



TRAKIA UNIVERSITY - STARA ZAGORA
FACULTY OF ECONOMICS
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AUTHOR'S ABSTRACT OF THE DISSERTATION THESIS

on the topic:

**"ECONOMIC ASSESSMENT OF THE REGIONAL
SECTORAL STRUCTURE"**

for the award of educational and scientific degree "Doctor of Philosophy" in the field of higher education - 3.0 Social, economic and legal sciences; professional direction - 3.8. Economics; Scientific Specialty "Economics and Management (Agriculture)"

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The dissertation thesis was discussed and approved at an expanded board of the Department of Economics, Faculty of Economics, Trakia University, Stara Zagora, Bulgaria on 10.09.2021 and a procedure for presenting the dissertation work was opened and was directed for defending in a Scientific Jury. The dissertation work has a total volume of 235 pages. It is structured in an introduction, three chapters, conclusions and recommendations, a conclusion, a list of references, annexes. The number of literary and information sources used is 219, of which 37 in Bulgarian and 182 in foreign languages. The dissertation includes 35 tables and 16 figures.

The dissertation thesis and the author's abstract are sent to the National Library "St. Cyril and Methodius" and to the Scientific Department of the Faculty of Economics at Trakia University, Stara Zagora. The defense of the dissertation will take place on 15.12.2021 in the Hall 3-A of the Faculty of Economics in an open session of the Scientific Jury according to the order of the Rector of Thrakia University Stara Zagora, №2610/11.10.2021

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I. CHARACTERISTICS OF THE DISSERTATION WORK

1. Relevance of the topic

The dynamics of economic processes form a certain sectoral structure that generates the potential of a region to establish and maintain economic growth. The study of this dynamics makes it possible to clarify the regularities in the functioning of the economic system, to examine changes in the structure of economic processes, to assess the role of the regional sectoral structure in the spatial location of economic sectors and for the resource assurance of individual sectors providing comparative advantages of a region. Knowledge of the ongoing structural processes is crucial for the establishing of an effective economic structure, respectively for the formation of economic development potential. As a major factor in the lack of competitiveness, the Sixth Periodic Report of the European Commission looks at the unfavourable sectoral structure that predetermines the economic backlog of certain countries and regions¹. The established economic structure with a certain referencing of its components is a prerequisite for achieving a certain efficiency of production, for the realization of relevant growth rates and level of consumption. In other words, the aim of any economic system is to achieve a favourable sectoral structure, a structure implying higher production efficiency, which is realised solely on the basis of competitive advantages corresponding to that production structure.

2. Purpose and tasks of the study:

The main objective of the dissertation work is to assess the role of the regional industry structure in shaping high economic growth by analysing the level, dynamics and structural differences at national and regional level by major economic sectors. On this basis, it seeks to identify opportunities for the future

¹ EC, "Sixth Periodic report on the social and economic situation and development of the regions in the European Union", *European Commission*, Directorate General for Regional Policy and Cohesion, EC, 1999

development of the regions related to their specificity and local economic potential.

In order to achieve the objective thus formulated, the following tasks are posed within the framework of the doctoral thesis:

- ✓ To examine and determine the relation between economic growth and industry structure in the light of the main theoretical conceptualizations of economic growth;
- ✓ To analyze the dynamics of the industry structure at EU and Bulgaria level, as well as the impact of the identified trends on regional processes;
- ✓ To assess the effectiveness of the sector structure of the region through specific indicators determining the localisation of structural changes and, on this basis, to examine national, structural and regional factors on sectoral changes;
- ✓ To examine the relationship between regional production efficiency as measured by relative labour productivity and selected factors for the formation of structural regional differences;
- ✓ To group interconnected regional clusters according to employment and relative labour productivity, which to characterize general development trends at national and regional level according to selected criteria.

3. Object, subject and scope of research

The object of the research is the regional sectoral structure at national and regional level (NUTS 2 and NUTS 3). According to NUTS2, classification of territorial units for statistical planning areas in Bulgaria are six, namely: South-West, South Central, South East, North East, North Central and North-West Planning Areas. The NUTS 3 hierarchical regions correspond to the 28 districts in Bulgaria

The subject of the survey is the sectoral structure at national and regional level and the factors determining economic regional differences.

The scope of analysis are the years 2000, 2007 and 2017, and the selected years allow to track the changes for a period covering significant changes in the economic development of the country.

4. Research thesis

Differences in structure by main economic sector are an essential factor determining national and regional economic growth.

In this regard, the observed changes in the structure of the main economic sectors at national level raise some **hypotheses** related to the economic development of individual regions, namely:

- The process of redirecting resources from agriculture to industry and services depends on the degree of economic development of the country – regions with a higher degree of economic development tend to redirect resources more flexibly and vice versa;
- Countries with a higher share of agriculture than other sectors are those with less developed economies within the EU;
- Integration processes lead to a significant increase in regional disparities in the sectoral structure.
- Structural changes to activities with higher efficiency are accepted as a major factor and motor of national and regional economic development.

5. Methods and information environment of the study.

In the dissertation there are used the comparative method, methods of analysis of structures and structural changes and differences, dynamic analysis of the movement of the shares (shift-share analysis), economic and statistical methods (correlation and regression methods), cluster analysis, induction and deduction, analysis and synthesis, a graphical method, etc. The source information covers variational but also time/dynamic series/rows. It uses primary and secondary information from NSI databases, Eurostat, certain classifications (e.g. NACE classification), and other sources of information. Licensed IBM SPSS Statistics 26 and Microsoft Excel 2010 software is used to process the information.

6. Limitations of analysis:

- ✓ In the dissertation there are selected for research and analysis 10 sectors, which are an aggregated nomenclature of economic activities.
- ✓ The publication of statistics by region lags behind the publication of those for the country, therefore the data is from 2017.

The results of the survey summarise structural changes at national and regional level. These transformations are emerging that would foster economic growth and could serve as a basis for determining the potential by region and for the country in general.

II. CONTENT OF THE DISSERTATION WORK

INTRODUCTION

The introduction justifies the relevance of the topic. A key objective of the study and the tasks related to its achievement have been formulated. The object, subject and scope of the study are defined and a research thesis is defined. The methods of analysis applied, the information base of the study, as well as the limitations related to the information environment are specified.

CHAPTER ONE. THEORETICAL AND METHODOLOGICAL BASIS FOR THE ASSESSMENT OF A REGIONAL SECTORAL STRUCTURE

This chapter of the dissertation tracks the development of economic growth theories and seeks the link between economic growth and industry structure. Tracking theories of economic growth, as well as the factors determining the relationship between growth and economic structure, makes it possible to shed more light on the importance of structural changes for the regions and for the country as a whole. Classic, neoclassical and new theories for economic growth are considered. A critical analysis of the growth factors has been carried out and a methodology has been presented for the assessment of the regional industry structure through a number of indicators revealing the impact of structural changes on the development of the country and its regions.

1.1. Theories of economic growth

The main task of this part of the study is to track the evolution of theories of economic growth. The theoretical concepts presented in this chapter explain differently the nature of economic growth and the factors underlying it. Initially, the classic theory is being presented, as in it economic growth is considered on the basis of the interrelation between labour and capital. The classics explain growth through the division of labor, factor productivity and the efficiency of manufacturing. **Adam Smith** in "The Wealth of Nations. A study of its nature and causes" (1776) emphasizes that the foundation of the wealth of nations is the international division of labour and the corresponding specialization of individual countries in the production of goods for which they have an absolute advantage. Another classic, **David Ricardo** in his fundamental work "On the Principles of Political Economy and Taxation" (1817), justifies the theory of comparative advantages, emphasizing that under certain conditions there is a benefit for the parties trading with each other only if they specialize in the production of goods for which they have an advantage. As a continuation of the theory of Smith and Ricardo, the concept of the production factors of the Swedish economists **Eli Heckscher and Bertil Ohlin** appears. They link comparative advantages to quantitative and qualitative factors assurance. According to the two researchers, a country's foreign trade specialization is predetermined by the abundance or scarcity of natural resources, physical capital and workforce. One of the most interesting studies on the relationship between the factors of production in a country and the real structure of its exports and imports is conducted in 1953 by an American economist of Russian origin **Wassily Leontief**, who proves that the countries trade with each other because it allows them to participate and profit from the international division of labor. Theories of economic growth in the late 18th and early 19th centuries are mainly based on the relationship between labour and capital, without taking into account the impact of technical progress and the use of production

