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## **ANALYSIS OF COMPONENTS OF REGIONAL AND STRUCTURAL CHANGES IN NORTH MACEDONIA**

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### **Abstract**

The paper presents the economic structure of North Macedonia after independence. Given the fact that the economic structure is strongly related to the development of a country, which is presented with GDP and it is taken as an indicator of analysis.

The analysis of the regional components change identifies which sectors of the economy develop faster and which grow more slowly compared to the regional average. The result of the empirical analysis indicates a depressing economic structure in both North Macedonia and Kosovo. Such a structure does not enable accelerated economic development, because the areas that contribute most to economic development are depressing and characterized by limited accumulation. The specialization of areas for GDP production, determines which sectors have comparative advantages and, as such are specialized (allotment effect 4) or have advantages but are not specialized (allotment effect 3). Also are identified sectors that are comparatively weak and not well specialized (allotment effect 2) or comparatively but not specialized as such (al effect; occupational 1).

*Keywords:* GDP, proportional participation, regional participation, structural difference, differential distance, allotment effect.

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### **1. Introduction**

Relationships between economic fields are the object of the study of economic sciences. GDP and its concentration across sectors are the best indicator of the level of economic development. The economic policies of countries that have managed to balance the sectors of the economy result in sustainable development. On the contrary, the states which have an archaic structure have remained poor states whose development bearers are the agricultural sectors, or the light industry.

From the title of the paper, the Analysis of regional components and structure has been applied for two countries North Macedonia and Kosovo. The empirical analysis is used the concrete data of the 2 countries for the years 2012/2018. To give the right results, the empirical analysis should not exceed the time frame before 1 decade. As presentations and economic structures are taken GDP. The specialization of the economic area in its contribution macroeconomic indicator in the best way shows the economic structure of a state. Identification and specialization of the economic areas in the contribution of GDP in taking adequate monetary and fiscal measures to summarize the economic structure and intensification of a national economy in a specific case of North Macedonia and Kosovo. The empirical method applied in the paper serves as a basis for building efficient monetary and fiscal policy. The results of the empirical analysis ask why a

macroeconomic indicator, in a concrete case GDP in some sectors, will grow fast, and in some slow.

## 2. Economic structure - economic development ratio

Economists think that there is a strong backward link between economic structure and economic development. Development conditions the dynamics of structural changes and the favorable economic structure enables efficiency which results in sustainable economic development. Economic development expresses the level of development of the productive forces of a country, which are realized through systemic or structural changes (Musa, L. 1994, p. 175).

The economic structure shows the existing proportions or ratios between fields and specific branches of the economy. The high level of economic development is accompanied by positive structural changes, which means the abandonment of partial or complete reports of unfavorable economic areas and branches and the creation of new more favorable reports. (Pollozhani. 2008, p. 43).

The contribution of the fields to the formation of GDP faithfully presents the existing structure of a national economy. As mentioned above in poor countries (African countries) the highest relative share of GDP and other indicators (income, employment, etc.) is in the primary sector (agriculture). In transition countries, the carriers are light trade or industry, and in developed countries the field of services dominates. The economies of the countries of Western Europe completed the industrialization phase in the 1960s, when this field participated in the formation of GDP with 50%, while the USA completed the industrialization phase in the 1950s.

The following table presents the sectorial structure through the contribution of GDP to some select economies of the globe.

