

REVIEW PAPER

Some issues of Romanian agriculture in the context of climatic changes and economic crisis

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Abstract

The aim of this paper is to present the main features of Romanian agriculture in the context of climatic changes and economic crisis. Essential approach on that topic refers to a blueprint of Romanian economy, with a particular view on its agriculture nowadays, considering the production factors that may influence economical growth, namely: land, capital, labor force and management. Since 2005-2006 agricultural branch production indices started to decrease. Romania's agriculture has declined because of both local factors, namely subsistence farms spreading, insufficient technical endowment, inappropriate usage of agricultural tools, faulty system of management, as well as external factors, like climatic changes and economic crisis. However, the recent adoption of a comprehensive economic policy programme, comprising structural reforms and financial sector supervision, is able to bring a positive impact on the Romanian economy, including agriculture.

Key words: agro-economics, Romania, agro-environment, agro-policies, climate change

Introduction

Mainly during the last decades a lot of organizations, governmental bodies have paid attention to the global climatic changes and have started to promote the sustainable development. The impact of climate change on agriculture and food security was underlined and a series of policies was proposed, too. For example, the Commission's White Paper "Adapting to climate change – Towards a European framework for action" (COM 2009 - 147 final) indicated that adaptation policies are emerging in nearly all member states, and that it is essential to share experiences from early adaptation action and results from research. On the other hand, the global economical crisis has started to show its effects in the last years. For that reason, like response to the current economic situation there was expressed a European strategy against global financial crisis through the European Economic Recovery Plan – COM (2008) 800. However, the regional policies and applied strategies allow for national issues and specific features of each country. No doubt, Romanian agriculture is confronted with the same problems as in the other European Union member states, but its evolution is depending on previous distinctive factors, which affect it at national level, too.

Material and methods

The environmental, technical, social and economic analysis emphasized in this paper has been constructed starting from the national sectorial policies and strategies for sustainable development, agriculture and research nowadays, as well as on the previous authors' works in the field. The National Strategy for Sustainable Development 2007-2013 was developed by cooperation between Romanian Ministry of Environment and Sustainable Development and the National Centre for Sustainable Development of the UNDP, with the aim to connect Romania to the new EU concept of sustainability. The National Strategy Plan for Rural Development 2007-2013 was prepared by the Romanian Ministry of Agriculture and Rural Development on the basis of the Council Regulation from 2005 on supporting rural development under EAFRD. The National Strategy of Research, Development and Innovation 2007-2013 was launched in December 2006 by the National Authority for Scientific Research after a large consultation with the interested stakeholders and accepted by the Romanian Government in 2007.

Results and discussion

With an area of 238 thousand km² and a population of more than 21 million inhabitants, Romania is an important new EU member state in terms of size, although there is a large gap between this country and the old member states as far as the level of economic and social development is concerned. Rural areas play an important part in this respect, both by their size and residential, economic and recreational dimensions. According to the national definition, rural areas in Romania cover 87.1% of the territory, and include 45.1% of the population, i.e. 9.7 million inhabitants. According with the ECOFIN 2009 economic analysis and forecast, the economic boom between 2004 and 2008 has led in Romania to overheating pressures and unsustainable fiscal and external imbalances: real GDP growth in this period averaged 6.6%; inflation peaked at 8.4% in 2008; the current account deficit reached 12.3% of GDP in 2009; banks and other businesses were increasingly reliant on short-term external funding. Moreover, years of procyclical budgetary policy had led to a sizeable deterioration in the underlying fiscal position, with the structural deficit rising from 2.4% of GDP in 2005 to 8.5% of GDP in 2008. Market participants and economic agents became increasingly concerned by these developments. This resulted in a significant tightening of capital flows to Romania and stress in the banking system. Pressures on the exchange rate increased, resulting in a more than 30% cumulative depreciation between August 2007 and January 2009. Balance sheet effects and a sharp decline of export demand plunged the economy in a severe recession in late 2008. In these conditions, the authorities decided to seek external financial support. The EU, the IMF, the World Bank, the EIB and the EBRD responded by making available to Romania medium-term financial assistance of up to EUR 20bn. This assistance is conditional upon the implementation of a comprehensive economic policy programme, comprising fiscal consolidation and reform measures in the area of fiscal governance, structural reform and financial sector supervision. The adoption of the policy programme has contributed to an improvement in market sentiment and had a positive impact on the Romanian economy. Financial stress eased, pressures on the exchange rate declined and strains on the government securities market diminished with average yields on government bonds declining from 14% on the end 2008 to just above 10% in August 2009 (ECOFIN 2009). Agriculture's role on economical increment in different European countries is different. In many member states of EU with higher economic development, the agriculture represents a smaller part of economic outputs even the agricultural sector is increasing in absolute values. But in Romania agriculture has still a significant contribution to GDP, with figures from 13% to 8.5%. Unfortunately, the contribution of agriculture to the Romanian economy no means necessary an important increment in absolute values, but also the decline of other economical sectors has happened.

