

**DESIGN AND DEVELOPMENT OF THE
REGIONAL AND MUNICIPAL PROFILING
IN THE REPUBLIC OF MACEDONIA**

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EXECUTIVE SUMMARY

Ineffective regional policy during the transition has imposed severe regional socio-economic imbalances in the Republic of Macedonia. Municipal socio-economic disparities have increased, regional development has been uneven, national and regional infrastructure has not been sufficiently developed.

Analysis presented in this study is based on the selection of 28 core variables, arranged into four groups of composite indicators, reflecting demographic, economic, social and communal characteristics of a certain municipality, sub-region or region. At the second stage of aggregation, the overall, Municipality composite indicator comprises: the Composite population index, the Composite index of economic development, the Composite index of social infrastructure and the Composite index of communal infrastructure.

Definition of municipalities in this study is based on the current territorial organization of the country. However, the aggregation (sub-regions and regions) is done on statistical grounds, using the four-level statistical nomenclature: NUTS 1 - Republic of Macedonia, NUTS 3 - Eight regions, NUTS 4 – 34 regions and NUTS 5 – 123 municipalities.

The ranking system, aimed at assessing the socio-economic disparities in the Republic of Macedonia, is designed for three organizational levels of the territory (NUTS 3, 4 and 5), which are divided into 4, 6 and 8 classes, respectively. It implies that, for instance, the eight regions are grouped in 4 groups depending on their demographic, economic, social and communal characteristics. Rank 1 is given to municipalities with the maximum values, while rank 8 is attributed to municipalities with minimum values.

Demographic picture of the Republic of Macedonia is characterized by large discrepancies among regions and municipalities. While some municipalities and even whole regions entered in the stage of ageing and declining of the population, other municipalities and regions have high birth rates and extremely young population. On NUTS 3 level only Poloski region is classified in rank 1, while three other regions (Skopski, Severoistocen and Jugozapaden are attached a rank 2. On the other side, three regions - Pelagoniski, Istocen (East Region) and Vardarski, are attached rank 4. Pelagoniski region is a typical representative of this group. It is well advanced into process of ageing of population with almost equal number of old and young population; it has the lowest birth rate among the eight regions and is the only region with declining population between the two last censuses.

Economic disparities are more severe and division in this field is only between Skopski region and all the others. Skopski region is the only region with positive average annual economic growth rate of 6% in the period 1998-2002. Pelagoniski and Jugoistocen regions, although classified in the rank 2, have significantly lower index than the Skopski region. The lowest ranks have Poloski and Severoistocen regions. However, one should be careful in the interpretation of these results, since hidden economy is partially captured into GDP estimates. On NUTS 5 level, the distribution of municipalities is skewed to the highest ranks. The general conclusion is that small, rural municipalities (with low starting level of income) have shown better growth performance than urban municipalities, which have declining, outdated industrial capacities.

There is also a clear division of regions and municipalities in the ranking by social index depending on their urban or rural characteristics. While three (Skopski, Pelagoniski and Istocen) out of eight regions are classified in rank 1, two regions (Poloski and Severoistocen) have the lowest rank 4. On NUTS 5 level, while educational services are present in almost all municipalities, health services and cultural services are concentrated in urban centers. Therefore, rural municipalities have very low health care indices. Another weak point of rural municipalities is the low index of gender equality. Thus, it is not surprising that two thirds of the municipalities have very low ranks for the social index.

Communal infrastructure is another area with sharp division between Skopski region and all the others. Skopski is the only region with rank 1, two regions (Pelagoniski and Jugozapaden) have rank 3, and the remaining five regions have the lowest rank 4. Concentration of urban municipalities in Skopski region is the main factor behind such severe discrepancy with the remaining part of the country.

High regional discrepancies noted in different areas are even more pronounced in the general, municipality composite index. On NUTS 3 level, again there is sharp division between Skopski and all other regions. In fact, only Skopski region is classified in rank 1. Three other regions (Pelagoniski, Jugozapaden, and Jugoistocen) are classified in rank 3, while half of the regions have the lowest rank 4. The situation is very similar on the NUTS 5 level. The large majority of 75% of all municipalities has ranks from 5 to 8. Only two municipalities and both are in Skopski region (Karpos and Centar) have rank 1.

Conclusions clearly call for an immediate policy action aimed at reanimating the regional policy and fostering the decentralization in the Republic of Macedonia. It is obvious that a highly centralized government is not aware of – and therefore is unable to provide – the basket of goods and services that is desperately needed by the population. Moreover, the central government has only accommodated the public service needs of the capital city, but it failed to provide any substantial public services outside the large urban areas. What happened after is only a rational decision made by the private sector.

INTRODUCTION

Ineffective regional policy during the transition has imposed severe regional socio-economic imbalances in the Republic of Macedonia. Municipal socio-economic disparities have increased, regional development has been uneven, national and regional infrastructure has not been sufficiently developed and local advantages have not been exploited. Macedonia has become a monocentric state with a fragmented territorial administrative system.

Rationale for policy intervention is to mitigate the socio-economic disparities among Macedonian municipalities. This is a social cohesion argument, as well – gaps undermine social cohesion since they serve as strong ethnic markers.

Policy makers as well as international donors need an information system that will help in the drawing of policy relevant decisions and allocation of resources. This study could be used as reliable base for regional and/or municipal development policy. It analyzes socio-economic disparities among Macedonian municipalities and classifies them into more homogenous groups.

The study takes into account four groups of indicators: demographic, economic, social and communal. For each group of indicators, composite indices that describe the status in that particular area are constructed. Construction of these composite indices reflects the availability as well as the importance of indicators at the current stage of development of Macedonian society. All four composite indexes are aggregated in a Municipality composite index.

