**EMIGRATION IN REPUBLIC OF NORTH MACEDONIA: INDICATORS AND ESTIMATIONS**

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**Abstract**

*Emigration is one of the most serious problems that is threating the country. Large portion of the population is leaving the country in a process that lasts for decades. The consequences can be felt by severe lack of labor force in professions such as doctors, other medical personnel, IT professionals, accountants, builders, drivers, worker etc. With lack of formal reporting for emigration and immigration in the country and legislative that could regulate these matters it is difficult to estimate the scope of these mechanical movements.*

*This paper offers an approach where the number of enrolled pupils in primary and secondary school are used to confirm their relationship with the number of emigrants and calculate the estimates of current population, population decline in the past decades and average annual loss of population. Using regression model the relationship between variables have been confirmed and estimates are made corresponding with those made by international institutions such as World Bank and OECD.*

JEL classification: J10, J19, F22

**Keywords:** Emigration, enrolled pupils, geometrical rate of growth/decline

**Introduction**

Migration movement has been part of the human civilization for millennia, where whole new societies were built as result to it, such as colonizing the American continent. The effects that these movements cause change the whole system (economic, demographic, political, and cultural) of one or more countries. In the past two decades migration flows have increased with high intensity, especially in Europe. Migration is a complex process, usually caused by number of factors, where the once that facilitate migration most are following:

* Economic factors – advanced economies from Western Europe are more attractive for workers from transitional and developing economies from Eastern and Southern European countries;
* Openness of the labor market in European Union – due to the process of serious demographic ageing in Western Europe and lack of qualified and less qualified labor, countries like Germany and Austria have open immigration policy which attracts skilled and educated labor force;
* Political factors and corruption – political instability, poorly functional educational and health systems, corruption in different layers of society in native countries contributes by great extent to emigration;
* Labor market, reward system and self-promotion in native countries – dysfunctional labor market and companies reward systems based on political background and corruption, not on personal merits, few or no opportunities for further promotion and self-realization of the individual make the decision for emigration easier;
* Technological advancement and lower transport costs – With new technology such as smart phones that facilitate everyday international communication, available and acceptable prices of airplane flights or other costs of transport, information is easily shared and the level of uncertainty is reduced when person decides to emigrate.

It is clear that migration causes great changes and further implications in both destination and origin country and it needs to be quantified. Measuring the level of emigration/immigration is very difficult task, especially when there is no systematic approach for documenting this mechanical movements of the population. In this case other approaches need to be explored in order to approximately evaluate the number of emigrants/immigrants so that further policies can be created and implemented in order to adopt to changed population structure and its repercussions to future country’s development.

The purpose of this paper is to develop an approach where by analyzing the number of enrolled pupils and students through the years to approximately evaluate the effect of emigration in Macedonia. It is apparent fact that every day people are leaving this country, yet despite statistics published by OECD and evaluation by the World Bank, there is no official reporting of people emigrating/immigrating from/to Macedonia.

This paper is composed in the following order: the first part is introduction, after what follows the literature review. The third part presents overview of student and pupil enrollment by different level of education and the fourth part gives an insight of the national emigration estimates. Analysis and empirical results are presented in the following text, and the paper is completed by conclusion from the applied analysis.

**Literature review**

There are few Macedonian authors that examine the issue of emigration, despite the fact that it is one of the greatest challenges that this country is about to encounter. In 2015 the government has come upon a resolution on migration policy of the Republic of Macedonia for period 2015-2020 (Janeska, 2015). It is a structured comprehensive strategy that involves a dozen government institutions in order to achieve the most significant goal of reduced permanent emigration. The document is consisted of three segments, where the first includes characteristics of migration processes, migration policy instruments, interstate cooperation on migration, relevant legal aspects of the migration policy and coordination and integration of involved institution. The second segment explains the migration policy for period 2015-2020, while the third segment involves the specific action plan. The document is detailed and obtains proper measures to fight the problem, yet there is no information whether they have been implemented and what the effects on emigration are.

In the Country Report from Bornarova and Janeska (2012) the main focus is the social impact of emigration, especially on vulnerable groups such as women, children, older people and groups from different nationality. They recognize the following key challenges related to emigration: progress in policy making related to emigration yet poor implementation of the same, no reliable data for migration flows and structure of migrants, high level of permanent emigration, abandoned villages, low rural population, intensive demographic ageing, significant regional differences etc. Also, they suggest further measures to be taken such as budget funds for implementation of strategic documents, creation of statistical database on migration flows, support of empirical research on social problems, improvement of the economic and infrastructural development, improvement of social, health and education benefits and other measures. These are all constructive measures that could reduce the emigration, yet as stated as a key challenge, more is said and written than implemented.

