THE IMPACT OF INSTITUTIONAL FACTORS ON BILATERAL MIGRATION: THE GRAVITY APPROACH

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ABSTRACT: *We explore the impact of institutional factors on bilateral migration between the EU, the Commonwealth of Independent States (CIS), and the US by applying the gravity model of migration. We employ instrumental variables methodology (IV-PPML, IV-GMM) and a non-linear estimation approach (NLS) to test our assumptions about the spurring effect of institutional indicators on migration. Empirical results demonstrate a significantly positive effect of economic development and the legislative system on migration flows in the sample countries. However, we find that government regulation and political stability decrease migration. We also find that Russia attracts CIS migrants for cultural and institutional reasons, while the EU and the US accommodate migration for economic reasons. The crucial role of institutional development as a determinant of international migration is often overlooked in contemporary literature. We generate new insight into the contribution of the control of corruption and law, governmental regulation, political stability and democracy, and the ease of doing business on migration. Based on the results, we suggest some policy implications.*

KEYWORDS*: institutional environment, migration, political stability, government regulation, gravity approach, instrumental variables*

INTRODUCTION

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The present body of economic literature professes that institutional development contributes to diverse economic growth (Acemoglu et al. 2012; Yeboua 2021), greater export earnings, and increased capital flows. Another strand of literature finds that institutional quality can influence the migration flows of countries. Several studies show that macroeconomic factors like real GDP, trade, wages, and unemployment (Nica 2015; Ortega–Peri 2013) work as the key determinants of migration. However, several other empirical findings argue that institutional factors in terms of governance and regulation pertaining to socioeconomic affairs affect cross-country migration (Dibeh et al. 2018; Nejad–Young 2014; Poprawe 2015). For instance, Dibeh and colleagues (2018) confirm the impact of institutional quality on both regular and irregular migration decisions. Poprawe (2015) also documents that corruption serves as a push factor that contributes to migration outflows. Meanwhile, Nejad and Young (2014) find that the state of women's rights drives high-skilled migration.

We observe that the present body of literature contains inconclusive outcomes regarding institutional development in terms of the socioeconomic regulatory framework and cross-country migration nexus. Some studies state that the European Union (EU), the Commonwealth of Independent States (CIS), and the United States of America (US) are the three biggest and most popular immigration destinations. These regions greatly diverge in terms of socioeconomic regulatory compliance. The US and the European Union have the most developed institutional environment, which is reflected in their positions on global indicators of institutional quality (WIPO 2021). The economic development of these countries predetermines their institutional leadership (Kunčič 2014). We observe that the business environment (the US) and rule of law (the EU) are the most significant institutional peculiarities that help these countries attract migrants (WIPO 2021). Poprawe (2015) and Nejad and Young (2014) argue that a developed institutional environment is one of the key drivers of increased migration. Additionally, cultural similarities play a special role in explaining migration between countries (Belot–Ederveen 2012). Recent studies document that the migration influx in the EU, the CIS and the US has received significant academic attention for several reasons. First, the EU and the CIS are the largest groups of countries, accounting for a significant share of the world's population and production. Second, the US is the top destination country for global migration. The number of migrants in the US in 2019 was close to 51 million (IOM UN MIGRATION 2021). The second most popular country for migrants in the world is Germany, an EU Member State with 16 million migrants in 2020 (ibid.). Third, the United States, the European Union, and the Russian Federation are the largest migration corridors in the world (ibid.). Given the contrasting arguments regarding the determinants of the global migration

influx and the ever-growing number of migrants in the EU, CIS, and the US, we were motivated to empirically investigate the impact of institutional factors on bilateral migration among the EU, the CIS, and the US.

We contribute to the literature in several ways. *First*, to the best of our knowledge, this is the first attempt to assess the impact of the institutional environment on bilateral migration flows considering the EU, the CIS, and the US. *Second*, to identify the determinants of migration in the EU, the CIS, and the US, we employ Poisson pseudo maximum likelihood with instrumental variables (IV-PPML), which can address the endogeneity problem, and generalized method of moments with instrumental variables (IV-GMM) and a non-linear estimation approach (NLS) for the robustness check. *Third,* our empirical results provide some new insights into the migration between the US, the EU, and the CIS. For instance, we find that the institutional environment significantly affects the bilateral migration flows among the stated regions. Control of corruption and law increase migration, especially from the CIS to the EU and the US, which emphasizes the importance of a stable institutional environment and ensuring the rights of and respect for migrants. However, we see that government regulation, political stability, and democracy deter migration flows because stringent state control over business and tight employment policy restricts indiscriminate migration. Further, we find that Russia attracts more migrants from other CIS countries due to the cultural and institutional similarities and the flexible regulations concerning doing business. Moreover, we observe that migration to the EU and the US is defined rather by economic and employment opportunities than the institutional environment.

The rest of the paper is organized as follows: the second section describes the data and methodology, the third section discusses the main results of empirical investigations, and the last section contains conclusions and policy implications.

LITERATURE REVIEW AND HYPOTHESIS STATEMENT

International migration and its determinants are widely studied in the academic literature. Numerous studies address the role of macroeconomic determinants in explaining migration flows (Ackah–Medvedev 2012; Ortega–Peri 2013; Simplice 2015; Walmsley et al. 2011). Ramos and Suriñach (2017) confirm the main assumptions of the gravity approach. They find a positive impact of the population of the origin and destination countries but the negative impact of geographical distance on migration. Several empirical studies consider the following determinants: higher average income in the country of destination

simultaneously with declining GDP per worker in the country of origin (Mayda 2007; Simpson 2017), immigration law (Nica 2015; Ortega–Peri 2013), and the skill level of employees (Walmsley et al. 2011). However, the importance of institutional factors is not supported in studies.

