ANALYSIS OF THE LAST DECADE'S EVOLUTION OF COMPETITIVENESS IN ROMANIA THROUGH REGIONAL AND SECTORAL LENSES

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ABSTRACT – The structure of labour productivity by regions and by economic activities as well as average sectoral income levels in Romania are analysed within the framework of this paper. The structure of labour productivity on regional level and by economic activities is an essential component of regional competitiveness besides the structure of regional population, the structure of employment by economic activities in total population at regional level and the structure of total GDP (or GVA) on regional level by economic activities. To capture the variation in time of competitiveness, a longer time horizon analysis of the above indicators is needed instead of analysing just one-year data, which would only give a static view on the matter. Our analysis covers the 2000-2008 time horizon and focuses mainly on labour productivity through analysing sectoral GVA and sectoral employment on the level of Romanian NUTS2 development regions, being an important determinant of regional competitiveness.

Keywords: competitiveness, NUTS2 regions, sectors, GVA, income, employment

INTRODUCTION

The examination of several socio-economic indicators on regional level shows high and increasing importance in the context of regional policy design in the European Union. In addition to studies made at national level, in most of the cases a regional analysis is needed in order to get a closer view, and to identify similarities as well as disparities on NUTS2 level. In order to identify different regional economic structures existing among member states, economic and social disparities among regions need to be analyzed. These are relevant in the context of sustainable development and according to regional growth theory as well. The aim of the present study is to analyze the situation of the Romanian NUTS 2 regions in the last decade, taking in consideration some important indicators such as: GDP on regional level, regional income and regional employment. Besides the regional dimension, a sectoral dimension analysis is also covered within present study in order to identify leading as well as lagging behind sectors, to reveal regional similarities and disparities in this respect too. The analysis covers the 2000-2008 time horizon (referred as 'last decade'), as most recent data from the National Institute of Statistics (NIS) on the territorial and sectoral levels used within this study is currently available for the year 2008.

REGIONAL COMPETITIVENESS

Regional competitiveness describes the ability of regions to generate income and maintain employment levels in the face of domestic and international competition. From time to time, the content of those indicators which measure regional competitiveness is reviewed. Another important question in this context is the measurement of regional competitiveness. Although there is no universally accepted definition of regional competitiveness, this concept is intended to measure the

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level of economic success displayed by regions. This is usually done by constructing a set of indicators and then comparing them, across regions, in order to quantify the level of success each region has achieved (Cojanu and Lungu, 2010).

Regional competitiveness has a wide-ranging literature as issues of productivity and competitiveness at a regional level have increasingly been a focus for both academic and policy concern. (Boddy et al., 2005). The competitiveness of a region can be measured in different ways: analyzing one or several factors of competitiveness, using theoretical models of competitiveness, creating composite indices, etc. The analysis of the main problems of regional competitiveness measurement showed that competitiveness cannot be completely defined by one or several economic and social indicators (Lengyel, 2003). However, there are some basic indicators by virtue of which we can get a picture of the state of competitiveness in different regions and therefore the relative location of the regions can be determined.

The European Commission defines regional competitiveness in the following way: it means the ability to produce goods and services which meet the test of international markets, while at the same time maintaining high and sustainable levels of income or, more generally, the ability of (regions) to generate, while being exposed to external competition, relatively high income and employment levels. In other words, for a region to be competitive, it is important to ensure both quality and quantity of jobs (Martin, 2006).

A recent study on the topic (Annoni and Kozovska, 2010) proposes to construct a complex index named Regional Competitiveness Index (RCI) in order to map economic performance and competitiveness at NUTS2 level for European Union Member States. There are 11 pillars included in this RCI framework. These are as follows: institutions, macroeconomic stability, infrastructure, health, quality of primary and secondary education, higher education/ training and lifelong learning, labour market efficiency, market size, technological readiness, business sophistication and innovation. Nine indicators have been used for describing the labour market efficiency pillar. The efficiency of the labour market gives an important feedback regarding the economic development of one region. An efficient and flexible labour market contributes to the efficient allocation of resources (Schwab and Porter, 2007). Employment rate and labour productivity (also used within present study) are two among the nine indicators defined by Annoni and Kozovska for representing the labour market efficiency pillar. Employment rates indicate the level of activity in the regional economy, while labour productivity is one of the main factors determining the competitiveness of a region. High labour productivity attracts economic activity and increases competitiveness – this was the basic support idea while above-mentioned authors included this indicator in the construction of RCI.