**Table 1.** Percentage in% of GDP across sectors of some selective economies of the world

	Agriculture		Industry		Services	
	1990	2019	1990	2019	1990	2019
Burundi	32.0	29.0	22.0	11.0	45.0	47.9
Central African Republic	25.0	32.0	29.0	21.0	48.0	43.8
Mali	48.0	37.0	16.0	21.0	39.0	33.5
Tanzania	38.0	29.0	18.0	25.0	38.0	37.9
<b>Low-income countries</b>	<b>39.9</b>	<b>22.0</b>	<b>26.0</b>	<b>20.0</b>	<b>39.9</b>	<b>39.2</b>
Sweden	3.0	1.0	32.0	26.0	64.0	70.9
Germany	2.0	1.0	38.0	27.0	68.0	62.6
France	4.0	2.0	30.0	17.0	66.0	70.2
Belgium	2.0	1.0	33.0	19.0	65.0	69.5
<b>High-income countries</b>	<b>5.3</b>	<b>1.0</b>	<b>36.5</b>	<b>28.1</b>	<b>58.1</b>	<b>69.9</b>
Albania	36.0	18.0	48.0	20.0	16.0	48.6
North Macedonia	9.0	8.0	48.0	23.0	46.0	55.1
Ukraine	26.0	9.0	45.0	23.0	30.0	54.4
Bosnia & Herzegovina	12.0	6.0	26.0	24.0	62.0	55.7
<b>High middle-income sta.</b>	<b>23.8</b>	<b>6.0</b>	<b>34.3</b>	<b>32.0</b>	<b>45.5</b>	<b>55.8</b>

**Source:** <http://wdi.worldbank.org/table/4.2>

As it can be seen in all countries presented in the table, from 1990 to 2019, the relative share of GDP in the agriculture and industry sector shrinks and the relative share of the services sector increases. Although the trends are the same, significant changes in the economic structure between the states can be noticed. They are as follows.

In the low-income countries in 2019, close to 1/4 of GDP is still formed by the agricultural sector, 1/5 by industry and close to 40% by the services sector.

In the countries with high incomes in 2019, agriculture in the formation of GDP participates with only 1%, industry with over 1/5 and the service sector close to 70%.

In major middle-income countries (mainly transition countries), in 2019 the agricultural sector contributes 6% to GDP, the industry sector by close to 1/3 and the services sector contributes by close to 56%.

It should be noted that in the transition countries after the 90s when radical economic and political changes took place, there were deep structural floods. Massive privatizations were realized which increased the demand for services (notary, accounting records, low construction, advocacy, privatization agencies, etc.) therefore marked the increase of the contribution of this sector in the formation of GDP. In other words, structural economic changes in transition countries did not have normal flows.

## ***2.1 Economic structure in North Macedonia***

The depressing structure in North Macedonia was inherited from the former Yugoslavia, resulting in modest economic development. Macedonia seceded from the Yugoslav Federation as one of the least developed republics.

Such an inherited economic structure had deep shocks during the transition. At the beginning of the transition (the 1990s) after independence, North Macedonia experienced external and internal shocks. With the exception of the Albanians (Albanian entities and the mother country), none of the neighbors recognized Macedonia as an independent state. Bulgaria does not recognize the Macedonian nation, Greece recognized it only as a geographical territory, Serbia does not recognize the religion. Such non-recognition by the neighbors also made the economic position difficult, because Macedonia could not join international institutions and could not receive loans and other assistance. Currently, Macedonia has solved the problem with Greece by changing its name from the Former Yugoslav Republic of Macedonia to North Macedonia, but the problem with Bulgaria remains because they do not recognize the Macedonian ethnicity.

In addition to external blows, Macedonia also experienced internal blows. The weakest point left by the long-term negative consequences is that of privatization. The state capital was privatized by key directors or managers not by market value but by accounting valuation. Such an assessment enabled directors to reduce the value of firms and buy the same with minimal amounts. Money is withdrawn from the firm's coffers to buy capital at book value. (Sillaveski. 1995, p. 100). Such privatization resulted in the mass dismissal of workers. High corruption, the operation of monopolies, selective judiciary, intimacy, the system of non-values, extreme partisanship were problems that hindered economic development.

The problems mentioned above were a serious obstacle for the Macedonian economy. (Pollozhani, 2015, p.106), the lowest rate of all transition countries. Such a performance restrained the ennoblement of economic leaves. In addition, as mentioned above, profound structural changes were also influenced by profound upheavals because of economic and political transformation.