The agricultural branch production indices of Romanian economy calculated for the period 2000...2007, according with the Romanian Statistical Yearbook 2008, indicate that the best outputs were recorded in 2004, but even then the agricultural potential was not achieved 100%. As structure, the branch of crop production has represented over 60%, comprising mostly cereals. The areas cultivated with industrial crops (rape, flax, sugar beet etc.) and fodder plants were mostly limited because of the difficulties in mechanization. The average crop production was not stable from one year to another, as it depended on the climate conditions. The average yield for main cereal crops was relatively low against its potential, measured by R-D institutes from the Romanian Academy of Agricultural and Forestry Sciences's network (e.g. 1429...3403 kg ha⁻¹ for wheat during 2000-2007, representing 40% of its potential). Less than 10% of cultivated area is represented by vegetables, with a production between 112.7 and 220.3 kg per inhabitant as average for 2000...2009, and the production has been affected by climate conditions, too. As far as vineyards are concerned, the areas cultivated with noble grape vines during 1998...2005 decreased by 16% and the productivity level of the noble vines is of only 30 hl wine ha⁻¹, a major gap from the EU average, which is of 50 hl wine ha⁻¹. Orchards also decreased in surface area year after year (by 15% during 1998...2005), while production dropped from quantitative points of view.

Livestock evolution over the period of 2002-2007 indicates a decrease of cattle (-5%), pigs (-43%), poultry (-8%) and horses (-8%). But there increased the number of sheep (18%), goats (17%) and bees (27%). Over the same analysed period the total animal production varied with a slight increasing trend, but meat production (calculated as live weight of slaughtered animals for consumption) per inhabitant is decreased lightly in the last years (64.9...78.2 kg per capita). But increased the total milk production (ratio_{2007/2002} 11%), the egg production (ratio_{2007/2002} 14%), as well as the extracted honey (ratio_{2007/2002} 25%). Concerning food market and international trade,

Romania became a net importer of foodstuffs, mainly with higher added value (processed ones), and the balance of trade deficit is increasing every year. Over the same analysed period on the internal market was registered an increment of retail by food goods, but indices of retail were smaller than the correspondent for non-food goods.

