoev, G., Paskalev, P., (2003), Organizational and economic problems in field vegetable farming, Fifth National Conference of Agro-Economists in Bulgaria.
4. Bogoev, G., Paskalev, P., (2008), Condition, trends and competitiveness of vegetable farming, Scientific Studies, book 5, European College of Economics and Management, Plovdiv.
5. National Statistics Institute, Statistics Almanac, 2000–2010.
6. Kuzmanov I., (2006), Economic Analysis (textbook), Plovdiv 2006, p. 12.

Dr Mariola Kwasek,
Agnieszka Obiedzińska
Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland

# 15. Food security in the context of the CAP

## 15.1. Introduction

For centuries food security was interpreted as the possibility of providing food produced in a given country in full or in the majority to satisfy the demands of all citizens. This meaning of food security has changed, along with development of trade and international specialty. The rapid growth in worldwide food production and free international trade has enabled the countries with disadvantageous conditions to purchase the necessary food from other markets. Access to food depended on incomes, and not national production. Financial security prevailed over food security. This perspective was influenced by economists who wanted to treat food and agrarian products just like other goods, and make the volume and structure of domestic food production subordinate to market regulations and the comparative costs rule. Only the global crisis in 2007/2008 renewed the debate on food security from the household, national, regional (e.g. European Union) and global perspectives.

Food security may be achieved only with the simultaneous provision of economic and social security, as well as maintenance of domestic production at a level ensuring food accessibility and foreign trade or food reserves and the correct functioning of processing and distribution. Food security results mainly from systemic and institutional solutions in the fields of politics, economy and society.

The European Union, as the largest economy in the world, can play an important role in ensuring global food security in the world of limited resources. Currently, the debate over the future shape of the Common Agricultural Policy after the year 2013 is still ongoing. The issue of food security is one of many topics in this debate.

## 15.2. Food security vs. food safety

Food security is of fundamental importance for human existence. Food security means that when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life [FAO 2009].

Food security is ensured when the following three conditions are simultaneously satisfied:

- Physical food availability – it means that the national food economy ensures meeting of at least the minimum physiological demand, and imports provide foods in excess of this minimum demand; the physical availability of food is linked with the need to maintain food reserves.

- Economical food availability – it means that the economically weakest households have access to essential food (due to different types of food aid); a consumer has to have the purchasing power facilitating the purchase of the essential goods and services on the market; the purchasing power of a consumer on the food market depends on: income and food prices as well as the prices of other goods and services.

- The health value of a single food product (food products free of any substances harmful to health, e.g. residues of pesticides, antibiotics, dioxins, and harmful colourants, as well as poisonous substances and pathogenic microorganisms) and consumer food rations (balanced food rations, e.g. the necessary energy level and the adequate proportions of nutritive components dependent on age, sex and type of work) [Małysz 2008]. ***Food safety is an integral part of food security.***

For the consumer, food safety is the most important feature of food quality; therefore food law regulates this issue in detail providing the consumer with the certainty that the purchased food is compliant with his safety requirements.

According to the Act of 25 August 2006 on the safety of food and nutrition, *food safety is interpreted as a whole set of conditions that have to be satisfied, in particular referring to: (1) additives and aromas applied, (2) levels of contaminations, (3) residues of pesticides, (4) food radiation conditions, (5) organoleptic features and measures that have to be taken at all stages of food production or trade – in order to ensure the health and life of a human being*[24].

Codex Alimentarius[25] plays an important role in measures ensuring the food safety and define it as *the guarantee that food shall not bring any harm*

[24] O.J. 2006, No. 171, item 1225.

[25] The Codex Alimentarius is the most important international organisation dealing with food safety, consumers' health and the ensuring of fair practices in food trading. It was founded in 1963 under the Common Programme for Food Standards established by the *Food and Agriculture Organisation of the United Nations – FAO,* as well as the *World Health Organization (WHO*).

