

Contributions of Agriculture to Economic Fluctuations in Romania*

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Abstract. *Globalization and European integration could be advantages for the development of agriculture in Romania, which still holds a high relative position in the economy and has structures of business organization and employment that do not match the European model. Based on the empirical analysis of available data, the paper presents changes of the Romanian agriculture in the last two decades and their influence on the whole economy, by pointing out three important fields of macroeconomic fluctuations: gross domestic product, prices and employment. The extended size of the subsistence component in the agricultural sector keeps the dependence of production variations on the natural conditions, strongly influenced by climate changes, while inducing significant variations in the GDP, but is also a solution to soften the social effects of the economic crisis.*

Keywords: agriculture; economic fluctuations; price volatility; overemployment.

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REL Codes: 3B, 8H, 15B.

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1. Introduction

The explanation of causes of business cycles in the context of long term changes determined by globalization and processes of economic integration need the identification of new sources of instability, which accompany the old ones already discussed in the specific literature. On one hand, the development of the knowledge economy allows the endogenous economic growth and creates new opportunities for individuals to enter the economic circuit dominated by the market, but, on other hand, there are voices which foresee the return to self-consumption in some economic sectors in order to have self-protection against food risk and risk of dependence on the distribution systems (Toffler, 2006, pp.151-172).

Agriculture was included among the industries in developed EU countries after it benefited from a sustained public support and reached a high level of competitiveness and stability. However, there is concern about the variation of agricultural production caused by climate changes and about the price volatility under the pressure of the search for alternative energy resources (Von Braun, 2008) and of the speculative drivers (Zawojaska, 2010). Volatility is a management challenge, since food chain actors must adapt to changing prices and quantities (Von Davier, 2010). Another concern within the European Union is the synchronization of business cycles of the Member States, which is a necessary condition for an efficient application of common policies, but assymetric development of sectoral business among countries especially in agriculture reduces the synchronization degree (Da-Rocha, 2006).

The paper presents changes of the Romanian agriculture in the last two decades and their influence on the whole economy, by pointing out three important fields of macroeconomic fluctuations: gross domestic product, prices and employment. The research method consists of an empirical analysis of available data.

2. Agriculture and the changes of GDP

During the transition to the market economy the agricultural sector had a high share in the Romanian economy. After a decade of transition (1990-2000) the contribution of agriculture to the total gross value added (GVA) of the economy diminished from 23% in 1990 to 12.1% in 2000. In the context of an important development of the services and the recovery of the industrial production, which represented structural changes with influence on the sources of economic growth, the contribution of agriculture to GDP decreased constantly. During the period of sustained economic growth (2000-2008) the

Romanian agriculture reached the maximum share 14% of the total GVA in 2004, which was an exceptionally good agricultural year, but the trend was the reduction of this share under 10% (Table 1).

In the period 2000-2009 the employment in agriculture in Romania decreased by 41.1%, while other EU countries with a high share of agriculture in GDP experienced a similar trend (Table 1). This massive reduction of employment in agriculture in a rather short time points to initially high level of overemployment. Moreover, the reduction of labor input was accompanied by the reduction of the utilized agricultural area. Thus the productivity in agriculture had not continuous increase as it was expected, but mainly annual fluctuations determined by the variation of the agricultural production, in strong connection to the weather instability.