We focus on two strands of literature related to the institutional determinants of global migration. The first strand highlights the nexus between institutional qualities and migration flows. Nejad and Young (2014) observe the key role of the level of individual rights and choices in the phenomenon of brain drain, i.e., the migration of high-skilled workers. Similarly, Nifo and Vecchione (2014) document that skilled people migrate in pursuit of a higher quality of life, which includes the quality of institutions. Poprawe (2015) paid particular attention to the factor of corruption, proving its role in the emigration of the population from a country. Evaluating the overall effect of the institutional environment, Dibeh and colleagues (2018) highlight that institutional factors promote migration through both regular and irregular migration channels. The second strand of literature reveals that institutional development has no significant role in migration influx. Shi et al. (2017) argue that institutional factors are significant for local populations rather than for migrants. Besides this, Cui et al. (2015) point out that the magnitude of traditional institutional factors has decreased compared to the economic determinants that propel migration. Considering the contradicting conclusions revealed by prior literature, we derive our first hypothesis.

Hypothesis 1: The European Union and the United States attract migration from the Commonwealth of Independent States due to their developed institutional environment.

The issue of migration is of growing importance to the CIS, Europe, and the US. Russia is considered to be the main destination for migrants from the CIS countries (IOM UN MIGRATION 2021). Metelev (2014) documents that migration, particularly from CIS, is shaping new drivers of economic growth for Russia. However, Brunarska et al. (2014) raise doubts about the existence of a unique migration system among the former Soviet countries. They stress the increased integration of the CIS countries into the international division of labor through trade and capital mobility. Similarly, Özden and colleagues (2011) highlight the remarkable stability of international migration flows after the collapse of the Soviet Union. It is worth mentioning that migration in the CIS region is associated with several specific features, such as the scale of illegal migration and illegal employment (Ivakhnyuk 2006), as well as the role of institutional factors such as the level of corruption, personal security, and freedom of speech, which are triggers for people to migrate to another country (Bilan 2017).

Identifying the determinants of migration is especially relevant for EU countries since migration flows in this region have recently increased significantly, causing several migration crises (Bertoli et al. 2016). Buonanno (2017) considers the negative impact on trade and economic growth to be one of the damaging consequences of the European migration crisis. Thus, insight into the motives of migrants and patterns of migration may enable European countries to control migration. The US, as well as Europe, attracts highly skilled specialists from the CIS who later contribute to boosting their economies. Greenwood (2014) also identifies the essential contribution of migrants to US economic development.

We observe from the literature that, due to strong institutional development, migration from the CIS countries to the EU and the US has greatly declined. Amidst this backdrop, we are convinced that Russia attracts migrants from the CIS as the countries have cultural, ethnic, and institutional similarities due to their shared historical path dependence. We are also interested in seeing how other economic factors encourage migrants to move to the EU and the US. Accordingly, we develop our second hypothesis.

Hypothesis 2: Russia attracts more immigrants from the CIS nations due to the shared cultural and socioeconomic compliance framework, while Western economies attract migrants from the CIS due mainly for economic reasons.

DATA AND METHODOLOGY

Data description

We employ bilateral migration flows for each pair of countries as the dependent variable. Due to the peculiarities of the construction of the gravity model, migration between the origin and destination country over a given period is calculated as follows:

$$Migration_{ij} = Inflow_{ij} + Outflow_{ij}$$

where $Migration_{ij}$ is the volume of migration between two countries, $Inflow_{ij}$ is the number of people migrating from the country of origin (j) to the destination country (i), while $Outflow_{ij}$ is the reverse migration flow (from the destination country (i) to the country of origin (j)).

The data on migration flows contains both permanent (e.g., skilled or family migration) and temporary migration (e.g., temporary work, students). The

rationale for including both is the following: according to Keshri and Bhagat (2013), in contrast to permanent migration, temporary migration is often a way of improving living conditions by moving to a more developed region or country. On top of this, there are greater legal barriers to permanent migration, which makes temporary migration a more accessible alternative. People who migrate to developed countries often consider temporary work or student visas as means of gaining access to later permanent residence in a destination country. Thus, we assume that temporary migration is determined by institutional and political factors to the same or a greater extent as permanent migration.