*to the consumer's health if it is prepared and/or consumed according to the identified purpose.*

Food affairs that have taken place at the turn of the millennium, and in recent years (e.g. mad cow disease, foot-and-mouth disease, glycol in wines, dioxins in fodder and food, melamine in milk, contamination of cucumbers with mutated *E. coli* bacteria – EHEC, industrial salt used in food production) have alerted the European consumer with regards to all aspects of food quality and safety.

Raised awareness of health threats and food safety among European consumers meant that satisfying constantly-increasing expectations in this field should be one of the most important challenges faced by the agrarian production and food industry.

In the European Union, supervision and control over food safety is performed by *the Food and Veterinary Office* being a part of Directorate-General for Health and Consumers (DG SANCO). There are different supervision systems of food quality and safety in individual Member States of the European Union.

In Poland, four inspectorates supervise food safety in the whole agricultural and food chain: the Veterinary Inspectorate, the Main Inspectorate of Plant Health and Seed Inspection, the Agricultural and Food Quality Inspection and the State Sanitary Inspectorate. Currently, there is a debate over the consolidation of these institutions and establishment of a State Food Safety and Veterinary Inspectorate.

### 15.3. Food security – as a high level of food self-sufficiency

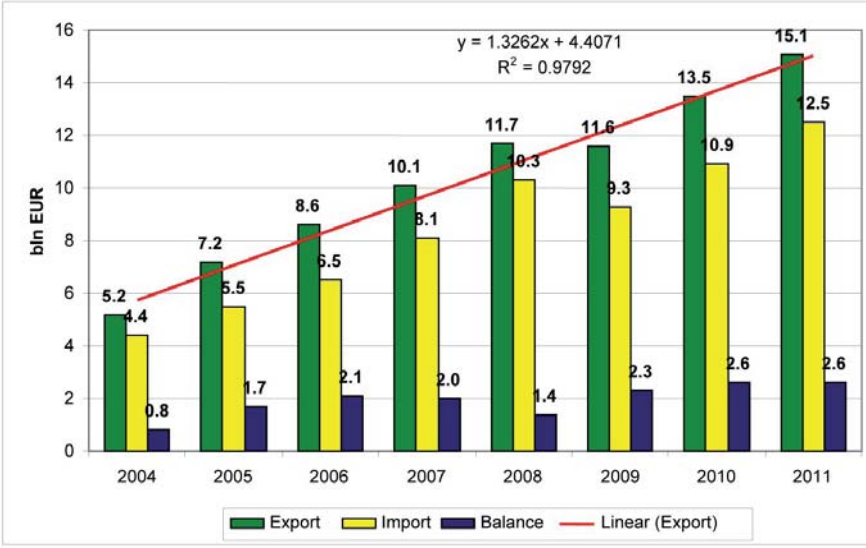
Under market economy conditions, the food self-sufficiency of the State means the physical and economic availability of food on the internal market regardless of the sources of its origin (domestic production or imports), and the balance of trade in agricultural and food products is a measure of food self-sufficiency.

An analysis of the balance of trade in agricultural and food products in Poland for years 2004-2011 proves the food self-sufficiency of the country. Agricultural and food products form a group of commodities that, having been traded since the accession of Poland to the European Union, provides Poland with a positive balance in foreign trade. In 2011, the balance of trade in agricultural and food products reached the level of 2.6 bln EUR, and was over 3 times higher than in 2004 (Graph 1).

In 2011, the value of the foreign sales of agricultural and food products amounted to 15.1 bln EUR and increased by 11.2% in comparison with 2010. In the same period, agricultural and food products imported into Poland amounted to 12.5 bln EUR.

Food self-sufficiency coefficients measured as a ratio of production to domestic supply prove that the majority of products necessary for the health nutrition of a human being are available on the Polish market. Proper nutrition is a prerequisite for the development of a human being, his/her fitness and intellectual development as well as his/her well-being and state of health.