METHODOLOGY

As a general rule, competitiveness is determined by productivity, defined as the output value per units of input, with which a region employs its human capital and natural resources. In turn, productivity sets a region's standard of living as reflected by wage level, returns on capital and human resources. In fact, the link between productivity and per capita GDP is quite strong (Cojanu, Lungu, 2010). This can be seen by breaking down the national level per capita GDP indicator into a series of component factors:

$$\frac{GDP}{P} = \frac{GDP}{E} \cdot \frac{E}{P_{Wa}} \cdot \frac{P_{Wa}}{P}$$

Where P = total population in the country; E=employment on national level; P_{Wa} = population at working age in the country, while the fractions: GDP/P = income per capita on country level; GDP/E = labour productivity on country level; E/P_{Wa}= rate of employment on country level, P_{Wa}/P = demographic factor on country level. (Vincze and Mezei, 2010).

A more complex analysis can be conducted if we break down the above indicator onto regional and sectoral level simultaneously. The present study uses GVA instead of GDP due to data availability on regional and sectoral level. The labour productivity element of this complex type of

breakdown – capturing regional differences and structure of economic activities - can be put into practice using the formula below:

$$\frac{GVA}{E} = \sum_{i=1}^{n} \sum_{j=1}^{m} \frac{GVA_{ij}}{E_{ij}}$$

Where n=8: the number of NUTS2 level regions in Romania and m=15: types of economic activities (sectors).

As mentioned, in the literature, there is no agreed definition referring to the competitiveness and the measurement of it, yet different approaches can be constructed. The aim of the present study is to build up a set of indicators, precisely three indicators through which the competitiveness of the Romanian NUTS2 regions is measured. After the presentation of the used indicators, the achieved results are analysed by defining the existing similarities and differences between the level of development and competitiveness of the eight Romanian NUTS2 regions. It is important to mention that a macroeconomic approach of regional development is presented as the analysed indicators are macroeconomic indicators defined at regional level.

INDICATORS

The system of the above-mentioned competitiveness indicators consists of regional GVA, regional employment (E), regional labour productivity (GVA/employment) and regional income (regional average earnings).

Regional Gross Value Added

Regional GVA is the major component of regional gross domestic product (GDP). Under ESA95 the difference between GVA and Gross Domestic Product (GDP) is that GDP (at market prices) includes taxes (less subsidies) on products (mainly Value Added Tax) while GVA (at basic prices) does not. In order to be more expressive both GVA and GDP are used in relation with the population or employment. If they are defined compared to population the name of indicators are: per capita GDP or per capita GVA, while their expression in relation with employed persons means the labour productivity. Due to data availability on NUTS2 level, the present study uses GVA when constructing the labour productivity indicator: labour productivity = GVA / Employment.

Regional employment

Regional employment means the civil employed population on NUTS2 level. The civil employed population includes all the persons who work for an income and whose work is usually employed in one of the activities of the national economy (15 sectoral breakdown in present study), being defined as an economic or social activity, based on a work contract or a free-lance activity (i.e. self-employed) in order to get an income such as salary. The categories of people included in the 'employment' indicator are the following: employees who work in one of the activities of the national economy in the public, employers – managers of private units – that employ labour force for the activity of their units, self-employed and unpaid family workers (NIS).

