



Review

DYNAMIC CHANGES IN THE TERRITORIAL AND SECTORAL STRUCTURE OF EMPLOYMENT IN BULGARIA

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ABSTRACT

The present study aims to determine the efficiency of a given industry in the regions of the country by identifying the sectors for which comparative advantages can be derived. This study will focus on the dynamic changes in the territorial and sectoral structure of employment, as those sectors that have the potential for development have been determined through defined criteria. The localization coefficient is used to determine the industries with a high degree of concentration and the effect of national and regional trends on the industry structure is established through a "shift-share" analysis of employment. As a result of the analysis, the need to increase the efficiency of the industries, for which the region has comparative advantages, is highlighted, as this is a prerequisite for increasing its competitiveness. The impact on the industries identified in the development in the direction of stimulation would have a favorable effect on the growth of the economy in the region, respectively on the economy of the country as a whole.

Key words: sector structure, localization coefficient, shift-share-analysis, regional development, regional trends

INTRODUCTION

Regional development in Bulgaria is determined both by the spatial location of the economic branches and by resource availability in the separate sectors. The ability of a region to use and develop its local potential provides unique competitive advantages and improves its ability to adapt to dynamic changes in the external environment. The efficient use of available human resources and the use of local potential are the basis for higher regional competitiveness. Regions are an integral part of the national economy and should be considered as a complex and interconnected system, limited in space and developing under the influence of various factors. "Regional efficiency is the result of the functioning of the economy of territorial units, as part of the unified economic system of the

country" (1). The socio-economic, natural, geographical, and ecological factors are part of this interconnected unified system and determine the overall appearance, condition and development of the region. They can be the basis for the formation of regional disparities, as well as a reason for accelerating the processes of convergence, and overcoming regional differences and imbalances. Global changes in economic processes are directly related to localization processes, as the presence of certain factors and conditions are a prerequisite for attracting and redistributing capital, stimulating investment, achieving sustainable socio-economic development, improving the competitiveness of the region, etc. „Quantitative and qualitative imbalances in the spatial allocation of resources and economic activities imply different returns on inputs for production factors, different levels of society's well-being, as well as different opportunities for impact on regional (local) development“ (2). Diagnosing and monitoring changes in regional economic

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systems aim to identify differences in the levels of development achieved by examining the causes of disparities. In this way, some guidelines for influencing the development of the regions can be justified, in accordance with the specifics of the respective regional structure.

The aim of this study is to assess the dynamic changes in the territorial and sectoral structure of employment, as well as the factors influencing the competitiveness of the regions. It is assumed that the competitive position of the region is favorable if it meets such high-quality parameters as the uniqueness of local factors, stability, reliability, attractiveness to investors, and others.

The tasks set to achieve the goal are related to:

✓ Establishing the degree of concentration of the industry in the region by calculating the localization coefficient.

✓ Study of the factors influencing the change of regional employment, establishing what part of the regional growth can be predetermined by the national growth and what part is due to regional factors.

✓ To make a comparative analysis of the regions, by determining the effectiveness of a particular industry in the region

The territorial scope of the analysis includes the six regions of NUTS-2 (Southwest, South Central, Southeast, Northeast, North Central and Northwest), while the years for which changes are studied are 2009 and 2019.

RESEARCH METHODS

✓ Localization coefficient (LQ) - this coefficient is calculated as the ratio between the

relative share of employees in a given sector in the region of total employment in the region and the relative share of employees in a given sector in the country of total employment in the country's economy. If its value exceeds one, it is assumed that the concentration of this industry in the region exceeds the average share of the same industry in the country as a whole.