Definition of municipalities and regions in this study is based on the current territorial organization of the country. However, the aggregation is done on statistical grounds, which does not reflect political or administrative considerations and is consistent with European Union's Statistical Nomenclature of Territorial Units. In accordance with it, there are four statistical levels:

- ▶ NUTS 1 - Republic of Macedonia
- ▶ NUTS 3 - Eight regions (see Appendix 1)
- ▶ NUTS 4 – 34 regions (see Appendix 1)
- ▶ NUTS 5 – 123 municipalities (see Appendix 1)

METHODOLOGY AND TECHNIQUES

1. Municipality composite indicator

The selection of data variables, that are included in construction of composite indicators, has been done on the basis of the following criteria:

- data is available for all municipalities;
- data is an unbiased reflection of municipal conditions;
- data is consistent and timely, and
- in general, data is not highly collinear.

Municipality composite indicator comprises four broad groups of indicators: demographic (captured by the Composite population index), economic (captured by the Composite index of economic development), social (Overall composite index of social infrastructure) and communal indicators (Composite index of communal infrastructure).

- **Composite population index**

- b) Aging index;
- c) Annual population growth;
- d) Total birth rate;
- e) Migration, net.

- **Composite index of economic development**

- f) VA in non financial sector in US \$ (PPP) per capita;
- g) Growth of VA in non financial sector in US \$ (PPP) per capita;
- h) Unemployment rate.

- **Overall composite index of social infrastructure**

- i) Education composite index
 - Illiteracy rate;
 - Number of graduate students.
- j) Health composite index
 - Physicians;
 - Infant mortality;
 - Deaths by tuberculosis.
- k) Culture composite index
 - Number of cinema performances;
 - Number of public cultural objects.
- l) Youth at risk composite index
 - Youth unemployed;
 - Convicted juveniles.
- m) Democracy and civic participation composite index
 - Candidates for LSG councilors over elected councilors;
 - Number of NGOs.

-
- n) Gender equality composite index
- Female activity rate;
 - Number of elected female councilors.
 - **Composite index of communal infrastructure**
- o) Roads in asphalt equivalent km per square km of municipality area;
- p) Telephone subscribers.

ON THE COMPUTATION OF THE COMPOSITE INDICES

In order to add the indices together, the variables used in each of the composite indices were standardized. The formula used is:

$$Index_i = (Variable_i - Variable_{Median}) / (Variable_{1/4} - Variable_{3/4})$$

Where:

$Index_i$ - is the value for the LSG ($i = 1$ to 123).

$Variable_i$ - is the calculated observation.

$Variable_{Median}$ - is the median of the calculated observation.

$Variable_{1/4}$ and $Variable_{3/4}$ - the $1/4$ and the $3/4$ percentile observation from the variable.

Outliers in the case of local self-governments (LSGs) can sway the value of the arithmetic mean and that is why in the above formula we use the median, as a measure of central tendency (standardized with the quartile values as a measure for dispersion to buffer the extreme values and outliers). Thus, the formula will be further transformed for the cases where outlier is defined as:

$$|Index_i| > 1$$

In those cases we calculate the index as:

$$Index_i > 1 \Rightarrow Index_i = (Index_i)^{0.25}$$

$$Index_i < -1 \Rightarrow Index_i = (-1) * (Index_i)^{0.25}$$

The computation of the municipality composite index and the composite indices is considered as arithmetic weighted average and we are not considering any weights sensitivity. This could be a separate project in which the weights sensitivity would be tested for each variable as a component in the composite and general index.

ON THE RANKING SYSTEM

The ranking system is aimed at assessing the socio-economic performance of Macedonian municipalities.

The number of classes we are considering for ranking is calculated in accordance with the Sturges' rule:

$$\text{number of classes} = 1 + 3.322 * \log(\text{number of observations})$$

In this paper we are considering three organizational levels of the territory. Each organizational level will yield different numbers of observations and thus, different number of classes. The corresponding number of classes according the Sturges' formula is illustrated in the next table:

NUTS	NUTS 3	NUTS 4	NUTS 5
Units	8	34	123
Number of classes (in accordance with Sturges' rule)	4	6	8

Thus, for the classes' criteria defined, it is suggested a ranking class as in the following table:

NUTS	Ranking							
NUTS 3	max							min
NUTS 4	max							min
NUTS 5	max							min

ON THE VARIABLES

Analyses presented in this study are based on the selection of a set of core variables that clearly describe current situation and trends in demographic characteristics, economic development, and health, educational and cultural standards on municipal level. Research team had to cope with the problems of availability, consistency and quality of statistical indicators. Moreover, care was taken to balance the number of demographic, economic and social variables.

Municipality Composite index

Municipality composite index is an aggregate measure of demographic, economic, social and communal conditions in a certain municipality.

Demographic index

Aging index

Aging index is defined as the ratio between the number of elderly people aged 65 years above, and the number of children (0-14). High values indicate that young people do not consider a certain municipality attractive for living, because of lack of communications with other places, insufficient job creation, lack of infrastructure etc. Source of this indicator is the Population Census 2002.

Index of Population Growth

In our analysis, this index represents the average annual population growth between the two national censuses (1994-2002). Increases in population often indicate the growth and stability of a municipality, as well as the need for increased resources and services. This indicator is calculated on the base of Population Censuses 1994 and 2002.

Total birth rate

Life born children expressed per 1,000 inhabitants.

Index of net migration

It is calculated as net of emigrated and immigrated persons.

Economic index

Without exception, at least some economic disparities do exist between different regions within a country and between different municipalities within a region. The root cause of regional disparities is the fact that economic activity is not spread out across space in an even manner.

VA in non-financial sector in US \$ (PPP) per capita

Value added in non-financial sector is used as a proxy for the dynamics of economic development in the municipalities. The logic behind this approach is that: (1) non-financial sector is the largest sector in the economy with a share of approximately 60% in the total value added; (2) it produce goods and services exclusively for market, contrary to: (a) government sector that produce non-market services and (b) household sector which, to a

large extent, produces goods for own consumption; (3) growth in the Macedonian economy is generated by non-financial sector; (4) household sector in respect to economic growth is highly pro-cyclical i.e. it grows in time of recession and is stagnant in time of economic growth.

