



---

## STRUCTURAL DIFFERENCES IN THE ECONOMIC PERFORMANCE OF ENTERPRISES IN THE REGION OF STARA ZAGORA

Iv. Stoycheva\*

Department of Economics, Faculty of Economics, Trakia University, Stara Zagora, Bulgaria

### ABSTRACT

Over the past few years there has been a change in the levels of a number of economic indicators in Bulgaria as a result of the global financial and economic crisis. It has affected the stability of Bulgarian economy and the sustainable regional economic development, and this involves some changes in management with a view to seeking balanced development of administrative-territorial units. The main goal of the research is to assess the size, structure and dynamics of some indicators characterizing the performance of enterprises in the region of Stara Zagora, as well as to trace the change in the volume of output under the influence of certain factors. To achieve this objective we use a specific integral coefficient for structural changes in order to characterize the intensity of changes whereas the influence of the individual variables is explored through the single-factor correlation analysis. As a result of the research we conclude that as a whole the financial-economic crisis does not have a significant impact on the structural change of economic indicators in the municipalities of Stara Zagora district.

**Key words:** regional differences, regional policy, integral coefficient, single-factor correlation analysis

### INTRODUCTION

In the mentioned-above conditions of development there are prerequisites for a strong increase in the disparities in economic and social development of the communities in respect to the quality of life of the population, the conditions under which the business is carried out, the degree of development of industrial production and other parameters, allowing balanced economic growth of the regions.

By balanced growth in this study, we accept the implementation of such a regional policy, that leads to a constant bridging over differences in the municipal development observed in the existing disproportions, underdevelopment and isolation. Among the various municipalities making up in a given area there are minor differences caused by divergent factor provision with natural resources, capital, manpower, infrastructure,

etc. Changes in the sectoral structure of territorial units have a significant impact on production efficiency, the orientation of the municipalities to activities with higher returns and the disclosure of further opportunities for development, which are crucial for the economic progress of the municipalities and the region as a whole.

In the present study we take as an indicator for stable growth the favourable changes in the structure of economic indices, allowing the growth of the industrial sector and the services. S. Totev remarks: „The share of employment in business and financial services, trade and construction is an indicator which has been adopted by the EU cohesion policy as a determinant for the economic level of a given area, respectively the level and evolution of this indicator is assumed to determine the economic level of the region“

The main goal of the research is to assess the size, structure and dynamics of some indicators characterizing the performance of enterprises in the region of Stara Zagora, as well as to trace the change in the volume of output under

---

\*Correspondence to: *Ivanka Stoycheva, Department of Economics, Faculty of Economics, Trakia University, Stara Zagora, Bulgaria, e-mail: vania\_jekova@abv.bg, phone: +35942699432*

the influence of certain factors. To attain it, the following tasks are being placed :

1. To measure the structural differences between municipalities, occurring in two compared periods, through the integral coefficient of structural changes
2. To present the relationship between the dependent variable and output factors determining the changes in its size through a regression linear model.
3. To measure the narrowness of interaction between production and the deterministic factors, as well as to establish the rate of change of this impact in the observed years.

The integral coefficient of structural change presents the intensity of structural change, specifically this research, it is used to measure the changes in the structure of the same economic indicator, but in two different periods. The rate reflects the differences in the relative shares of the observed economic indicator for the periods compared. The indicator has one and the same number of compared structures through the two monitored periods and so it has in a differing time periods, which gives us the right to compare the integral coefficients.

The subject of this article is the structural and dynamic analysis of economic parameters, characterizing the economic activities of enterprises in Stara Zagora region municipalities in 2000, 2007 and 2011, as well as the measuring of impact certain factors and reasons have on the favourable development of the area in order to find reserves to influence it. The gross output indicator is preferred for observation and analysis, as this resultant value is part of the gross added value at a regional level. In addition to this indicator in the survey we included a number of enterprises, employees, operating income, operating expenses, profits, loss and tangible fixed assets (DMA).