facilities. With the emergence of **neoclassical theories** of growth, they advocate the idea of balanced economic growth. Through the use of production functions research relating to quantitative assessment of the contribution of the given factor to growth is further exacerbated. The theories of R. Solow, T. Swan, J. Meade, E. Phelps, K. Arrow, etc. stand out from the others. **Josef Schumpeter's** innovative theory gives a strong impetus in the development of the conception of innovative theory. In his work "Theory of Economic Development" (Schumpeter, 1934, pp 66), he introduced the concept of innovation, stressing that structural changes generate growth and innovation is a primary factor in this economic growth. Robert Solow, develops Schumpeter's theories and create a neoclassical growth model. It proposes that the influence of individual factors be assessed through the classical production function of Cobb – Douglas, thereby examining the dynamics of economic growth. In the mid-1980s, the theory of endogenous (domestic) growth emerged, its founding fathers being Paul Romer (1986), and Robert Lucas (1988). The representatives of this theory try to overcome the limitations of neoclassical theory by looking at factors of production with increasing returns and focusing on the so-called human capital, taking into account the education, experience and health of the workforce. Empirical results that cannot fit into neoclassical models create the need to create new economic theories. Krugman's economic theory, for example, focuses on foreign trade and economic geography issues. This theory is based on the so-called "center -periphery" model and proves the advantages of the higher volume of production. The new economic - geographical theory and the new theory of trade examine both the possibilities and adverse effects associated with the integration processes. Many authors, such as P. Krugman (1991, 1995, 1998), M. Fujita (1999), A. Venables (1996, 1999), D. Puga (1999), J. Ottaviano (2001) etc., present models based on international, national, regional comparisons, globalization, integration processes, etc. A number of empirical studies have documented a strong and positive relationship between exports and economic

growth, including in the studies of Michaely (1977), Balassa (1978,1985), Tyler (1981), Chow (1987), Darrat (1987), Khan and Saqib (1993), etc., justifying the **export-based growth theory**. In modern research, the services sector is cited as a key factor in achieving economic growth and competitiveness of the economy, which necessitates a new theory of **the service economy**. The expansive development of service activities benefiting from new intellectual, communication and information technologies has given rise to a number of authors such as Castells (2004), Toffler A.and Toffler H.(2000), Chen and Dahlman (2004), Stiglitz (2002), to develop the concept of a newly transformed modern economy, which they define as an 'information economy'. The structure of an economy is constantly evolving and changes over time are comprehensive as they affect sectors, markets, companies, products, services, etc. Against this background, the question arises of how to achieve such a structural change that will be effective and successful for the country's economy. The study of structural changes creates an opportunity for redistribution of production factors and innovations that form the basis for future growth and prosperity.

1.2. Factors for characterising economic growth

In scientific literature, there is a great deal of diversity of concepts justifying the different factors of economic growth, according to different classifications. The classical economy, for example, distinguishes between three main factors of the production process, and these are precisely: labour, land and natural resources and capital, and neoclassical theory considers economic growth under the influence of three factors of production: labour, capital and technological level. The technological level is derived as a generalized factor of production, which includes hard-to-measure factors such as entrepreneurship, etc.² Other theories (Rodrik 2000, Lensink, R. and E. Sterken, 1999, Bloom, D. and J. Sachs, 1998,

² Smith, A., An Enquiry into the Nature and Causes of Wealth of Nations, The Electric Book Company, London, 1998 (1776).

² Barro, R. & Sala-i-Martin, X., Economic Growth, 1st edition, MIT Press, 1999, p. 17

etc.) underline the significant role of non-economic factors such as institutional structures, legal and political systems, socio-cultural factors influencing economic growth. Detailed knowledge and examination of factors leading to economic growth may provide partial or comprehensive information on the level of economic development achieved by a region or country.

Looking at most of the definitions known in economic literature concerning a regional industry structure and using the rich experience of authors such as Totev S. (2008), Totev, S., G. Sariiski. (2005), Aarsrad J, Kvitastein O, (2019), Drucker J. (2011) and others. a proposed definition aimed at covering the tasks set out in labour, namely: a regional sectoral structure is an objectively formed interconnected set of sectors, subsectors and distinct groups of activities located in a given territory, which are permanently interconnected and operate in ever-changing conditions, under the influence of a number of factors. Thus defined, the concept does not claim completeness, but seeks to highlight essential characteristics of processes and phenomena determining a particular structure.

1.3. Methods for economic assessment of regional structural differences

In modern literature, various concepts related to the cost-effectiveness of urban, regional and national territories, schemes of economic regionalization and administrative-territorial division, inter-district and cross-sectoral models and balances have been developed. Many of the authors, such as Krugman (1991,1996,1998,1999), Fujita (1999), Venables (1999), etc., explore the regions within the framework of the New Economic Geography and develop models based on national, regional and international comparisons. Methods of territorial concentration and regional specialisation can determine whether sectors become more geographically concentrated within a region and whether countries become more specialised in their production. One of the most often used methods for assessing regional specialization is through the introduced by Isard (1960) index of localisation, localisation coefficient and coefficient of specialisation. With

their assistance, there are justified individual aspects of sectoral specialisation in this research, namely:

- ✓ Statistical structural analysis presents many summarising measures of structural changes, which provide a comprehensive assessment of changes in the internal structure of the population and its structural dynamics.
- ✓ Shift-shear analysis explores regional growth resulting from the region's specialization in activities for which it has unique advantages and is the most competitive.
- ✓ Using a multifactorial regression model, the factor factor between indicators characterising different socio-economic variables in a given area is quantified.
- ✓ The impact of localisation on the economic development of the region is presented through the cluster analysis for the assessment of the regional structure. With its help, the geographical concentration of interconnected areas by certain economic indicators and refines the possible specialization, taking into account the unique advantages of the place.

CHAPTER TWO. LOCALISATION AND SPECIALISATION BY REGION AND INDUSTRY

2.1. Regional structural economic disparities in the EU and Bulgaria

2.1.1. Structural economic disparities in the European Union

One of the tasks set out in the research is related to the assessment of structural changes in the main sectors according to the classification of Eurostat and NACE.BG 2008. The main sectors surveyed are based on an aggregated nomenclature of economic activities A10s, looking for their influence on general trends in the development of regions. The comparative analysis of structural changes in our country compared to those of other European countries makes it possible to identify changes that are identical to changes in EU Member States, as well as the peculiarities of development with which our country differs from

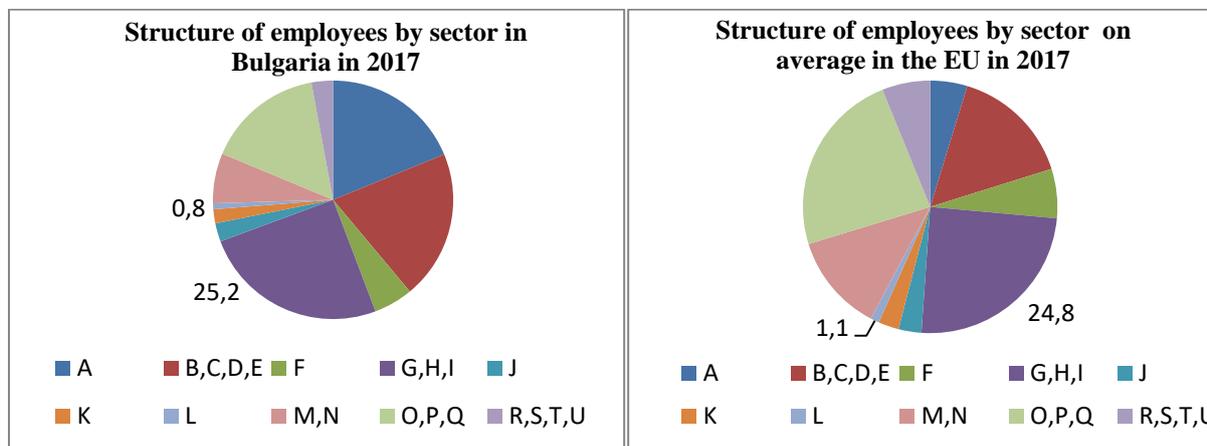
the development of other countries. As a rule, the high relative share of the agricultural sector is considered to be characteristic of countries with lower economic potential, as labour productivity in this sector is lower. The redeployment of labour resources from the agricultural sector to the other sectors leads to an increase in average labour productivity, and hence the increase in gross value added (GVA), which is a prerequisite for economic growth. The study of structural changes in the share of employees, GVA and relative labour productivity makes it possible to track the shift of resources from one sector to another and, on this basis, to assess the degree of economic growth.