Janeska et al. (2016) explain the demographic consequences of emigration. High emigration rate, extensive permanent migration and changes in the migration contingent structure indicate serious demographic long term implications. For identification of the determinants of the natural population increase of the migration contingent, the correlated component regression model is applied. Results confirm that the share of Macedonian live births in Germany, Italy and Switzerland in the total number of live births in the country, is mostly correlated with the increase of the share of total Macedonian migrants in these countries in the total population of the country, as well as with the share of Macedonian women in Germany, Switzerland and Italy in the total women population in Macedonia. These results confirm previously stated finding, that the birth that supposed to happen in Macedonia are now birth in the destination countries. The long term effects are reduced number of enrolled pupils in primary, secondary education and reduction in active working force in few decades in Republic of Macedonia.

Brain drain from Macedonia is analyzed by Janeska and Lozanoska (2016) where the direct effects from it are identified as reduction of the economic growth and innovation capacity. Also, long term implications on the research and development are evident as reduction of scientist and engineers and the quality of scientific research institutions. Another negative effects include acceleration of the population and labor force ageing and the reduction of the reproductive population.

**Summation of pupil and student enrollment by level of education**

 Today’s pupils and students are tomorrow’s working force and one country’s development depends on this young population. When analyzing migrations in the past, typical migrant from the Balkans was young male, not married and without children. Today demographic structure of the migrants is quite diverse. Both male and female, married or single, with or without children are taking part of migration process. Couples are deciding to start families in the destination country or to leave the origin country with young children. This is the starting point to approximately evaluate the scope of emigration. Children that are supposed to be born or enrolled in the education system in the native country are born or enrolled in schools in the destination country. The following figures present the situation of enrolled pupils and students in Republic of North Macedonia.

 It is evident that the number of enrolled pupils in primary and secondary education is decreasing. Secondary education is mandatory in Republic of North Macedonia. From 2000 to 2017 the number of pupils in primary education is reduced from 249.375 to 192.448 (56.927 pupils less or 22.8%) and in secondary education is reduced from 93.161 to 71.458 (21.703 pupils less or 23.3%). This is a decrease of almost one quarter of the population, which is quite significant. When the population decreases it can be either due to the decrease in number of births or emigration. Figure 4 accounts for the live births from 2005 where the number of births was 22.482 to 2018 with 21.333 live births. Difference between these periods is 1.149 birth or 5.1%. Difference between the highest number of births (2010=24.296 births) and lowest number of births (2018=21.333 births) is 2.963 births or 13.9%. It can be concluded that the population is decreasing at significantly higher rate than the number of births, and the reason for that is emigration. Prolonged emigration also contributes to decrease in the number of future births.

*Figure 1. Number of enrolled pupils in primary education in RoNM*

Source: State Statistical Office of Republic of North Macedonia, MAKStat database

*Figure 2. Number of enrolled pupils in secondary education in RoNM*

Source: State Statistical Office of Republic of North Macedonia, MAKStat database

*Figure 3. Number of enrolled students at universities in RoNM*

Source: State Statistical Office of Republic of North Macedonia, MAKStat database

*Figure 4. Number of live birth in RoNM*

Source: State Statistical Office of Republic of North Macedonia, MAKStat database

 **Emigration in Republic of North Macedonia and its regulation**

 Emigration is defined as movement from one territory to another state, town, community or territorial unit and together with immigration it is part of the mechanical movement of the population (Risteski and Trpkova, 2014). Estimating number of emigrants in Macedonia is very difficult task. There is no official registry that records the number of emigrants and immigrants, no legislation that regulates this issue, and probably the most defeating moment, no official population census since 2002. There are official statistics that report the domestic and foreign migration, yet the numbers presented does not seem to confirm the real situation. People are leaving the country for decades, and there is deficit of working force in different professions, starting from doctors, nurses, accountants, engineers to builders, drivers, etc.

*Figure 5. Number of emigrants from Republic of North Macedonia according to different sources*

Source: State Statistical Office of Republic of North Macedonia, MAKStat data base and OECD database

 As presented in figure 5, number of emigrants according to National Statistical Office and OECD are significantly different. According to the author, numbers from OECD are more realistic, where approximately twenty thousand citizens are leaving the country annually in the last few years. Unfortunately, the real number of emigrants that is currently unknown might be even higher. OECD statistics are used to gain an insight of the dispersion of Macedonian emigrants across the world.