Growth rate of VA in non-financial sector in US \$ (PPP) per capita

It is calculated as a geometrical mean of the growth rate of VA in non-financial sector in US \$ (PPP) per capita in 2002 compared to 1998. This index serves as an adjustment to the previous one indicating whether the growth rate of municipal economy can keep the pace with the population growth.

Unemployment rate

It is estimated as a ratio between the number of unemployed persons and the labor force, which is defined as a sum of unemployed and employed persons in the municipality. The source of this indicator is the Population Census 2002. Definitions of employed, unemployed and labor force are consistent with the Labor Force Survey (LFS), which is conducted only on the country level.

Social infrastructure index

Education

The purpose of the **Composite index of Education** is to measure the educational well-being of the population in a particular municipality. It is well known fact that the overall learning environment plus the development of academic skills for youth are critical factors in determining the current and future educational well being of the municipality.

Illiteracy rate among adult population

The percentage of people aged 10 and above who cannot, with understanding, both read and write a short simple statement in their everyday life.

The number of graduate students per 1000 inhabitants

The number of students attending tertiary education expressed per 1,000 people.

Health

Health Index is a composite index aimed at measuring the comparative physical and mental health of the Macedonian population by municipalities. The *physical health* sub-index combines the Number of Physicians, Infant mortality rates, the Life expectancy at birth and the death by tuberculosis.

Number of physicians per 1,000 inhabitants includes graduates of a faculty of medicine who work in medical institutions. Pharmacists are excluded.

Infant mortality rate represents the probability of dying between birth and exactly one year of age expressed per 1,000 live births. This indicator is taken as a five year average of the period 1998-2002.

Culture

Among culture and social life variables, we have used the following data:

A Cinema performance per 1,000 inhabitants is a open-for-public projection of a film program in a municipality.

Number of public cultural objects is a sum of the number of theatres, museums, libraries, cultural centers and cinemas in a certain municipality.

Youth at risk

Youth unemployment is a participation of the number of unemployed youth on the age 15 to 24 in the total labor force on the age 15 to 24.

Total convicted juveniles is a juvenile perpetrator of crime against whom with the court decision a legal sanction has been announced – juvenile imprisonment or educational measures.

Civic participation

Local democracy is defined as number of candidates for councilors on local elections over elected councilors in the local self-government.

Number of NGO's per municipality, which is a proxy for the civil society development is used to capture the voluntary associations of citizens aimed at shaping the (local) governance structures and policies.

Gender equality

Equality between women and men may be described in different ways and by using different kinds of statistics.

In the **gender equality index** we try to combine various direct and indirect measurements of gender equality that show the extent to which women and men participate in politics, education and working life. Usually, the key indicators that comprise the gender equality index are: number of women per 100 men aged 20-39, education levels for women and men, labor force participation for women and men, representation of women in municipal structures etc.

Participation of women in politics is defined as elected females councilors over total elected councilors.

Activity rate of women is the participation of the female labor force in the female population over 15 years of age.

Communal infrastructure index

Two indicators were available for assessment of municipal infrastructure:

Roads (km) in asphalt equivalents per square km of area means that all roads at the territory of the municipality are converted in asphalt equivalents and expressed relative to the size of the area of municipality.

Telephone subscribers per 1,000 inhabitants covers all active telephone lines on the territory of the municipalities.

ANALYSIS OF THE RESULTS

On NUTS 5 level, the research team has used an eight-level ranking system with ranks from 1 to 8 (see Section "*On the ranking system*"). It implies that 123 municipalities are grouped in 8 more homogenous groups depending on their demographic, economic, social and communal characteristics. For instance, rank 1 is given to municipalities with the maximum values, while rank 8 is attributed to municipalities with minimum values.

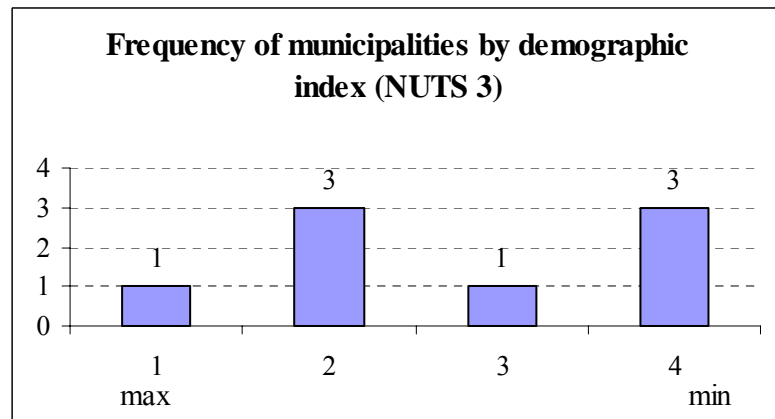
On NUTS 4 level there are 34 sub-regions ranked in 6 classes from the highest 1 to the lowest 6.

On NUTS 3 level there are 8 regions ranked in 4 classes from the highest 1 to the lowest 4.

Demographic index

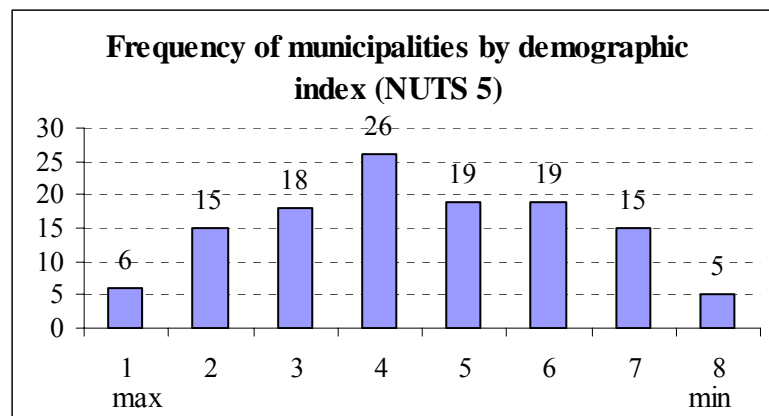
The highest rank 1 is attached to a municipality, sub-region or region with young population, high birth rate, high growth of population between two last Censuses, experiencing net inflow of population (immigration).