✓ The comparative analysis of the calculated relative dimensions of the employee structure by sector in the EU-28 shows that countries with a more developed economy have a low relative share of employees in the agricultural sector. The ranking of the countries with the highest and lowest relative share determines Luxembourg, Germany, Belgium, Britain, Austria with the lowest share of employees in the agricultural sector and the highest percentage employed in the same sector are Romania, Bulgaria, Lithuania, Greece, Poland. In comparison with the relative share of employees in the industry sector, it is found that there is no significant change in Bulgaria's place in terms of employment in this sector compared to the other EU Member States. In a dynamic aspect, there are no significant changes in this sector for our country. The difference between the relative share of employees in the industry sector for Bulgaria and the average employment in the EU is not drastic.

Overall, Bulgaria has a high relative share of employees in the agriculture, forestry and fisheries sector and the lowest share of employees in the three years in the financial and insurance activities and culture, sports and entertainment, household repair and other activities sectors. When ranking those employed in EU Member States, according to the magnitude of their relative

share, it is established that our country is in the same group as Romania, Greece, Portugal, Lithuania, etc.

In Fig. 2.1.1.1. visually presents the structure of employees by sector for Bulgaria and on average for the EU in 2017



Source of information: NSI, Eurostat and own calculations

An additional estimate of changes in the structure of employees for all sectors over the years can be obtained by the sum of the Square of Differences (SSD) indicator³. In 2007 compared to 2000, the figure of the square of differences for employees in all sectors was highest for Romania, Lithuania, Latvia, Poland, Bulgaria, Malta. This means that it is in these countries that there are the greatest changes in the dynamic aspect of the employment structure for all 10 sectors observed. In 2017 compared to 2000, the most important indicator is the importance of this indicator for employees in Romania, Malta, Lithuania and Poland, and the comparison of 2017 compared to 2007 shows that there is no drastic change in the magnitude of this indicator for EU Member States. For Bulgaria, a significant change is observed, comparing employment in relative

³ $SSD_t = \sum_i^n (a_{it} - b_{it})^2$ where [a, b] a given pair of regions or the same region in different periods, $i = 1, \dots, n$ is the number of sectors (for SSD by main sectors $n = 10$ – agricultural, industry, construction, etc.; t the year – 2000, 2007 and 2017)

terms in 2017 compared to 2000, and the smallest change in the structure of employment by sector in 2017 compared to 2007.

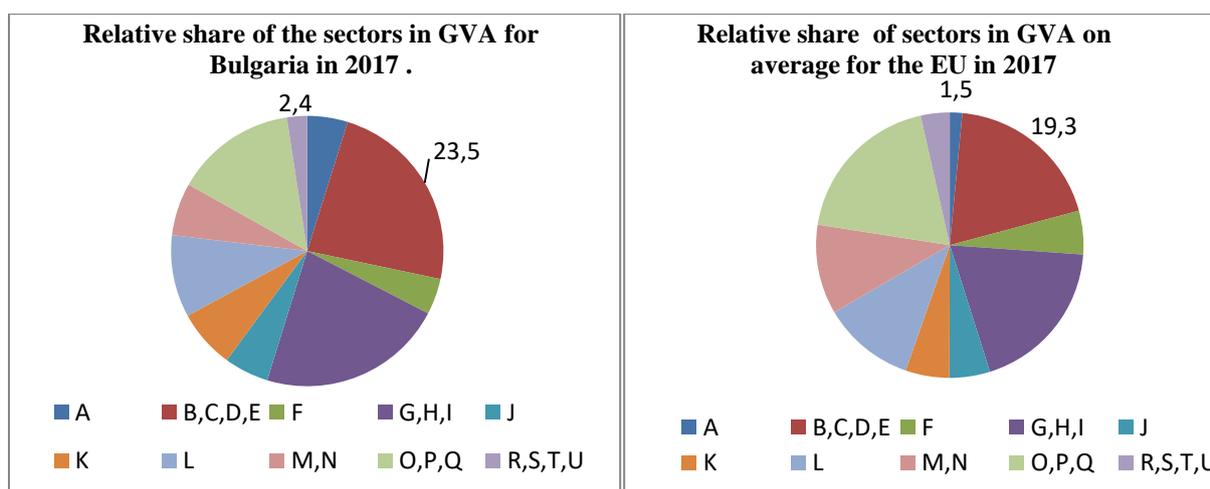
	SSD employed by sector		
	2007/2000	2017/2000	2017/2007
EU28	15,0	46,8	11,6
Belgium	16,8	92,0	30,9
Bulgaria	47,8	90,0	17,4
Czech Republic	4,0	10,1	2,6
Denmark	10,6	35,2	10,2
Germany	13,4	33,0	5,9
Estonia	43,4	49,7	38,1
Ireland	46,0	122,0	70,4
Greece	33,7	60,1	21,9
Spain	36,4	119,1	76,3
France	7,5	29,1	9,3
Croatia	-	-	70,8
Italy	10,8	38,7	15,2
Cyprus	17,6	54,4	31,2
Latvia	92,3	92,7	26,9
Lithuania	122,0	175,6	40,3
Luxembourg	18,0	87,6	28,9
Hungary	41,4	128,2	37,2
Malta	47,6	269,5	104,3
Netherlands	11,6	32,0	8,1
Austria	9,7	40,3	12,2
Poland	53,2	132,2	23,8
Portugal	30,3	121,3	40,9
Romania	243,8	559,1	76,5
Slovenia	35,5	108,2	26,6
Slovakia	29,5	57,2	10,3
Finland	13,0	67,1	22,7
Sweden	7,6	50,4	20,6
Britain	25,1	52,5	7,7

Source of information: NSI, Eurostat and own calculations

✓ When examining the changes in the structure of the GVA for the EU-28, it is confirmed that the share of GVA in the agricultural sector is higher in countries with weaker economy. The ranking of member states from the highest to lowest relative share of a sector's participation in GVA finds that our country is in the same group as Romania, Croatia, Lithuania, etc. The countries with a more developed economy such as Luxembourg, Great Britain, Germany, Belgium

have the lowest share of the indicator. The comparative analysis for the period 2007-2017 shows a slight decrease in structural differences compared to the EU-28 average. The changes are related to the fact that countries with weaker economies such as Croatia, Greece, Spain, Malta, Bulgaria, Romania, Finland reduce their differences with the average structure of the EU-28. The biggest changes in the structure of GVA by country are observed in Romania, Lithuania, Latvia, Greece, Slovakia. Our country makes an exception with high changes in the structure of GVA and small ones in that of the employees. An interesting fact is that the sectors where there is a decrease in the differences in the structure of GVA compared to the EU-28 average are the same sectors where there is an increase in the differences in the structure of employees. These reciprocal changes in the structure of employees predetermine a lower overall labour productivity for our country. Differences with other countries and the EU-28 remained highest for Bulgaria and Romania in 2000, 2007 and 2017 in the agriculture sector.

On Fig. 2.1.1.2. the relative share of the individual sectors in GVA for Bulgaria and on average for the EU in 2017 is presented.