The actual evolutions of foods demand are influenced by the small economical performances, corresponding with the general low level of population's incomes and purchasing power. Also a dispersion of consumption behavior in relationship with the population's social stratification was pointed out (Dutu and Sirbu, 2007). In 2007, the expenses for eating passed over 70% of the population available income. The food consumption in Romania in comparison with the developed European countries is in deficit regarding meat, milk, fish and some ranges of vegetables and fruits, but there is an excess in cereal products. Low purchasing power allows many times to promote on market food commodities with cut prices, not necessary with best quality or added value. Romanian agriculture has started to be organized according with the market requirements from 1990, with the purpose to improve the outcomes of this sector and to accomplish the EU requirements for Romania's entry. Although many steps in the straight direction were made, and different financial support and strategies were assessed, the new economical crisis and climatic changes have disturbed the evolutionary process. Land represents an important resource that underlies agrarian production and food security. Considering the level and the way of people interference, the land fund of Romania consists of: 61.7% agricultural area (about 14.7 mil. ha); 28.3% forests and other forest vegetation lands (about 6.74 mil/ha); 3.56% (849,900 ha) surface water zones (rivers, lakes, pools) plus the continental plateau of the Black Sea; 1.94% (463,200 ha) other areas corresponding to non-productive land; and 4.5% (about 1.08 million ha) land for physical infrastructure of the social-economic system components. The agricultural area decreased slightly during the past six years, but the arable one increased in absolute value, that means a better use of the land fund from this point of view. At the end of the year 2007, the arable land represented 64.06% of agricultural area, and it was utilized extensively and intensively for agricultural crops. From agricultural area 22.64% lands with grassy vegetation used as natural and semi-natural pastures, 10.41% lands with grassy vegetation used in semi-natural regime for producing fodder (hayfields), 1.48% lands for orchards and trees nurseries and 1.41% vineyards and vine nurseries were recorded. As for the forests and other forest vegetation lands, there were recorded approximate 3% as primary woods and 97% as secondary woods and lands with forestry vegetation. If it is only considered the ecologic functional woods, the degree of deforestation is only 23% and the percentage is by far below other European countries with similar natural conditions (MESD, 2006).

Starting twenty years ago, the legal status of the land property or/and agricultural holdings was changed through a debatable legislative package and had in view to transfer partially the land fund from the state property to the land-owners or stockholders. At the moment there are individual agricultural holdings (99.54%) and other legal entities (companies, associations, co-operative societies etc.). Unfortunately, there were some law-marking inadvertences during the restructuring of private agricultural holdings concerning the legal status of land property without agricultural machinery or agricultural services. After changes of the legal status of agricultural holdings, which used agricultural areas and owned livestock, there were insufficient investments and slow rate of technological progress. And all those has generated a lower performance of the Romanian agricultural sector as well as a decrement of the total agricultural holdings, with a decreasing ratio of 12.3% in the last five years. On the other hand, if we analyze the agricultural holdings by use category and size class of agricultural area in use, it has observed at the end of 2007 that 97.39% of agricultural holdings are small, namely those with a size class of agricultural area in use under 10 hectares, while the bigger agricultural holdings with over 100 hectares in use represent only 0.25%. In comparison with 2002 there was registered a slight decreasing of number of small farms (from 98.58% to 97.39%), but in this case the figures are non representative by far. The number of agricultural holdings by large class of agricultural area in use (over 100 ha) narrowed down from 10,203 in 2002 to 9608 in 2007, too. It seems that the presage for 2015, expressed by Maftai (2002), was too optimistic and the probability to develop associative forms for a large size class of agricultural area in use has scanted. Many specialists in this area have expressed the need of Romanian agriculture to be rebuilt in terms of augmentation of the medium agricultural holdings, by agricultural area in use and improvement of agricultural production structures (Zahiu and Toma, 2009).

Agriculture infrastructure (buildings, plants, tractors, agricultural machinery, irrigation system and others) is not sufficient for ensuring in a suitable manner all needed agricultural services in the optimum periods. Firstly, as we mentioned above, the homesteader received back only the land property without livestock and machinery (combines, tractors etc). Secondly, because of spread agricultural holdings in terms of size-scale of agricultural land by use, the owners had not the economical power to invest into technical equipments or the investment would not be justified in view of capital depreciation. By using EU financial support (Special Accession Programme for Agriculture and Rural Development) some farmers have bought machineries in the last years, but at the end of 2007 the total park consists of 174,003 tractors and 272,679 agricultural machineries at national level as whole. Romania still has an important gap compared to the older EU member states, with regard to agricultural equipments. That circumstance is obviously in terms of agricultural services of which production indices varied from 88% to 69.9% during the period 2002-2006 and became 92.7% in 2007 by comparison with year 2000 (=100%). (INS, 2008). Natural resources, especially climate, water and soil, play an essential part in the development of Romanian agriculture. The climate of Romania is temperate continental with important areal variations. The agricultural production systems of the natural capital structure are over 40% affected by the climatic changes, which have been recorded in terms of precipitation, wave heat or wind speed and produced important damages like droughts, floods, soil erosion and landslides (Hera and Kleps, 2009). Romania was one of the first countries to sign the Kyoto Protocol and thereby show its commitment to the fight against climate change by agreeing to reduce greenhouse gas emissions by 8% by 2012. It is now one of the leading new EU Member States in achieving this objective with a reduction of more than 30 % of gas emissions since 1989. Although it should be noted that this is not solely due to environmental policy, but mainly to the general economic decline during the period 1990-1999 and the restructuring of the industrial sector. The main sources of air pollution and greenhouse gas emissions in Romania are currently the energy producing industry (thermal energy based on the burning of coal and oil still accounts for about 60% of domestic power generation), transportation, and to a lesser extent, agriculture. Low level of mechanization in Romanian agriculture, in contrast with European average, together with small areas covered by greenhouses, are generating a low contribution to climate change. However, the old park of tractors and main agricultural machines, need to be renewed in order to keep a low level of emissions. Available EUROSTAT data indicates that the agricultural emissions of greenhouse gases in 2007 were over 11 million tones of CO₂ equivalence. The observed and anticipated effects of climate change on Romania's agriculture and forestry are as follows:

- during the last decade, the incidence of both droughts and floods has become more frequent with a negative impact on agricultural yields (especially for wheat and corn) and an affect upon flora and fauna species. In some cases, human activities, such as the deforestation of mountain areas, have further increased the incidence and intensity flooding by accelerating the movement of excess rainfall to streams and rivers;
- more than a quarter of the Romanian territory is covered by forested land, including a large number of species and ecosystems. The impact of climatic changes on the Romania's forests has been analyzed with the support of several global climate models. For the forests situated in low land or hilly regions a considerable decrease of forest productivity is forecasted after 2040 because of the temperature increment and the decrement in the volume of precipitation.

It is likely that agriculture and forestry can make an important contribution to the further climate change mitigation through: (i) the use of afforestation for the absorption and retention of greenhouse gases. The role that forests have in binding CO₂ and purifying the air is widely acknowledged. Changes in land use (including afforestation of agricultural and non-agriculture land) directly affects the carbon balance - especially the planting of new forests since younger trees grow more rapidly and absorb more CO₂ than older forests; (ii) the supply of biomass as a renewable energy source. Romania benefits from hydro-power generation, which combined with other modest sources of renewable energy generate about 28.8 % of the domestic energy supply (10% is generated by nuclear power plants). Agriculture and forestry also have the potential to provide significant quantities of biomass, the energy potential of which is estimated to be approximately 7.594.000 equivalent oil tons per year. This includes residue from forest enterprises and firewood (15.5%), sawdust and other wood residue (6.4%), agricultural residues (63.2%), household waste (7.2%) and bio-gas (7.7%). The national strategies for energy development foresee an increasing of the ratio of renewable energy sources in the total power capacity of Romania. This could be supported by a range of rural development measures to sustain investments

for bio-gas and bio-fuel production through the recycling of farm animal wastes and sewage sludge, use of energy crops to produce bio-energy or the application of more efficient production technologies (MADR 2006).

Conclusions

From social point of view agriculture ensures either food security or labor force occupation, especially in rural area. In labor terms, the employment structure by status showed that the number of workers involved into agricultural holdings decreased in the past years towards 28.2% of occupied population. Most striking feature is the ageing of the agricultural labor force and the continued high proportion of holdings with no other gainful activity than agriculture. The labor efficiency is less because of lower skills and basic training, too. Consequently, the agricultural holdings differ among them from many points of view: legal status, production behavior, management type, applied technologies, concerns on sustainable development, labor force and professional training, outcomes and economical outputs, and conventional practices (Bajan, 2009). Generally speaking, agriculture accomplishes two main functions, namely economical and social ones. Romania's agriculture has declined because of the excessive breaking up of land property, poor endowment with equipments and insufficient agricultural services, absence of a functional system of management and agricultural marketing. Climatic changes as well as economic crisis deeply affect Romanian agricultural production and market as a whole. Like many other countries, Romania is already in need of emergency interventions due to all these factors, although the competitiveness is considered to be a necessary condition for guaranteeing sustainable growth of agricultural sector.

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