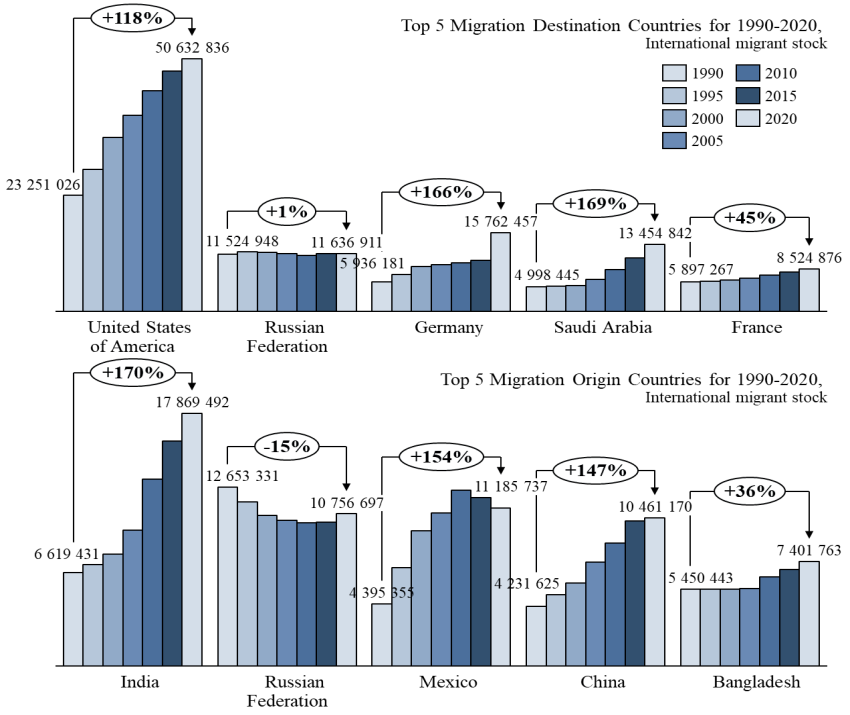
We also test the assumption that Russia attracts more migrants from CIS due to cultural and institutional similarities, while the EU and the United States are more favored for economic reasons. However, the increase in migration to Russia may further enhance migration to the EU and the US.

First, Russia is in second place among both destination and origin countries according to the total international migrant stock for the period 1990–2020 while demonstrating negligible migration flow growth (Figure 1) in comparison with the US and European countries such as Germany and France.

Second, Russia is the main direct recipient of migration flows from post-Soviet countries (Brunarska et al. 2014), which is reflected in Figure 2.

Third, the Russian Federation is characterized by spatially diffused diasporas (United Nations 2020) that facilitate migration due to the lower private costs of shifting and legal entry barriers (Beine et al. 2015).

Figure 1. *Top migration destination and origin countries by migrant stock for 1990–2020*



Source: Authors' estimations based on International Migrant Stock data (United Nations 2021)

Figure 2. *Top migration destinations of post-Soviet countries' migrants (destinations Russia, the US, and EU countries; % of CIS migrants, 2000–2015).*

Source: Authors' estimations based on International Migrant Stock data (United Nations 2021)

In our empirical setup, we employ yearly data on bilateral migration flows, the variables of the gravity migration model (total population in the countries of destination and origin and geographical distance between national capitals), control variables (presence of a shared land border, common official language, inflation rate and difference between the employment rate per 10,000 people in the country of destination and the country of origin), and institutional variables (indices of Political Stability and Democracy, Government Regulation and Control of Corruption and Law) for the US, European Union, and CIS countries. The sample includes 918 observations on unique country pairs from 2000 to 2015. Table 1 includes a detailed description of the variables.

Table 1. *Variable descriptions*

Variable	Description	Source
Migration	Bilateral migration flows for each pair of countries	Federal Statistics Service, United Nations (2021)
Population (destination)	Total population in country of destination	Penn World Table, 2021 (Univ. of Groningen 2021)
Population (origin)	Total population in country of origin	Penn World Table, 2021 (Univ. of Groningen 2021)
Distance	Geographical distance between national capitals in country of origin and country of destination	CEPII, 2021
Shared border	Dummy variable for the presence of a shared land border (0 – no land border, 1 – presence)	CEPII, 2021

Variable	Description	Source
Common language	Dummy variable for the presence of a common official language (0 - no common language, 1 - presence)	CEPII, 2021
Common ethnic groups	Dummy variable for the presence of a language spoken by at least 9% of the countries' populations (0 – no common language, 1 – presence)	CEPII, 2021
Inflation	Inflation rate in the country of destination, %	World Bank (2021)
Employment (difference)	Difference between the employment rate per 10,000 people in the country of destination and the country of origin	Authors' calculations based on Penn World Table, 2021 (Univ. of Groningen 2021)
GDP per capita (difference)	Difference in GDP per 10,000 people between the country of destination and the country of origin	World Bank (2021)
Business (ease of doing business)	Score for the ease of starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency	World Bank (2021)
Political Stability and Democracy	Calculated indicator of political stability and democracy (includes the Voice and Accountability index and Political Stability and Absence of Violence) in the country of destination	Estimated by authors based on World Bank data (World Bank 2021)
Government Regulation	Calculated indicator of government regulation (includes Regulatory Quality and Government Effectiveness indices) in the country of destination	Estimated by authors based on World Bank data (World Bank 2021)
Control of Corruption and Law	Calculated indicator of government regulation (includes Control of Corruption and Rule of Law indices) in the country of destination	Estimated by authors based on World Bank data (World Bank 2021)

Source: Compiled by the authors.

As for institutional indicators, we estimate *Political Stability and Democracy, Government Regulation, Control of Corruption and Law* indices. These are calculated as the simple averages of *Political Stability and Absence of Violence/ Terrorism* and *Voice and Accountability* indices, and *Regulatory Quality* and *Government Effectiveness* and *Control of Corruption* and *Rule of Law* indices, respectively. We employ this calculation to account for the bigger number of institutional indicators and the multicollinearity problem (Chan et al. 2022; Siegel 2016). The initial indicators were obtained by World Bank in three steps: assigning data from individual sources to the aggregate indicators, rescaling the individual source of data to run from 0 to 1, and using an unobserved components model. The resulting indicators take a value from 0 to 1, where '0' implies a low-quality institute, and '1' is high. We also employ the *Ease of doing business* score of the World Bank, which is the simple average of the scores for each of the Doing Business topics: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. Table 2. presents the descriptive statistics of the variables that were employed. According to the Jarque-Bera statistics, none of these variables are normally distributed.

