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Structural changes of Romanian economy

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Abstract: *Economic activity in Romania has undergone significant changes over the last 20 years. Some of these changes can be classified as structural changes. Thus, in the national economy, the share of some fields has increased significantly, and the weights of others were significantly reduced. A shift has been in employment, with significant effects on revenue and productivity. A structural change was also within the branches, to sub-branches with a higher technological level. Other changes are qualitative, in order to improve the technical level of production. Qualitative changes are reflected mainly by the significant increase in labor productivity. The paper investigated both qualitative and structural changes. The aim is to highlight trends in economic activity in Romania. This can be useful in establishing objectives of employment and social policies, to accelerate the pace of development and to prevent imbalances.*

Key-words: *productivity, economic growth, technical progress, gross value added*

1. Introduction

The objective of this paper is to provide a fresh perspective on the economic growth of Romania after 1995. Economic growth was accompanied, on the one hand, by a significant increase of the capital stock, and on the other hand, by the reduction of employment. The cumulative effect of these changes was reflected in labor productivity growth. Increasing productivity is an essential indicator of production processes modernization. Economic growth which relies entirely on expanding the capital factors contribution is an unsustainable growth.

Measuring the contribution of labor productivity growth to real GDP growth has its origins in the work of Jan Tinbergen (1942, 1-8) and Robert Solow (1956, 65-94). They were the first who have proposed separate recording of factors contribution and productivity to economic growth. In particular neoclassical growth theory formulated by Robert Solow, defining stable growth path, it was a sophisticated clarification of the role of productivity growth in the economic growth process.

The concept of *total factors productivity (MFP)*, as a measure of total productivity was introduced by George Stigler (1974) and became an important

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starting point for economic research programs. In empirical studies, the link between the growth rate and labor productivity involves solving the problems of its measurement. Productivity measurement involves measuring aggregate production, Y, measuring the amount of labor used, L, and measurement of the capital stock. Felipe K. and McCombie (2013) showed that problems related to the use of macroeconomic production functions, particularly those concerning data aggregation are important, and direct estimation of parameters of these functions is not recommended. Measuring the value added, of labor resources used in economic activity and the capital stock shall comply with international standards in this area (Schreyer, and Pilat 2001, 127-170). The measurement methods used in this paperwork are consistent with those used by Denis (2006, 247) and Altar (2010).

2. Comparative study of structural changes in European Union

Simultaneously with the changing of production factors quantity, in Romanian economy there has been a significant change of the economic activity structure. Following the analysis methodology of the European Commission, the study of structure change involves analyzing of production, employment and income evolution in main sectors of national economy. According to NACE classification, the main branches include the following types of economic activities:

- Agriculture, forestry and fishing (agriculture);
- Mining and quarrying, manufacturing, production and supply of electricity, gas, steam and air conditioning, water supply, sewerage, waste management and remediation activities (industry);
- Construction (construction);
- Wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, hotels and restaurants, information and communication (trade, transport, communications);
- Financial intermediation and insurance, real estate, scientific and technical professional activities, secretarial and support services activities (financial intermediation, consulting);
- Public administration and defense, social public system security, education, health and social assistance, spectacles activities, cultural and recreation activities, other services (public administration).

Table 1 illustrates the evolution of Gross Value Added (GVA) in these branches of activity, during 1995 - 2014. It may be noted, firstly, the declining share of agriculture in total gross value added from 19.2% in 1995 to 5.4% in 2014. This decrease is not incidental but reflects a long term trend. In 2014, agricultural production was among the highest ever achieved by Romania, and in 1995, agricultural production was moderate. In Figure 1 is presented the evolution of the

share of agriculture in the total gross value added, in Romania, during the twenty years analyzed.

1995	2014	Sectors
19.2%	5.4%	Agriculture
31.7%	27.3%	Industry
6.7%	7.1%	Construction
17.3%	24.5%	Trade, transport, communications
17.1%	22.0%	Financial intermediation, consulting
8.0%	13.7%	Public administration

Table 1. *Evolution of GVA sectoral weights, in Romania, 1995 – 2014*
Source: Eurostat

The share of agriculture in total gross value added in Romania and in other former communist countries, now EU members, is illustrated in Figure 2.a. For comparison, the share of agriculture in total gross value added in the most developed EU countries is illustrated in Figure 2.b. It may be noted that the share of agriculture in total gross value added is greater for the former communist countries compared to the developed EU countries. Romania, of the former communist countries, has the largest share of gross value added of agricultural production, by 5.4%. Although in the last twenty years, this percentage has steadily declined, it remains one of the largest from all EU countries. Romania is followed by Bulgaria with 5.3% and Hungary with 4.5%. Among developed countries, UK holds the lowest share of agriculture in gross added value. Low levels of this share, close to that of UK, have Belgium and Germany.