The objects of the study are the eleven municipalities comprising the District of Stara Zagora, the source information is presented through variational lines and the period on which the study is set is that of three years – 2000, 2007. and 2011. We have chosen these years because after Bulgaria's transition to a market economy, 2000 is the year in which there is a noticeable stabilisation as a result of the carried out economic policy based on the principles of the currency board, the

maintenance of a tight fiscal policy and the improvement of financial discipline. In 2007 Bulgaria becomes a full member of the EU with all consequential rights and responsibilities, which in turn is a prerequisite for major changes in the existing so far, geopolitical and economic status. A little later, in the middle of 2008, there begins a worldwide financial and economic crisis that continues to the present moment. We are interested in its impact on a range of economic indicators, primarily on the unemployment, the migration in the area, which gives its characteristic reflection in 2011, too.

## MATERIAL AND METHODS

The participation of each municipality to form the overall magnitude of the economic indicators in the Stara Zagora region is established by calculating separate relative values of the structure. They measure the ratio between the size of the indicator in one municipality and the size of the same indicator in the whole area, presented in a percentage form. The relative magnitudes of the structure are calculated by the following formula:

$$W_i = \frac{ni}{\sum ni} \cdot 100,$$

where:

$W_i$  – is the proportion of the indicator in the  $i$ th municipality relative to the size of the same indicator in the region;

$ni$  – the absolute size of the indicator in the  $i$ th municipality;

$\sum ni$  – the total amount of the indicator in the region.

The summary assessment of the intensity of the structural changes in economic indicators in municipalities is obtained by means of the integral coefficient of structural changes. The average value of the changes in the compared structures in one period in relation to the other enables the evaluation of the change in the dynamics of two adjacent period and for this purpose K. Gatev offers a coefficient of the structural changes based on the following formula:

$$K_s = \sqrt{\frac{\sum (W_{i1} - W_{i0})^2}{\sum W_{i0}^2 + \sum W_{i1}^2}}$$

where:

$K_s$  – integral coefficient of structural changes;

$W_{i0}$  and  $W_{i1}$  – the relative shares in the two compared periods.

This coefficient relates the absolute and relative changes of an economic indicator in dynamics, and thus evaluates the complex changes in its structure. It is regulated in the range from zero to one and its interpretation is done through a scale for the interpretation of coefficients of structural changes. If the coefficient is zero there is no change in the structure of the observed phenomena, with the approaching to one the intensity of changes grows, and if its value reaches one, it can be argued that the structural changes are diametrically opposed.

In this study, attention is drawn to the narrowness of interaction between the studied variables. The power of influence of the factors causing changes in the resultant value is measured by the Spearman coefficient of rank correlation and the correlation coefficient of Pearson. The coefficient takes values from zero to one, and its approach to the unit presents a strong correlation between the variables. The degree of significance of the resulting coefficients are estimated using the F-criterion, in which a linear regression model, coincides with the statistical significance of the parameter  $b_1$  of the equation.

## RESULTS AND DISCUSSIONS

There is an established proportion of each of the monitored economic indicators about the three years analysed. It is related to the total amount in the region through the relative values of the structure (Table 1). We observe as expected, the most favorable relative shares of almost all the indicators in the municipality of Stara Zagora. It ranks first in the number of enterprises, employees, production, operating income, costs of the action, profit and loss. Only after the indicator tangible fixed assets this municipality takes the second place in 2000 and 2007 and it takes the third place in 2011. In terms of unemployment figures are available only for 2011. It is found that the Municipality of Stara Zagora has adopted the lowest unemployment coefficient compared to other municipalities and it amounts to 9,9%. The lowest values are in the municipality of Opan and the municipality of Nikolaevo. The double increase in the share of business and production in the municipality of Opan in 2011 compared to 2000 impresses. The same municipality has thrice increased the share of expenses for its activity and almost five times the proportion of revenue coming as a result of this activity.