Table 2. *Descriptive statistics*

	Migration	Population (destination)	Population (origin)	Distance	Shared border	Common language	Common ethnic groups	Inflation	Employment (difference)	GDP p/capita (difference)	Business	Political Stability and Democracy	Government Regulation	Control of Corruption and Law
Mean	5,41	16,36	16,80	7,60	0,14	0,02	0,03	5,25	0,03	0,65	37,09	0,76	0,71	0,62
Median	5,18	16,04	16,57	7,73	0,00	0,00	0,00	3,93	0,02	0,76	55,95	0,81	0,74	0,54
Max.	12,40	19,59	18,79	9,18	1,00	1,00	1,00	15,53	0,53	2,41	86,28	0,96	1,00	1,00
Min.	0,00	12,94	14,87	5,13	0,00	0,00	0,00	–4,48	–0,27	–1,04	0,00	0,53	0,42	0,38
Std. Dev.	2,54	1,50	1,34	0,64	0,35	0,15	0,18	4,15	0,14	0,72	36,34	0,13	0,20	0,19

	Migration	Population (destination)	Population (origin)	Distance	Shared border	Common language	Common ethnic groups	Inflation	Employment (difference)	GDP p/capita (difference)	Business	Political Stability and Democracy	Government Regulation	Control of Corruption and Law
Skewness	0,43	0,46	0,26	–0,52	2,02	6,55	5,26	0,88	0,63	–0,37	0,00	–0,47	0,02	0,59
Kurtosis	2,80	2,19	1,82	3,96	5,07	43,92	28,63	3,17	3,93	2,46	1,08	1,74	1,66	2,17
Jarque-Bera	29,36	57,86	63,88	77,36	787,13	70621,8	29361,7	120,40	93,84	32,48	140,38	95,03	69,27	80,30
Prob.	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Observations	918	918	918	918	918	918	918	918	918	918	918	918	918	918

Source: Author's own calculation.

Methodology and empirical model

To estimate the impact of various determinants on migration flows among the United States, the EU, and the CIS, we implemented a gravity approach. The gravity approach consists of applying a gravity model that includes standard migration factors – namely, the total population in the destination country, the total population in the home country, and the geographical distance between the capital cities (Poot et al. 2016). Therefore, the theoretical representation of the basic gravity model employed in this study is as follows (Equation 1):

$$Migration_{ij} = A * \frac{(PopDest_i * PopOrig_j)^{\beta_1}}{Distance\_capitals_{ij}^{\beta_2}} \quad (1)$$

where *Migration* is the volume of migration between two countries; *A* is the normalizing constant used to build a linear model (has no direct interpretation); *PopDest* is the population of the country of destination; *PopOrig* is the population of the country of origin; *Distance capitals* is the geographical distance between the capitals of the two countries, β is the regression coefficient, and *i* and *j* indicate the country of destination and origin, respectively, index *ij* indicates the country pair.

The rationale for the gravity model implementation is two-fold. First, global migration is a bilateral process, and this type of model accounts for bidirectional movements. Second, Mayda (2007) has highlighted the influence of migrants' opportunities to increase their income and geographical distance on the volume of bilateral migration flows, which are the components of a gravity model. The idea of the gravity model is that bilateral migration flows directly depend on the number of people in the countries of origin and destination and are inversely related to the distance between the countries. Vanderkamp (1977) pioneered the application of a gravity model to assess migration. Its effectiveness in explaining migration flows is supported by its application in some studies (Nejad–Young 2014; Ramos–Suriñach 2017).

To facilitate the construction and interpretation of the model, we take logarithms of the gravity model (Equation 2). In this way, we arrive at ordinary least squares (Beck 2020):

$$\ln Migration_{ij} = \ln A + \beta_1 \ln\left(PopDest_i * PopOrig_j\right) + \beta_2 \ln Distance\_capitals_{ij} + \beta_3 contig + \beta_4 comlang_{off} + \beta_5 inflation + \beta_6 Emp10k_{diff} + \beta_7 GDPpcDiff + \beta_{8i} Inst + \epsilon_{ij} \quad (2)$$

where ln*Migration* is the natural logarithm of migration volume; *A* is the normalizing constant, *PopDest* is the population of the country of destination; *PopOrig* is the population of the country of origin, ln*Distance_capitals* is logarithm of the geographical distance between the capitals of the two countries; *contig* is the land border; *comlang_off* is a common official language; *inflation* is the inflation rate; *Emp10k_diff* is the difference in employment in the two countries; *GDPpcDiff* is the difference in GDP per 10,000 people between the country of destination and the country of origin; *Inst* is a vector of institutional variables, ϵ_{ij} is the error rate, *i* and *j* indicate the country of destination and origin, respectively, and index *ij* indicates the country pair.