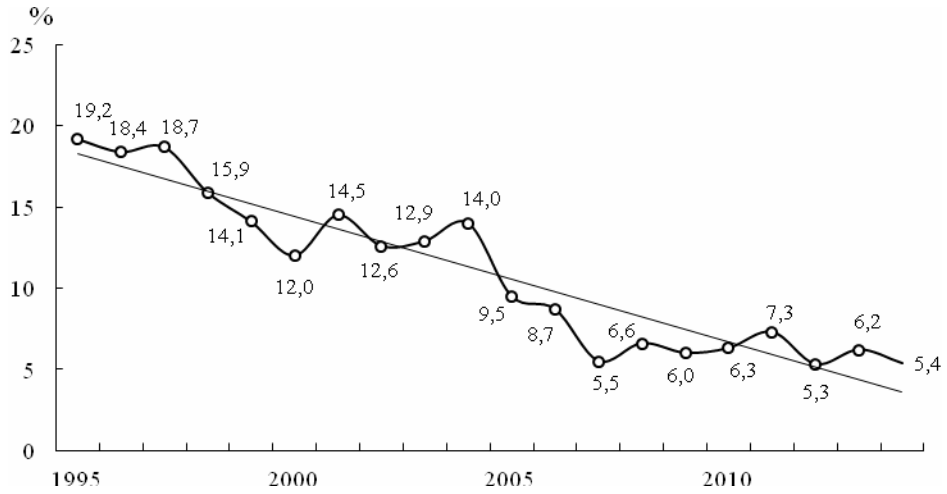

Fig. 1. *Evolution of agriculture GVA share in total GVA*

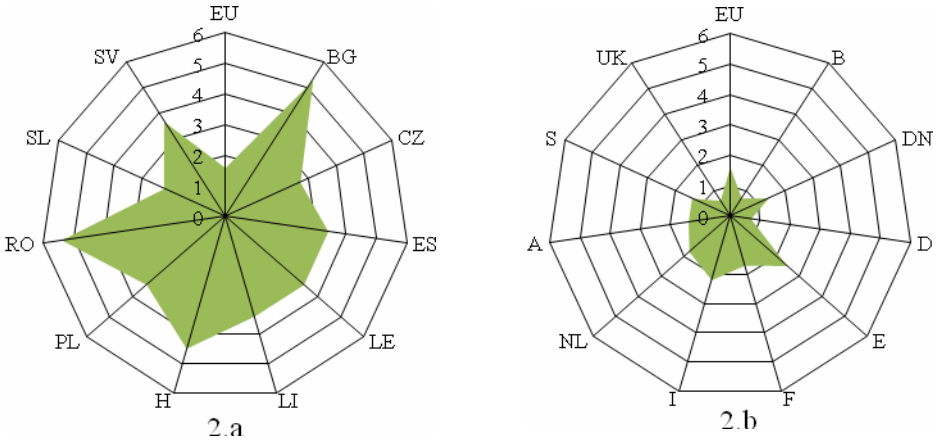

Fig. 2. *Share of agriculture in Gross Value Added, in 2014*

Regarding industrial activity, the share of Gross Value Added in this sector in total Gross Value Added, it recorded a decrease of 4.4 percentage points. It can be said that this decrease was not significant, but the long term trend has been downward. As it can be seen in Figure 3, the GVA of industry in total GVA in the analyzed period, had a fluctuating evolution. In 2011, it exceeded the level achieved in 1995, suggesting that the industry can increase dramatically in the next period. However, long-term historical trend has been decreasing.