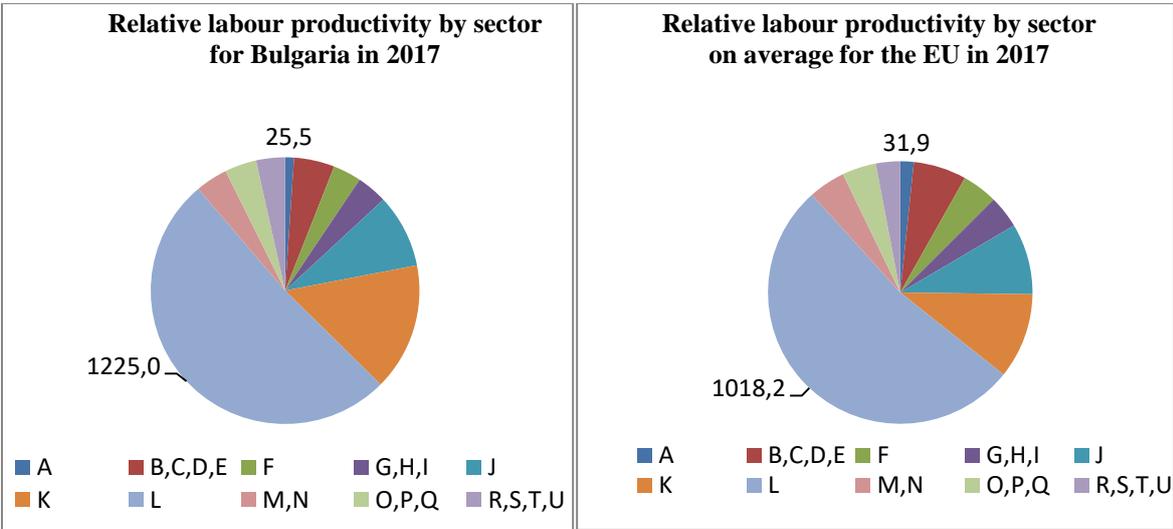
Source of information: NSI, Eurostat and own calculations

With regard to the indicator, the sum of the square of differences in GVA for the period 2007-2017 there was a slight decrease in the structural differences for Bulgaria compared to the average structure for the EU-28. In 2007/2000 they

were larger by about 19 times, in 2017/2000 the difference was about 9 times, and in 2017/2007 the magnitude of the SSD indicator was about 8 times higher.

✓ **Relative labour productivity** is measured as a relation between the share of the sector concerned in GVA and the share of employees in the same sector. For the study period, it is found that the average labour productivity calculated as an arithmetic mean unweighted amount significantly exceeds the average weighted amount in the agricultural sector (2000 – 52.7%>27.3%; 2007 – 50.4%>30.9%; 2017 – 41.4%>34.1%). In Bulgaria, in the period 2007-2017 there is no significant movement of labour resources from the agricultural sector to industry and services. The share of employees in this sector remains relatively high compared to that of other EU countries, and this in turn predetermines lower relative labour productivity and cost-effectiveness in general. An analysis of relative labour productivity in industry for the EU-28 found that the most significant changes in the direction of growth are observed in Ireland. The smallest is the relative labour productivity in this sector in Estonia, Cyprus, Luxembourg, Bulgaria and Malta. In general, there are no drastic differences between countries, both by year and in a dynamic aspect.

In Fig. 2.1.1.3. relative labour productivity by sector in Bulgaria and on average for the EU in 2017.



Source of information: NSI, Eurostat and own calculations

2.1.2. Regional structural economic disparities in Bulgaria

The structural changes in the major sectors towards higher efficiency are a prerequisite for the socio-economic development of the region, its investment attractiveness, the development of scientific and technical progress, etc. The study of structural changes is associated with an analysis of changes in labour productivity. This will provide information on what these changes are due to – whether the changes are the result of an overflow of resources from one sector to another or as a result of changes due to an increase in labour productivity within the sector concerned. Of interest is the state and changes of leading economic indicators in the different regions of Bulgaria and their impact on the sectoral regional structure of the country.

✓ The structure of employees by economic sector and by district (NUTS 3) in Bulgaria shows that the share of employees in the agriculture sector in 2000 is highest for the districts of Sliven, Pazardzhik, Silistra and Smolyan. In 2007 and 2017 with a large relative share in this sector remains the Silistra region, as well as the districts of Yambol, Targovishte, Pleven, Shumen, Razgrad, Dobrich, Kardzhali. With the lowest share of employees in the agricultural sector during the three years are districts Sofia (capital), Pernik, Varna, Gabrovo, Stara Zagora. The most significant changes in the direction of reduction are found in the districts of Burgas, Sliven and Pazardzhik in 2007 compared to 2000, and in 2017 compared to 2000 there is a significant decrease in the employment in the agricultural sector for Smolyan region. However, the data for Kardzhali district is not so favorable. It indicates an increase in the share of employees in the sector by 17.4 percentage points, representing 68 % higher employment in the agricultural sector for the region in 2017/2000. There has been a decrease in the share of employees in the agricultural sector, calculated as an arithmetic average for the country. This means that for the periods surveyed compared to 2000, a trend of transition of employed persons from this sector to other sectors has emerged, which is a prerequisite for building a more favourable employment

structure. The districts in the industry sector that have the highest relative share of employees in our country are Gabrovo, Blagoevgrad, Kyustendil, Pernik, Stara Zagora, and the lowest share is in Sofia (capital), Silistra, Yambol, Smolyan, Varna. The change in the national average in 2007 compared to 2000 is negligible and it can be argued that over time there is no intensive dynamics of employees in the industry sector, as well as the transition of employees from other industries in this one. In a dynamic aspect, there has been no change in the direction of resource overflow industrialisation. In the field of services for the observed three years, leaders are emerging, which have the highest relative share of employment in this sector. These are the districts of Sofia (capital), Varna, Pernik, Plovdiv, Burgas, Ruse. There are also those with the lowest share of employees during the observed period, namely Targovishte, Razgrad, Silistra, Yambol, Montana.

✓ The results for the share of **GVA** in the agriculture sector over the three years indicate the districts of Vidin, Silistra, Razgrad, Dobrich, Kardzhali, Yambol with the highest meanings. The lowest share of GVA for this sector for districts Sofia-grad, Varna, Burgas, Gabrovo, Stara Zagora is the lowest. There has been a change in the direction of the decrease in the share of GVA in the agriculture sector for all areas except Haskovo region in 2007 compared to 2000, and in 2017 compared to 2007 there was a slight decrease in the share of GVA in the sector for the districts of Silistra, Shumen, Targovishte, Vidin, etc. In the industry sector with the highest share of GVA are the districts of Gabrovo, Stara Zagora, Sofia, Vratsa, and the lowest share in Vidin, Dobrich, Silistra, Sofia (capital) districts. The national average in this sector in 2017 compared to 2007 increased by 1.6 percentage points, i.e. by about 7.0 %. In the construction sector there is a high share of GVA in Varna, Targovishte, Burgas, Smolyan, and in the sector "Trade, transport, hospitality and restaurant" and "Information and Communication" for Varna, Burgas and Sofia-city districts. In Vidin and Montana, the share of GVA is high in the sectors "Real estate operations" and

"General government, education, human health and social work", which means that reserves can be sought for their further development. The participation of the main sectors in the formation of GVA shows a significant variation for 2000 - from 5.3% in the south-west areas for the agricultural sector to 19.4% in the north central districts area. These percentages are from 0.8% in Sofia (capital) to 36.9% in Silistra region, respectively. The large differences observed are due not only to the regional specificity by main sectors, but also to the difference in the adaptation of economies by main sectors at the level of planning areas and areas. Overall, it is established that the share of GVA in the agriculture sector is highest in the North-West Region and this stems from the specificity of the region, which has a high share of arable land per capita. The share of GVA in the industry sector during the observed period is highest in the Southeastern Region, which defines it as an area with a better prospect for development due to the relatively favorable demographic and economic indicators.

✓ The determining indicator for measuring the economic efficiency of a sector or industry is **labour productivity**. A crucial component in characterising structural changes is the differences in labour productivity between sectors and sectors of the economy. Higher-performing activities, as well as favorable structural changes, appear to be the main driver for the economic growth of a country or region. With an overall average labour productivity for the country adopted for 100% the agriculture sector has a relative labour productivity of 57.8% in 2000, in 2007 it is 27.9% and in 2017 it is 24.9%. In dynamic terms, the indicator is smaller than that of 2000 by about 30 percentage points, which represents a decrease of over 50%. The comparative analysis in this sector makes it possible to identify the areas with high labour productivity, namely Montana, Vidin, Silistra, Kardzhali, Smolyan. For the districts of Montana and Vidin, decrease in relative labour productivity in 2007 and 2017 compared to 2000, but this is at the expense of an increase in the share of employees in the sector and a decrease in the participation of the agricultural sector in GVA.