Graph 1. An analysis of the balance of trade in agricultural and food products in Poland for 2004-2011 – in bln EUR

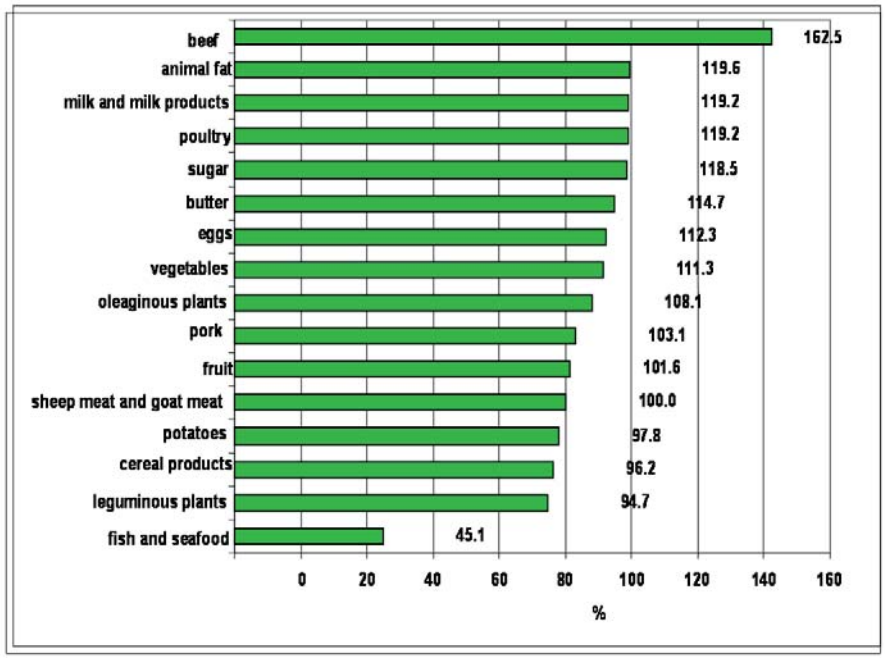



*Source: Prepared according to reports on the status of foreign trade in subsequent years, Ministry of the Economy, Warsaw.*

In 2005-2007, Poland reached a high level of food self-sufficiency (over 100%) in the categories of beef, animal fats excluding butter, milk and milk products, poultry, sugar, butter, eggs, vegetables, oleaginous plants, pork and fruit, but low for fish. The self-sufficiency coefficient for leguminous plants was equal to 94.7%, for cereals 96.2%, and for potatoes 97.8% (Graph 2).

The Polish agricultural sector has a chance to become one of the main exporters of food to the European market. The following should be the strategic directions of Polish agricultural development: beef production, milk and milk products, poultry, eggs, sugar, fruit and vegetables. The high ratio of food self-sufficiency at the level recorded in Poland and the European Union constitutes the basis for food security.

Graph 2. The food self-sufficiency of Poland as measured by the ratio of production to domestic supply in 2005-2007 – percentages




## 15.4. Risks to food security

The food system is bending under the intense pressure of the increasing global population, increasing food demand, in particular meat and meat products as well as milk and milk products, diminishing water and land resources and the fight for arable land with the manufacturers of biofuels, industry and urbanisation. Climate change, the vanishing of biodiversity of ecosystems and the diversity of agricultural cultivars, new plant and animal diseases, and increasing power and food prices, as well as speculation on the food market, will have a disadvantageous impact on global food security.

### *The increase in global population*

In the last 50 years, i.e. in the years 1960-2010, the global population has increased from 3.0 to 6.8 bln people. On 6 June 2012 the world was inhabited by 7,018,125,610 people. According to demographic forecasts, in 2025 the Earth will be inhabited by 7.4 bln people, and in 2050 – 9.1 bln people.