The lowest rank (4 on NUTS 3 level, 6 on NUTS 4 level and 8 on NUTS 5 level) is characteristic for regions, sub-regions and municipalities with dominant old population, low birth rate, decline of population between two latest Censuses and net outflow of population (emigration).



Republic of Macedonia is characterized by large discrepancies among regions and municipalities. While some municipalities and even whole regions entered in the stage of ageing and declining of the population, other municipalities and regions have high birth rates and extremely young population. On NUTS 3 level only Poloski region is classified in rank 1, while three other regions (Skopski, Severoistocen (North-Eastern) and Jugozapaden (South-Western)) are attached a rank 2. Poloski region is a typical representative of demographic growth with high birth rate, net inflow from migration and consequently high growth rate of population between the two last censuses and dominance of young population.

On the other side of the scale are three regions Pelagoniski, Istocen (East Region) and Vardarski, all classified in rank 4. Pelagoniski region is a typical representative of this group. It is well advanced into the process of ageing of the population with almost equal number of old (more



than 65) and young (less than 15) population, has the lowest birth rate among the eight regions and is the only region with declining population between the two last censuses. The internal migration path shows even distribution of regions with net inflow and net outflow of the population. The most attractive regions are Skopski, Poloski and Jugozapaden, while population is leaving the Severoistocen, Istocen, Vardarski and Jugoistocen regions.

Economic index

Municipalities with the highest rank 1 have high level of economic activity, high economic growth and low unemployment rate.

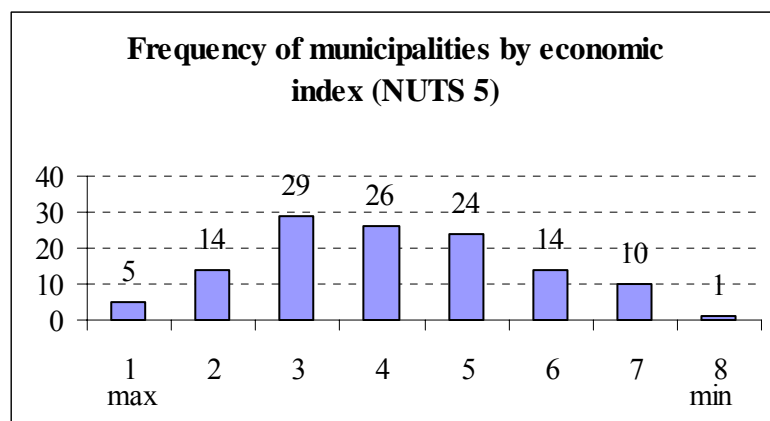
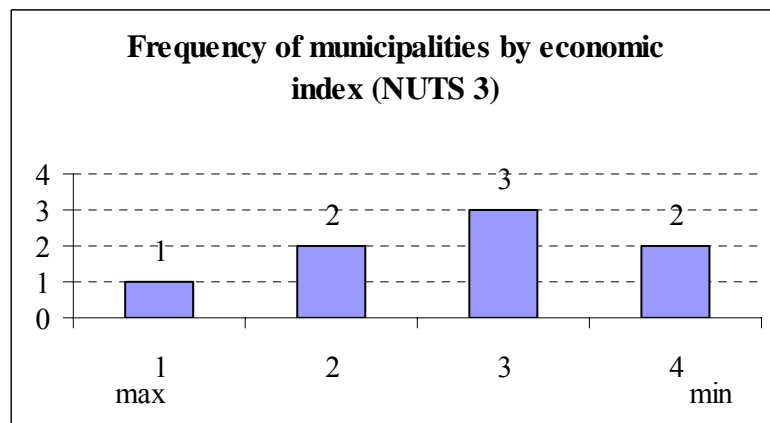
On the other side, the lowest rank (4 on NUTS 3 level, 6 on NUTS 4 level and 8 on NUTS 5 level) indicates regions, sub-regions and municipalities with low level of economic activity, declining economic trend and high rate of unemployment.

Economic index also suggests a bipolar world among Macedonian regions.

However, the economic disparities are more severe and division in this field is only between Skopski region and all the others. Skopski region is the only region with positive average annual economic growth rate of 6% in the period 1998-2002. Thirteen out of sixteen municipalities in this region have experienced growth in this period. The growth is higher in rural municipalities due to lower starting position.

It is obvious that Skopski region, which covers the largest urban area in the country and is populated with higher income population, offers much better opportunities for businesses than rest of the country. Large concentration of higher income population is very favorable environment for development of market for

service industry, which has generated high growth rates of economy in Skopski region. On the other side, in other regions service sector was not able to generate sufficient growth that would compensate for decline of old industrial capacities. In addition to favorable growth pattern, Skopski region has also the highest level of income and the lowest unemployment rate. Some urban municipalities (like Karpos) have very low unemployment rate (16.9%) compared to the national average of 38.1%.



Pelagoniski and Jugoistocen regions, although classified in the rank 2, have significantly lower index than the Skopski region. The first keeps this relatively high position due to the high initial income level as a legacy of the past industrial development, while the other due to large engagement of the population in agriculture.

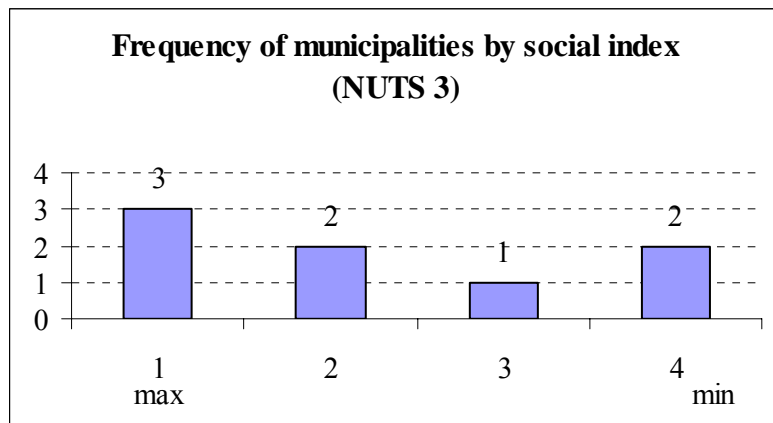
The lowest ranks have Poloski and Severoistocen regions. However, one should be careful in the interpretation of these results, since hidden economy is partially captured into GDP estimates.