*Figure 6. Distribution of Macedonian emigrants*

Source: OECD database

 From 2000 total of 226.634 citizens have left the country. Almost half of them chose Germany as destination country. Austria, United States, Slovenia, Switzerland, Australia, Sweden, Canada are also popular between emigrants. Category Other includes more countries with smaller number of emigrants from Macedonia, such as Luxembourg, Poland, Hungary, Japan and others.

 According to the Economist Intelligence Unit (2017) 30% of the Macedonian population has emigrated, which differs significantly from the State Statistical Office estimates of 11.380 emigrated citizens in the period 1994-2013. International organizations estimate 450.000 to 630.000 emigrated citizens (20-30% of the population). One reason for this discrepancy is that e SSO only reports the citizens that have officially informed the authorities about their emigration. World Bank estimates total of 626.312 emigrants from Macedonia in 2013 which accounts 30.2% of the population. These estimates correspond with the estimates made in this paper with the number of pupils (from 2000-2017 the number of pupils in primary education is reduced by 22.8% and in secondary education is reduced by 23.3%), which is one confirmation that the number of enrolled pupils can approximately estimate the current scale of the population and its lost citizens due to emigration. After Montenegro, Bosnia and Herzegovina, Albania and Kosovo, Macedonia ranks on the fifth place according to the percentage of emigrants. UNICEF estimates 327.787 emigrants in Germany, Italy, Serbia, Switzerland and Australia by 2013. Official statistics do not report the real situation of emigration processes. The large scale of emigration is mostly economically driven, mostly due to poor business and employment opportunities. Easy access to Bulgarian EU passports makes emigration in EU easier. Remittances are one positive thing of emigration, yet the large scope of this phenomena leads to low population growth, low economic growth and it reduces the public finances.

 Comprehending the great risk that emigration brings on different segments the Government of Republic of North Macedonia in 2015 has created a resolution on migration policy for period 2015-2020. This is a comprehensive and detailed strategic document that refers to important question regarding migration such as reduction of permanent emigration, collection of relevant data for emigrants, encouragement of return migration, harmonization of the national legislation with the EU legislation etc. There is no official data of the implementation and the achieved effects of taken measures, yet the migration processes continue.

**Data, research methodology and empirical results**

To estimate the effect that the enrolled pupils have onto the emigration, the following variables were used: enrolled pupils in primary education (PRIMARY), enrolled pupils in secondary education (SECONDARY) and inflows of foreign population by Macedonian nationality (EMMIGRATION). Data are collected in annual frequency for period 2000-2016. Data sources are State Statistical Office of Republic of North Macedonia (for enrolled pupils in elementary and secondary education) and OECD International Migration Database (for number of Macedonian emigrants)

Due to the difference in the scale of the data, variables were transformed by logarithm. The equation for the multiple regression model follows:

$$logEMMIGRATION\_{i}=β\_{0}+β\_{1}logPRIMARY\_{i}+β\_{2}logSECONDARY\_{i}+ε\_{i}$$

The results of the estimated panel regressions are presented in table 1.

*Table 3. Estimated regression coefficients*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Coefficient** | **Standard error** | **t-statistics** | **Probability** |
| logPRIMARY | -2.706591 | 0.602975 | -4.488726 | 0.0005 |
| logSECONDARY | -3.345776 | 0.851695 | -3.928374 | 0.0015 |
| C | 80.81620 | 6.807317 | 11.87196 | 0.0000 |
| R-squared | 0.899043 |
| Adjusted R-squared | 0.884620 |
| Durbin-Watson statistics | 1.855309 |

Source: Author’s calculations.

Estimated model finds both variables to be statistically significant. Pupils enrolled in primary education have inverse relation with number of emigrants. As the pupils continue to decrease, the number of emigrants continuously increases. It is the same inverse relation with the pupils enrolled in secondary education. Since the variables are transformed in logarithms, the relationship is interpreted as elastic. If the number of enrolled pupils in primary school decreases by 1%, the number of emigrants will increase by 2.71%. For secondary education, for every decrease in enrolled pupils by 1% the emigration increases by 3.35%. The adjusted coefficient of determination is 88.46%, which explains that these two variables account for the major part of the variability in the number of emigrants. These findings confirm that the number of enrolled pupils are statically significant determinants of emigration and can be used as approximate estimators of further emigration.