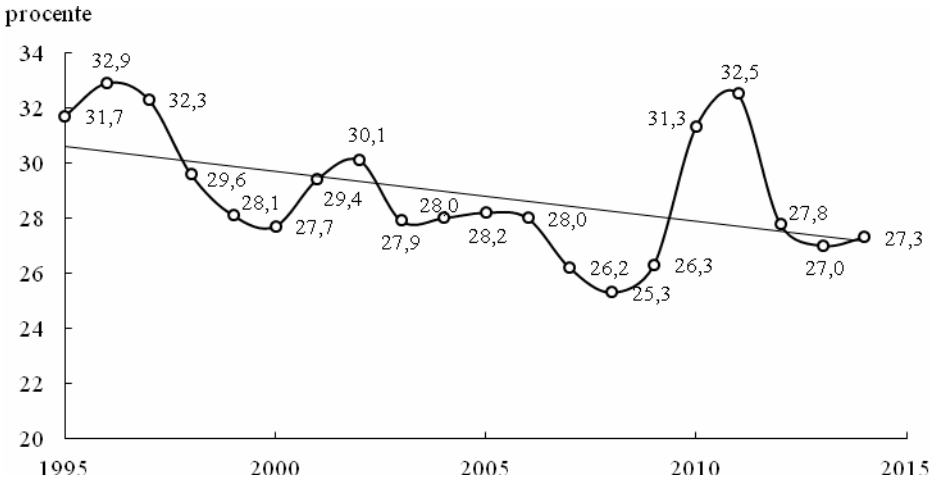

Fig. 3. *Evolution of industry GVA share in total GVA*

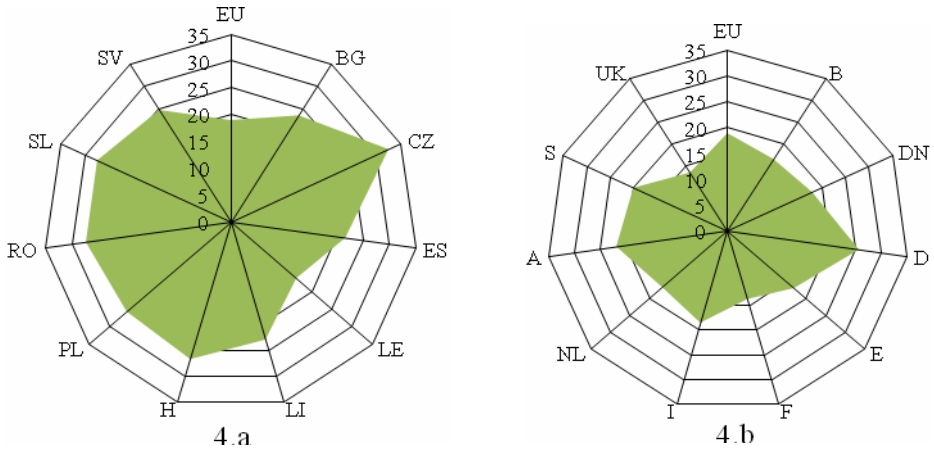

Fig. 4. *Share of industry in Gross Value Added, in 2014*

Figure 4 illustrates the difference between the former communist countries now members of the EU, and the most developed EU countries in the year 2014. It can be seen that compared with developed EU countries, the former communist countries have a share of gross value added in industry in total gross value added higher.

As share of gross value added, the construction sector has remained about the same level as twenty years ago. An increase of this share was recorded in the period 2006 - 2012, but the ability of this sector to generate added value remains relatively stable around 7% of total GVA.

A significant increase was registered by services. If we have regard to all activities falling within this sector (domains 4, 5 and 6), increasing the GVA share achieved in these activities in total GVA is 17.7%. Activities of trade, transport have increased by 7.1%, financial intermediation increased by 4.9% and public service activities increased by 5.7%. The trend of increasing share of services in gross added value makes the former communist countries EU members to approach by the developed countries.

Figure 5 illustrates the share of gross value added by services in total gross value added, in 2014. Figure 5.a illustrates this proportion for the former communist countries, EU member-states, and in Figure 5.b share for developed EU countries. It can be seen that all countries have the largest share of gross value added in services. In the developed countries, services have a share in gross added value higher than in the former communist countries. In Romania, the largest share of about 29.7% in total services is held by trade with transport and storage of goods. Real estate transactions hold approximately 17.8% of total services and the public administration services, education, health and social activities together hold approximately 17.1%.