Speaking about NUTS 5 level, the distribution of municipalities is skewed to the highest ranks. The general impression is that small, rural municipalities have low starting level of income, but have managed to compensate with much better growth results than urban municipalities, which have declining outdated industrial capacities. This is also an indication of the rapid growth of small businesses in most of the small underdeveloped municipalities.

Social index

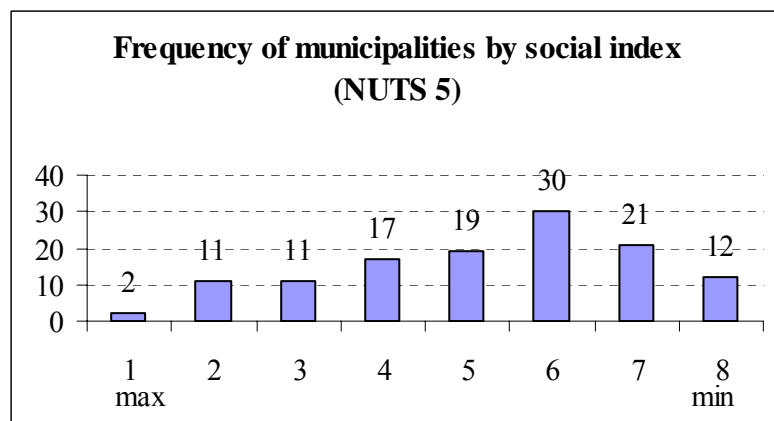
The typical municipality with the highest rank 1 in the social area has low illiteracy rate, large number of its population are students, have access to relatively good health services, have numerous public cultural objects, low youth delinquency rate, developed civic participation and gender equality.

Regions, sub-regions and municipalities with the lowest rank (4 on NUTS 3 level, 6 on NUTS 4 level and 8 on NUTS 5 level) are characterized by low educational level of the population, weak health care services, lack of public cultural objects, youth are at high risk, there is very weak civil society and female population is discriminated.



There is a clear division of regions and municipalities in the ranking by social index depending on their urban or rural characteristics. Three (Skopski, Pelagoniski and Istocen) out of eight regions are classified in rank 1 by social index. On the other side two regions (Poloski and Severoistocen) have the lowest rank 4. The highest ranked regions are with dominantly urban municipalities while the lowest ranked regions are dominated by rural municipalities.

While educational services i.e. schools are present in almost all municipalities, health services and cultural services are concentrated in urban



centers. Therefore rural municipalities have very low health care indices. Another weak point of rural municipalities is the low index of gender equality.

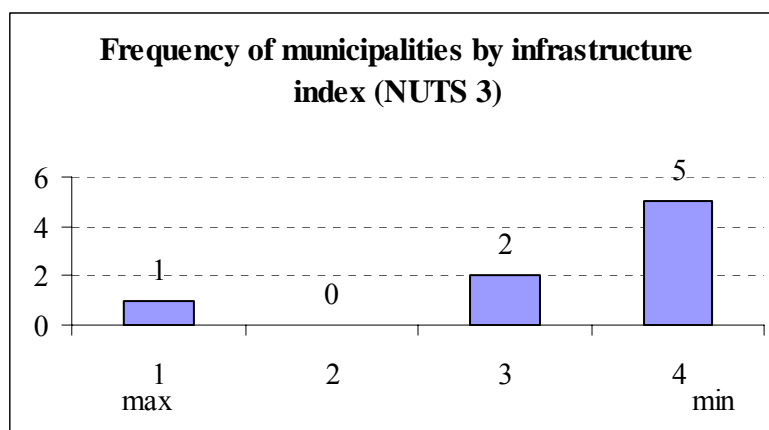
Bearing in mind above mentioned characteristics and the fact that vast majority of the total of 123 municipalities is rural, it is not surprising that two thirds of the municipalities have very low ranks of social index. Moreover, it is interesting to note that the only indicator where rural municipalities have better ranks than the urban ones is the crime rate among youth. Obviously, urban way of life creates much more temptations for young people and draws them into the crime.

Communal infrastructure index

The highest ranked municipalities are characterized by long network of roads relative to the size of their territory and high availability of telephone lines.

The lowest rank (4 on NUTS 3 level, 6 on NUTS 4 level and 8 on NUTS 5 level) means that typical municipality has very small road network relative to its area and lower use of telephone lines.

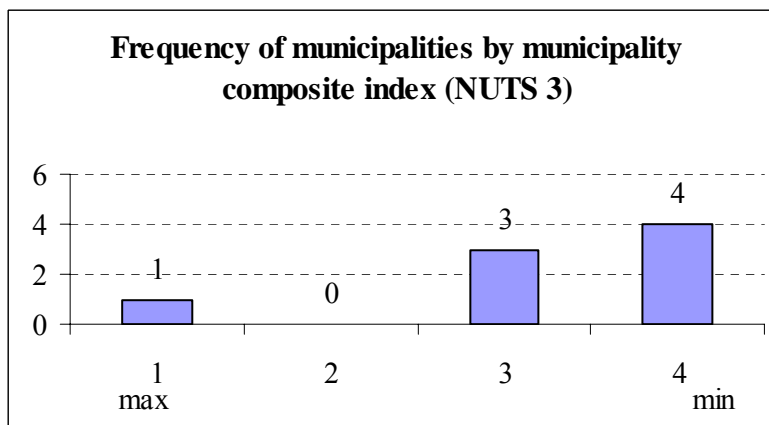
Communal infrastructure is another area with sharp division between Skopski region and all the others. Skopski is the only region with rank 1, two regions (Pelagoniski and Jugozapaden) have rank 3, and the remaining five regions have the lowest rank 4. Concentration of urban municipalities in Skopski region is the main factor behind such severe discrepancy with other part of country. Skopski is by far the smallest region by size of the area, but the largest by population, which gives high density of population in high-income region. Thus, the highest availability of telephones per 1,000 inhabitants and largest road network is a logical consequence.