In 2025, the number of inhabitants of Asia will reach 4.4 bln (nearly 1.5 bln in China, and 1.4 bln in India), and 1.3 bln in Africa, including over a billion in Sub-Saharan Africa. The population of Europe will increase to 814 mln, Latin

America and Caribbean up to 690 mln, North America to 388 mln, the Middle East to 280 mln, North Africa up to 211 mln, and Oceania to 40 mln [International Population Reports 2002].

The rapid growth of the world's population resulting mainly from the high birth rate in the developing countries, mostly African as well as in some countries of Asia and South America, means that sustaining the population is one of the most important issues in the modern world. There are serious disproportions in the level of nutrition of the world's inhabitants resulting from the uneven distribution of food production (the largest areas of food demand are not the same as the largest areas of food production) and poor food distribution, as well as improper political and institutional solutions. It should be stressed that climate change causing droughts, floods and other disasters will have a disadvantageous impact on global food production ability[26].

***The increase in food demand***

The forecast increase in the world's population to over 9 billion in 2050 will result in the further growth in food demand. At present, global food production guarantees the consumption of 2796 kcal daily by each inhabitant of the Earth. But due to the uneven access to food, 25% of the world's population is underfed, and 10% is starving.

The level of food consumption is strongly related to external environment (the economy). The higher the level of economic development, the higher the level of food consumption. Global economic growth results in: increased wealth of the global population, higher food demand, and changes in consumption patterns dominated by the consumption of animal-origin products, especially meat and meat products.

The exact functioning of this mechanism is illustrated by an example of the enrichment of Chinese citizens. In years 1987-2007, an increase in the consumption of the majority of food products was observed in China. Among plant-origin products, the consumption of vegetables and vegetable products was the highest (nearly 3 times higher – up to the level of 280 kg per capita annually), and fruit and fruit products (over 4 times higher, up to the level of 64 kg). In the group of animal-origin products, the highest consumption was related to meat and meat products (2.5 higher – up to 53 kg), milk and milk products (5.3 times higher – up to 27 kg), fish and seafood (2.7 times more – up to 27 kg).

The increased consumption of animal-origin products is translated to the caloric and nutritive value of the daily food ration. The total consumption of protein has increased from 65 g in 1987 to 89 g in 2007, e.g. by 37%, including animal protein – from 12 g to 34 g, i.e. by 183.3%.

[26] According to the FAO, 370 million people will be threatened with hunger at the beginning of 2050s if new land is not immediately cultivated.

The growth of wealth in developing countries will result in higher food demand, including animal-origin products. The higher demand for animal-origin products is disturbing, because 20 tonnes of fodder composed mainly of cereals comes per each tonne of produced meat. If global meat consumption is not limited in the next several decades, we shall be faced with a global food crisis threatening food security [Świerczyńska 2008]. Forecasts by the World Bank show that by the year 2030 global food demand will increase by 50% and meat and meat products by 85% [Evans 2009].

### *Food Prices*

The global food crisis that began with the sudden increase in food prices all over the world at the turn of 2007/ 2008 resulted in an increase in the costs of food product imports (especially in developing countries dependent on import), and had catastrophic effects on the household budgets. The increase in prices is being felt the most by the millions of the poorest people. It is estimated that global food prices can increase by 70-90% by the year 2030, without taking into account the impact of climate change, which could cause prices to double [*Stwórzmy lepszą przyszłość* 2011].

The food crisis played its part in the increase in the number of undernourished people all over the world. In 2009, the number of undernourished people exceeded 1 billion [FAO 2010]. Why is it then that in the world where enough food is produced to feed all its inhabitants, one person out of 7 suffers hunger? Such a large number of undernourished people is blighting the hope of reaching the first of the Millennium Development Goals, which, at the same time, is a priority for the international community, that is *eliminating extreme poverty and hunger*.

On one hand, there is the growing number of undernourished people, while on the other, the obese, whose number is estimated at around a billion. The worldwide problem of obesity is connected not only with changes in lifestyle (sedentary way of living, improper food habits, low physical activity, stress), but also with the increase in food prices and its correlation to production costs [Drewnowski 2010].