Table 1

The position of agriculture in selected EU countries

- % -

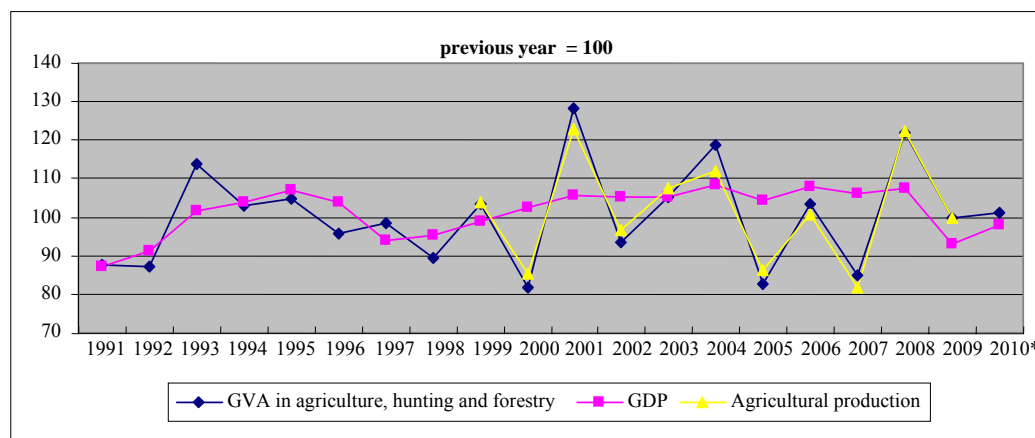
Countries	Share of agriculture (including hunting and fishery) in total GVA for all branches		Share of agricultural employment in total employment*	Changes of employment in agriculture 2009/2000	GVA in agriculture per AWU* (EU-27 = 100%)	
	2000	2009			2000	2009
EU-27	2.4	1.6	5.0	-24.9	100	100
Share of agriculture in total GVA > 3%						
Romania	12.1	7.0	23.4	-41.1	25.2	43.2
Bulgaria	13.6	5.6	10.7	-48.1	51.9	59.4
Slovakia	4.5	3.9	3.8	-42.5	109.9	256.1
Poland	5.0	3.6	14.0	-11.3	47.3	51.6
Lithuania	6.3	3.4	10.4	-21.1	60.3	55.5
Latvia	4.6	3.3	9.4	-38.2	35.1	53.5
Hungary	5.4	3.3	11.0	-34.8	56.5	60.6
Greece	6.6	3.2	12.0	-2.6	132.8	79.4
Share of agriculture in total GVA < 1%						
Ireland	3.2	1.0	7.6	-3.9	132.8	52.9
Germany	1.3	0.8	1.3	-21.7	235.1	194.2
Belgium	1.4	0.7	1.4	-14.8	307.6	178.7
United Kingdom	1.0	0.7	1.0	-13.2	266.4	244.5

* own estimations based on Eurostat data regarding AWU (annual work unit, which is the equivalent of a full time worker engaged in agricultural activities over an entire year).

Source: Eurostat Newsrelease 66/ May 2010 and Eurostat database.

The productivity in agriculture, calculated as the gross value added (GVA) per annual work unit (AWU), is much lower than the EU-27 average (Table 1). But the annual variation of the agricultural production may generate changes of position in the EU hierarchy from one year to the other. For example, in 2000 the agricultural production in Romania decreased while the productivity represented only 25.2% of the E-27 average. In 2009, which was a better year, the productivity was 43.2% of the EU-27 average. These kind of oscillation occurs also for other countries (Slovakia, Greece). However the basic problem for Romania is that its position within the EU shows the productivity under 50% from the EU-27 average even in the best agricultural years.

According to studies written after 2000 (Dobrescu, 2005, p. 280), the competitiveness of the Romanian economy on the supply side was influenced by four essential factors: the presence of an important sector of companies chronically inefficient; the use under potential or the complete exit from the economic circuit of many production capacities; the low capitalization of a large part of viable segments of the economy; the high taxation level. These factors were also present in the agricultural sector and they caused the low efficiency level of production. In addition, the weather variation after the year 2000 determined the fluctuation of the agricultural production due to the low level of modernization in this sector (i.e. lack of irrigation systems or insufficient systems against flooding). Implicitly there was a stronger variation of the GVA in agriculture compared to the GDP (Figure 1). This situation has an impact on the real GDP growth (Figure 2).