Regional labour productivity

The regional labour productivity is computed as GVA/workforce job, in other words per employment GVA. It can also be determined as per employment GDP (the difference between GDP and GVA is described below). As a rule, labour productivity is defined as GDP or GVA per hour worked. Besides, other alternative indicators that are also used for measuring the labour productivity can be compiled and computed. In our case the used indicator is the per employment GVA which defines the value of GVA which comes to an employee.

Regional income (regional average earnings)

Regional average earnings measure the marginal product of labour and it is usually expressed as hourly earnings. It can also be expressed by the monthly average income of the region, case when it

wears the „regional income" denomination. The level of income of the employed persons can express not only the competitiveness but the development of the region as well. As presented in the introductory part, according to the definition of the European Commission the maintenance of incomes at a sustainable level denotes a competitive region.

RESULTS OF THE ANALYSIS

Figure 1 represents the evolution of the average gross nominal monthly salary earnings in Romania, on regional and sectoral level. Values of various sectors regarding average earnings have been aggregated into the four main sectors of the economy: agriculture, industry, construction and services. Aggregation is based on a simple average calculation of the CANE Rev. 1 – activity of national economy sections. Though, the four main categories represented on Figure 1. are composed by: agriculture = agriculture, hunting + silviculture, forestry + fishing and fish farming; industry = mining and quarrying + manufacturing + electric and thermal energy, gas and water; construction = construction; services = trade + hotels and restaurants + transport + post and telecommunications + financial intermediation + real estate transaction and other services + public administration and defence + education + health and social work + other. Income values are expressed in lei. For an easier visual understanding of the figures in the view of comparing the average income levels in different sectors, the four components of Figure 1 are all scaled between 0 – 4,000 lei (y axis). The 'TOTAL' line represents the national average income evolution for the four sectors separately.
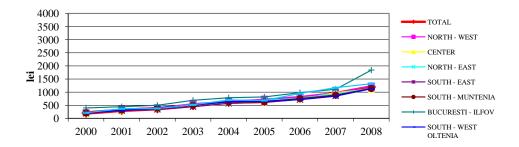

Figure 1a. *Evolution of average gross nominal monthly salary earnings in the **agricultural sector** of the Romanian NUTS2 regions between 2000 and 2008*
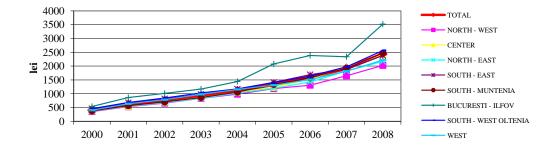Source: authors' own calculation based on NIS data

Figure 1b. *Evolution of average gross nominal monthly salary earnings in the **industrial sector** of the Romanian NUTS2 regions between 2000 and 2008*
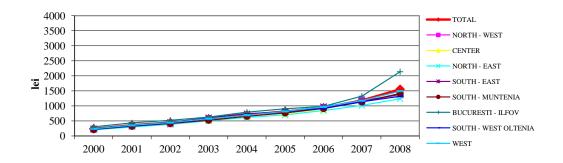Source: authors' own calculation based on NIS data

Figure 1c. *Evolution of average gross nominal monthly salary earnings in the **construction sector** of the Romanian NUTS2 regions between 2000 and 2008*
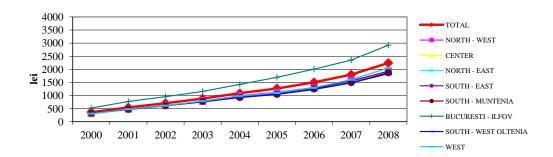Source: authors' own calculation based on NIS data

Figure 1d. *Evolution of average gross nominal monthly salary earnings in the **services sector** of the Romanian NUTS2 regions between 2000 and 2008*
Source: authors' own calculation based on NIS data

Comparing the four sub-figures of Figure 1, we can notice that the lowest average gross nominal income values were registered in the case of the agricultural sector. The national average in 2008 was only 1196 lei/month. Agricultural sector is generally followed by the construction sector, with a 1554 lei/month average salary earning registered for year 2008. Salaries in the other two sectors are much higher: services sector had a 2242 lei/ month national average, while industry a 2434 lei/month in 2008. However we consider important to highlight the fact that large heterogeneity can be found within the services sector category: its worst performer sub sector was the trade category with 1397 lei/month (which is still higher than the agriculture average), while its best performer was financial intermediation with an average monthly value of 4389 lei in 2008, on national level.