Moreover, the age structure of agricultural workers in these areas does not imply the overflow of labour resources in other sectors, so the decline in agricultural employment cannot be a prerequisite for increasing labour productivity. In the industry sector there was a slight decrease in the relative labour productivity for the country in 2007 compared to 2000. The areas with high labour productivity in this sector are Burgas, Varna, Vratsa, Pazardzhik, and as such with a low magnitude of the indicator can be identified districts Vidin, Montana, Dobrich. High labour productivity in the service sector is established, mainly due to specific services in the field of business and finance, namely in the information and communication, financial and insurance sectors, real estate operations and professional activities and research, administrative and ancillary activities. Therefore, the potential for the development of services in terms of labour productivity is precisely in those sectors contributing to the growth of this indicator.

The close link between the participation of individual sectors and the degree of economic growth achieved is confirmed by the correlation factors determined on the basis of SSD differences in relative share of GVA and GDP per capita. When examining the correlation between GDP per capita and SSD differences in GVA compared to the EU average, a negative correlation factor was found, which is statistically significant for the agriculture, forestry and fisheries sector and in 2000 was minus 0.481, in 2007 it was minus 0.546 and in 2017 it was minus 0.504. This means that the increase in the differences in GVA in the agricultural sector leads to a decrease in GDP per capita. A statistically significant negative correlation factor between GDP per capita and SSD differences in GVA compared to the EU average for the professional activities and research sector has been established over the three years, administrative and ancillary activities', amounting to minus 0,586 in 2000, minus 0,530 in 2007 and minus 0,427 in 2017. in 2000 was 0.637, in 2007 it was 0.737 and in 2017 it was 0.779. This means that the differences in the structures of these three sectors

have a divergent impact on the economic level reached in 2000, 2007 and 2017. Therefore, structural changes in the EU as well as those in Bulgaria will be favourable if they develop towards reducing disparities in the agriculture, forestry and fisheries sector and increasing the share of services in the financial and insurance activities sector, as well as in the real estate operations sector.

In conclusion, it can be summarised that, compared to other EU Member States, South-Eastern European countries have a less favourable structure by main sector and lower overall labour productivity. Our country is one of the countries with a weaker economy, deprived of sufficient investment, modern technologies and innovation. The relative share of employees in the agricultural sector is high, which is characterized by high labor-intensiveness and low labour productivity. The change in economic potential is possible through restructuring by major sectors and shifting labour from the agricultural sector to higher labour productivity sectors.

2.2. Localisation of structures

Grouping areas using the SSD metric and localization factor

In order to identify sectors and subsectors that have comparative advantages and are key to the regional economy, the study is aimed at establishing the growth rate of certain sectors through shift-share analysis. It assesses structural changes in the territorial and sectoral structure from factors of national, regional and local importance. The choice of sectors and areas to be explored by shift-share analysis in this development is made by the following sequence:

- ✓ Calculates the average SSD for the sector for each area of the country - the calculated dimension shows how much on average from an SSD in a given sector falls on one area. With "x" are noted those areas that by SSD exceed the average sum of the square of differences.
- ✓ An average SSD for the sector is established, as a ratio between the sum of the square of differences for each area and the number of sectors. The aim is to compare each area with the calculated average in the sector and to

identify those sectors in the area where the SSD is of greater importance than average. Those areas where there is a higher average SSD in the sector are marked with a "y"

- ✓ A localization coefficient is determined. Select those areas and sectors where the localisation coefficient is above one and marked with "z". These are the sectors with basic employment in the region, which is a sign of the specialization of the research industry.

In order to establish the reasons for structural changes, those areas and sectors meeting at least two of the following requirements for more than two sectors shall be selected:

1. To have a higher sum than the square of differences relative to the average for one area;
2. To be of a higher sum than the square of differences relative to the average for one sector;
3. To have a localisation coefficient greater than one

With the help of the group with the average SSD by districts and sectors, as well as on the basis of the results obtained from the calculation of the localization coefficient in 2017, the following table sets out the areas and economic activities meeting the defined criteria:

Table 2.2.1.4. Selected areas and economic activities to analyse structural changes through Shift-share analysis

Statistical regions	Agriculture, forestry and fisheries	Industry	Construction	Trade transport, hospitality and catering	Information and communication	Financial and insurance activities	Real estate	Professional activities and research; administrative and	Government, education, human health and social work	Culture, sports and entertainment; repair of household items and
Vidin	xyz	xy							xyz	
Vratsa	xyz	xyz							y	
Montana	xyz	yz							xyz	
Varna			xz	yz			xz	xy		xz
Burgas	xyz		xz	xyz			xz			xz
Sliven	xyz	xz		xy						
Yambol	y	xyz							xy	
Blagoevgrad		xyz	xz	xy					xy	
Pernik		xyz		xy						xz
Sofia-City		xy			xyz	xz		xyz	xyz	xz
Kardzhali	xyz								xy	
Pazardzhik	xyz	xyz		xy						
Smolyan	xyz	xyz								xz

Source of information: NSI and own calculations

Where:

x – higher SSD in a given area sector than the average SSD per area

y - higher SSD in a given area sector than the average SSD per sector

z – localization factor above unitKardzhali district has also been added to the selected areas, although there has been a change that meets these requirements in only two sectors. For it, the overall SSD is high, which means that there are large structural employment disparities for the area in 2017 compared to 2000.

The assessment of local development factors through "shift-share" shows that:

✓ The areas where there are local factors conducive to the development of the agriculture, forestry and fisheries sector are Vidin, Vratsa, Montana, Yambol, Kardzhali. The first three districts, together with pernik region and Sofia-capital region on the other hand, show an unfavorable trend of local factors for the development of the industry sector.

✓ Negative local effect associated with a decrease in employment in the agriculture, forestry and fisheries sector is established in the districts of Burgas, Sliven, Pazardzhik and Smolyan, and in the same areas together with the districts of Yambol and Blagoevgrad there has been an increase in employment in the industry sector under the influence of local, local factors.

✓ These differences in 2017 compared to 2000 are the result of the redirection of employees from the agricultural sector to industry and services and are a prerequisite for implementing favourable structural changes for some areas. This leads to higher labour productivity in these areas, better regional indicators and a higher standard of living for the population.

2.3. Structural changes in employment according to NACE.BG

In order to characterize the structural changes in employment according to NACE.BG 2008, two summary measures are applied – that of K. Gatev and that of Ryadbtsev. The share of employees in a sector of a given region compared to the total number of employees in the sector is also established. The calculated coefficients of K. Gatev and B. Ryabtsev, characterizing the intensity of the structural changes of the employees in 2017 compared to 2000 by sector show that significant structural changes have occurred in the agriculture, forestry and fisheries and financial and insurance sectors. The intensity of structural changes in the Information and Communication sector is strong, while in other sectors there is a negligible intensity of changes measured as moderate or weak. The coefficients of Gatev and Ryabtsev, characterizing the intensity of the structural changes of employees in 2017 compared to 2000 by sector in the country are presented in the following table:

Table 2.3.2. Integrated coefficients of structural change by sector in 2017 compared to 2000

Sectors	Integral coefficient of K. Gatev	Integral coefficient of structural differences of B. Ryabtsev	Intensity of structural changes
Agriculture, forestry and fisheries	Ks=0.296	Ksr=0.214	Significant
Industry	Ks=0.126	Ksr=0.090	Ks – Moderate, Ksr – Weak
Construction	Ks=0.124	Ksr=0.088	Ks – Moderate Ksr – Weak
Trade, transport, hospitality and catering	Ks=0.104	Ksr=0.075	Weak
Information and communication	Ks=0.550	Ksr=0.423	Strong
Financial and insurance activities	Ks=0.312	Ksr=0.226	Significant
Real estate	Ks=0.161	Ksr=0.115	Moderate
Professional activities and research; administrative and ancillary activities	Ks=0.124	Ksr=0.088	Ks – Moderate, Ksr – Weak
Government, education, human health and social work	Ks=0.164	Ksr=0.117	Moderate
Culture, sports and entertainment repair of household items and other activities	Ks=0.098	Ksr=0.069	Weak