Municipality composite index

The highest ranked municipalities are characterized with a well balanced demographic characteristics, sound economic development and good availability of social and communal infrastructure.

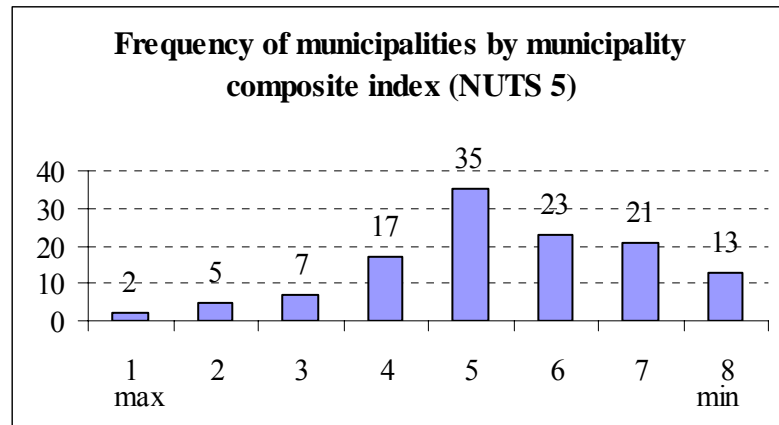
The lowest rank (4 on NUTS 3 level, 6 on NUTS 4 level and 8 on NUTS 5 level)



indicates regions, sub-regions and municipalities with unfavorable demographic, economic, social and communal infrastructure characteristics.

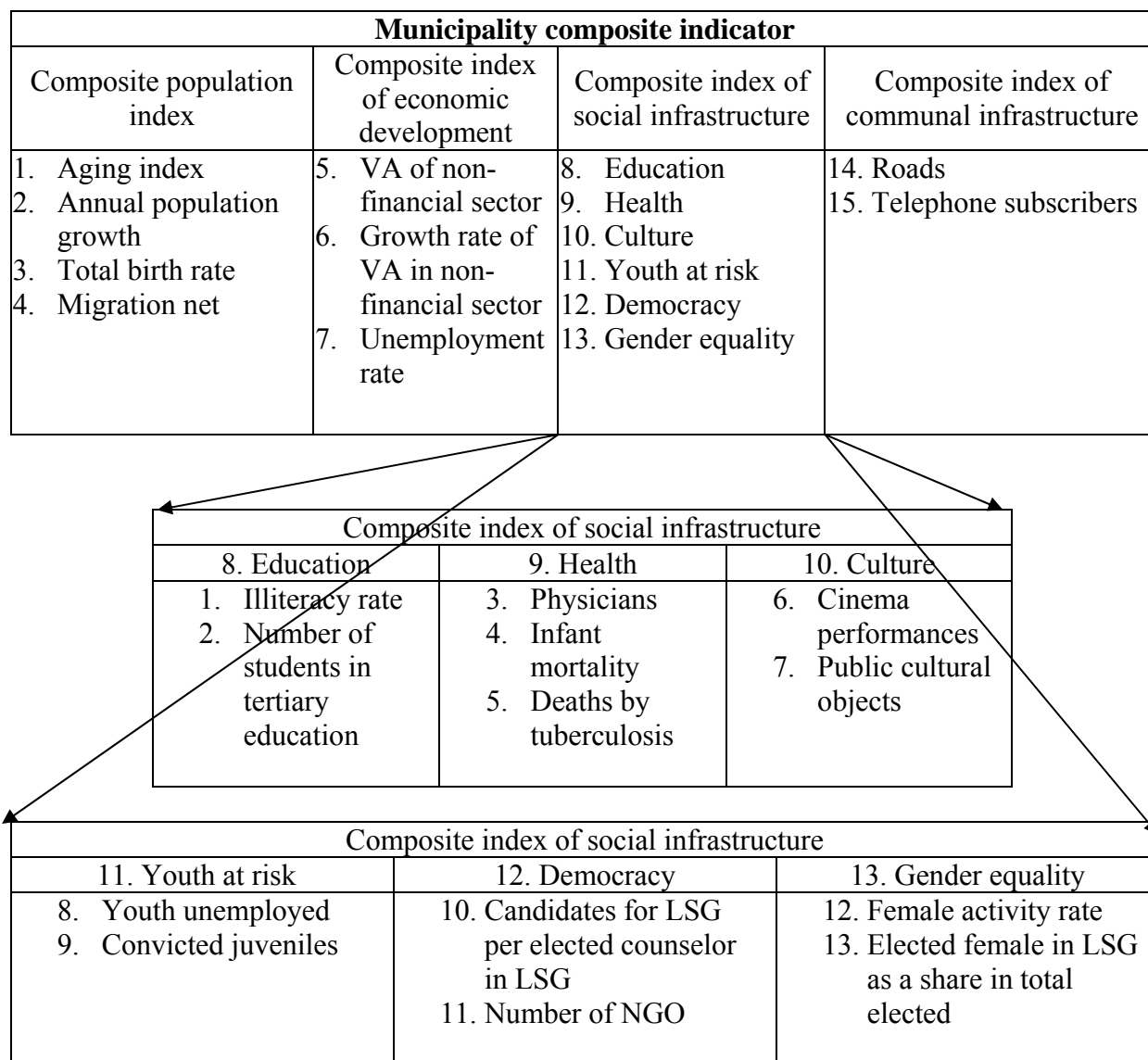
High regional discrepancies noted in different areas are even more pronounced in the municipality composite index. On NUTS 3 level, again there is sharp division between Skopski and all other regions. In fact, only Skopski region is classified in rank 1. Three other regions (Pelagoniski, Jugozapaden, and Jugoistocen) are classified in rank 3, while half of the regions have the lowest rank 4.