Regarding the agricultural level of earnings on a regional scale, one notices values close to the national average in most of the cases. However, the values belonging to Bucharest (considering the whole period analysed) and to the West Region (especially starting from year 2006) are significantly higher. Compared to other regions, the above mentioned two have an increasing growth rate, especially Bucharest-Ilfov Region with 66.3%, from 2007 to 2008 (at this time, the average national growth rate in the case of earnings in the Romanian agricultural sector has been 27.32%).

The industrial sector figure shows outstandingly high values for Bucharest-Ilfov compared to other regions. In 2008, the average gross monthly salary earning in Bucharest-Ilfov (3519 lei)

exceeded by 44.6% the national industry sector average (2434 lei). Except for Bucharest-Ilfov and the regions of South-East and South-West Oltenia – which have approximately national average values during the period analysed – the other regions have values under the Romanian average. A lagging-behind gap is noticeable in the case of North-West and North-East regions, having higher and higher differences compared to the national average - especially starting from 2006.

In the case of the construction sector, monthly earnings evolved almost simultaneously until 2006, when values for Bucharest-Ilfov 'jumped up', consequently several regions fell under the national average line. While in 2007 it exceeded the national average by 12%, in 2008 the gap was significantly higher: 37.5%.

Gross nominal monthly salary earnings in the services sector show a slightly increasing diverging trend for Bucharest-Ilfov, i.e. its distance from the average is getting larger over time in a positive direction. The separation of earnings in Bucharest-Ilfov from all the other regions is most obvious in this case, as all the other regions are below the average level and Bucharest-Ilfov the only one above. As average values contain Bucharest-Ilfov data, it is obvious in the situation described above that the values from capital region significantly exceed the values of the other Romanian regions , by a value around 40% at the beginning, which 'decreases' to 30% in the second part of the decade.

As mentioned in the introductory part, regional GVA is one of the indicators through which different sectors and different regions of the Romanian economy are analysed. In each sector and region a relative high increase of the value can be noticed, which is justifiable by the fact that nominal values of the indicator are presented so they do not contain the inflationary correction. The other important indicator which appears next to the GVA values is the sectoral employment. By constructing the fraction of these two indicators, labour productivity of each sector and region can be calculated.
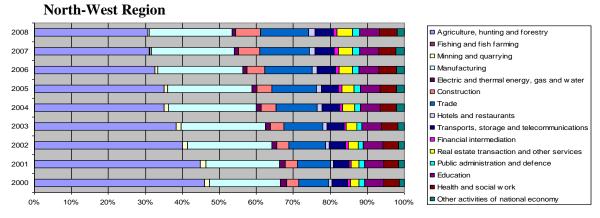
North-West Region

Figure 2a. *Sectoral employment in the North-West Region, 2000-2008*
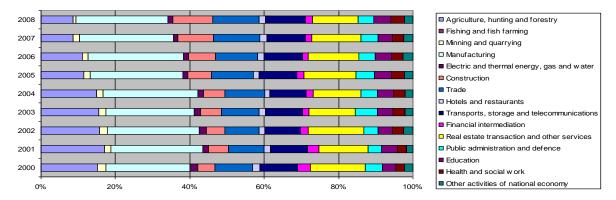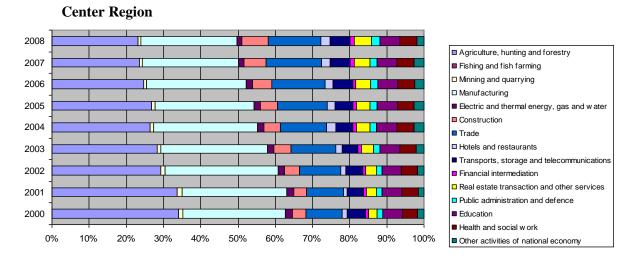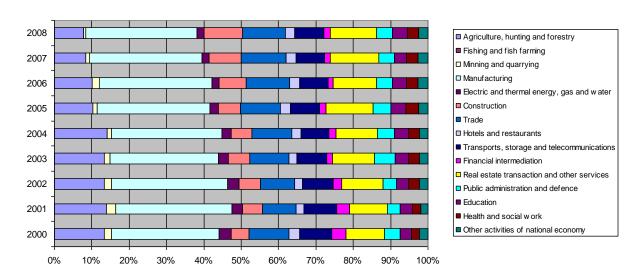Source: authors' own calculation based on NIS data