There is a significant rise in the relative share of the profit, as that of the DMA in 2011 being 7 times larger than in 2000 and 2007. Despite the increase in the relative magnitudes, Opan municipality is ranked at one of the last places in size and share of the economic indicators in the region of Stara Zagora. For this municipality we find out some positive changes with the lapse of time, since in 2000, it is the last in eight indicators out of eight observed, in 2007 we report only four indicators at the lowest position. In 2007, the municipality of Nikolaevo already occupies the last place in five out of eight indicators and this trend continues in 2011, when the number of indicators with the smallest size and partition is seven. This fact qualifies the municipality as having a low economic development, which is the result of the negative socio-demographic profile, the relatively poor state of the local economy, lower investment capacity, etc. With a view to changing the status quo, it is in favour of the municipality to create an economic and institutional environment for the development of innovation and entrepreneurship. It is an interesting fact that in 2000, the municipality of Chirpan takes the fifth place out of six indicators, and in 2011 it is fifth in seven places out of the eight indicators observed.

The results of the calculated relative dimensions of the structure are presented in **Table 1**.

The measured structural differences in the municipalities for each of the economic indicators in the three observed periods—2007/2000; 2011/2007 and 2011/2000 are presented in **Table 2**.

The integral coefficient of the structural changes shows that in the municipalities that make up the area, there have been little structural changes in the number of establishments and number of employees over the years. A moderate number of changes in the structure of income and expenditure for the activity are recorded in 2007/2000 and 2011/2007. The same intensity of changes occurs in the negative financial result of enterprises' operation, 2007/2000 as well as in the production in 2011 and 2011/2000/2007. In 2011/2007 there are moderate structural changes taking place in the for the indicators income tax and the DMA.

**Table 1.** Structure of the economic indicators for the municipalities in the region of Stara Zagora in 2000, 2007 and 2011.

(%)

Municipalities	Enterprises			Employees			Production			Income from business			Expenses on business			Profit			Loss			Tangible fixed assets		
	2000	2007	2011	2000	2007	2011	2000	2007	2011	2000	2007	2011	2000	2007	2011	2000	2007	2011	2000	2007	2011	2000	2007	2011
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Bratya Daskalovi	1,0	0,7	1,3	1,2	1,0	1,0	0,7	0,6	0,9	0,5	0,4	0,7	0,5	0,4	0,7	0,8	0,5	1,2	2,1	0,5	0,2	0,2	0,2	<b>0,3</b>
Galabovo	3,4	2,6	3,0	7,6	6,6	6,8	19,8	13,0	11,5	13,7	9,4	8,5	12,6	9,1	9,3	31,7	12,5	7,9	9,6	14,6	27,6	10,6	<b>40,3</b>	<b>33,0</b>
Kazanlak	21,6	22,9	21,3	23,2	22,4	23,9	14,8	11,6	14,0	13,2	11,9	14,4	12,9	11,7	13,9	8,8	14,7	21,2	15,0	12,3	11,4	11,2	6,5	6,9
Maglzh	1,7	1,4	1,7	2,0	1,3	0,6	0,3	0,3	0,4	0,3	0,3	0,5	0,3	0,3	0,5	0,5	0,7	0,6	1,0	0,8	0,2	0,2	0,2	0,3
Opan	<b>0,3</b>	<b>0,4</b>	0,6	<b>0,4</b>	<b>0,2</b>	0,3	<b>0,2</b>	0,2	0,4	<b>0,1</b>	0,5	0,5	<b>0,2</b>	0,5	0,5	<b>0,0</b>	0,2	1,1	1,0	<b>0,1</b>	1,5	<b>0,1</b>	<b>0,1</b>	0,7
Pavel banya	2,5	2,3	2,3	2,0	2,0	1,5	0,5	1,6	1,8	0,5	1,2	1,5	0,5	1,3	1,4	0,5	0,7	1,5	1,0	0,6	0,6	1,2	1,3	1,2
Radnevo	5,7	4,2	4,2	14,3	13,0	15,2	27,1	22,0	26,8	18,6	14,3	18,9	18,9	14,6	18,7	11,1	9,0	12,7	9,4	2,6	3,2	<b>51,2</b>	23,0	31,7
Stara Zagora	<b>56,7</b>	<b>60,5</b>	<b>60,3</b>	<b>42,3</b>	<b>48,7</b>	<b>47,0</b>	<b>33,9</b>	<b>48,7</b>	<b>40,8</b>	<b>50,7</b>	<b>60,1</b>	<b>51,3</b>	<b>51,6</b>	<b>60,1</b>	<b>51,4</b>	<b>44,8</b>	<b>59,9</b>	<b>49,1</b>	<b>56,1</b>	<b>65,6</b>	<b>52,5</b>	23,4	27,2	23,8
Chirpan	5,6	3,6	4,0	4,9	3,4	2,6	1,8	1,2	2,1	1,7	1,2	2,4	1,8	1,3	2,3	1,3	1,0	3,2	3,0	2,0	2,4	1,3	<b>0,7</b>	1,4
Gurkovo	1,0	0,8	0,8	1,2	1,0	0,9	0,6	0,7	1,1	0,5	0,6	1,1	0,5	0,6	1,1	0,4	0,7	1,3	<b>0,6</b>	<b>0,1</b>	<b>0,1</b>	0,3	0,4	0,4
Nikolaevo	0,5	0,6	<b>0,5</b>	0,9	0,4	<b>0,2</b>	0,3	<b>0,1</b>	<b>0,2</b>	0,2	<b>0,1</b>	<b>0,2</b>	<b>0,2</b>	<b>0,1</b>	<b>0,2</b>	0,1	<b>0,1</b>	<b>0,2</b>	1,2	0,8	0,3	0,3	<b>0,1</b>	<b>0,3</b>
Total area of Stara Zagora	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