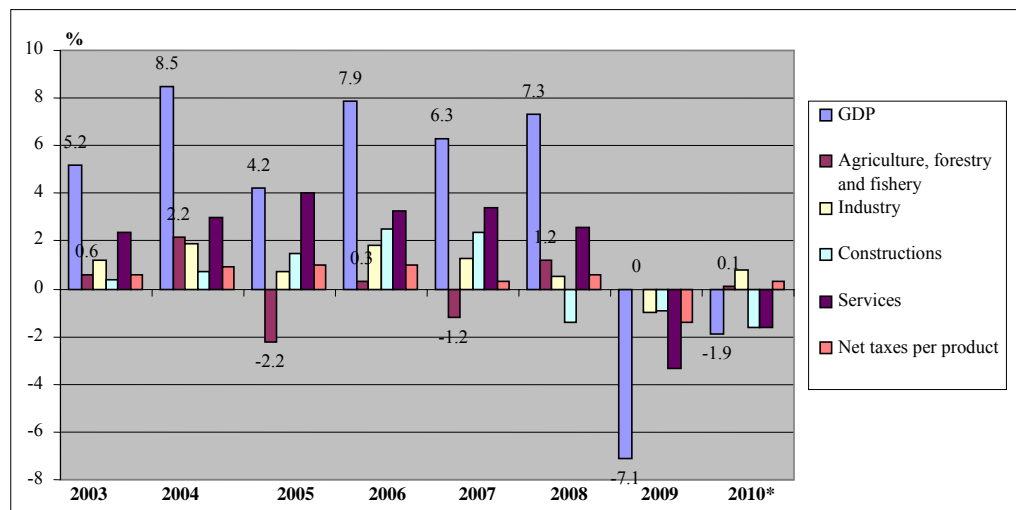


*preliminary autumn prognosis of the Romanian National Commission for Prognosis, 6 Sept. 2010.

Source: Romanian Statistical Yearbook, time series and other data from the National Institute of Statistics (NIS).

Figure 1. *Indices of GDP and of agricultural gross value added (including hunting and forestry and volume indices of agricultural production in the period 1991-2010*

Even if the continuous reduction of the share of agriculture in the GDP should diminish the contribution of agricultural supply shocks to the GDP fluctuations, this contribution still remains high. Thus, in unfavorable agricultural years, i.e. 2005 and 2007 (Figure 2), the negative contribution is visible, even during sustained economic growth. This makes the GDP prognosis difficult, as well as the measurement of the impact of the agricultural policy.



*preliminary autumn prognosis of the Romanian National Commission for Prognosis, 6 Sept. 2010.

** in 2010 data about agriculture include also forestry.

Source: Data from the National Institute of Statistics.

Figure 2. Contribution of main activities to the real GDP changes in Romania

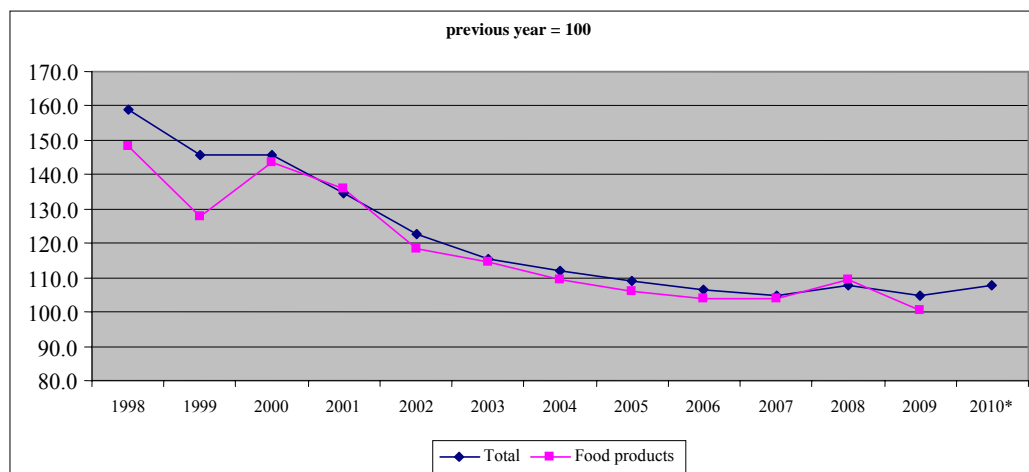
3. Impact of the agricultural price changes on inflation

The analysis of the consumer price index (CPI) indicates that in Romania there is still inflation, even after the accession to the EU, with disinflation trend during 2001-2007.