Such changes may also justify the decline in the industrial sector contribution from 46% in 1990 (Word Development Indicators, 2002, p. 208) to 31.8% in 2005, (Transition report, 2006, p. 82, 79) to 18.6% in 2019 in shaping the contribution of GDP, and increasing the contribution of the services sector from 46% (1990), to 58.5% (2005) respectively 55.1% (2019)

The Macedonian industry sector is dominated by light industry processing activities such as: textile, paper, footwear, etc., which are not proprietary fields and as such cannot create favorable ratios for other economic fields.

### **3. Review of structural changes with related empirical support**

Keble & Hauser (1972) Reg. Studies 6, p, 11-36. Analyze the multiple regression of the interurban spatial model for output growth in South East England for the years 1960/67. Employment growth from economic growth directly changed unemployment rates, population growth, economic potential and expectations for improving the industrial structure. The growth of industrial space has been positively related to the availability of labor force, population growth, urban size and unemployment rate, but negatively to the specialization indices.

Bishop & Simpson (1972), Reg. Studies 6, p, 59-68. The article reviews some of the problems of interpreting the results of the components of the change technique as applied in the analysis of regional employment growth. The pragmatic use together with other regional analysis techniques produces an interpretation problem for alternative definitions of individual structural components. A synthesis of methods is proposed, enabling more meaningful interregional and inter-temporal comparisons of the effects of industrial structure.

Paris (1970), Studies 4, p, 425-443. Regional and structural analysis of population change aims to identify some of the sources of regional growth change. The differences between regional growth rates and those at the national level are explained by two components: the first one reflects the structural capacity of a region which enables slow or rapid growth; second, the regional component, measures the region's ability against other regions (competitive migration.) Understanding these two components helps not only in historical analysis, but also provides reasonable data for forecasting migratory population movements.

Francesca, & Philip 2013, this paper aims to identify the possible problem of parameter heterogeneity in growth regressions. Data from the Italian economy are used mainly in the manufacturing and services industries.

Frenken, & Verburg. (2010) p. 685–697. Distinguish the variety of the source of regional knowledge dissemination, called Jacobs externalities, and variety as a portfolio that protects a region from external shocks. It is argued that Jacobs externalities are best measured by diversity linked within sectors, while the portfolio argument is best captured by unrelated diversity between sectors. Using data at NUTS 3 level in the Netherlands for 1996–2002, it was found that Jacobs externalities increase employment growth, while the unrelated variety dilutes unemployment growth. Productivity growth can be explained by traditional determinants including investment and research and development spending.

#### ***3.1 Analysis of regional change components***

This method identifies the specialization of economic fields in the contribution of macroeconomic indicators. The most relevant indicator of economic development is GDP, therefore this indicator is analyzed in the paper.

Selected indicator (GDP) in some sectors, respectively in some regions is growing faster compared to others. (Perloff, 1963,). Dunn estimates that Regional Analysis enables the identification of a) components that operate more or less globally (although operating differently in particular regions) and b) components that operate more or less specific in special regions (Edgar & Dunn, 1960, p.97)

The symbols that will be used in the research method are as follow:

$X_{ij}$  - Value of the indicator for the sector  $i$  in region  $j$

$X_j = \sum_i x_{ij}$  - Value of the indicator across sectors in region  $j$ , respectively the value of the indicator at the level of region  $j$

$X_i = \sum_j x_{ij}$  The value of the indicator in the sector  $i$  across regions, respectively the value of the indicator in the whole analyzed region

$X = \sum_i \sum_j x_{ij}$  - The value of the indicator in the sector  $i$  across regions, respectively the total value of the indicator in the whole researched region.

The sign 0 indicates the values of the indicator in the base year

The  $t$  sign indicates the values of the indicator in the last year

The analysis of regional variations in algebraic form can be expressed as follow:

$$(1) F_j = X^t_j - X^0_j$$

$$(2) P_j = \sum_i p_{ij} = \sum_i (x^0_{ij} X^t / X^0 - x^0_{ij})$$

$$(3) S_j = \sum_i s_{ij} = \sum_i x^0_{ij} (X^t_i / X^0_i - X^t / X^0)$$

$$(4) D_j = \sum_i d_{ij} = \sum_i (x^t_{ij} - x^0_{ij} X^t_i / X^0_i)$$

$$(5) D'_j = \sum_i d'_{ij} = \sum_i [(x^t_{ij} / x^0_{ij} - X^t_i / X^0_i) X^0_j X^0_i / X^0]$$

$$(6) D''_j = \sum_i d''_{ij} = \sum_i [(x^t_{ij} / x^0_{ij} - X^t_i / X^0_i) X^0_j (x^t_{ij} / X^0_j - X^0_i / X^0)]$$

$$(7). D_j = D'_j + D''_j$$

$$(8) F_j = P_j + S_j + D_j$$

Symbols present:

$F_j$  - The real changes of the indicator, in this case of GDP

$P_j$  - Proportional regional partaking which represents the hypothetical changes in the value of the indicator (GDP) in the region, assuming that the value of the indicator in the region in year  $t$  compared to the base year 0 has increased or decreased according to the average rate of the researched region.

$S_j$  - Structural difference represents the part of changes in the value of the indicator (GDP), which is a consequence of the sector structure and suggests the answer to the question of whether the

chosen indicator, the structure of the region is appropriate (mostly represented sector whose growth is above average) or inappropriate (representation of sectors whose growth is lower than average).

$D_j$  - Differential distance represents part of the changes (value) of the indicator which is a result of changes in the increase of the value of the indicator in the sector of the same sector at the global level. The differential distance is positive in those regions in which the economic spheres grow faster than those of the global level. Otherwise, the differential distance will be negative. This difference is conditioned by the different specifics of the region and consists of pure defecation distance and the allotment effect (. Esteban-Marquillas, 1972, p. 249-255)

$D'_j$  - The net differential distance represents the shared impact of the competitive position which is gained by eliminating the influential specifics of the regional structure so that the true value of the indicator (GDP) will be realized if the national economy had the same structure  $s_i$  at global

$D''_j$  - The allotment effect indicates whether the region is specialized. The value of the indicator allocated to those sectors in which there is growth above average indicates competitive advantages and the value of the indicator above-average indicates competitive disadvantage. (Çaslav, 1994, pg. 10). The symbol of the allotment effect depends on the difference of regional participation and total participation in the aggregate value of the indicator ( $x_{0ij} / X_{0j} - X_{0i} / X_0$ ) and the difference of the growth coefficient in the sector region  $i$  in general level ( $x_{0ij} / X_{0j} - X_{ti} / X_{0i}$ ). Four possible combinations of regional specializations and comparative advantages are presented in the table below.

**Table 2.** Types of allotment effect

allotment effects	Description		Specialization	Comparative advantages
			$(x_{0ij} / X_{0j} - X_{0i} / X_0)$	$(x_{0ij} / X_{0j} - X_{ti} / X_{0i})$
1	Comparatively poorly specialized	-	+	-
2	Comparatively weak non-specialized	+	-	-
3	Comparatively good, not specialized	-	-	+
4	Comparatively good, specialized	+	+	+

### **3.1.1 Analysis of the components of regional GDP changes for North Macedonia**

The analysis includes GDP, across sectors of the economy calculated according to constant prices, expressed in €, the reference year is 2005. The analysis belongs to the years 2012/18.

The obtained data are presented in the table below and constitute information on the real changes, proportional participation, structural and differential distance for all sectors of the region, in this case for North Macedonia. The total differential distance is divided into pure differential distance and allotment effect.

**Table 3.** Analysis of the components of regional GDP changes for North Macedonia,

Description	F <sub>j</sub>	P <sub>j</sub>	S <sub>j</sub>	D <sub>j</sub>	D <sub>j</sub> '	D <sub>j</sub> ''	Allotment effects
Total	1147	1289	86	-50	-12	-38	--
Agriculture, forestry and fishing	35	96	-63	3	4	-1	3
Mining and quarrying; * Manufacturing. electricity,	188	158	15	12	14	-2	3
Construction	80	121	10	-51	44	-7	2
Wholesale and retail ** trade; repair of motor	411	204	94	115	116	-1	3
Information and communication	117	67	138	84	-53	-31	2
Financial and insurance activities	68	48	14	6	5	-1	3
Real estate activities	-25	154	-142	-36	-32	-4	1
Professional, scientific and technical active. ***	126	43	63	20	15	-5	3
Public administration and defense; ****	39	166	-81	-44	48	4	3
Arts, entertainment and recreation; *****	81	31	41	10	6	4	4
Taxes on products less subsidies	27	200	-3	-169	-175	6	2