Source of information: NSI and own calculations

Similarly, a table shows the magnitude of the coefficients in 2007 compared to 2000 and 2017/2007. The intensity of changes in the information and communication sector in 2017/2007, calculated by the K.Gatev coefficient, is strong and according to the coefficient of V. Ryabtsev is significant. In the financial and insurance activities sector in 2007/2000 there are significant, according to Gatev and moderate, according to Ryabtsev changes in the structure of employment. In general, the sectors in which significant changes have occurred in the structure of the employees are Agriculture, Forestry and Fisheries, Information and Communication, Financial and Insurance Activities and Real Estate. These two measures of structural change have also been applied by area, measuring the intensity of structural changes for each area and for the ten sectors in it. On the basis of the calculated indicators during the years

analyzed, the areas with significant and strong changes in the structure of employees, which are Burgas region, Sliven region and Pazardzhik region for 2007/2000 are determined. Silistra, Varna, Yambol, Blagoevgrad, Kyustendil, Pernik, Sofia-grad, Kardzhali and Smolyan. In 2017 compared to 2000 there were significant changes in sectoral employment, as measured by the coefficient of K. Gatev and moderate changes through the coefficient of V. Ryabtsev there are in the districts of Burgas, Sliven, Pazardzhik, Vidin, Vratsa, Montana, Razgrad, Blagoevgrad, Kardzhali and Smolyan. Moderate are the changes established by the coefficient of K. Gatev in the districts of Silistra, Varna, Dobrich, Targovishte, Stara Zagora, Yambol, Pernik, Sofia, Sofia-city, Haskovo. In 2017/2007, indicators for measuring structural changes identified three areas where there is a significant intensity of structural changes in the share of employees by sector and these are Vidin, Montana, Yambol, Kardzhali and Smolyan districts. Moderate is the intensity of the changes in the districts of Vratsa, Plevan, Razgrad, Dobrich, Shumen, Burgas, Blagoevgrad, Kyustendil, Pernik, Sofia, Sofia-city. For all sectors in the field, the calculated coefficients and their interpretation according to the scale are presented in the following Table 2.3.4:

Table 2.3.4: Structural change coefficients by area

Coefficients of structural changes	2007/2000		Intensity of structural changes (Ks/Krs)	2017/2000		Intensity of structural changes (Ks/Krs)	2017/2007		Intensity of structural changes (Ks/Krs)
	Ks	Krs		Ks	Krs		Ks	Krs	
Vidin	0,008	0,055	Very weak	0,245	0,176	Significant/ Moderate	0,219	0,156	Significant / Moderate
Vratsa	0,097	0,069	Weak	0,224	0,161	Significant / Moderate	0,177	0,126	Moderate
Lovech	0,101	0,072	Weak	0,092	0,065	Weak	0,072	0,051	Weak
Montana	0,046	0,033	Weak	0,245	0,176	Significant / Moderate	0,223	0,16	Significant / Moderate
Pleven	0,175	0,125	Moderate	0,081	0,057	Weak	0,133	0,095	Moderate / Weak
Veliko Tarnovo	0,052	0,037	Very weak	0,068	0,048	Weak	0,049	0,035	Weak
Gabrovo	0,038	0,027	Very weak	0,045	0,032	Very weak	0,069	0,049	Weak
Razgrad	0,067	0,047	Weak	0,226	0,162	Significant / Moderate	0,2	0,143	Moderate
Ruse	0,08	0,057	Weak	0,073	0,052	Weak	0,072	0,051	Weak
Silistra	0,118	0,084	Moderate /Weak	0,117	0,083	Moderate /Weak	0,048	0,034	Weak
Varna	0,131	0,093	Moderate/ Weak	0,144	0,102	Moderate /Weak	0,062	0,044	Weak
Dobrich	0,07	0,05	Weak	0,13	0,092	Moderate /Weak	0,159	0,113	Moderate
Targovishte	0,076	0,054	Weak	0,155	0,11	Moderate	0,096	0,068	Weak
Shumen	0,079	0,056	Weak	0,091	0,064	Weak	0,125	0,089	Moderate / Weak
Burgas	0,282	0,203	Significant/ Moderate	0,332	0,241	Significant	0,12	0,085	Moderate / Weak
Sliven	0,43	0,319	Strong / Significant	0,383	0,281	Significant	0,075	0,053	Weak
Stara Zagora	0,109	0,077	Weak	0,159	0,113	Moderate	0,067	0,048	Weak
Yambol	0,164	0,117	Moderate	0,171	0,122	Moderate	0,227	0,163	Significant / Moderate
Blagoevgrad	0,136	0,097	Moderate./ Weak	0,243	0,175	Significant/ Moderate	0,188	0,134	Moderate
Kyustendil	0,128	0,091	Moderate./ Weak	0,101	0,072	Weak	0,157	0,111	Moderate
Pernik	0,137	0,097	Moderate / Weak	0,191	0,136	Moderate	0,149	0,106	Moderate
Sofia	0,07	0,05	Weak	0,127	0,09	Moderate /Weak	0,11	0,078	Moderate / Weak
Sofia-city	0,132	0,094	Moderate/Weak	0,196	0,14	Moderate	0,119	0,085	Moderate / Weak
Kardzhali	0,117	0,083	Moderate /Weak	0,314	0,228	Significant	0,219	0,156	Significant/ Moderate
Pazardzhik	0,321	0,233	Significant	0,281	0,202	Significant/ Moderate	0,092	0,065	Weak
Plovdiv	0,07	0,05	Weak	0,096	0,068	Weak	0,051	0,036	Weak
Smolyan	0,171	0,122	Moderate	0,36	0,263	Significant	0,214	0,153	Significant / Moderate
Haskovo	0,105	0,075	Weak	0,177	0,126	Moderate	0,098	0,07	Weak

Source of information: NSI and own calculations

CHAPTER THREE. FACTOR ANALYSIS AND ECONOMIC ASSESSMENT OF STRUCTURAL REGIONAL DIFFERENCES

3.1. Factors for forming structural regional differences. Selection of certain indicators forming structural differences in regional terms

One way to obtain additional evaluation, albeit with some conditionality, is by ranking the districts of the country according to certain indicators forming differences in the regional sectoral structure. Ranking by selected indicators, as well as the calculation of the rank indicator amount, is related to finding a single summary indicator that gives an idea of the approximate position of each area in terms of economic level and development potential. The 28 districts for 2000, 2007 and 2017 were carried out according to some of the justified indicators, namely: the number of employees, GVA, relative labour productivity, GDP per capita and population density. In the ranking, the most favorable meaning of each of the factors accepts rank 1, and the most unfavorable - rank 28. The ranking of selected indicators forming structural differences in regional aspect by statistical region (NUTS2) for 2000, 2007 and 2017 identifies the North-West Region as the most unfavourable in terms of economic and demographic indicators. In 2000 he took fifth place in the ranks, and in 2007 and 2017 he was in the last (sixth) position. This region has the lowest population density, with a low percentage of employees, with the lowest share of GVA and GDP per capita relative to the national average. Within this region, the economic development indicators of Vratsa region were best in 2000 and 2007 and the worst for the districts of Vidin and Montana. The low economic potential of these areas, the unfavorable numbers and age structure of the population, negative mechanical growth, etc. are the factors that may deepen and create economic, social and demographic problems in the future. During the three years observed in terms of ranked indicators, it is found that the most favorable socio-economic and demographic characteristics is the Southwestern region. The development of this region is significantly different from the average indicators for the country and a

major contribution to this is the influence of the capital. Sofia (capital) is significantly ahead of the other areas in its economic development and this is a prerequisite for increasing the structural differences between it and the other areas in the region.

Migration processes are directed to the capital and this is an inevitable process due to the favorable economic and social infrastructure. In Table 3.1.3.1. the result of the ranking by districts and districts by selected indicators is presented.