In the case of price index for food products, the growth rate decreased in the period 2004-2006. However it increased in 2007-2008, mainly because of the effects of bad weather conditions (drought and floods), but also due to the increase of prices for imported food products as a result of strong depreciation of the RON against the main currencies, as well as to the low competition environment on the internal market. From May to September 2009 the growth rate of prices for food products decreased every month more than the CPI and contributed in this way to the decrease of inflation (Figure 3).

The price indices of food products depend directly on changes in food demand, supply of food industry and net food export. In the last years there was a gap between the average growth rates of the food industry production and the agricultural production. Thus we can see a partial decoupling of the food industry production from the internal supply of raw materials. This resulted in different price changes for food products compared to agricultural products.

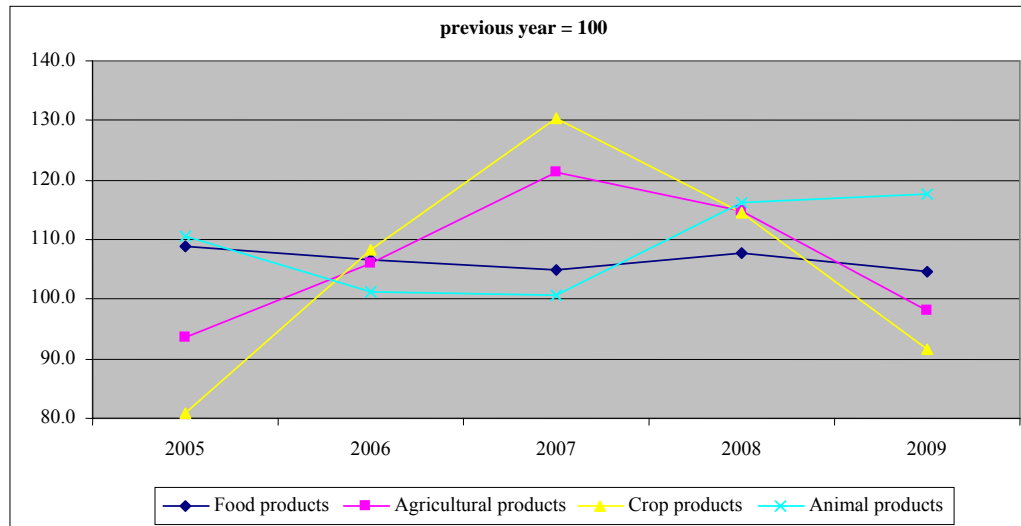
The pressure of competition in the retail sector hindered the increase of consumer price indices. Figure 4 shows the stronger changes of prices for agricultural products compared to changes of final consumer prices. The increase of prices for crop products was higher than for animal products, while in the case of crop products the amplitude of price oscillation was larger and the market more instable. Actually the agro-food chain is damping the oscillation of prices for agricultural products both in the case of increase and decrease.



*preliminary autumn prognosis of the Romanian National Commission for Prognosis, 6 Sept. 2010.

Source: Romanian Statistical Yearbook, time series and other data from the National Institute of Statistics (NIS).

Figure 3. Consumer price indices in Romania



Source: Data from from the National Institute of Statistics.

Figure 4. Price indices of food products and agricultural products in Romania

Within the EU-27 Romania registered the highest price increase of agricultural products in nominal terms in the period 2000-2008. Large increases in the same period had other countries too (Latvia – 86%, Estonia – 63.5%), but they were overtaken by Romania with an increase of +213%. This does not necessarily mean that the absolute agricultural prices are higher in Romania compared to other EU countries, but the change rate was higher.