To test the first hypothesis, we use the overall dataset to estimate the effect of institutional variables on migration between all CIS economies and the EU and US. For the second hypothesis, we divide the dataset into two subsets. The first subset includes the data on migration from CIS (excluding Russia) to Russia, the EU, and the US. The second subset analyzes the factors influencing migration from CIS (excluding Russia) only to Western countries. Based on the estimated coefficients comparison, we test our second hypothesis.

Endogeneity problem

The quality and the level of institutions determine economic development while also being the outcome of the latter. As a result, institutional arrangements are a cause and a consequence of economic growth (Rodrik et al. 2004). The institutional environment within a country is subject to the pressure of migration as well. Gautam (2021) gave evidence for the negative effect of increased emigration on the origin country's institutions. Consequently, the problem of endogeneity appears in the models. Daude and Stein (2007) mention that the endogeneity issue arises when institutional development indicators are used in connection with subjective expert evaluations. The direction of the causal link depends on the period in focus and the region of the study (Rodríguez-Pose 2013).

To address the endogeneity problem and estimate regression based on the gravity model, we applied the Poisson pseudo maximum likelihood proposed by Silva and Tenreyro (2006) with instrumental variables (IV-PPML) as described by Windmeijer and Silva (1997). The current literature highlights several groups of instrumental variables in the context of migration: spatial, ethnic, and legal. Easterly et al. (1997) and Hall and Jones (1999) apply latitude, number of ethnic groups and religions, and the percentage of people who speak English for these instruments. La Porta et al. (1999) used legal instrument variables – namely, belonging to a particular legal system. Similarly, we introduced instrumental variables (Orefice 2010) that represent affiliation with a legal system (French, Scandinavian, German, United Kingdom), with '0' indicating unaffiliated and '1' representing belonging to a system. Further, we use as an instrumental variable the latitude of the country (Bénassy-Quéré et al. 2007), as this variable is correlated with institutional indicators but is not a factor that influences bilateral migration flows directly.

The method is adequate for gravity model estimation and, coincidently, resolves the endogeneity problem. The model is described as follows:

$$\sum_{i=1}^{n}[y_i - \exp(x_i\tilde{\beta})]x_i = 0 \tag{3}$$

where $exp(x_i \beta)$ is interpreted as the conditional expectation of y_i given x, denoted $E[y_i \mid x]$. y_i represents the dependent variable, i is the number of observations, and x_i indicates the independent variables. A correct specification of the conditional average is essential for the coherence of the assessment, i.e., $E[y_i \mid x]=exp(x_i \beta)$. Therefore, the final representation of the IV-PPML model is described in Equation 4.

$$\ln Migration_{ij} = \exp(\ln A + \beta_1 \ln(PopDest_i * PopOrig_j) + \beta_2 \ln Distance\ capitals_{ij} + \\ + \beta_3 contig + \beta_4 comlang_{off} + \beta_5 inflation + \beta_6 Emp10k_{diff} + \beta_7 GDPpcDiff + \\ + \beta_{8i} Inst + \epsilon_{ij}$$

where ln*Migration* is the natural logarithm of migration volume, *A* is the normalizing constant, *PopDest* is the population of the country of destination; *PopOrig* is the population of the country of origin; ln*Distance_capitals* is the logarithm of the geographical distance between the capitals of the two countries, *contig* is the land border, *comlang_off* is a common official language; *inflation* is the inflation rate; *Emp10k_diff* is the difference in employment in the two countries; *GDPpcDiff* is the difference in GDP per 10,000 people between the country of destination and the country of origin; *Inst* is a vector of institutional variables; ϵ_{ij} is the error rate, *i* and *j* indicate country of destination and origin, respectively, and index *ij* indicates the country pair.

As a robustness check, we applied instrumental variables regression with GMM (IV-GMM) and the non-linear NLS approach. As the PPML is derived from GMM maximum likelihood estimation, the IV-GMM is widely used in gravity models to address the bias caused by the endogenous variables (Drapkin 2020; Hansen 1982; Mariev et al. 2016). We applied NLS as it handles the non-linear structure of the data (Dennis Jr. et al. 1981) and confirms the efficiency of the IV-PPML estimator.

RESULTS AND DISCUSSION

We estimate our models by deriving three subsets of our empirical setup to test our hypotheses. The first model describes the migration processes between all the regions under consideration (the CIS, including Russia, the EU, and the US) and tests our first assumption that a higher level of institutional development in the destination country spurs migration from the origin country. The dataset comprises all country groups as the origin and destination of migration flows.

Two additional models are designed to test the second hypothesis about migration from the CIS to the US, the EU, and Russia. Considering the limitations of the econometric methods (regarding a sufficient number of observations), we first ran the regression on a subsample that represents migration from the CIS (excluding Russia) to Russia, the US, and the EU. The third model represents migration flows from the CIS (excluding Russia) only to the US and the EU. The construction of the two models allowed us to compare the slope coefficients and accept or reject the hypothesis based on the magnitude of the coefficients in the regressions.

