Emigration and Gravity Theory: Application on the Western Balkans

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Abstract

The use of gravity equations for explaining international migration flows has significantly increased during the last years. The increased availability of data have allowed scholars to investigate numerous independent variables related to both the origin and the destination countries. **The main objective of this study is the empirical investigation of Western Balkan emigration flows and some of the respective social and economic determinants. The region is both a migration source for developed EU countries, and a major migratory route for Asian and African migrants.** We formulate and estimate different gravity equations for **Western Balkan migrants**. The considered explanators include shares of population with tertiary education, human development indexes as well as incomes per capita. Empirical results show a satisfactory explanatory power of the formulated models.

Keywords: International Migration, Gravity Theory, Western Balkans

1. Introduction

There is no formal definition of an international migrant, but many scholars and experts agree that an international migrant is "someone who changes his or her country of usual residence, irrespective of the reason for migration or legal status".[1] Migration decision can be influenced by both push and pull determinants. Push variables are associated with origin countries, i.e., countries from which persons emigrate. They can be related to poverty, poor living conditions, political persecution, discrimination, armed conflicts, or natural disasters. On the other hand, migrants are attracted by pull variables in destination countries, such as prospects for higher income, job opportunities, political stability, better living conditions, lack of

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[1] https://refugeesmigrants.un.org/definitions.

discrimination, etc. Migrants contribute to economic growth and poverty reduction in their home countries. Furthermore, they can stimulate foreign direct investments, trade and tourism. Migrants also impact the economies of receiving countries. They contribute to the workforce increase and fill important niches in fast-growing and declining sectors of the economy (OECD, 2014).

The main objective of this study is the empirical investigation of Western Balkan (WB) emigration factors. The paper is structured as follows. We report in section 2 important facts and figures about WB emigration and some of the respective social and economic determinants. In section 3 we provide a general overview of the gravity theory and also estimate different models for WB migration stocks. In the last section we illustrate the concluding remarks.

2. Migration Facts

The global number of international migrants was estimated to be about 281 million in 2020 or 3,6 per cent of world population. This estimation was lower by nearly 2 million than it would have been, due to COVID-19. The most important corridors are from developing countries to larger economies, including the United States, Saudi Arabia, the United Arab Emirates and Germany. Europe remains the largest continent for international migrants, receiving 87 million in 2020, or 31 per cent of the global number (IOM, 2021).

The WB includes Kosovo, Albania, Montenegro, Bosnia and Herzegovina, Serbia and North Macedonia. Actually Albania, Montenegro, Serbia and North Macedonia are potential candidates for EU membership, whereas Bosnia and Herzegovina and Kosovo are potential candidates. The WB is not only a migrant source for the European Union (EU) and other developed economies, but also one of the main migratory paths for Asians and Africans. Data from the European Border and Coast Guard Agency (Frontex) show that the number of illegal border crossings on this route fell steadily for some years after 2015, but it has started to increase again from 2019. In 2021, the number of detected irregular migrants was 61.735, or 129 per cent more than in 2020.