However we notice that prices of agricultural products in Romania have decreased in real terms (deflated prices) in 2004 and 2005 under the level of year 2000, in accordance with the European decrease trend in the same period.

The intense increase of prices for agricultural products in nominal terms after the year 2000 is mainly the result of late liberalization of the internal agricultural markets, but also to higher inflation rates in Romania compared to the euro zone. In addition, the increase of agricultural prices is due to the higher internal and international demand, in connection to the economic growth and increased household income, as well as to the non-food use of agricultural products (i.e. for biofuel).

The economic crisis and its effects on the household income had only little impact on food demand in Romania in 2009. The purchased food quantities decreased in 2009 compared to 2008, but only for certain food products (estimates based on NIS data from the Household Budget Survey):

- bread and similar products (3.6%), which had a decreasing trend in the last years, specific to inferior goods, both for purchased and consumed quantities;
- meat and meat products (1.7%), while the consumed quantities decreased only by 0.6%;
- potatoes (1.2%), while the consumed quantities increase by 2.8%;
- vegetables and canned vegetable (25.1%), while the consumption decreased less (8.4%); this group of products has the most significant decrease of demand on the market, but also of the total consumption;
- sugar (4.2%);
- chocolate and bonbons (2.9%);
- mineral water and non-alcoholic beverages (0.2%);
- total alcoholic beverages (6.2%), while the consumption decreased by only 0.5%.

These quantity decreases do not distinguish the structural changes of demand by types of products within every food category and do not reflect the new orientation of consumers toward lower quality products.

The general level of household income imposes a limit for price increases for basic food and the price adjustments for final products operate under the pressure of the market competition. In addition, the large retailers have most likely a price margin reserved for the adjustment to the variation of the agricultural raw material prices.

The lower income level in Romania is correlated with the lower level of food prices. Even if the food prices increased during the last decades, data calculated at the purchasing power parity show that in Romania the price level reached 42.5% of the EU-27 average in 2000 and 61.5% in 2007 (Zahiu, 2010, pp. 41-42). The largest price gap is in the case of vegetables and fruit, where the market supply from the internal production is the lowest compared to other crops. The crisis restored in 2009 the self-consumption of vegetables and canned vegetable to 50% of the total consumption, compared to 42.5% in 2004 and about 40% in 2008.

3. Employment in agriculture

The agricultural labor force in Romania is employed in a large number of holdings. At the end of 2007 the total number of agricultural holdings was 3.93 million compared to 4.26 million in 2005 and 4.48 million in 2002. The Romanian agriculture is not homogenous from the view point of the holding structures.

The sector of small subsistence households of the peasants proved to be very resistant and survived after 1990 based on the structure of the old rural households. The land reform that started in 1991 and the absence of an efficient structural policy resulted in the process of excessive parcelling of land which has extended the subsistence agriculture over the limits acceptable from economic point of view. The small holdings were disconnected from the market and increased the self-consumption in the rural areas. In 2007 the individual households under two hectares still covered 64.5% of the agricultural area in use.

At present the large commercial holdings play an important role on the internal market and also for the exports. In 2007 the holdings over 50 hectares used about 0.37% of the utilized agricultural area. Such agricultural companies could reach good results in the production of cereals and oilseeds, viticulture, pig breeding, poultry breeding etc. The adjustment of these holdings to the market requirements has been done with difficulties.

The numerous individual holdings produce mainly for self-consumption and are practically excluded from the market and do not meet the requirements of the Community acquis. They were not attracted in the economic circuit by means of cooperation and on a legal base in order to become viable.

The segment of market oriented and viable agricultural family holdings of economic size is still underdeveloped. The consolidation of this sector is important in the context of the world economic and financial instability and climate change because, on one hand, they provide part of the food for rural families, and, on the other hand, they are able to supply the market with a diversified production.

Even if in the period 2000-2009 the employment in agriculture decreased, measured in annual work units (AWU), this equivalent in full time units does not provide a complete measure of the reality regarding the use of labor resources in agriculture. The analysis of the number of persons working as regular labor force in holdings under one European size unit (1 ESU - the measure unit for the economic dimension of the farm) shows the very high number of persons working in these holdings (Table 2).