### *The expansion in the areas short of water and the limitation of the availability of land*

Water is one of the most important factors deciding the fate of a person. Water resources all over the world are estimated to be at around 1 387 mln $km^3$. Salt water constitutes 97% of water resources all over the world, while fresh water constitutes only 3%. 69% of fresh water is stored in glaciers and continental ice-sheets, while 30% is stored underground. This means that the available drinking water constitutes only 1% of global water resources.

Water resources are decreasing in many countries due to climate changes. The amount of water allotted to 1 person is 0.23 $km^3$. According to the World Water Development Report, during the next 20 years, the average amount of water allotted to 1 person will decrease by 1/3.

The demand for water is growing at an alarming rate due to the larger number of people inhabiting the planet. The increase in the demand for water is also a result of changes in consumption patterns, as well as increases in energy production, especially bio-fuels. The most water is used by the inhabitants of Asia, where the population is growing at the quickest rate. For example, a Chinese citizen in 1961 consumed, on average, only 4 kg of meat and meat products per year, in 1987 22 kg, while in 2007 as much as 53 kg. It is important to note that the production of 1 kg of beef requires 15 500 litres of water, 1 kg of poultry – 3 900 litres, 1 kg of eggs – 3 300 litres, and 1 kg of wheat – 1 300 litres [Stwórzmy lepszą przyszłość 2011].

According to the FAO, the main factor limiting the increase in the production of food all over the world is water. Agriculture utilises 70% of global resources of fresh water, and climate changes further aggravate this problem.

A significant increase in the demand for food must be met using dwindling resources of not only water, but also of land. Due to the erosion of soil, the exhaustion of nutrients and the development of infrastructure and urbanisation, the area of land suitable for cultivation is decreasing. With such a high estimated population growth, until the year 2050 it will need to be fed in the conditions of the decreasing area of land suitable for cultivation. The decrease in land is influenced by, among other things, the demand for land suitable for the cultivation of energy crops in relation to the production of bio-fuels and the production of other non-food crops.

The estimated level of agricultural land in 2030 will amount to 0.22 hectare/person (currently 0.27 hectare/person). Therefore, any increase in agricultural production must come from better efficiency.

### *The disappearance of the variety of agricultural plant species*

Biological diversity in agriculture encompasses, apart from natural habitats and wild plant and animal species, the agricultural genetic resources, which comprise local varieties of crops and breeds of livestock.

Agricultural diversity is the only and the most important method of achieving food security in the conditions of a changing climate. The greater the number of kinds of species and varieties on one farmland or in one ecosystem the greater the possibility that some of them will handle the changes in the environment. Diversity of species also lowers the possibility of diseases and pests by limiting the number of the host organisms on which they could develop [Cotter and Tirado 2008].

### *The losses and waste of food*

The losses and waste of food are two different matters. The losses of food occurs mostly in the poorest countries, as a result of the lack of vital infrastructure. The losses of food occurs mostly during the production stage, while the losses during the consumption stage are much lower. The production and improper storage constitutes approximately 40% of food losses.

The waste of food occurs mainly in developed countries. According to the estimates of the FAO, the average citizen of the European Union throws away 179 kg of food per year, and citizens of Europe and North America 105 kg, while citizens of Sub-Saharan Africa and South and South-East Asia 8.5 kg.

1.3 billion tonnes of food is wasted every year all over the world, which constitutes 1/3 of the amount of food produced fit for human consumption. In Europe, 89 mln tonnes of food are wasted annually, 9 mln in Poland [FAO 2011].

Due to such high levels of food waste, all necessary steps should be taken to reduce it. An informational campaign aiming to change the habits of consumers is a good solution. One such campaign, under the name ”Don’t waste food, think ecologically”, was conducted by the Federation of Polish Food Banks at the beginning of this year. The reduction of food waste will result in increased efficiency in land use, improvement in water economy, the assurance of benefits for the whole of the agricultural sector on a global scale and the decrease in undernourishment in the developing countries.