2007/2000 and 2011/2000 lays down the major changes in the share of the profits. The intensity of loss in 2011/2000 and 2007/2000 as well as the size of the DMA in 2011/2000 are similar. Strong are the changes in the structure of the DMA in the municipalities for the period 2007/2000. The value of the coefficient is 0,5197.

The integral coefficients show a reduction of the gaps in time during 2007 and 2011 compared to 2000. For production output significant changes turn into moderate, for income for business and expenses on business the changes are change from moderate to weak, and for fixed asset the alteration is from strong to significant. There increase the disparities in the indicator of loss from moderate to significant level and the intensity of structural changes for a number of companies, employees and profit is retained. The differences in the territorial distribution of the population is a fact which leads to the relocation of production activities to larger centres and as a logical consequence, we have the economic indicators more intensive growth in larger municipalities (Stara Zagora, Kazanlak, Radnevo and Galabovo). Opan municipality is one of the smallest municipalities and in the studied years, it is at one of the last places in the share of economic performance in the region. In Opan municipality, there is a visible reduction of the structural differences compared to the other municipalities, since the municipality was again put to the last place in 2011, but with an increase in a number of important indicators.

The changes in the available work force lead to the reduction of welfare and the potential of smaller municipalities. In general, the large municipalities are "rich", albeit in the context of the financial crisis, they have limited opportunities for economic activity, and the small municipalities remain "poor". During the crisis, economic indicators do not suffer crucial structural differences. One of the reasons for this is the caution on the part of the companies to reinvest funds for upgrading technological capacity, and this in turn makes them less competitive.

The priority of local authorities in respect to the backward municipalities is to seek provisions for cumulation of extra revenue, which is possible through the improvement of the management, searching for additional sources of financing, organizing an effective municipal activity, attracting and stimulating the business units, creating a high-profit, providing opportunities for investment intentions and differentiated policy to stimulate the lagging behind municipalities, etc. According to S.Totev "Economy should also introduce a regional approach in the implementation of sectoral policies (agriculture, industry, etc.). We need to seek the commitment of national sectoral policies with the issues of regional development, especially for support and promotion of the falling behind areas through their economic restructuring".