Figure 1. Number of illegal border crossings on the Western Balkans route. Source: European Border and Coast Guard Agency (Frontex).
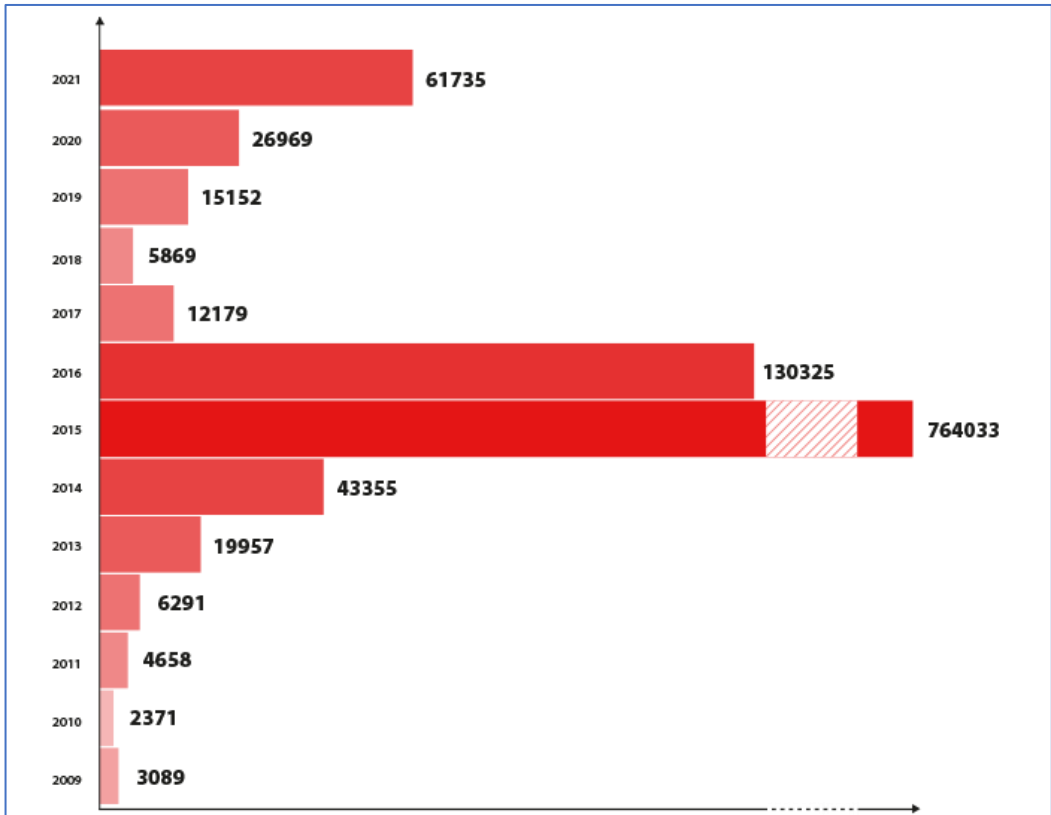
The determinants of WB emigration and the respective consequences have been studied by several authors. Maroukis and Gemi (2011) study back-and-forth migration patterns of Albanians to Greece, starting from the 1990s. Albanian circular migration to Greece has been mainly related to geographical proximity and the relative ease of entry in the destination country. Positive experience and legal channels of migration have increased the likelihood of remigration. Whereas, Efendic (2016) investigates the intentions to emigrate from Bosnia and Herzegovina, focusing both on individual and household factors, and on post-conflict influences. Empirical results show that the young, educated and poor respondents have the highest probability of emigration. Furthermore, emigration is stimulated by the post-conflict environment characterised by political and economic instability. Other lesser important determinants are household income, employment status, and perception of economic development. Blazhevska (2017) investigates the factors that contribute to the high youth emigration from Kosova. Empirical results show that the major reasons for emigrating are country instability, higher corruption levels, high unemployment and political instability. According to the author, Kosova youth would

return to their country in case of a social, economic and political improvement. Koleša (2019) studies the economic impact of WB emigrants on their countries of origin and the region. According to the author, emigrants seem involved in their countries' economies through remittances, foreign direct investment, and migrant entrepreneurship, but the overall impact on both regional and national economies is limited. Political instability and structural obstacles to development have been identified as key barriers to migrants' economic engagement in the Balkans. Nikoloski and Apostolovska-Toshevska (2019) analyze the migratory flows from North Macedonia to developed countries. The most important "push" factors include the high unemployment rate, a significant increase in poverty, and social exclusion. Empirical results confirm that emigration flows are higher for those occupations with low wage and modest employment opportunities in the domestic labour market.