Figure 2b. *Gross Value Added in the North-West Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figure 2a and Figure 2b represent the GVA and employment values of the North-West Region in fifteen different sectors. It is noticeable that, while in 2000 the contribution of the agricultural sector to the total GVA represented almost 50%, in 2008 this value barely exceeds 30%. Regarding the number of people employed in the mentioned sector, a decrease can be also noticed. However, the fact that the reduction rate in the case of GVA values is much higher than in the case of the number of employed people reflects the low labour productivity rate of the above-mentioned sector in the NW region. Besides, the increasing value of both GVA and employment appears in the construction sector between 2002 and 2008.

Center Region

Figure 3a. *Sectoral employment in the Center Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figure 3b. *Gross Value Added in the Center Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figure 3a and Figure 3b contain the values of analysed indicators (GVA and employment) of the Center Region. The tendency observed in the case of the North-West Region is noticeable in this case as well, so the low level of labour productivity of the agricultural sector is highlighted. Another interesting aspect is the increase of both indicators in the case of the trade sector. The number of employed persons increased from 104.4 thousand persons in 2000 to 147.3 thousand in 2008 in the

Center Region, while the share of the GVA of the sector compared to the total regional GVA increased from 10% in 2000 to almost 12% in 2008. According to this, the increase in the case of employed persons was higher than the increase of the sector share in the total regional GVA.
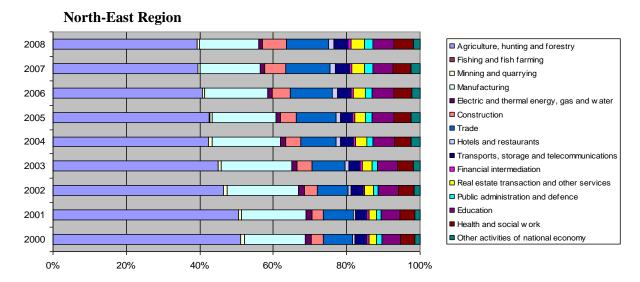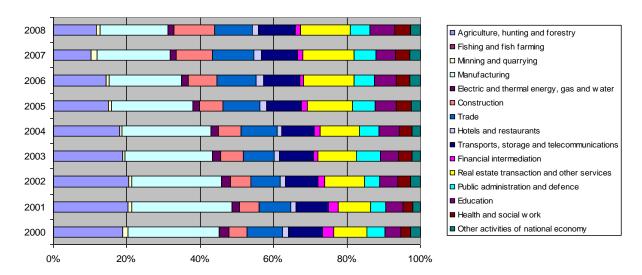
North-East Region

Figure 4a. *Sectoral employment in the North-East Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figure 4b. *Gross Value Added in the North-East Region, 2000-2008*
Source: authors' own calculation based on NIS data