Integral coefficients presented in **Table 2**:

**Table 2.** Values of the integral coefficient of structural changes for some economic indicators in the region of Stara Zagora

Indicators	2007/2000	2011/2000	2011/2007
Enterprises	0,05	0,05	0,02
Employees	0,09	0,10	0,04
Production	0,23**	0,15*	0,13*
Income from business	0,13*	0,07	0,12*
Expenses on business	0,12*	0,05	0,12*
Profit	0,30**	0,39**	0,17*
Loss	0,15*	0,23**	0,20**
Tangible fixed assets	0,52***	0,38**	0,16*

\*moderate structural changes  
 \*\*significant structural changes  
 \*\*\* strong structural changes

It is essential to note where the proportion of the employed in economic activities is the highest and to point out which municipalities have a high proportion of persons employed in the agricultural sector. For such municipalities we may claim they are lagging behind in their economic development since most of the employees are involved into the time and labour consuming agricultural sector. S.Totev remarks: "the high proportion of workers in agriculture

implies inefficient structure, while the high share of services implies higher productivity."

**Table 3** presents the distribution of employees according to their relative share into four groups divided by sectors for the year 2011. While grouping them it becomes clear that there are five municipalities, for which no data are available for the employees in the construction sector.

**Table 3.** Relative share of the employed into economic activities in the municipalities of Stara Zagora district in 2011 (%)

Municipalities	Agriculture, Forestry and Fisheries	Industry	Construction	Services	Total
0	1	2	3	4	5
Bratya Daskalovi	23,6	56,0	..	20,4	100,0
Galabovo	1,6	60,2	17,9	20,3	100,0
Kazanlak	1,8	62,8	3,6	31,8	100,0
Maglizh	26,6	21,2	..	52,2	100,0
Opan	51,7	6,5	..	41,8	100,0
Pavel banya	13,2	40,5	2,6	43,7	100,0
Radnevo	8,0	34,6	14,3	43,1	100,0
Stara Zagora	4,3	27,2	15,1	53,4	100,0
Chirpan	23,2	29,1	2,5	45,2	100,0
Gurkovo	50,3	3,6	..	46,1	100,0
Nikolaevo	38,4	2,1	..	59,5	100,0

Relative values in major sectors show that the highest share of those employed in the sector of agriculture, forestry and fisheries is in the municipality of Opan and amounts to 51.7%, and in the municipality of Gurkovo, where its size is 50.3%. The high degree of involvement of employees in agriculture for these two municipalities is a factor affecting the lower productivity in the other sectors. In the municipality of Nikolaevo the greatest proportion belongs to the services, followed by

that of agriculture, forestry and fishing. However, it occupies the last place in terms of its economic indicators.

Another aspect in the present article is fixing the correlation coefficients characterizing the narrowness with which the phenomena interact. Production output in municipalities for the three years of survey been chosen as the resultative variable(dependent variable). It is assumed that the changes in its size are determined by the influence of the following factors: population

density, number of employees, mechanical growth in population and unemployment coefficient. In this survey the power of interaction between the factors and the resultative variable is measured by the

correlation coefficients of Pearson and Spearman.

**Table 4** presents the correlation coefficient of Spearman:

**Table 4.** Correlation coefficient of Spearman

Dependent variable - Output	Population density			Employees			Mechanical Increase in Population			Coefficient of Unemployment
	2000	2007	2011	2000	2007	2011	2000	2007	2011	2011
Spearman's Correlation	0,56	0,47	0,55	0,89*	0,93*	0,97*	0.16	-0.07	-0,30	-0.96*
Sign. (2-tailed)	0,07	0,14	0,08	0,00	0,00	0,00	0,64	0,83	0,37	0,00

\* Correlation is significant at the 0.01 level (2-tailed)