Begović, Lazović-Pita, Pijalović and Baskot (2020) investigate the determinants of youth propensity to emigrate from Bosnia and Herzegovina. The study considers socio-demographic variables, satisfaction with life conditions and sentiment, government and public services. Empirical results show that young respondents are more likely to consider emigration than older ones. In addition, there is a positive effect of high level of corruption and dissatisfaction with public services on tendency to emigrate. Muço, Merko and Kılıçaslan (2021) analyze the relationship among crime, inequality, and emigration in WB countries. Empirical results show that inequality stimulates both criminality and emigration. In addition, there is a positive relation between inequality and crime. According to the authors, the levels of inequality and crime are closely related to rule of law and good governance. Topalović (2021) investigates the factors that influence emigration, particularly of young and highly educated people of the WB countries. The regression analysis indicates a statistically significant relationship between the migration indicator and indicators of economic, educational, and political system. High unemployment rate, and a poor education and political system can be considered as important push factors of emigration, whereas pull factors include higher earnings, a higher economic activity, and a better education system. Mara and Landesmann (2022) investigate the relation between human capital endowment, labour market determinants and migration from WB countries. Empirical results show the statistically significant effect of wage gaps and their changes on emigration from the region. Furthermore, gaps in human capital are an important determinant for explaining emigration into economies with relatively higher returns to human capita. Ivanov, Palamidovska-Sterjadovska, Ciunova-Shuleska, Hester, Parker and Geegan (2022) study the emigration decision of educated and young residents of North Macedonia. The main factors that stimulate emigration are institutional systems, a lack of professional opportunities and cultural tightness. Whereas, the factors that discourage the phenomena are culture, community and social responsibility.

3. The gravity model

The gravity equation is often considered as one of the most successful models in economics. In a gravity model, the size of bilateral flows depends on factors related to the origin, factors related to the destination and other factors related to the distance between areas. Tinbergen (1962) and Pöyhönen (1963) were the first scholars who proposed the gravity equation. They affirmed that trade flows between two countries are proportional to their sizes and inversely proportional to bilateral distance. Anderson (1979) provided the first theoretical foundation for the gravity equation; he explained that gravity models can be derived from the properties of expenditure system. Bergstrand (1985, 1989) adopted a similar approach to define a theoretical equation, employing a general equilibrium constraint. Since then, numerous scholars have formulated and estimated gravity models for different types of flows, related to trade, migration, tourism etc.

The number of authors who have employed the gravity theory to international migration is relatively small. Vanderkamp (1977) **formulates a set of assumptions underlying a gravity model of migration. According to the author, the gravity specification can be considered as a starting point in the investigation of migration behaviour.** Ramos and Suriñach (2017) examine past and future migration trends between EU and ENC. The authors formulate and estimate a gravity model for around 200 countries. Empirical analysis show that migration flows depend on geographical, demographic, social and economic factors. According to Poot, Alimi, Cameron and Maré (2016), the gravity model owes its success to its consistency with migration theories, and to its ease of estimation. The authors reconsider the problems of distance deterrence measurement, and parameter stability. They conclude that the gravity model of migration should be applied in a multi-regional stochastic population projection system. Karemera, Oguledo and Davis (2000) investigate the impact of economic, political and demographic factors on migration flows to North America. The authors specify a modified gravity model, including immigration regulations and characteristics associated with the destination and origin countries. Empirical results indicate that income of destination countries and populations of origin countries are two major factors of migration. The dependent variable is also influenced by the domestic restrictions on civil and political freedom in home countries. Backhaus, Martinez-Zarzoso and Muris (2015) analyze the impact of climatic variations on international migration through a gravity model. Empirical results show that temperature and changes in precipitation are positively correlated with migration. The authors conclude that the reaction of migration due to temperature changes could be driven by the agricultural dependence of a sending country.

According to Ramos (2016), the availability of bilateral migration data has permitted scholars to investigate the effect of push and pull factors that had not been considered in the past. Scholars have gathered new evidence on the role of linguistic proximity

between countries and networks. The author concludes that there are still issues that require attention such as the excess of zeros in samples and the presence of endogeneity. Zhang, Wang, Harris and Leckie (2020) suggest a new multilevel gravity model of migration to study the urban migration in China. The authors propose a new method that allows for the interconnections among migration flows. Empirical results confirm the statistical significance of population size, distance, and regional income levels. In this section, we estimate different gravity equations, including basic and new independent variables. Our response variable is the number of WB immigrants in a developed European destination at a given year. The first equation includes basic gravity variables such as populations in home and host countries and bilateral distance. The second (extended) equation includes some additional independent variables, such as GDPs per capita, a dummy variable indicating whether countries share a common border, human development indexes, and shares of population with tertiary education in origin and destination countries. We estimate the following (extended) gravity model, where positively defined variables are expressed in natural logarithm. The variables definition and expected sign are displayed in table 1.