The evolution of sectoral GVA and employment of the North-East Region is presented in Figure 4a and Figure 4b. It is outstanding that while approximately 20% of the region's GVA in 2000 and 11% in 2008 is created by the agricultural sector, about 40-50% of the employed persons are occupied in the sector. This means that the productivity of the sector is very low. On the other hand, in the case of real estate transactions and other services sector, the share of employed persons was only 2.1% in 2000 and 3.6% in 2008 while the sectors' contribution to the total regional GVA was 9% in 2000 and 13.4% in 2008. This means that the sector is strongly productive. This is confirmed by the high values of the labour productivity in the above-mentioned sector of the region.
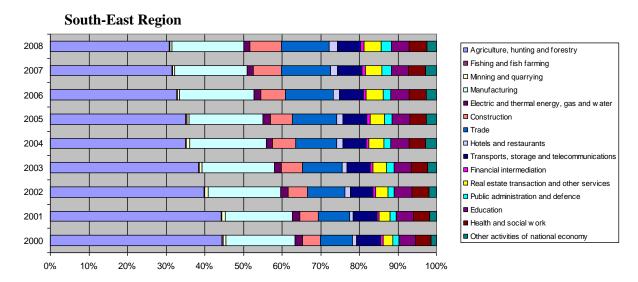
South-East Region

Figure 5a. *Sectoral employment in the South-East Region, 2000-2008*
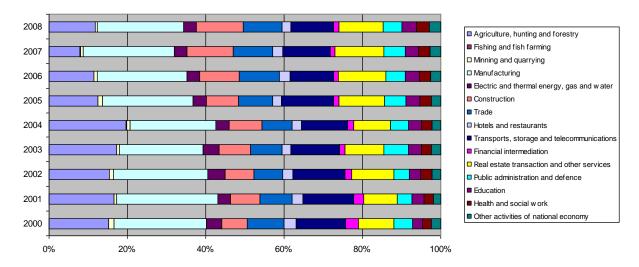Source: authors' own calculation based on NIS data

Figure 5b. *Gross Value Added in the South-East Region, 2000-2008*
Source: authors' own calculation based on NIS data

The low productivity of the agricultural sector can be noticed in the South-East Region as well. Figures 5a and b represent the GVA and employment indicators of the mentioned sector in the region. While in 2000, the share of agriculture in the total GVA of the region was almost 15% and 11.8% in 2008 (the decreasing tendency of a non-productive sector in the total regional GVA value is a positive aspect), the share of employed persons in the agriculture was 44% in 2000 and it decreased only to 30% in 2008. In order to be a more productive region, the share of persons employed in agriculture needs to be reduced. The case of transport, storage and telecommunications sector shows a reversed tendency. In this case, in the 2000-2008 period the share of employed persons is approximately 6%, while the sector's share in the total regional GVA value represents about 12%. This supports the productive nature of the chosen sector.
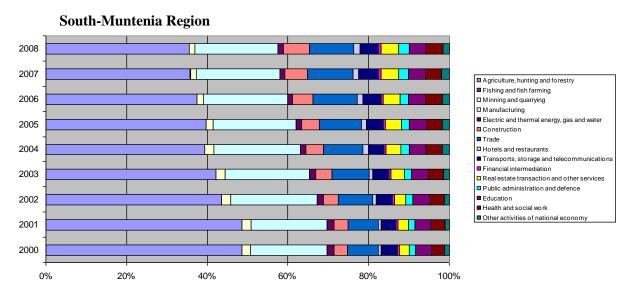
South-Muntenia Region

Figure 6a. *Sectoral employment in the South-Muntenia Region, 2000-2008*
Source: authors' own calculation based on NIS data
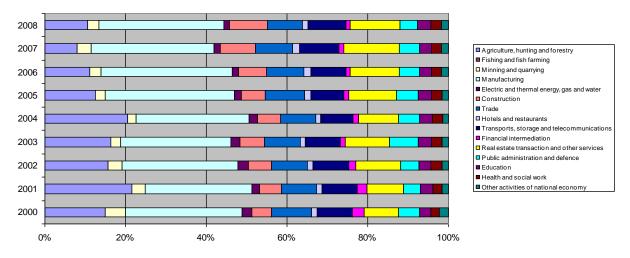