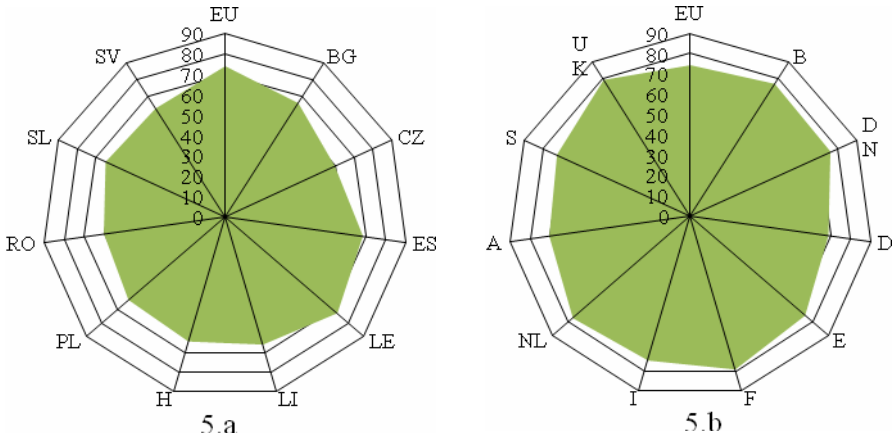

Fig. 5. *Share of services in Gross Value Added, in 2014*

In France, for example, the largest *GVA* share in total services, 29.4% is held by public administrative services with education, health and social activities.

3. Employment and earnings

Comparative analysis of work done in different industries can be developed by analyzing the employment level and the share of wages in total gross revenues generated in economic activity. Table 2 presents data on gross value added, employment and income of employees in various industries, in 2014. Agriculture, which generates 5.4% of GVA and only 1.7% of earnings, holds a significant share of 29.3% in the level of employment. On the opposite side are financial intermediation and insurance activities, real estate etc., generating 22.0% of GVA and 12.9% of earnings, employment at a very low level of just 6.1% of total employment in Romania.

GVA	Employed population	Earnings	Sectors
5.4%	29.3%	1.7%	Agriculture
27.3%	21.2%	30.9%	Industry
7.1%	7.3%	5.6%	Construction
24.5%	21.4%	27.2%	Trade, transport, communications
22.0%	6.1%	12.9%	Financial intermediation, consulting
13.7%	14.7%	21.8%	Public administration

Table 2. *GVA, the employment and earnings in Romania in 2014*

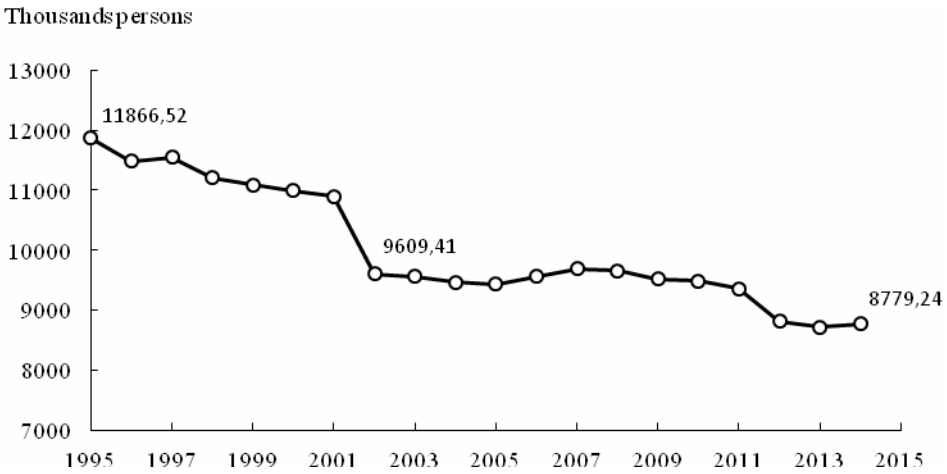

Fig. 6. *Evolution of employed population in Romania, in the period 1995 - 2014*

The largest share of total earnings is held by industry with 30.9%, followed by trade, transport and communication with 27.2% and 21.8% in public administration. The fact that agriculture counts only with 1.7% in total earnings shows that work in this area has largely an unpaid character.

A great deal of farming takes place in households, which is primarily intended to satisfy the needs of household members, and only production that exceeds these needs is for the market. Work on your own, non-wage prevails in Romanian agriculture. The fact that a significant proportion of the employed population of about 29.3%, works in agriculture is a proof of the failure of structural adjustment of the Romanian economy to market conditions. By comparison, at the EU level, the share of employment in agriculture in total employment is about 5%.

Financial intermediation services, insurance and consulting have an insufficient development. They contribute with 22% to the GVA value. The relatively low level of earnings, of only 12.9% of the total, is justified by the low share of 6.1% of people employed in these activities in total employment. Evolution of employment in the Romanian economy is illustrated in Figure 6. The permanent tendency of employment decreasing alternates with a stabilization during 2012-2014, at around 8.78 million people.

4. Evolution of labor productivity

Comparing branches of different sizes in terms of gross value added and consumption work can be done by calculating labor productivity. Labor productivity

is calculated in a simplified way, by reporting GVA to labor consumption, represented by the employed population. Data about productivity are presented in Table 3.