Table 2

Farm labour force employed in holdings with less than 1 ESU*

	Annual work units (AWU) in holdings < 1 ESU (number)		Annual work units (AWU) in holdings < 1 ESU (% in total AWU)		Regular labor force in holdings < 1 ESU (number of persons)		Regular labor force in holdings < 1 ESU (% in total farm labor force)	
	2003	2007	2003	2007	2003	2007	2003	2007
Romania	1 262 050	1 239 730	46.75	56.75	5 829 640	4 535 420	65.6	70.1
Bulgaria	480 260	269 680	60.67	54.94	940 050	644 160	69.6	67.8
Slovakia	38 090	27 750	32.11	30.40	145 920	123 910	59.1	58.4
Poland	508 200	524 710	23.20	23.18	1 872 640	2 211 900	43.5	43.9
Lithuania	101 410	68 910	45.65	38.25	322 550	261 620	59.6	54.4
Latvia	49 950	34 840	35.46	33.25	124 090	105 630	49.0	48.5
Hungary	271 010	194 670	51.54	48.25	1 041 990	885 990	70.7	70.3
Greece	30 080	20 720	4.90	3.64	245 110	207 340	16.3	13.7

*1 ESU is a standard gross margin (SGM) of 1,200 euro.

Source: Agricultural Statistics main indicators 2008-2009, Eurostat.

In Romania, in 2007, about 1.24 million AWU of the holdings under the economic dimension (<1 ESU) represented 56.7% in total AWU in agriculture. The number of persons who worked in households < 1 ESU was 4.53 million and represented 70% in total regular farm labor force, regardless the work time per year. The fact that almost a quarter of the total population of the country worked regularly in households under the economic size gives the picture about the subsistence resources of these persons and their families, including the extended families living in urban areas.

A similar situation is also specific to other new EU member countries (Table 2) with important agricultural resources and a relative low efficiency of the agricultural sector (Bulgaria, Hungary and Poland).

In the context of the crisis that became visible in Romania in 2009, the trend of diminishing employment in agriculture was interrupted. Again the agricultural sector plays the role of employment buffer, as it happened in the '90. According to the data from the National Institute for Statistics, in the first three quarters of 2010, the number of employed in the economy continued to decrease, while the unemployment rate also had a slight tendency to decrease. In return, the employment rate has a slight increase especially in three development regions (South-West Oltenia, South Muntenia and North-East), where the size of the agricultural sector is large, and in Bucharest, where the service sector is absorbing the labour force.

The reduction of employment in agriculture in the period 2000-2008 and then its increase due to more seasonally work, as a reaction to the crisis, had no notable impact on the agricultural production. This weak correlation between input and output and the volatility of both variables were observed also in other countries with high share of employment in agriculture (Da-Rocha, 2006).

4. Conclusions

The main findings of the paper:

- The fluctuations of the agricultural production in Romania still induce important variations of the GDP, even if the share of agriculture in GDP had a continuous decrease in the last decade;
- The volatility of agricultural prices is high, but the agro-food chain is damping the price variation of the agricultural raw materials, both in the case of increase and decrease;
- The agricultural activity dominated in number by individual holdings with less than two hectares (64.5% of the agricultural area in use) plays the role of employment buffer in the context of crisis, by having an counter-cyclical action.

The Romanian agriculture did not yet approach the European agricultural model and the large part of it is not market oriented and did not reach the expected efficiency after the accession to the European Union. A higher and stable productivity would diminish the economic fluctuations. The long run trend of the return to self-consumption, as it is foreseen by A.Toffler, is the inverse projection of what we expect to be the result of modernization in rural areas. However, if we reconsider the meaning of modernization in agriculture under the pressure of changes in the global world and the new conception about healthy life, Romania could find a way to use positively its natural endowments and the present consumption model in rural areas.

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