The situation is very similar on the NUTS 5 level. The large majority of 75% of all municipalities has ranks from 5 to 8. Only two municipalities and both are in Skopski region (Karposh and Centar) have rank 1. Not surprisingly, the next five municipalities, which are classified in rank 2 are in Skopski region, too. Twelve out of thirteen municipalities with the lowest rank 8 are small rural municipalities with dominant Macedonian ethnic population. Demir Kapija is the only urban municipality in the group of the lowest rank municipalities.



Appendix

Variables used for the indices



Nomenclature of the Territorial Units of Republic of Macedonia - NUTS

Nomenclature of territorial units of Republic of Macedonia - NUTS

Code	NUTS 1	NUTS 2	NUTS 3	NUTS 4	NUTS 5
	RM 1 unit	RM 1 unit	statistical regions 8 units	group of municipalities 34 units	municipalities 123 units

MK Republic Macedonia Republic Macedonia

MK001			Pelagoniski		
MK00101				Bitola	
MK00101001					Bac
MK00101002					Bistrica
MK00101003					Bitola
MK00101004					Dobruševo
MK00101005					Kukurečani
MK00101006					Mogila
MK00101007					Novaci
MK00101008					Staravina
MK00101009					Čapari
MK00102				Demir Hisar	
MK00102001					Demir Hisar
MK00102002					Sopotnica
MK00103				Krusevo	
MK00103001					Zitose
MK00103002					Krusevo
MK00104				Prilep	
MK00104001					Vitliste
MK00104002					Dolneni
MK00104003					Krivogastani
MK00104004					Prilep
MK00104005					Topolčani
MK00105				Resen	
MK00105001					Resen
MK002			Vardarski		
MK00201				Veles	
MK00201001					Bogomila
MK00201002					Veles
MK00201003					Gradsko
MK00201004					Izvor
MK00201005					Caska
MK00202				Kavadarci	
MK00202001					Kavadarci
MK00202002					Konopiste
MK00202003					Rosoman
MK00203				Negotino	
MK00203001					Demir Kapija
MK00203002					Negotino
MK003			Severoistocen		
MK00301				Kratovo	
MK00301001					Kratovo
MK00302				Kriva Palanka	
MK00302001					Kriva Palanka

MK00302002		Rankovce
MK00303		<i>Kumanovo</i>
MK00303001		Klecevce
MK00303002		Kumanovo
MK00303003		Lipkovo
MK00303004		Orasac
MK00303005		Staro Nagoricane
MK004	Jugozapaden	
MK00401		<i>Debar</i>
MK00401001		Debar
MK00401002		Centar Zupa
MK00402		<i>Kicevo</i>
MK00402001		Vranestica
MK00402002		Drugovo
MK00402003		Zajas
MK00402004		Kicevo
MK00402005		Oslomej
MK00403		<i>Makedonski Brod</i>
MK00403001		Makedonski Brod
MK00403002		Plasnica
MK00403003		Samokov
MK00404		<i>Ohrid</i>
MK00404001		Belcista
MK00404002		Kosel
MK00404003		Meseista
MK00404004		Ohrid
MK00405		<i>Struga</i>
MK00405001		Vevcani
MK00405002		Velesta
MK00405003		Delogozdi
MK00405004		Labunista
MK00405005		Lukovo
MK00405006		Struga
MK005	Skopski	
MK00501		<i>Gazi Baba</i>
MK00501001		Aracinovo
MK00501002		Gazi Baba
MK00501003		Ilinden
MK00501004		Petrovec
MK00502		<i>Karpos</i>
MK00502001		Gorce Petrov
MK00502002		Karpos
MK00502003		Kondovo
MK00502004		Saraj
MK00503		<i>Kisela Voda</i>
MK00503001		Zelenikovo
MK00503002		Kisela Voda
MK00503003		Sopiste
MK00503004		Studenicani
MK00504		<i>Centar</i>
MK00504001		Centar
MK00505		<i>Cair</i>
MK00505001		Cair

MK00505002		Cucer - Sandevo
MK00505003		Suto Orizari
MK006	Jugoistocen	
MK00601		<i>Valandovo</i>
MK00601001		Valandovo
MK00602		<i>Gevgelija</i>
MK00602001		Bogdanci
MK00602002		Gevgelija
MK00602003		Miravci
MK00602004		Star Dojran
MK00603		<i>Radovis</i>
MK00603001		Konce
MK00603002		Podares
MK00603003		Radovis
MK00604		<i>Strumica</i>
MK00604001		Bosilovo
MK00604002		Vasilevo
MK00604003		Kuklis
MK00604004		Murtino
MK00604005		Novo Selo
MK00604006		Strumica
MK007	Poloski	
MK00701		<i>Gostivar</i>
MK00701001		Vrapciste
MK00701002		Vrutok
MK00701003		Gostivar
MK00701004		Dolna Banjica
MK00701005		Mavrovi Anovi
MK00701006		Negotino - Polosko
MK00701007		Rostusa
MK00701008		Srbinovo
MK00701009		Cegrane
MK00702		<i>Tetovo</i>
MK00702001		Bogovinje
MK00702002		Brvenica
MK00702003		Vratnica
MK00702004		Zelino
MK00702005		Jegunovce
MK00702006		Kamenjane
MK00702007		Tearce
MK00702008		Tetovo
MK00702009		Djepciste
MK00702010		Sipkovica
MK008	Istocen	
MK00801		<i>Berovo</i>
MK00801001		Berovo
MK00801002		Pehcevo
MK00802		<i>Vinica</i>
MK00802001		Blatec
MK00802002		Vinica
MK00803		<i>Delcevo</i>
MK00803001		Delcevo
MK00803002		Makedonska Kamenica

MK00804	<i>Kocani</i>	Zrnovci
MK00804001		Kocani
MK00804002		Oblesevo
MK00804003		Orizari
MK00804004	<i>Probistip</i>	Cesinovo
MK00804005		Zletovo
MK00805	<i>Sveti Nikole</i>	Probistip
MK00805001		Lozovo
MK00805002	<i>Stip</i>	Sveti Nikole
MK00806		Karbinci
MK00806001		Stip
MK00806002		
MK00807		
MK00807001		
MK00807002		

Methodological notes on HDI calculation

General notes

The HDI is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth;
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight);
- A decent standard of living, as measured by GDP per capita (PPP US\$).