**Sources:** [https:// www.stat.gov.mk/Publikacii/SG2020/](https://www.stat.gov.mk/Publikacii/SG2020/), \* Mining and quarrying; Manufacturing; Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities, \*\* Wholesale and retail trade; repair of motor vehicles and motorcycles; Transportation and storage; Accommodation and food service activities, \*\*\* Professional, scientific and technical activities; Administrative and support service activities, \*\*\*\* Public administration and defense; compulsory social security; Education; Human health and social work activities, \*\*\*\*\* Arts, entertainment and recreation; Other service activities; Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use.

The analysis of the components of regional changes shows that from 2012 to 2018 the real changes (1147) in North Macedonia are smaller than the proportional participation (1289), the total positive structural difference (86) shows that in North Macedonia in analyzed years have been dominated by fast-growing sectors and GDP has grown above the regional average (North Macedonia and Kosovo). Sectors that have recorded lower growth than the region are those related to the non-movable property (-142), public administration, (-81), agriculture, (- 63), and taxes on products fewer subsidies (-3). Seven other sectors have achieved faster GDP growth compared to the regional average, where the most advanced is that of informatics and communications (138).

In North Macedonia in the years analyzed there was only one sector (Arts, entertainment, and recreation) which is characterized by the allotment effect 4, which means that it was the only comparatively good field and as such specialized. The other six sectors (agriculture, mining and manufacturing, trade, financial and insurance activities, professional scientific and technical

activity, and public administration) are comparatively good but non-specialized areas ( allotment effect 3). The three sectors (construction, informatics, and communications and taxes on subsidized products) are characterized by the allotment effect 2, which means that these sectors in the economy of North Macedonia were comparatively weak but not specialized. The comparatively weak and specialized sector as such was that of real estate activities (allotment effect 1).

### **3.1.2 Analysis of regional GDP change components for Kosovo**

The analysis includes GDP at constant prices, in the sectors of the economy of Kosovo for the years 2012/18.

The data presented in the table below constitute information on real changes, proportional participation, structural and differential distance for all sectors of the Kosovo economy.

**Table 4.** Analysis of regional GDP changes for Kosovo

Description	F j	P j	S j	D j	D j'	D j''	Allotment effects
Total	1215	1080	-87	218	319	-101	--
Agriculture, forestry and fishing	41	129	-86	-3	-2	1	2
Mining and quarrying; * Manufacturing Electricity	197	187	22	-12	-10	-2	1
Construction	129	72	6	50	-2	52	3
Wholesale and retail ** trade; repair of motor	144	177	81	-115	-113	-2	1
Information and communication	117	11	22	84	273	-189	3
Financial and insurance activities	48	42	12	-5	-6	-1	1
Real estate activities	43	94	-87	36	43	-7	3
Professional, scientific and technical active. ***	18	16	23	-20	-34	14	2
Public administration and defense; ****	129	167	-83	44	40	4	4
Arts, entertainment and recreation; *****	2	5	6	-10	-33	23	2



Taxes on products less subsidies	347	180	-3	169	163	6	4
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**Sources:** [https://ask.rks.gov.net/Statistical Yearbook -2019](https://ask.rks.gov.net/StatisticalYearbook-2019)\* Mining and quarrying; Manufacturing; Electricity, gas, steam and air conditioning supply; Water supply; sewerage, waste management and remediation activities, \*\* Wholesale and retail trade; repair of motor vehicles and motorcycles; Transportation and storage; Accommodation and food service activities,\*\*\* Professional, scientific and technical activities; Administrative and support service activities, \*\*\*\* Public administration and defense; compulsory social security; Education; Human health and social work activities, \*\*\*\*\* Arts, entertainment and recreation; Other service activities; Activities of households as employers; undifferentiated goods- and services- producing activities of households for own use.