It may be noted that, in real terms, labor productivity increased in all sectors except public administration sector. Increasing the highest of 121.9% was registered in the industry. A significant increase of productivity was recorded in agriculture. At labor productivity growth, have contributed, on the one hand, the increase in gross value added in all branches and on the other hand, reducing numbers of employed in these sectors. In total economy, labor productivity per worker increased by 110.6%.

1995 (th. lei 2010)	**2014 (th. lei 2010)**	**% change**	**Sectors**
6.9	13.6	97.1%	Agriculture
34.7	77.0	121.9%	Industry
33.0	58.8	78.2%	Construction
29.3	63.8	117.7%	Trade, transport, communications
137.6	230.4	67.4%	Financial intermediation, consulting
63.2	52.8	-16.5%	Public administration
28.2	59.4	110.6%	TOTAL

Table 3. *Labor productivity per employed person*

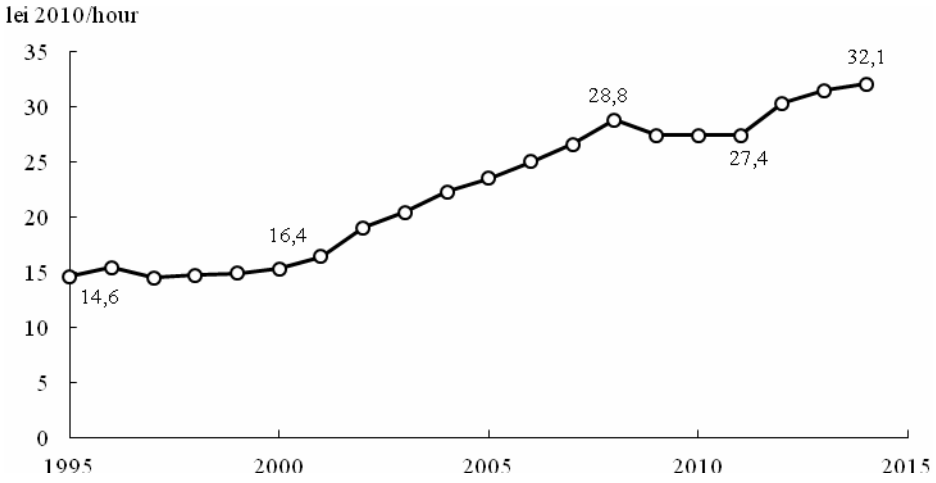

Fig. 7. *Evolution of hourly labor productivity in Romania, in the period 1995 - 2014*

Hourly labor productivity evolution is illustrated in Figure 7. The continuous trend of growth is due both to structural changes in the Romanian economy and to improvement of technical level of production.

5. Conclusions

Quantitative and qualitative changes in the Romanian economy are likely to mitigate the differences face to the developed EU countries. Although the sense of these changes is positive, reflected in significant increasing of productivity, there are still big differences, face to the developed countries. Analysis of economic activity fields highlights the changes that have occurred in the structure of economic activity in Romania in the past twenty years. If in 1995 the share of agriculture in GVA was about 19.2%, in 2014 it dropped to 5.4%.

The agriculture contributes relatively little to the GVA and keeps occupied a particularly large number of people. Work in agriculture has only in a low proportion a salary character, this fact negatively influencing the programs of social assistance and protection.

The economic activity in industry recorded, like that of agriculture, a declining trend, but the decline was smaller. In 1995 the industry had a 31.7% share in GVA, while in 2014 it dropped to 27.3%. Compared with the developed countries, industry in Romania has a share in GVA higher than that of developed countries. The industry, benefiting from the low wage compensation, has a development above the optimum level, while being the main provider of jobs with salary character.

The Construction sector has remained about the same level as in 1995. Construction remains the sector where the employment rate is low, and the wages compensation is, after agriculture, the lowest.

The services, although they had an important development, they are far below the existing in developed countries. The positive aspects, however, are prevalent.

The structural changes and those occurring in the factors' amounts have determined the sustainable productivity growth. In all activities, labor productivity has doubled. The industry has experienced the highest productivity growth of 121.9%, but significant increases occurred also in other areas.

Productivity growth reflects the process of modernization, improving manufacturing technologies and work organization. In the context of reducing the employed population, one can say that the main source of growth was the increase in productivity. Maintaining of a stable growth rate, to ensure internal and external balance, implies further increasing of productivity.

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