Calculation of HDI is an evolving methodology, and comparisons should not be made between years (when methods might have varied) but can be made between countries, as issued by the same source.

Country-specific notes

Since data on Life expectancy and Gross enrolment ratio on municipality and regional level do not exist, the Human Development Index (HDI) for the Republic of Macedonia was constructed using national data for this particular sub-index¹.

As reference values for the HDI analysis, we have used two groups of countries:

- Advanced transition countries (Poland, Slovenia, Hungary, Romania and Czech Republic) and
- Western Balkans countries (Croatia, Bosnia and Herzegovina, Albania and Macedonia) plus Bulgaria.²

Data source is the UNDP Human Development Report 2003, which refers to HDI values for 2001.

Reference country	Life expectancy index	Education index	GDP index	HDI
Advanced transition countries *	0.804	0.922	0.786	0.8306
Slovenia	0.850	0.940	0.860	0.881
Czech Republic	0.830	0.910	0.830	0.861
Poland	0.810	0.950	0.760	0.841
Hungary	0.770	0.930	0.800	0.837
Romania	0.760	0.880	0.680	0.733
Western Balkans *	0.802	0.856	0.686	0.782

¹ We are aware that this is a serious shortcoming of the estimated municipal and regional HDI, which has to be counted on by everyone who will use these indicators. Municipal and regional HDI were included as an appendix to the study on request of Community Development Project.

² HDI calculations for Serbia and Montenegro for year 2001 are not available.

Croatia	0.820	0.880	0.750	0.818
Macedonia	0.810	0.860	0.690	0.784
Bulgaria	0.760	0.910	0.710	0.795
Bosnia and Herzegovina	0.810	0.830	0.680	0.777
Albania	0.810	0.800	0.600	0.735
Central & Eastern Europe and CIS *	0.740	0.920	0.700	0.787

* Unweighted averages.

* Commonwealth of Independent States.

Source: UNDP Human Development Report 2003.

Macedonian regional vs. advanced transition countries HDI values

Country / Regions	Life expectancy index	Education index	GDP index	HDI 8
Advanced transition countries	0.804	0.922	0.786	0.8306
Republika Makedonija	0.801	0.877	0.705	0.795
<i>Difference</i>	<i>-0.003</i>	<i>-0.045</i>	<i>-0.081</i>	<i>-0.036</i>
Pelagoniski	0.801	0.876	0.683	0.787
<i>Difference</i>	<i>-0.003</i>	<i>-0.046</i>	<i>-0.103</i>	<i>-0.044</i>
Vardarski	0.801	0.877	0.661	0.780
<i>Difference</i>	<i>-0.003</i>	<i>-0.045</i>	<i>-0.125</i>	<i>-0.051</i>
Severo-istocen	0.801	0.867	0.588	0.752
<i>Difference</i>	<i>-0.003</i>	<i>-0.055</i>	<i>-0.198</i>	<i>-0.079</i>
Jugo-zapaden	0.801	0.878	0.602	0.760
<i>Difference</i>	<i>-0.003</i>	<i>-0.044</i>	<i>-0.184</i>	<i>-0.070</i>
Skopski	0.801	0.883	0.811	0.832
<i>Difference</i>	<i>-0.003</i>	<i>-0.039</i>	<i>0.025</i>	<i>0.001</i>
Jugo-istocen	0.801	0.875	0.678	0.785
<i>Difference</i>	<i>-0.003</i>	<i>-0.047</i>	<i>-0.108</i>	<i>-0.046</i>
Poloski	0.801	0.875	0.563	0.746
<i>Difference</i>	<i>-0.003</i>	<i>-0.047</i>	<i>-0.223</i>	<i>-0.084</i>
Istocen	0.801	0.875	0.646	0.774
<i>Difference</i>	<i>-0.003</i>	<i>-0.047</i>	<i>-0.140</i>	<i>-0.057</i>

Macedonian regional vs. Western Balkans countries HDI values

Country / Regions	Life expectancy index	Education index	GDP index	HDI 8
Western Balkans + Bulgaria	0.801	0.886	0.718	0.801
Republika Makedonija	0.801	0.877	0.705	0.795
<i>Difference</i>	<i>0.000</i>	<i>0.008</i>	<i>0.012</i>	<i>0.007</i>
Pelagoniski	0.801	0.876	0.683	0.787
<i>Difference</i>	<i>0.000</i>	<i>0.009</i>	<i>0.035</i>	<i>0.015</i>
Vardarski	0.801	0.877	0.661	0.780
<i>Difference</i>	<i>0.000</i>	<i>0.008</i>	<i>0.057</i>	<i>0.022</i>
Severoistocen	0.801	0.867	0.588	0.752
<i>Difference</i>	<i>0.000</i>	<i>0.019</i>	<i>0.130</i>	<i>0.049</i>
Jugozapaden	0.801	0.878	0.602	0.760
<i>Difference</i>	<i>0.000</i>	<i>0.007</i>	<i>0.115</i>	<i>0.041</i>
Skopski	0.801	0.883	0.811	0.832
<i>Difference</i>	<i>0.000</i>	<i>0.003</i>	<i>-0.094</i>	<i>-0.030</i>
Jugoistocen	0.801	0.875	0.678	0.785
<i>Difference</i>	<i>0.000</i>	<i>0.011</i>	<i>0.039</i>	<i>0.017</i>
Poloski	0.801	0.875	0.563	0.746
<i>Difference</i>	<i>0.000</i>	<i>0.010</i>	<i>0.155</i>	<i>0.055</i>
Istocen	0.801	0.875	0.646	0.774
<i>Difference</i>	<i>0.000</i>	<i>0.011</i>	<i>0.071</i>	<i>0.027</i>