Table 3.1.3.1. Ranking of districts and regions in Bulgaria by selected economic and demographic indicators

Statistical regions	Rank Amount		
	2000	2007	2017
North West Region	23 (V)	28 (VI)	29(VI)
Vidin	106	103,5	128
Vratsa	29	41	81
Lovech	90	69,5	93
Montana	99	88,5	105
Pleven	55	56	79
North central region	25(VI)	25(V)	24(V)
Veliko Tarnovo	52	55	58
Gabrovo	52	44	57
Razgrad	86,5	86	93
Ruse	39	32	44
Silistra	89,5	108	127
North-East region	17(II-III)	15(II-III)	16(III)
Varna	16	10	19
Dobrich	67	96,5	88
Targovishte	98	94	88
Shumen	82	79	69
South-East region	17(II-III)	17(IV)	15(II)
Burgas	31	30	39
Sliven	90	93	69
Stara Zagora	27	29	30
Yambol	109	118	105
South-West region	5(I)	5(I)	5(I)
Blagoevgrad	106	104	68
Kyustendil	100	115	104
Pernik	107	100,5	91
Sofia	101	100	52
Sofia-city	11	7	7
South central region	18(IV)	15(II-III)	17(IV)
Kardzhali	92	104	93
Pazardzhik	80	48	44
Plovdiv	28	27	23
Smolyan	114	107	88
Haskovo	73	84,5	90

Source of information: NSI and own calculations

3.2. Regression analysis of Relative labour productivity

On the basis of the decomposition of the factors, two economic factors influencing the relative productivity of labour were selected – the share of GVA in the primary, secondary and tertiary sectors of the region and foreign direct investment. The model also includes one social factor – population density by district. The results of the multicollinearity check between the selected factors for 2000 are presented in a matrix for the absolute meanings of the correlation coefficients for the relationship between the different variables in the model:

Factors	Relative labour productivity	GVA first sector	Foreign direct investment	Population density
Relative labour productivity	1	0,46732	0,36137	0,112659
GVA first sector	0,467323	1	0,57915	0,378372
Foreign direct investment	0,361373	0,57915	1	0,595491
Population density	0,112659	0,37837	0,59549	1

Source of information: NSI and own calculations

In this matrix, there is no multicollinearity between these variables, since the correlation coefficients matter below 0,7, and this reflects a lack of close linear relationship between these variables. The correlation and determination factors for the relationship between relative labour productivity and factor variables in 2000 are assessed. Multiple determinant coefficient representing the relative share of variation in relative labour productivity due to factor variables included in the model is 41,1 %. There is a moderate predestination of the changes in the result under the influence of variation in the selected factors.

The adequacy assessment of the regression model is carried out using a dispersion analysis. A relationship between the factor and the result variable shall be reported and the model shall be assessed as adequate:

Regression Statistics					
Multiple R		0,641302			
R Square		0,411268			
Adjusted R Square		0,337676			
Standard Error		17,85329			
Observations		28			
ANOVA	df	SS	MS	F	Significance F
<i>Regression</i>	3	5343,9	1781,3	5,58852	0,004716
<i>Residual</i>	24	7649,8	318,74		
<i>Total</i>	27	12994			

Source of information: NSI and own calculations

The statistical significance of the regression coefficients was verified by the T-criterion of Student, $p\text{-value} < 0.05$. It is found that statistically significant at the risk of error 5% was the influence of the factors: the share of GVA in the primary sector of the region and population density, as well as the free parameter of the equation, and in case of a risk of error of 10% significant was the influence of the Foreign direct investment factor. The general regression model is presented with the following equation:

$$* \text{ RLP } \% = 138,91 - 1,21 \cdot \text{GVA}_{\text{agriculture sector}} + 1,01 \cdot \text{FDI} - 0,25 \cdot \text{PD}$$

Necessary condition in the analysis is to check for the presence of autocorrelation, and for this purpose the Durbin-Watson criterion is selected. In the observed regression model, the meaning of the coefficient $DW = 2.187$ gives reason to assume that the deviations for the regression equation are random and the regression model reflects a real correlation between the variables studied. As a final stage of obtaining a qualitative assessment of the regression parameters by the method of the smallest squares is compliance with a requirement for the presence of constancy of the dispersion of random deviations. Diagnosis of heteroscedasticity is achieved with White's criterion. The empirical characteristic of χ^2 obtained as a work between the number of observations and the coefficient of detergent of residues is $\chi^2_{em} = n \cdot r^2 = 28 \cdot 0,437 = 12,24$. The

strength of dependence between factors and result is represented by the following average elasticity factors:

$$\text{➤ } E_{\text{GVA agriculture sector}} = b_{\text{GVA agriculture sector}} \cdot \left(\frac{\overline{\text{GVA agriculture sector}}}{\overline{RLP\%}} \right) = -1,21 \cdot \left(\frac{18,57}{94,7} \right) = -0,24\%$$

$$\text{➤ } E_{\text{FDI}} = b_{\text{FDI}} \cdot \left(\frac{\overline{\text{FDI}}}{\overline{RLP\%}} \right) = 1,01 \cdot \left(\frac{3,34}{94,7} \right) = 0,04\%$$

$$\text{➤ } E_{\text{PD}} = b_{\text{PD}} \cdot \left(\frac{\overline{\text{PD}}}{\overline{RLP\%}} \right) = -0,25 \cdot \left(\frac{101,72}{94,7} \right) = -0,27\%$$

By analogy, the same sector-by-sector analysis was carried out for 2007 and 2017 on the relationship between relative labour productivity and the three factors. The results of the analysis are presented in the following table:

Coefficients	2007			2017		
	Agriculture sector	Industry sector	Services sector	Agriculture sector	Industry sector	Services sector
Multiple R	0,842	0,885	0,848	0,815	0,904	0,857
R Square	70,9	78,3	71,9	66,5	81,8	73,4
Adjusted R Square	67,3	75,6	68,4	63,8	80,3	71,3
Coefficients of elasticity (E%)	Agriculture sector	Industry sector	Services sector	Agriculture sector	Industry sector	Services sector
GVA	-0,19	0,39	-0,66	-0,24	0,5	-0,87
Foreign Direct Investment (FDI)	0,06	0,08	0,09	0,05	0,09	0,11
Population Density (PD)	-0,15	-0,14	-0,12	-	-	-
Parameters	Agriculture sector	Industry sector	Services sector	Agriculture sector	Industry sector	Services sector
Intercept	107,03	55,47	141,7	95,44	32,87	141,32
GVA	-1,49	0,95	-1,01	-1,91	1,17	-1,25
Foreign Direct Investment (FDI)	1,48	1,96	2,14	1,11	2,01	2,38
Population Density (PD)	-0,13	-0,12	-0,10*	-	-	-

Source of information: NSI and own calculations

3.3. Cluster analysis of employment and relative labour productivity in Bulgaria

Hierarchical cluster analysis by agglomeration method allows to perform successive mergers of units and clusters. The final results shall be presented in the form of a dendogram, which graphically depicts the grouping of units. Self-contained clusters in 2000, which differ significantly from the rest consist of the districts - Sofia - capital and Varna, as well as the districts of Sliven and Pazardzhik. In 2007. in one group are the districts of Silistra and Yambol, as well as Varna, Burgas and Sofia- capital. In 2017. in a separate cluster, different from the others are included districts varna and Sofia (capital). In these clusters, the structure of employees is significantly different from the characteristic structure of employment by industry in the other areas of the country.

The development of internal regional processes and their integration are aimed at deepening regional differences between the districts of the country, which finds manifestations as follows:

- ✓ Lagging areas are formed where demographic processes of a negative nature take place.
- ✓ The significant difference between lagging areas and some other urbanised regions, especially the capital, is unfavourable, which is a prerequisite for future problems related to migratory flows targeting them. This leads to the depopulation of certain areas.
- ✓ The low economic potential of the districts in some regions, the unfavorable population size and age structure, negative mechanical growth, etc. factors that may become more and more important in the future. This would create economic, social and demographic problems if targeted regional policy is not carried out.

III. CONCLUSIONS AND RECOMMENDATIONS

To sum up for the regions of the country, the following conclusions can be drawn as a result of the analysis for its regions:

✓ **Northwestern: Vidin, Vratsa, Lovech, Montana, Pleven region** have extremely ingesting demographic characteristics – ageing population, negative natural growth, large internal migration, lower educational level, higher percentage of rural population. These and other demographic characteristics, together with the indignities of socio-economic indicators such as high unemployment, low investment, low GDP per capita, etc. significant increase in structural disparities compared to other regions of the country.