✓ A shift-shear analysis is used in the present study as a method to identify the part of regional growth that is determined by national growth, as well as the part that is due to regional factors. It establishes the effect of regional and national trends on individual industries in the region. The application of shift-shear analysis is based on the number of employees in the respective sector in the economy of the region, and the country. It is believed that the rate of regional growth depends on three factors: the sectoral structure of employment in the country's economy, the impact of national changes in the regional development of an economic sector and the influence of local factors. If we assume that the same industries develop equally, regardless of their location, and if we assume that the region has the same industry structure as that of the whole country, then the growth rate of the region's economy must follow the growth rates of the country's economy. However, regional growth rates often differ from national economic growth rates and this is a result of the region's human or resource advantages. The measurement of the effect in determining the industry structure by "shift-shear" analysis is as follows:

Table 1. Elements for factor analysis of overall economic growth

Factors	Method of calculation	Headings
National effect (NE) - a factor reflecting the influence of national trends of change	$e_0 \times (N_1 / N_0) - 1]$	N_0 and N_1 - total national employment at the beginning and end of the period i_{s0} - employment in a given sector of the region at the beginning of the period
Structural effect (MIX) - factor reflecting the influence of the national rate of development on the industries in the region	$e_0 \times [E_1 / E_0 - N_1 / N_0]$	E_0 and E_1 - employment in the sector at national level at the beginning and end of the period
Regional / local effect (DIF) - factor reflecting the influence of regional growth trends	$e_0 \times (e_1 / e_0) - (E_1 / E_0)$	e_1 - employment in the respective sector in the region at the end of the period

The total amount of growth takes into account the influence of national, sectoral and regional factors and is obtained as the sum of these influences, i.e.: $SS = NE + MIX + DIF$, and the estimate of the expected change for growth is presented as the sum of the national component and of the component reflecting the development of the industry, i.e.: $ES = NE + MIX$

RESULTS AND DISCUSSION

Regional efficiency, assessed by the localization coefficient, makes it possible to draw a comparison between the sectoral structure of employment in the industries of the region and the sectoral structure of the industry in the country as a whole. This coefficient has a comparative spatial-geographical character and shows the degree of concentration of the industry in the region. If its value exceeds one, it is assumed that the concentration of this industry in the region exceeds the average share of the same industry in the country as a whole. In **Table 2** information about the dominant branch specialization of the region has been presented. The calculated localization coefficient selects the area, for which there is a reason to make a "shift-

shear" analysis, as the next stage of the assessment of regional competitiveness. It is assumed that these are industries with a value of the coefficient exceeding one. This means that employment in the selected sector in the region is highly concentrated and exceeds the average relative share of employment in the same sector for the country. Using the calculated coefficients presented in Table 2, the sectors in the individual regions that have a value greater than one are selected. It is for their sake that it can be argued that there is a concentration of the respective industry in the region, which exceeds the national average. However, there are sectors and regions in which in one of the years the coefficient of localization is less than or equal to one. Nevertheless, they were also selected for further analysis, because the changes in the sectoral structure of the region constitute a legitimate research interest. At this stage of the analysis, a selection is made of sectors and regions for which the influence of national, structural, and local factors will be examined through a "shift-shear" analysis. The results of the first stage are presented in the following **Table 2**:

Table 2. Localization coefficient by economic sectors and regions for 2009 and 2019

Region	Agriculture, forestry and fisheries		Industry		Construction		Trade, transport, hospitality industry		Creation and distribution of information and creative products, telecommunications		Financial and insurance activities		Real estate activities		Professional, scientific and technical activities; administrative and support service activities		Public administration, education, human healthcare and social work		Culture, sports and entertainment, household items repair activities	
	09	19	09	19	09	19	09	19	09	19	09	19	09	19	09	19	09	19	09	19
NW	1,1	1,3	1,2	1,2	0,7	0,8	0,9	0,9	0,6	0,4	0,5	0,5	0,6	0,7	0,8	0,6	1,2	1,2	0,7	0,7
NC	1,3	1,3	1,2	1,3	0,8	0,8	1,0	0,9	0,5	0,6	0,7	0,9	1,0	0,5	0,6	0,7	0,9	1,0	1,0	1,0
NE	1,2	1,4	0,8	0,7	1,3	1,6	1,1	1,2	0,6	0,5	0,6	0,9	1,2	1,9	0,9	0,8	1,0	0,8	0,8	0,9
SE	1,1	1,2	1,1	1,2	1,2	1,0	1,0	1,0	0,5	0,3	0,6	0,6	0,8	1,4	0,7	0,7	0,9	1,0	0,8	0,9
SW	0,5	0,4	0,8	0,7	1,0	0,9	1,0	1,1	1,9	2,1	1,7	1,7	1,6	1,1	1,6	1,6	1,0	1,0	1,3	1,2
SC	1,5	1,4	1,1	1,3	0,9	1,0	0,9	0,9	0,6	0,5	0,7	0,5	0,3	0,3	0,7	0,6	0,9	1,1	1,0	0,9