**Table 5** presents the results of the single factor correlation analysis:

**Table 5.** Correlation coefficient of Pearson

Relationship between the output and the following factors:	Correlation coefficient of Pearson Multiple R	Empirical characteristics of F-test	Observed level of significance Sign F
<b>2000r.</b>			
Population density	0,71	9,25	0,01
Employees	0,85	22,74	0,00
Mechanical Increase in Population	0,30	0,90	0,37
<b>2007r.</b>			
Population density	0,81	16,74	0,00
Employees	0,94	69,75	0,00
Mechanical Increase in Population	0,21	0,43	0,53
<b>2011r.</b>			
Population density	0,78	14,15	0,00
Employees	0,92	49,43	0,00
Mechanical Increase in Population	0,64	6,21	0,03
Coefficient of Unemployment	0,78	14,40	0,00

During the three years we can see a direct proportional relationship between the output and the factors population density and number of employees, which is assessed by an F-test as statistically significant. The correlation

coefficient of Pearson at a level of significance  $\alpha = 0.01$  takes into account the relations between these variables as strong. Spearman's coefficient accounts for the relationship between the output and the density of population as a significant, but

statistically negligible, and the relationship between the dependent variable and the employees as statistically significant and strong.

While assessing the level of significance of the coefficient of Pearson we found it not to be statistically significant for the factor mechanical population growth in 2000 and 2007. The impact of this factor on the production output is reported as moderate in 2000 and weak in 2007. There is a change in 2011, as mechanical growth in population already has statistical significance and this analysis provides information about the significant impact of the factor with a resultant value.

The correlation coefficient of Spearman measures the interdependency between the measured resultant magnitude and the mechanical population growth as weak and statistically negligible.

The unemployment coefficient has been studied as a factor only for 2011, since there is no available data on its value in municipalities for the previous years.

Its connection with production output, as measured by the correlation coefficient of Pearson is strong and statistically significant. As a whole, the analysis shows that the greater population density and the engagement of more employees determines a higher amount of output. As regards the other factors, it is apparent that with the reduction of migratory population growth and the rate of unemployment, greater quantity would be produced in the area, and this in turn is a prerequisite for increased economic growth. As a whole, the analysis shows that the higher density of population and the migration growth are beginning to have a significant impact on the growth of production, and this is a prerequisite for increased economic growth.

The study displayed that the implementation of favorable structural changes have an opportunity to mitigate regional disparities, especially in terms of underdeveloped municipalities.

## CONCLUSIONS

The study displays that the structural changes are the opportunity to mitigate regional disparities, especially in terms of underdeveloped municipalities. The process of increase of regional differences is inevitable due to the deepening of inequalities in income, in payments and in the concentration of production factors, and this in turn will result in the retardation of more municipalities. The area's regional policy must be consistent with the actual ongoing economic and demographic processes.

Migration, the unfavourable demographic development and unemployment affect significantly the negative aspect of the development of a municipality and determine the economic problems in the direction of increase in regional disparities. In this study, the municipalities of Nikolaevo, Opan and Gurkovo have a relatively low proportion of economic indicators, the agricultural sector is important, and this is one of the labour-intensive industries whose growth in a municipality leads to the formation of an unfavorable to economic development structure. This structure, on the other hand, is a prerequisite that in time these municipalities are lagging behind in their development compared to the average indicators for the region and the country.

To sum up, an effective regional policy is the one, aimed at mitigating the migration processes, through the creation of conditions for professional development and a preference to a specific municipality as an attractive for living, employment growth, reducing the share of the agricultural sector at the expense of the development of the services and industry and a favorable resource allocation structure of the area.

## REFERENCES

1. Gatev, K., Statistical methods for the analysis of economic and social structures, Sofia, Science and Art, 1987
2. S. Totev, Regional differences and regional policy in Bulgaria, A study published in "Economic Studies", vol. 3, 33-52, 2011.