After confirming the relationship between enrolled pupils and number of emigrants, an estimation of further number of emigrants will be calculated. Geometrical rate of growth/decline (Risteski and Tevdovski, 2009) is calculated for both primary and secondary enrolled students:

$$r\_{g}=\left(\sqrt[N-1]{\frac{y\_{N}}{y\_{1}}}-1\right)∙100$$

Geometrical rate for enrolled pupils in primary school for period 2002-2017:

$$r\_{gPRIMARY}=\left(\sqrt[16-1]{\frac{192.448}{237.581}}-1\right)∙100=-1.395\%$$

Geometrical rate for enrolled pupils in secondary school for period 2002-2017:

$$r\_{gSECONDARY}=\left(\sqrt[16-1]{\frac{71.458}{95.352}}-1\right)∙100=-1.905\%$$

Geometrical rate show the average decrease or increase of the observed variable. Average decrease in number of enrolled pupils in primary schools is 1.395% and 1.905% in enrolled pupils in secondary school. Knowing that the last official statistical data for population is from the 2002 census and counts for 2.022.547 citizens, this rates of decrease will be applied to calculate momentary estimate of the population using the formula for geometrical rate:

$-1.395=\left(\sqrt[16-1]{\frac{y\_{N}}{2.022.547}}-1\right)∙100$ $y\_{N}=y\_{2017}=1.638.326$

$-1.905=\left(\sqrt[16-1]{\frac{y\_{N}}{2.022.547}}-1\right)∙100$ $y\_{N}=y\_{2017}=1.515.722$

If the decline of the population is proportional to the decline in pupil population, current estimate shows that North Macedonia has approximately 1.515.722 to 1.638.326 citizens. The population decrease from 2002 is between 384.221 to 506.825 citizens, or on average annual basis population declines from 24.014 to 31.677 citizens. The estimates are approximate, and also correspond to one made by international organizations. The fact remains that population has declined, by 20% to 30%, and every year there are approximately 25.000-30.000 citizens that leave the country.

**Conclusion**

The motive behind this paper was to find an indicator closely connected to the national emigration, in situation where there is no official statistics, legislative or database to account for the migrations in the Republic of North Macedonia. Detailed observation of the number of enrolled pupils in primary and secondary school and their decreasing trends indicate that the population is decreasing. There are two demographical causes for declining population, reduction in birth rate or emigration. After examination of the number of live births (Figure 4) it is evident that the reduction is not as severe as is for enrolled pupils and emigrated citizens. That leads to assume that the reason for decreased population in mandatory school contingent is emigration and vice versa, the decreased pupil population is indicator of emigration. It is not by chance that the estimates of emigration in the past decades is approximately between 20-30% of total population and that from 2000-2017 number of pupils in primary education is reduced by 22.8% and in secondary education is reduced by 23.3%. Reduction in total population and reduction in the school contingent is to some extent proportional.

Regression analysis confirms that both enrolled pupils in elementary and secondary education are statistically significant variables that determine emigration. Every decline in number of enrolled students, both in primary and secondary education leads to increase in emigrant population. Using the geometrical rates of growth/decline estimations were made where the total population in 2017 is estimated to around 1.5-1.6 million citizens, total decline of approximately half a million and annual population decrease of about 30.000 thousand citizens. The State Statistical Office estimates the population of 2.075.307 citizens by the end of 2017, yet the author considers this number too optimistic.

The numbers strongly indicate that strict measures must be undertaken, either to decrease the emigrant population or the adapt to the current situation by directing the young population to professions that need more working force, while simultaneously working on better education, working conditions, better health, economic growth and other parameters that will contribute to the quality of life in the country.

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**ЕМИГРАЦИЈА ВО РЕПУБЛИКА СЕВЕРНА МАКЕДОНИЈА: ИНДИКАТОРИ И ОЦЕНКИ**

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**Апстракт**

*Емиграцијата претставува еден од најсериозните проблеми кои и се закануваат на земјата. Голем дел од популацијата ја напушта татковината во процес кој трае со декади. Последиците може да се почуствуваат преку значителниот недостаток на работна сила кај професиите како што се: доктори, друг медицински персонал, ИТ професионалци, сметководители, градежници, возачи, работници и слично. При недостаток на официјално известување за емиграцијата и имиграцијата во земјата и законодавство со кое би се регулирале овие прашања претставува тешкотија да се оцени големината на овие механички движења.*

*Овој труд нуди пристап при што се зема бројот на запишани ученици во основно и средно образование со цел да се потврди нивниот однос со бројот на емигранти и да се пресметаат оценки за тековната популација, популациското намалување во изминатите декади и просечното годишно намалување на популацијата. Со користење на регресионен модел потврдена е врската помеѓу променливите и пресметани се оценки кои се во согласност со оценките на меѓународните институции како што се Светскта Банка и ОЕЦД.*

JEL класификација: J10, J19, F22

**Клучни зборови:** емиграција, запишани ученици, геометриска стапка на раст/пад