Source of information: NSI and own calculations

The second stage of development is related to the study of the impact of changes in the national economy, in the regional incentives for development and in the factors for internal efficiency of a certain branch in the region. The Shift-shear analysis identifies the industries in a region that are more competitive than the same

industries at national level. The positive magnitude of the regional effect ($DIF > 0$) shows the degree of influence of unique local factors on the employment dynamics in the region, and the assessment of the regional effect is complemented by the expected change obtained

as the sum of the national and structural effect ($ES = NE + MIX$).

When comparing the local effect with the expected change, it is assumed that the industries in the region are more competitive than those at the national level if two conditions are met, namely:

- ✓ The regional effect should be a positive value ($DIF > 0$)
- ✓ The regional effect should exceed the calculated expected change ($DIF > ES$).

Thus, if the above two requirements are met ($DIF > 0$ and $DIF > ES$), we move to the third stage, in which an index characterizing the influence of

regional factors are calculated. This index is calculated as the ratio between the structural effect, and the employed during the current period, i.e. $Irf = DIF / e_1$.

It is assumed that if this ratio, presented in percentage form, exceeds 10% ($Irf > 10\%$) the influence of regional factors in the sectoral structure of the region is significant. In this way, the industry can be identified as competitive for the region and can contribute to employment growth in the future.

The second and third stages of the analysis are presented in **Table 3**:

Table 3. "Shift-shear" analysis of employment in selected sectors of the regions in Bulgaria.