Figure 6b. *Sectoral employment in the South-Muntenia Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figures 6a and 6b are the graphic representations of GVA and employment values in the South-Muntenia Region. In the case of public administration and defence, the share of employed persons from the total occupied persons of the region was 1.5 % in 2000 and it increased up to 2.6% in 2008, while the contribution of the sector to the total regional GVA in the 2000-2008 period was approximately 5%. On the other hand, the agricultural sector shows the previously presented tendency. Although the sector's contribution to the total regional GVA decreased from 14.8% in 2000 to 10.6% in 2008, which is a positive aspect regarding the low productivity level of this primary sector, the share of employed persons in the sector shows high values (even if it decreased from 48% in 2000, it still had the high value of 35.5% in 2008).

Bucharest-Ilfov Region

Bucharest-Ilfov Region is the region that has outstanding values in each sector of each region in each year – as this region contains the Romanian capital city.
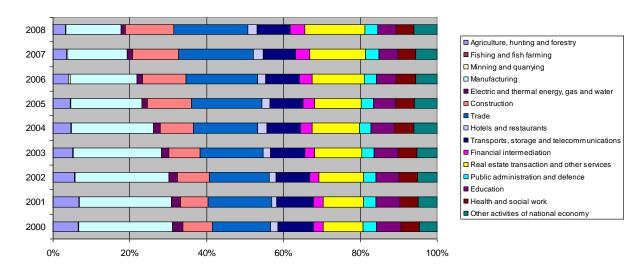
Figure 7a. *Sectoral employment in the Bucharest-Ilfov Region, 2000-2008*
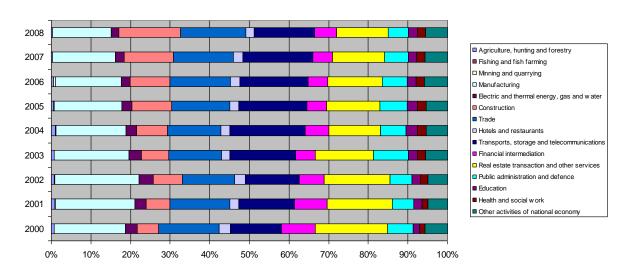Source: authors' own calculation based on NIS data

Figure 7b. *Gross Value Added in the Bucharest-Ilfov Region, 2000-2008*
Source: authors' own calculation based on NIS data

Figures 7a and 7b represent the GVA and employment values of the fifteen sectors in the case of the region of the capital. This is the region where the share of the agriculture in the total regional GVA value is the lowest, 0.07% in 2000 and 0.03% in 2008. This aspect confirms the competitiveness and high development of the region. However, even in this case the low productivity of the primary sector can be caught out, because the share of employment in the agricultural sector was 6.5% in 2000 and 3.1% in 2008. Besides, the developed level of the financial intermediation sector can be observed considering the fact that the share of employment in the 2000-2008 period have changed between 2.4 % and 3.7 % while the share of the sector's GVA in the total regional GVA amounted an average of 6.5% in the time horizon analysed.
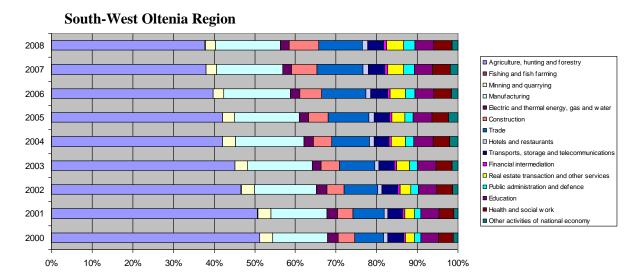
South-West Oltenia Region

Figure 8a. *Sectoral employment in the South-West Oltenia Region, 2000-2008*
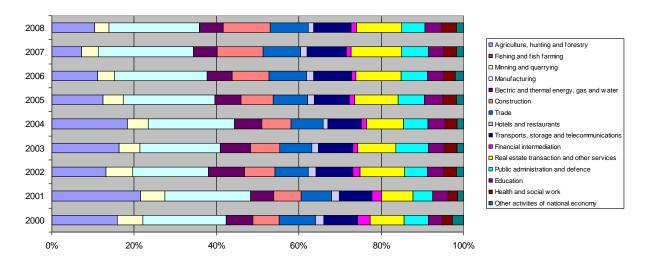Source: authors' own calculation based on NIS data