## 15.5. Food Security – as an aim of the Common Food Policy

The Common Food Policy is one of the key policies of the European Union, which is constantly evolving. Just fifty years ago its main goal was the guarantee of the necessary amount of food for the European citizens struggling with the post-war food shortage. That goal was achieved. However, its side-effect was the overproduction of food.

In the nineties of XX century, one of the most important aims of the Common Agricultural Policy was the elimination of the production surplus and the increase in the quality of agricultural and food products, as well as environmental protection. The reasons for the shift from intensive agriculture to the multi-functional development of the rural areas were, among others, (1) the overproduction of food, (2) the degradation of the natural environment caused by the over-chemicalisation and mechanisation of agriculture, (3) the depopulation of rural areas, and (4) the crisis caused by mad-cow disease. The counteraction against those trends was included in the Maastricht Treaty of 1992, in which the European Union adopted regulations promoting the production of high-quality food rooted in the environment and tradition.

Currently, the main aim of the Common Agricultural Policy is not only to guarantee the necessary amount of food, but also the high quality of the food produced in a sustainable manner and in accordance with the requirements in the fields of environmental protection, water resources, the health and well-being of animals, the health of plants and public health, all of which simultaneously guarantee stable agricultural profits.

The Common Agricultural Policy, with a perspective reaching the year 2020, will be directed towards raising the competitiveness of European agriculture and ensuring food security, simultaneously promoting high-quality food products, environmental protection and the development of rural areas.

Food security is becoming a more prominently raised topic during the discussion on the future CAP. This is shown by the Resolution of the European Parliament of 18 January 2011 on recognising agriculture as a strategic sector in the context of food security [European Parliament 2011]. The Resolution states that, among others:

- The right to food security is the basic right of a human being and the European Union is obligated to feed its citizens.

- The guarantee an adequate amount of food is the basic element in food security.
- The future CAP, in order to achieve its formula of **Food security – Nutrition – Quality – Proximity – Innovation – Productivity**, must include public expectations, according to which it should consist of an agricultural and food policy that promotes proper nourishment (for example, the realisation of programmes promoting the consumption of fruit, vegetables and milk in schools).

- The intensified pursuit of the development of renewable energy sources must include the impact on food production and its demand.

- The future increase in efficiency in new Member States will cause an increase in the area of available land and will constitute an opportunity for protein plant and oil plant production in the EU.

- The food from third countries which is imported into the EU must meet the same standards, so as not to harm the competitiveness of European producers.

In the face of numerous threats to food security, the European Union needs a strong CAP, which could succeed in feeding the constantly-growing world's population in the conditions of limited water and land resources.

The reformed Common Agricultural Policy should ensure food security, both at the EU and global level. The most important challenges for the Common Agricultural Policy are:

(1) the assurance of the continuity of agricultural production in the whole of the European Union,

(2) the assurance of the coexistence of different agricultural models, including small-scale agriculture, which is suitable for the creation of jobs in the rural areas of the European Union, ecological agriculture and sustainable agriculture,

(3) taking into account the expectations of the European consumers in the matter of quality and food security,

(4) the assurance of the clearance of the whole of the agriculture and food chain, so that consumers can have access to reliable information as to where the food they consume has been produced, what ingredients it contains and how it was produced,

(5) the creation of a new food-quality policy, which will have a significant impact on sustainable and competitive European agriculture,

(6) the support of agricultural producers who want to meet the challenges in the area of food quality through participation in food-quality systems, both at the European Union and national levels,

(7) the encouragement of farmers to convert to a management system in which support is not connected with the amount of food, but rather with its quality,

(8) the production, protection and promotion of high-quality food,

(9) the support of promotional and informative actions directed towards both food producers and consumers,

(10) the protection of the natural environment,

(11) the concern for health and the proper conditions of livestock breeding,

(12) the production of organic food,

(13) the promotion of pro-health food-consumption patterns, which would result in the improvement in the health of the citizens of the European Union,

(14) the assurance of food and health education, which constitutes a basic tool in the process of developing proper nutritional and health habits, especially of children, and

(15) the limitation of food waste.