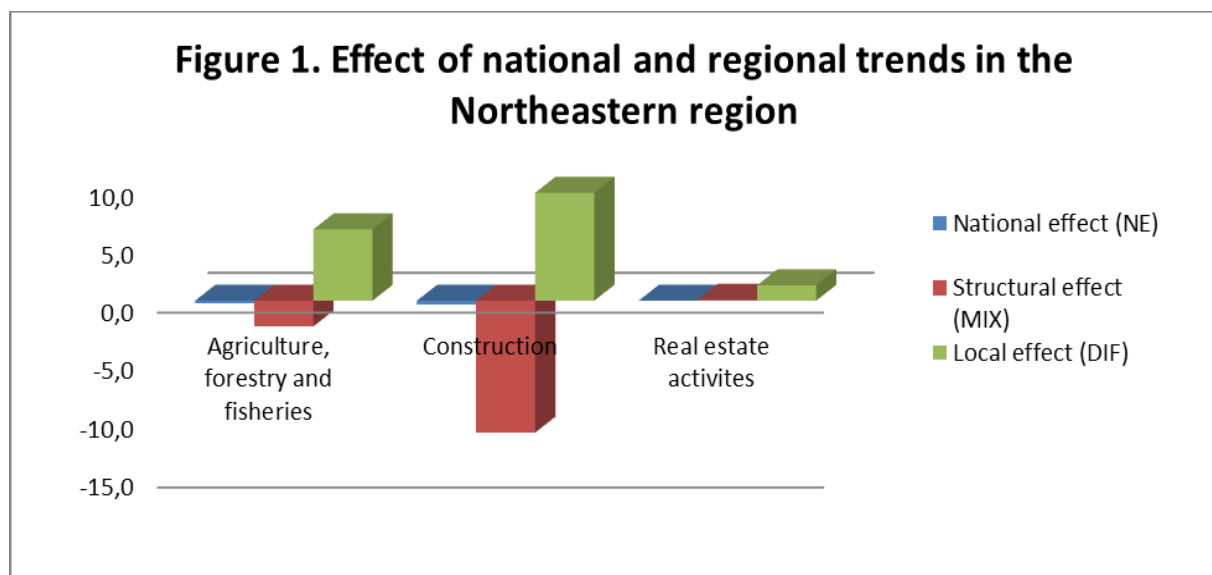
Regions	National effect (NE)	Structural effect (MIX)	Local effect (DIF)	Total Growth (SS)	Expected growth (ES)	Index (Irf)
Northwest	-1,29	-15,79	-30,92	-48	-17,08	*
Agriculture, forestry and fisheries	-0,17	-1,81	-2,91	-4,9	-1,99	-12,84
Industry (excluding construction)	-0,66	-12,81	-17,03	-30,5	-13,47	-22,92
Public administration, education, human healthcare and social work	-0,46	-1,17	-10,97	-12,6	-1,63	-18,19
North Central	-0,9	-15,61	7,51	-9	-16,51	*
Agriculture, forestry and fisheries	-0,21	-2,19	0,2	-2,2	-2,4	0,65
Industry (excluding construction)	-0,69	-13,42	7,31	-6,8	-14,11	7,1
Northeast	-1,34	-5,51	28,96	22,1	-6,86	*
Agriculture, forestry and fisheries	-0,21	-2,21	6,12	3,7	-2,42	16,4
Construction	-0,34	-11,32	9,26	-2,4	-11,66	18,04
Trade, transport, hospitality industry	-0,78	7,91	12,27	19,4	7,13	8,55
Real estate activities	-0,01	0,1	1,31	1,4	0,09	39,79
Southeast	-1,38	-29,21	7,19	-23,4	-30,59	*
Agriculture, forestry and fisheries	-0,22	-2,27	4,59	2,1	-2,49	12,51
Industry (excluding construction)	-0,82	-15,99	5,71	-11,1	-16,81	4,77
Construction	-0,33	-11,02	-4,45	-15,8	-11,35	-12,19
Real estate activities	-0,01	0,07	1,34	1,4	0,06	47,71
Southwest	-3,14	89,85	36,1	122,8	86,7	*
Trade, transport, hospitality industry	-1,85	18,68	21,46	38,3	16,84	6,48
Creation and distribution of information and creative products, telecommunications	-0,28	18,45	7,33	25,5	18,17	10,52
Financial and insurance activities	-0,22	3,46	0,96	4,2	3,24	2,48
Real estate activities	-0,04	0,35	-2,01	-1,7	0,31	-39,44
Professional and research activities; administrative and support service activities	-0,51	40,01	8,4	47,9	39,5	6,49
Culture, sports and entertainment, household items repair activities	-0,25	8,89	-0,04	8,6	8,64	-0,09
South Central	-2,27	-28,85	39,42	8,3	-31,12	*
Agriculture, forestry and fisheries	-0,43	-4,44	-3,23	-8,1	-4,87	-5,42
Industry (excluding construction)	-1,17	-22,68	24,25	0,4	-23,85	13,04
Public administration, education, human healthcare and social work	-0,68	-1,72	18,4	16	-2,4	14,93

Source of information: NSI and own calculations

The table shows that a positive regional effect, calculated on the basis of employees in industries with a coefficient of localization above one and with an index for the influence of regional factors over 10% is present in the following regions and industries:

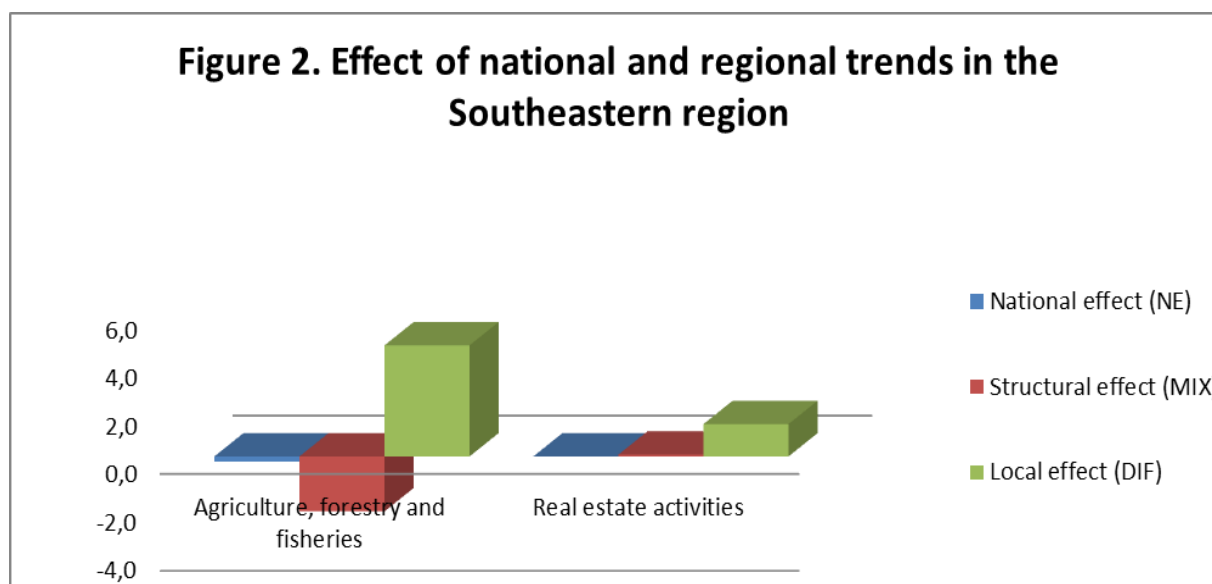
✓ Northeastern region (Varna, Dobrich, Targovishte, Shumen) for the branches Agriculture, Forestry and Fisheries, Construction and Real Estate Activities

Figure 1 shows the national, structural and local effect in this region:



✓ Southeastern region (Burgas, Sliven, Stara Zagora, Yambol) for the branches of Agriculture, forestry and fisheries, Industry (excluding construction) and Real estate activities

A visual idea of the effect of the national and regional trends of the Southeast region can be given by **Figure 2**:



The largest increase in employment in the sector "Real Estate" is noted in these two regions - Northeast and Southeast, as this growth is

determined by the action of specific local factors for the region. It is in this sector that there is a potential for more favorable development

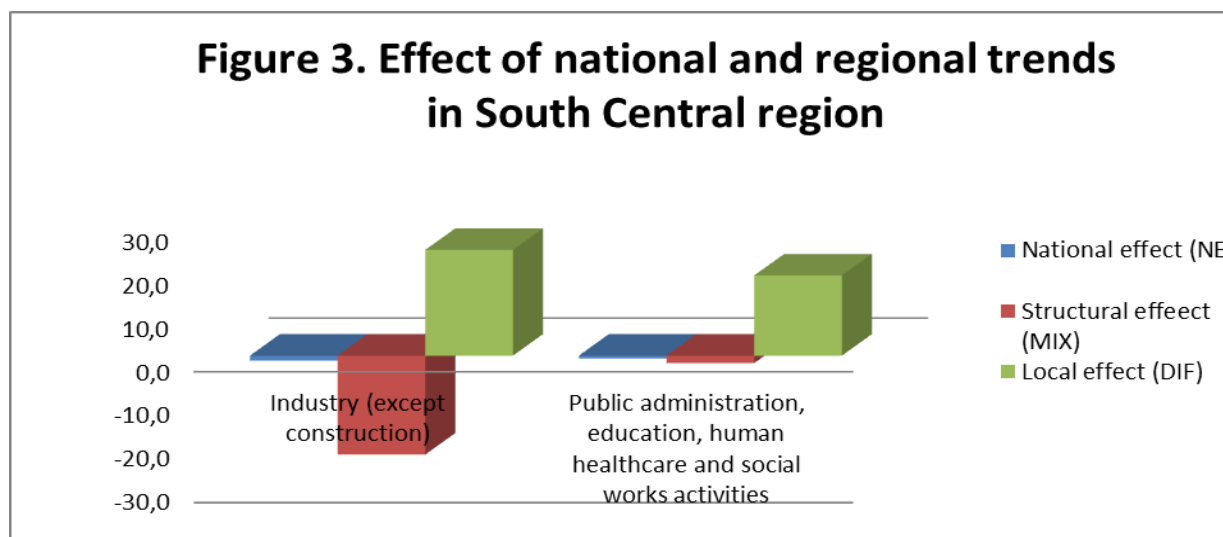
compared to the development of the same sector in the national economy. The relative share of employees in the real estate sector is relatively low, its effective development does not require significant investment and in combination with the comparative advantages it has would have a positive impact on the overall economic development of the region.