Figure 8b. *Gross Value Added in the South-West Oltenia Region, 2000-2008*
Source: authors' own calculation based on NIS data

Regional GVA and employment values of different sectors of the South-West Oltenia Region are presented by Figures 8a and 8b. The contribution of agriculture to the region's total GVA changed from 15.9% in 2000 to 10.3% in 2008, while the share of employment of the sector in the total number of occupied persons showed 51.2 % in 2000 and 37.8% in 2008. This aspect supports the idea of low productivity of the analysed sector. The share of employment in the sector of hotels and restaurants out of the total regional employment was 0.9% in 2000 and increased to 1.3 % in 2008. In addition, the contribution of the same sector to the total regional GVA fluctuated between 1.4 % and 1.9%.
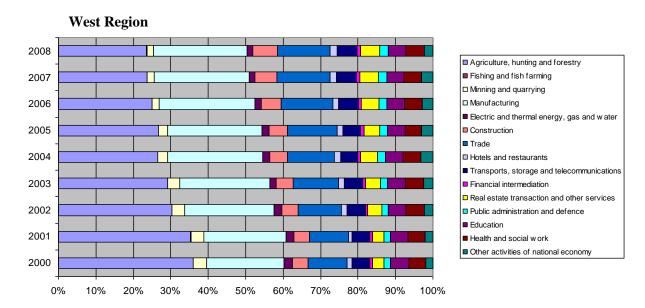
West Region

Figure 9a. *Sectoral employment in the West Region, 2000-2008*
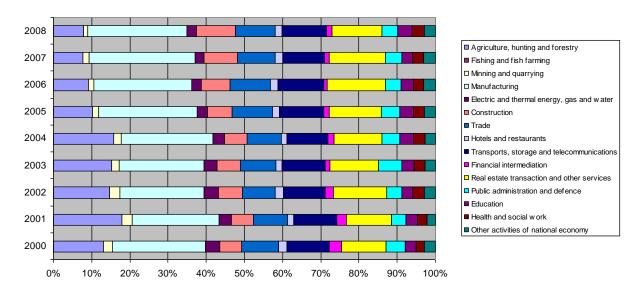Source: authors' own calculation based on NIS data

Figure 9b. *Gross Value Added in the West Region, 2000-2008*
Source: authors' own calculation based on NIS data

The West Region's GVA and employment values are presented in Figures 9a and 9b. In this case, the above-mentioned trend of the agricultural sector can be observed as well. However, although the share of employed persons in the mentioned sector was still high (30.8%) in 2008, it presented quite a high decrease in comparison with the value of 56% recorded in 2000. The share of employment decreased in 2008 at almost half of its 2000 value and the share of the sector's GVA in the total regional GVA presented the same aspect as it decreased from 13% in 2000 to 7.9% in 2008. This way the unproductive aspect of the agriculture is confirmed. The case of the education sector shows a remarkable image: although the share of employment in the analysed period (2000-2008) remained almost the same (it changed between 4.5% and 4.9%), the sector's GVA value presented a growing share in the total regional GVA as it was 2.8% in 2000 and 3.7% in 2008.

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CONCLUSION

Having analysed the evolution of the average gross nominal monthly salary earnings in Romania, we can conclude that in the case of all the four sectors, a regional divergence is noticeable, i.e. the gap between the average earnings in the same sector in different regions becomes larger over time between 2000 and 2008.

As an overall conclusion, it can be stated that in the case of each Romanian region the unproductive nature of the agriculture is confirmed. According to another important remark, the different sectors of the aggregated service sector show an increasing tendency in the employment and even a wider increase in the regional GVA values that supports the productive characteristic of the tertiary sector.

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