## 15.6. Conclusion

In a situation where the global population is growing, as is the global demand for food, the European Union, as the largest economy and the biggest assistance provider in the world, may help satisfy that demand. Therefore it is crucial to maintain and improve the agricultural production capability of the EU and, at the same time, respect the obligations of the Europe-

an Union arising from international trade agreements and policy coherence for development. A strong agricultural sector is necessary for a competitive food industry.

The agriculture of the European Union will not only have to provide more food, but also improve food quality in conditions of aggravating climate changes (droughts, floods), the decreased availability of water and land, the disappearance of biodiversity, new plant and animal diseases, increasing speculation on the markets of agricultural resources, the growing disproportions in the rate of the natural population growth on the global scale and the growing requirements of consumers in the area of food security.

The pursuit of higher quality constitutes an important element of the strategy of the agriculture and food sector of the EU on the global market, in order to maintain the high level of competitiveness. High-quality European food is the main principle of the agriculture of the European Union and plays a key role in the creation of the cultural identity of countries and regions.

The priority of the Common Agricultural Policy should be the improvement in the efficiency of agriculture in the EU, while simultaneously improving environmental standards. In this manner the European Union will guarantee its self-sufficiency in relation to food and increase its input into global food security.

**References**


1. Cotter J., Tirado R., (2008), Problem: Bezpieczeństwo żywnościowe a zmiany klimatu. Rozwiązanie: Różnorodność biologiczna, Geenpeace.
2. Drewnowski A., (2010), The cost of US foods as related to their nutritive value, Journal of Clinical Nutrition no 92(5).
3. Dz. U. 2006, nr 171, poz. 1225.
4. Evans A., (2009), The feeding of the nine billion. Global food security for the 21st century, Chatham House, London.
5. FAO, (2011), Global Food Losses and food waste, Rome.
6. FAO, (2010), The State of Food Insecurity in the world. Addressing food insecurity in protracted crises, Rome.
7. FAO, (2009), The State of Food Insecurity In the World 2009. Economic crises – impacts and lesson learned, Rome.
8. International Population Reports WP/02. Global Population Profile: 2002, (2004), U.S. Government Printing Office, Washington, DC.
9. Małysz J., (2008), Bezpieczeństwo żywnościowe strategiczną potrzebą ludzkości, ALMAMER, Warsaw.
10. Polska 2006. Raport o stanie handlu zagranicznego (2006), Ministry of Economy, Warsaw.

11. Polska 2007. Raport o stanie handlu zagranicznego (2007), Ministry of Economy, Warsaw.
12. Polska 2008. Raport o stanie handlu zagranicznego (2008), Ministry of Economy, Warsaw.
13. Ocena sytuacji w handlu zagranicznym w 2011 r. (2012), Ministry of Economy, Warsaw.
14. Stwórzmy lepszą przyszłość. Sprawiedliwość żywnościowa w świecie ograniczonych zasobów, (2011), Oxfam International, Polska Akcja Humanitarna, Warsaw.
15. Rezolucja Parlamentu Europejskiego z 18 stycznia 2011 r. w sprawie uznania rolnictwa za sektor strategiczny bezpieczeństwa żywnościowego (2010/2112(INI)).
16. Świerczyńska U., (2008), Przyczyny światowego kryzysu żywnościowego oraz jego wpływ na najbiedniejsze kraje świata [in:] Globalne ocieplenie i kryzys żywnościowy, Fundacja Polskie Centrum Pomocy Międzynarodowej, Warsaw.
17. www.fao.org.

**COPY FREE**

*Print run: 300 copies*
*Printing and binding: EXPOL Włocławek*