Comparative advantages in the Northeast region and Southeast region are also present in the sector "Agriculture, forestry and fisheries", in which the localization coefficient is greater than one, the local effect is a positive value and the influence of regional factors in the economic structure of

the regions is significant. The development of this sector is defined as an unfavorable trend, as labor productivity in agriculture is low and is combined with a high relative share of employees, especially if this development is at the expense of other sectors.

✓ South Central Region (Kardzhali, Pazardzhik, Plovdiv, Smolyan, Haskovo) for the branches of Industry (excluding construction) and Public administration, education, human health and social work.

Figure 3 shows the national, structural and local effect in this region:



The local effect of employment in industry in the South Central region is a determining factor for the formation of favorable economic indicators, and this is a prerequisite for increasing the potential for economic development of the region. In some areas of the region there are problems related to low population density, high migration, low economic indicators, but their solution requires a specific approach to reduce regional disparities. This approach, together with the real comparative advantages of the local effect, can lead to positive results in terms of the economic development of the region.

CONCLUSION

Regional sectoral competitiveness is seen as the quality and ability of regions to compete. Regional development appears as a logical result of the symbiosis between national, structural and

local factors, but the local effect has a significant role in the economic growth of the region. It summarizes the effectiveness of the action of unique factors for the region that affect economic, social, financial, institutional and other subsystems. On the one hand, regional development is a result of the overall economic policy of the state. On the other hand, each region participates with its potential in the national economy, has its own sectoral specialization, economic resources are in lasting internal economic relations with other regions and are inextricably linked to them. Through this potential it participates in the country's economy and occupies a certain place in the general development of the country.

As a result of the defined criteria, the sectors in several regions that have a potential for

development have been identified, as their stimulation could have a favorable effect on the growth of the economy in the region. The promotion of certain sectors may lead to an increase in regional disparities, but this process should not be seen as unfavorable. It should correspond to the economic structures, and be in line with the national trends and the economic conditions of the region. "Analyzing the structural changes in the economy helps to solve a number of practical tasks, as the sectoral structure of production is closely linked to the efficiency and growth of the economy." (3)

The effective use of the comparative advantages of the regions leads to visible economic growth, expressed in employment growth, modernization of the public administration, stimulation of investments, increase of the living standard, reduction of migration, etc. This is a favorable process that allows for the restructuring of sectors into individual regions and alleviates significant regional disparities related to socio-economic and demographic indicators.

REFERENCES

1. Geneshki M., Regionalna ekonomika (Regional Economics).S., Trakia-M, 2002, p.67
2. Yarkova, Y.,N. Markov, K. Toneva 2018, Analysis and evaluation of the territorial economy in Stara Zagora district, Proceedings of the Scientific Conference" Regional Economy and Sustainable Development ", organized by the Research Institute at the University of Economics - Varna, November 17, 2017 Publishing House" Science and Economics ", University of Economics - Varna, 2018, ISBN 978-954-21-0956-3, p.312
3. Gospodinova, S., Structural changes in Gross value added and their relationship with the economic growth of Bulgaria in the period 1997-2017.Economics 21, 1/2019, p.93

Internet sources

<https://www.nsi.bg/>
[https://infostat.nsi.bg/infostat/pages/reports/quer
y.jsf?x_2=184](https://infostat.nsi.bg/infostat/pages/reports/query.jsf?x_2=184)
<https://ec.europa.eu/eurostat>