✓ **North Central Region: Veliko Tarnovo, Gabrovo, Razgrad, Ruse, Silistra-** population indicators, as well as those for GVA, GDP and GDP per capita are slightly better than those of the Northwestern region, but in general these two regions are approaching by unfavorable indicators. This region has relatively good infrastructure and the areas in it do not have very high regional differences.

✓ **The Northeastern region includes the districts of Varna, Dobrich, Targovishte and Shumen-** The Northeastern region has good infrastructure and one of the reasons for this is the relief of the area. It has a high population density, with varna region having the largest population – almost half for the region, and with the smallest population is Targovishte district. Foreign direct investment in the North East has increased significantly in recent years. The existing differences in the North-East region are not drastic and do not outline future problems for the region.

✓ **Southeastern: Burgas, Sliven, Stara Zagora and Yambol** - the districts of Burgas and Stara Zagora have high socio-economic indicators, and on the other hand the districts of Sliven and Yambol have their own. Significant differences are observed in terms of employment and GDP formation by main sectors –

Burgas and Stara Zagora have a high participation of the secondary sector, while the districts of Sliven and Yambol have a high share in the primary sector.

✓ **South Central: Kardzhali, Pazardzhik, Plovdiv, Smolyan and Haskovo** - in the South Central Region the districts differ significantly from each other in socio-economic characteristics. These differences stem from the geographical relief, urbanization and high inhomogeneity of socio-economic indicators for this region. A significant problem in Smolyan region is poorly developed infrastructure and telecommunications due to the mountainous nature of the relief in the area. In other areas, the variation in socio-economic and demographic indicators is not high and no significant deepening of regional disparities is expected.

✓ **Southwest: Blagoevgrad, Kyustendil, Pernik, Sofia and Sofia-capital** - the leading place of this region is determined by the participation of Sofia-capital, which is a highly urbanized center. The population in this area is 63.2% relative to the population in the region and about 19% relative to the population of the country. Telecommunications security is high, infrastructure is well developed, unemployment is low, employment in the capital is large, the demographic picture is favorable, incomes and living standards are high. The development of the South-West region is entirely determined by the development of the capital and the differences between it and the other areas are expected to deepen in the future.

RECOMMENDATIONS

The implementation of a targeted regional policy related to the establishment of a favourable regional sectoral structure is possible on the basis of a good knowledge of regional processes. Some of the recommendations that can be considered with greater precision relate to:

✓ Stimulating local investment and savings. A higher share of investment is driven by a higher rate of economic growth.

- ✓ Stimulating foreign direct investment – they provide economic growth for the economy of the region and the country.
- ✓ Protecting the property rights of the population and ensuring political and tax stability.
- ✓ Promoting free trade.
- ✓ Stimulating education, research and innovation. This can be done through subsidies, through the use of tax breaks and through patents for the acquisition of temporary ownership of inventions.

With regard to labour resources, in order to increase labour productivity in the region, the following points may be taken into account:

1. Implementation of programmes to support labour mobility and social protection.
2. Implement adequate measures to maintain the number of labour force in the region
3. Improvement, adjustment and modernisation of the vocational education, training and retraining system as a crucial factor for cost-effectiveness.
4. To monitor the demographic changes of the population in the region and to bet a higher rate of growth of production relative to that of the population.

The models derived are applicable and can be solved with each update of the information for each factor individually, as well as in general for all observed factors. In this way, trends in the development of regions can be explored and forecast, depending on the methodology chosen.

IV. MAIN CONTRIBUTIONS OF THE DISSERTATION WORK

- Scientific systemization and critical review of theoretical views on the historical structural approach and in the context of a knowledge-based economy in the face of modern challenges.
- An author's approach to grouping regions by criteria for assessing regional structural differences has been developed and adapted, which is applicable to the needs of a targeted national and regional policy.
- The significant volume of data processed and analysed makes it possible to draw up substantial patterns and trends related to the level, dynamics and structure of regional and sectoral differences that can be used to purposefully structure and regulate the economy in order to achieve sustainable economic growth.
- A practical model including a set of statistical and economic methods has been applied, which highlights key factor influences that determine regional socio-economic differences.
- Recommendations have been made to create more favourable conditions for the formation of an industry economic structure at national and regional level to boost economic development on the basis of smart and sustainable growth.

V. CONCLUSION

Structural changes and economic growth are manifested in interconnectedness and interdependence, are found in continuous interaction, continuity and development, and the main driving force in the dynamics of the "economic structure-economic growth" relationship is improving the quality of life and well-being of the population. Market mechanisms of self-regulation of the economic structure are not able to solve a number of important issues in the field of social development and stability of the system. This requires intervention by state and local authorities, which, through targeted structuring and regulating the economy, achieve sustainable economic growth. A favourable structure leads to optimisation of the opportunities for further development of the economic system, and this is a prerequisite for the formation of macroeconomic stability, a high degree of business development, efficiency of commodity markets, optimal cross-sectoral transfer of capital, rational distribution of labour and material resources, innovation, investment, etc. A favorable structure leads to optimisation of the possibilities for further development of the economic system, and this is a prerequisite for the formation of macroeconomic stability, a high degree of business development, efficiency of commodity markets, optimal cross-sectoral transfer of capital, rational distribution of labour and material resources, innovation, investments, etc. In conclusion, it can be argued that an objective economic assessment of the structural level and dynamics is a prerequisite for the development of a targeted regional policy, in order to seek effective measures to achieve a more favourable structure and eliminate accumulated structural imbalances.

VI. PUBLICATIONS ON THE TOPIC OF THE DISSERTATION

1. Totev, S., G. Sariiski, Yv. Stoycheva, Comparative Assessment of the Competitiveness of the Bulgarian Economy, Economic Thought Magazine, 4/2016, pp. 3-212.
2. Stoycheva Iv., Regional structural economic disparities in Bulgaria Trakia Journal of Sciences, Series Social Sciences, Volume 15, Number 4, pp381-385, 2017.
3. Stoycheva Iv., Assessment and analysis of some changes in the sectoral structure of the economy, Trakia Journal of Sciences, Vol. 17, Suppl. 1, pp 138-144, 2019.

Quotes noted: Stoycheva, Iv. "Regional structural economic disparities in Bulgaria." Trakia Journal of Sciences 15.4 (2017): 381

Quoted by: Petrova, N. "Consumption and purchasing power of the population of basic food products." Trakia Journal of Sciences 17.1 (2019): 562-564

VII. ABSTRACT/ SUMMARY

This dissertation examines the dynamics of economic processes influencing the spatial location of economic sectors and the resource situation of the individual sectors for which the region has comparative advantages.

The main goal of the study is to assess the role of the regional sectoral structure for the formation of high economic growth, analyzing the level, dynamics and structural differences at the national and regional level by major economic sectors. On this basis to determine opportunities for future development of the regions, related to their specifics and local economic potential.

The object of study is the regional industry structure at national and regional level (NUTS 2 and NUTS 3). According to NUTS 2, the planning regions in Bulgaria are six, and the regions of the third hierarchical level NUTS 3 correspond to 28 districts in Bulgaria.

The subject of the survey is the sectoral structure at national and regional level and the factors determining economic regional differences.

Research thesis: The differences in the structure by main economic sectors are a significant factor determining the national and regional economic growth.

Methods and information environment of the research: the dissertation uses a comparative method, methods for analysis of structures and structural changes and differences, shift-share analysis, economic-statistical methods (correlation and regression method), cluster analysis, induction and deduction, analysis and synthesis, graphical method, etc.

Conclusion: The changes in the sectoral and territorial components of the structure of the economy have a significant impact on the efficiency of production, the orientation of the regions towards competitive structural activities and the optimization of further opportunities for development. The study of structural changes makes it possible to assess the degree of adaptation of an economy to changing conditions and the ability of regions to reduce the regional disparities that exist between them. At this stage, it is imperative to pursue a targeted regional policy related to the economic recovery of the lagging regions in order to alleviate regional disparities in the future.