$$mig\_ijt = \alpha_1 + \alpha_2(inc\_it) + \alpha_3(pop\_it) + \alpha_4(inc\_jt) + \alpha_5(pop\_jt)$$
$$+ \alpha_6(dist\_ij) + \alpha_7(border\_ij) + \alpha_8(hdi\_it) + \alpha_9(hdi\_jt) + \alpha_{10}(edu\_it)$$
$$+ \alpha_{11}(edu\_jt) + \varepsilon\_ijt$$

The considered dataset includes WB migrant stocks in European Union countries and the respective determinants for the years 2010-2020. The Human Development Index (HDI) is calculated by the United Nations Development Programme (UNDP). HDI is a measure of average achievement in crucial dimensions of human development: a decent standard of living, a long and healthy life, and being knowledgeable. The value is given by the geometric mean of normalized indices for each dimension. Migrant stocks are obtained from Eurostat and the Organisation for Economic Co-operation and Development (OECD). Populations and GDPs per capita are sourced from the World Bank databases, whereas bilateral distances between home and host countries are calculated by CEPII (Mayer and Zignago, 2011). The shares of population with tertiary education are obtained from OECD and the respective national statistical offices.

Table 1. Definition and expected sign of gravity model variables.

Variable	Definiton	Expected sign
mig_ijt	Migration stock in country j from origin i at year t	Dependent variable
inc_it	GDP per capita in origin i at year t	-
pop_it	Population in origin i at year t	+
inc_jt	GDP per capita in destination j at year t	+

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pop_jt	Population in destination j at year t	+
dist_ij	Distance between origin i and destination j	-
border_ij	dummy indicating whether countries share a common border	+
hdi_it	human development index in origin i at year t	+ or -
hdi_jt	human development index in destination j at year t	+
edu_it	share of population with tertiary education in origin i at year t	+ or -
edu_jt	share of population with tertiary education in destination j at year t	+

Table 2 shows the main estimation results for the different gravity equations. We have formulated two econometric models. Furthermore, we have applied two different estimation techniques for panel data: fixed effects and random effects. In a fixed effects (FE) estimation, the unobserved variables can have a relation with the observed variables. In such case we control for the effects of time-independent explanators with time-independent effect. Whereas, in a random effects (RE) model, we assume absence of correlation between the unobserved variables and the observed variables. This method allows the estimation of variables which do not vary with time. RE is the estimation method that presents the best fit to the sample. Estimation results confirm the statistical significance of both 'standard' and new independent variables. In addition, coefficients magnitude and sign are in line with theoretical expectations. The adjusted R-squared varies from nearly 46 percent to 73 percent, showing a satisfactory explanatory power of the formulated models. Estimation results are similar to many past empirical studies (e.g., Karemera, Oguledo and Davis, 2000; Ramos and Suriñach, 2016; Poprawe, 2015)

Table 2. Estimation results.

Response v.: mig_ijt	model I (FE)	model II (FE)	model III (RE)	model IV (RE)
pop_it	1,19***	1,15***	1,22***	1,19***
pop_jt	1,01***	0,97***	1,11***	1,13***
dist_ij			-2,29***	-2,55***
inc_it		0,021		-1,62***
inc_jt		0,268***		1,49***
border_ij				0,56***
hdi_it		-0,04		0,49***

hdi_jt		0,54*		0,61**
edu_it		0,031**		0,056***
edu_jt		-0,11		0,091***
Adjusted R2	0,461	0,488	0,653	0,729
N	1650	1650	1650	1650
*Note: * p < 0,10; ** p < 0,05; *** p < 0,01.*				

4. Final remarks

The main objective of this study was the empirical investigation of WB emigration flows and some of the respective social and economic determinants. The region is both a migration source for developed EU countries, and a major migratory route for Asians and African migrants. The number of illegal border crossings fell steadily after 2015, but it has started to increase again from 2019. Empirical results showed that migrant stocks are positively related to total populations, income in host countries, existence of a common border, human development indexes, and shares of population with tertiary education in origin and destination countries. On the other hand, the response variable is negatively related with incomes in origin countries and bilateral distances. Governments of WB countries should implement drastic reforms in order to promote the economic activity, speed up the process of *European integration, and minimize emigration.*

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