Table 3 illustrates the estimation results for the general sample. The population in the country of origin and destination increases migration, while the distance between two countries decreases it (Poprawe 2015), which confirms the assumptions of the gravity model. The empirical evidence shows that government regulation, which includes the Regulatory Quality and Government Effectiveness indices, negatively affects migration flows, which is consistent with the findings of Nifo and Vecchione (2014). An increase in the Government Regulation index of 1 point decreases migration flow by 2.44% and indicates that a higher value of the indicator implies the greater extent of state control over business and more tight employment policy, creating constraints for labor migration. Regarding the index of Political Stability, which includes the indices of Political Stability and Absence of Violence and Voice and Accountability, it negatively and significantly affects migration. An increase in the index by 1 point decreases migration flows by 2.36%. The increasing number of immigrants to Western countries may generate greater risk to cultural and ethnic sovereignty. Therefore the EU and US tighten immigration policy to increase political stability, which decreases incoming migration flows (Alexseev–Hofstetter 2006). Coincidently, the ease of doing business indicator and employment difference are associated with a reduction in migration flows from the CIS countries by 0.001% and 0.8%, respectively. Along with the negative effect of the Political Stability and Democracy indicator, this reflects the fact that immigrants face more difficulty due to regulation and bureaucratic procedures when starting a business or finding new employment. However, greater Control of Corruption and Law increase migration by 1.365%. Coincidently, an increase in the difference in GDP per capita of countries significantly impacts migration, enhancing it by 0.499%, which finding aligns with the study of Mayda (2007). A higher level of economic development and an efficient legislative system are the main factors that attract migrants from the CIS to the EU and the US. Moreover, shared borders have a positive effect on migration and increase migration by 0.121%, as claimed by Belot and Ederveen (2012), as the absence of cultural barriers facilitates migration. Inflation negatively affects migration flows.

Table 3. *Models of factors influencing migration between the CIS (including Russia) and the EU and US*

Migration	IV-PPML		NLS		IV-GMM	
Population (destination)	0.182*** (0.010)	0.160*** (0.009)	0.813*** (0.042)	0.813*** (0.042)	0.821*** (0.048)	0.774*** (0.049)
Population (origin)	0.149*** (0.016)	0.154*** (0.015)	0.854*** (0.064)	0.871*** (0.061)	0.726*** (0.082)	0.758*** (0.070)
Distance	–0.249*** (0.023)	–0.266*** (0.023)	–1.039*** (0.097)	–1.027*** (0.096)	–1.076*** (0.101)	–1.163*** (0.106)
Shared border	0.121** (0.049)	0.033 (0.043)	0.655*** (0.196)	0.647*** (0.196)	0.607** (0.255)	0.372 (0.232)
Inflation	–0.016*** (0.005)	–0.012** (0.005)	–0.007 (0.019)	–0.007 (0.020)	–0.067*** (0.023)	–0.053** (0.022)
Employment (difference)	–0.187 (0.117)	–0.749*** (0.184)	–0.941 (0.582)	–0.783 (0.551)	–1.304** (0.588)	–3.401*** (0.943)
GDP per capita (difference)	0.408*** (0.042)	0.499*** (0.055)	1.571*** (0.159)	1.607*** (0.154)	2.057*** (0.236)	2.411*** (0.278)
Business	–0.002*** (0.001)	–0.001** (0.000)	0.002 (0.002)	0.003* (0.002)	–0.009*** (0.003)	–0.004* (0.002)
Government Regulation	–2.44*** (0.477)		–3.045*** (1.131)		–10.93*** (2.295)	
Control of Corruption and Law	1.365*** (0.376)		0.386 (0.459)		5.418*** (1.631)	
Political Stability and Democracy		–2.359*** (0.518)		–2.572*** (0.981)		–10.809*** (2.557)
Constant	–1.191** (0.486)	0.010 (0.771)	–13.65*** (1.884)	–14.201*** (1.769)	–8.470*** (2.369)	–4.161 (3.622)
Observations	808	808	808	808	808	808
R-squared			0.539	0.539	0.448	0.497
Hansen's statistics	1.640**		–		5.146**	

Source: Authors' own estimation.
*Note: *** indicates 1% significance level; ** 5% significance level; *10% significance level.*

NLS and IV-GMM models provide a robustness check of the core model represented by IV-PPML. The control variables indicated a similar outcome as the IV-PPML regression, which verified the absence of specification errors.

Almost all the predictors are significant in all the regressions and have the same signs, which affirms the validity of the results of the IV-PPML regression. For IV-GMM and IV-PPML, we calculated Hansen's J-statistics (the rejection of the null hypothesis implies that the instrumental variables do not meet the conditions required for their employment). According to the significance of the J-statistics, in the case of both regressions obtained when applying the generalized method of moments and IV-PPML, the null hypothesis may be accepted at the 5% significance level, which confirms the validity of the instrumental variables added to solve the endogeneity problem.

Table 4 displays the estimation results for the first subsample, where the origin is represented by CIS countries (excluding Russia), and the destination countries are Russia, the EU, and the US. Consequently, Table 5 covers CIS countries (excluding Russia) as the origin and the EU and the US as the destinations.