The analysis of the components of regional changes shows that from 2012 to 2018 the real changes (1215) in Kosovo, were greater than the proportional participation (1080), this difference is the contribution of the differential distance (218) which exceeds the proportional participation negative (-87). The total negative structural difference (-87) shows that in the Kosovo economy in the analyzed years have dominated the sectors with slower growth, compared to the regional average. The sector with the lowest negative growth was real estate activities (-87), while the highest growth was recorded with the Wholesale and retail trade (81).

In the Kosovar economy in the years analyzed there were 2 sectors (public administration, and taxes on subsidized products) comparatively good and specialized as such (allotment effect 4). Three sectors (construction, informatics and communication, and real estate activities) are characterized by the allotment effect 3 (comparatively good but not specialized). The other three sectors (agriculture, professional scientific and technical activities and arts, entertainment and recreation), are characterized by the allotment effect 2 (comparatively weak but not specialized as such). Three sectors (mining and quarrying; manufacturing, wholesale and retail trade and financial and insurance activities), were comparatively weak and specialized as such (allotment effect 1).

#### **4. Structural and technological changes in North Macedonia**

As mentioned above, structural and technological changes depend on the dynamics of economic development. The unsustainable development of North Macedonia does not enable rapid structural and technological changes. Based on the current economic situation, the existing structure, financial means and other available resources in North Macedonia, the following changes should be made:

Reducing the relative share of sectors with high energy intensity because high energy consumption increases unit costs and makes goods and services in the world market uncompetitive.

Development of sectors that bring innovation, such as. areas of industry of propulsive character. Carriers of such structural changes should be small and medium ovens (Popovska., 2000, p. 2017)

Sectors with high levels of finalism should be a policy priority in North Macedonia. Sectors with low stages of finalization currently dominate. Monetary and fiscal stimulus policies should be applied to achieve this objective.

Orientation towards increasing quality is the main condition to enter the international markets, to achieve this objective advanced technology is needed.

North Macedonia should focus on the production of small and specialized series according to consumer tastes.

## 5. Conclusions

The result of the research shows that the contribution of GDP across sectors is the most reliable indicator of the level of economic development. Based on this criterion we have seen that in the lowest income countries in 2019, close to 1/4 of GDP is still formed by the agricultural sector, 1/5 by industry, and close to 40% by the services sector. In the countries with high incomes in the same year, agriculture participates in the formation of GDP with only 1%, an industry with over 1/5, and the service sector close to 70%. In high middle-income countries (mainly transition countries), in the same year, the agricultural sector contributes 6% to GDP, the industrial sector by 1/3, and the services sector by 56%.

In this paper, I try to present the contribution of economic areas to GDP in North Macedonia and Kosovo. Through the *Analysis of regional change components* method are identified the specialization of economic fields which contribute to GDP. The results of the analysis for the years 2012/18 show that in the two national economies (North Macedonia and Kosovo) in the contribution of economic development are better-specialized areas with limited accumulation, which can not be carriers of economic development.

The analysis of regional change components identified specialized sectors for GDP. According to this empirical method in North Macedonia in 2012/18, only the sector of arts, entertainment, and recreation was the field with allotment effect 4 (comparatively well specialized). In Kosovo with allotment effect 4, there were two areas: public administration, and taxes, and subsidized products. The most undesirable allotment effect (type 1) in North Macedonia was in one sector (real estate activities) while Kosovo had 3 areas they were: mining and quarrying, manufacturing, wholesale and retail trade, and financial and insurance activities allotment type 3 (comparatively good but not specialized), in North Macedonia there were 6 and in Kosovo 3 sectors, allotment type 2 (comparatively weak but not specialized), both countries had 3 sectors each.

Based on the existing structure, financial means, and other available resources in North Macedonia, the following changes should be made:

Advance areas that bring innovations such as propulsion industry sectors. Priorities should be given to areas with high levels of finalism.

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