Table 4. *Models of factors influencing migration from CIS (excluding Russia) to Russia, the EU, and the US*

Migration	IV-PPML		NLS		IV-GMM	
Population (destination)	0.170*** (0.030)	0.265*** (0.015)	0.992*** (0.067)	1.102*** (0.058)	0.633*** (0.159)	1.111*** (0.064)
Population (origin)	0.039* (0.021)	0.114*** (0.026)	0.791*** (0.066)	0.982*** (0.064)	0.270** (0.107)	1.242*** (0.194)
Distance	–0.202*** (0.040)	–0.204*** (0.022)	–1.115*** (0.110)	–0.977*** (0.098)	–0.733*** (0.168)	–0.996*** (0.124)
Shared border	0.123** (0.057)	0.102** (0.049)	0.573** (0.246)	0.559** (0.231)	1.022*** (0.365)	0.406 (0.379)
Common language	0.348*** (0.092)	0.334*** (0.074)	1.919*** (0.599)	1.891*** (0.565)	1.959*** (0.671)	2.079*** (0.663)
Common ethnic groups	–0.257*** (0.080)	–0.235*** (0.069)	–1.042** (0.529)	–1.280** (0.499)	–1.610*** (0.604)	–1.726*** (0.609)
Inflation	–0.002 (0.007)	0.003 (0.006)	0.164*** (0.039)	0.065* (0.036)	–0.032 (0.058)	–0.035 (0.054)
Employment (difference)	–0.008 (0.009)	0.011*** (0.002)	–0.003 (0.014)	0.023*** (0.008)	–0.016 (0.041)	0.030*** (0.009)
GDP per capita (difference)	0.146*** (0.041)	0.156*** (0.036)	1.401*** (0.248)	1.110*** (0.232)	0.839*** (0.278)	0.689** (0.293)
Business	0.005*** (0.001)	0.002*** (0.000)	0.007*** (0.002)	0.009*** (0.002)	0.019*** (0.005)	0.014*** (0.002)

Migration	IV-PPML		NLS		IV-GMM	
Political Stability and Democracy	3.154*** (0.875)		2.011*** (0.711)		12.69*** (3.759)	
Government Regulation	–0.018** (0.008)		0.008 (0.018)		–0.151*** (0.036)	
Control of Corruption		1.364*** (0.284)		5.008*** (0.513)		10.679*** (1.836)
Constant	–2.243*** (0.562)	–3.739*** (0.604)	–18.077*** (1.874)	–23.171*** (1.776)	–9.99*** (2.785)	–27.594*** (3.326)
Observations	591	591	711	711	591	591
R-squared			0.719	0.750	0.660	0.726
Hansen's statistics	1.640**		–		5.146**	

Source: Authors' own estimations.
*Notes: *** indicates 1% significance level; ** 5% significance level; * 10% significance level.*

The regression results for the first subsample are consistent with those of the main regression (Table 3). A shared border and official language contribute to an increase in migration flows, which is especially pronounced in terms of migration from CIS countries to Russia, while a shared ethnic language negatively affects migration flows, which finding is in line with Stichnoth and Yeter (2016), who argue that that the assumption that all immigrants make their choices in an identical environment in the host country is unlikely to be true, even when controlling for individual characteristics. These cultural factors support the claim that Russia can be seen as a transit migration destination, as evidenced by Kakhkharo and colleagues (2021). It is also important for migrants from the CIS to have a higher level of political stability and a more effective legislative system, which is reflected in the positive impact of these factors on migration flows. An increase in the Political Stability and Control of Corruption indices enhance migration by 3.154% and 1.364%, respectively, while Government Regulation decreases migration flows by 0.018%.

Table 5. *Models of factors influencing migration from CIS (excluding Russia) to the EU and the US*

Migration	IV-PPML		NLS		IV-GMM	
Population (destination)	0.296*** (0.034)	0.207*** (0.012)	0.968*** (0.054)	0.934*** (0.054)	1.351*** (0.158)	1.033*** (0.058)
Population (origin)	0.162*** (0.037)	0.218*** (0.013)	1.085*** (0.069)	1.072*** (0.067)	0.778*** (0.170)	1.176*** (0.064)
Distance	–0.286*** (0.060)	–0.231*** (0.022)	–0.929*** (0.102)	–0.988*** (0.102)	–1.053*** (0.224)	–0.949*** (0.103)
Shared border	0.549*** (0.139)	0.147*** (0.046)	1.191*** (0.288)	1.132*** (0.286)	2.472*** (0.615)	1.000*** (0.276)
Inflation	–0.008 (0.013)	–0.001 (0.006)	–0.007 (0.026)	–0.001 (0.026)	–0.047 (0.051)	0.004 (0.025)
Employment (difference)	1.626*** (0.517)	0.588*** (0.195)	3.860*** (0.773)	2.728*** (0.774)	6.054*** (1.770)	3.846*** (0.865)
GDP per capita (difference)	–0.329 (0.193)	0.233*** (0.064)	1.019*** (0.214)	1.212*** (0.211)	–1.046 (0.716)	0.996*** (0.278)
Business	–0.014*** (0.004)	0.001** (0.000)	0.002 (0.002)	0.005*** (0.002)	–0.062*** (0.015)	0.005*** (0.002)
Government Regulation	–10.032*** (1.959)		–4.147*** (1.001)		–49.35*** (10.73)	
Control of Corruption and Law	7.525*** (1.549)		1.585** (0.66)		34.70*** (7.926)	
Political Stability and Democracy		–1.284** (0.639)		–5.435*** (1.241)		–5.713** (2.914)
Constant	–0.102 (1.185)	–2.773*** (0.797)	–20.103*** (1.982)	–16.915*** (1.919)	–2.042 (5.328)	–19.932*** (3.412)
Observations	596	596	596	596	596	596
R-squared			0.607	0.607	0.600	0.600
Hansen's statistics	1.64036**		-		5.14621**	

Source: Authors' own estimations.
*Note: *** indicates 1% significance level; ** 5% significance level; and * 10% significance level.*

The results reported in Table 5 confirm the gravity model propositions and the positive effect of a shared border. Moreover, the employment difference becomes significant and spurs migration by 1.626%, accounting for the joint effect of Government Regulation and Control of Corruption and Law. A better legislation system enhances migration by 7.525%. However, Government Regulation and Political Stability decrease migration flows by 10.032% and 1.284%, respectively.

Comparing the results represented in Table 4 and Table 5, we confirm our second hypothesis. The significance and positive coefficients of the GDP difference suggest that migrants from the CIS and Russia are interested in improving their financial situation when moving to the US and the EU, which claim is in line with the findings of other studies (Mayda 2007; Ortega–Peri 2013; Simpson 2017). The magnitude of the slope coefficients is higher for migration flows to the EU and the US than when including Russia as the destination point. Moreover, the coefficients for the Control of Corruption and Law indices have a greater magnitude for direct migration flows from the CIS to the EU and the US. However, in contrast to Table 4, the coefficients for the Political Stability index become negative and significant in Table 5. Some migrants have less voice and accountability, along with political rights, when migrating to Western countries (Alexseev–Hofstetter 2006), and this reduces migration flows to the US and the EU. Interestingly, the coefficient for the Government Regulation index in Table 5 is negative and of a higher magnitude than in Table 4, which suggests that stricter government regulation with the US and the EU is counterproductive in relation to migration inflows. Government Regulation in Table 4 also has a negative but insignificant effect on migration inflows, confirming that if Russia is one of the destination countries, then Government Regulation does not reduce the latter significantly. However, in relation to the ease of doing business indicator, the coefficients are of a much smaller magnitude than for other institutional factors, although migration to Russia provides more opportunities for business startups than in the EU and US. Therefore, we confirm that the reason for migrating from CIS to Russia is the cultural and institutional similarities, which also include factors that affect the ability to operate as an entrepreneur. In contrast, the EU and the US attract migrants due to their higher level of economic development, more effective legislative systems, stricter corruption control, and employment opportunities. Moreover, an increase in the distance between the capitals of the origin and destination countries decreases migration less in the model with Russia as a destination country, which supports our assumption.

The difference in GDP per capita between the CIS and the Russian Federation is less than between CIS and Europe (World Bank 2021); therefore, the living costs in Russia for a migrant from the CIS will be lower than in the EU or the

United States. In this case, transit migration is explained by the attractiveness of Western countries with higher incomes, which are the ultimate goal of migrants, and the comparative ease of transit through a third country (Düvell 2012).

CONCLUSION

Even though the primary driver of global migration is the opportunity to improve one's financial condition, and the migration choice often falls on countries with a potentially higher income for migrants (Mayda 2007; Ortega–Peri 2013; Simpson 2017), institutional arrangements largely determine the decision to migrate (Dibeh et al. 2018), especially among highly skilled labor migrants (Nejad–Young 2014).

Given the importance of institutional factors in explaining the patterns of migration, we examine their impact on bilateral migration between the CIS, EU countries, and the US by applying the gravity model of migration. To achieve robust estimation results and resolve the endogeneity problem, we analyzed the data on bilateral migration for 2000–2015, applying the Poisson pseudo maximum likelihood with instrumental variables (IV-PPML), instrumental variables regressions with GMM, and a non-linear estimator (NLS). In addition, we endeavored to assess the attractiveness of Russia for migration from the CIS to the EU and the US through the empirical setup.

The effectiveness of the implementation of a gravity model has been confirmed and provides a few noteworthy insights. First, institutional indicators have a significant effect in all models. However, a positive effect is reported only for the Control of Corruption and Law indicator, which increases migration flows between all the countries under consideration and in the subsamples. In contrast, Government Regulation and Political Stability, in most cases, have significant negative effects on bilateral migration flows. The assessment of institutional variables suggests that the impact of institutions varies significantly among different origin countries: the positive coefficient for Corruption and Law and the negative coefficient for Government Regulation are of a greater magnitude in the subsample that includes migration data from the CIS (excluding Russia) to the EU and the US. In contrast, Political Stability and Democracy have a positive effect on migration from the CIS to Russia, the EU, and the US, while the exclusion of Russia changes the coefficient in a negative direction. Moreover, the models that control corruption and law increase the magnitude of the effect of GDP per capita, highlighting the ability to ameliorate income as the driving force of migration. Second, given the model results, we confirm that CIS citizens

migrate to Russia due to the cultural and institutional similarities, which also foster business startups and entrepreneurial activity. Migrants from Russia and CIS are interested in increasing their wealth, reflected by the significance of a shared border in all the models and the primary interest of migrants.

Our results suggest that the institutional environment affects migration flows both through direct measures such as the introduction of a visa regime and work permits (or, conversely, subsidies for immigrants) and indirect factors, including the effectiveness of the legislative system, control of corruption, etc. Adjustments to the indirect factors can help regulate irregular migration flows, decreasing the attractiveness of the country to migrants. However, such policies should be targeted at specific groups of migrants, depending on their educational level and country of origin (Simpson 2017). To attract labor migrants, it is required not only to pay attention to working conditions and wages but also to improve the institutional environment, considering that the imposition of more restrictions decreases migration flows. This effect is obvious because, in countries that can guarantee the rule of law on their territory, migrants do not need to focus on human rights issues. They can concentrate on their own development and incorporation into public life.

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