THE EFFECT OF EU-ENLARGEMENT ON IMMIGRATION TO OLD EU-STATES

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Abstract

This contribution develops the traditional gravity model of immigration to estimate the effect of EU-enlargement on the old EU states. For this purpose I use the data on migration flows from newly accepted members to 7 of old EU states that covers 10-year period from 1998 till 2008. The results suggest that EU enlargement has played a significant role in the increase of migration rates to the old states. Furthermore, the variable of policy is introduced in the analysis to account for the migration restrictions that still held for NMS countries even after EU accesion.

Key words: EU Enlargement, immigration, migration policy.

INTRODUCTION

Human history is a history of migration; today there are even countries where the migrants make up more than half of the population[1]. Whether it is bad or good practice to attract more migrants has been a controversial issue that is pivotal in the migration policy of a country. The EU has been facing this dilemma for 2 decades while making decisions on the enlargement of its borders. As a result, in spite of having settled the agreement on mobility of capital, goods and services within Europe in 90s, the free movement of labor is still an issue contingent on EU membership. In 2004, the EU underwent unprecedented enlargement by 10 members that had different development levels; in fact, even Czech Republic and Slovenia which at that time could be considered the wealthiest newcomers were far beyond EU average income (Ebenhard, Rhein 2010). Although considerable research has been devoted to the ways EU enlargement influenced new and old states including the growth specifics in new states (Caporale, Giorgelis

[1] In Qatar 86,5 %, UAE - 70 %, Kuwait – 68,8 % // http://data.worldbank.org/indicator/SM.POP.TOTL.ZS

2007), mobility of production factors throughout the enlarged area (Kahanec and Zimmermann, 2009), the efficiency on the markets achieved due to post enlargement migration (Ferragina et al., 2005), rather less attention has been paid to the effect on immigration induced by EU accession. It would thus be of interest to find out the direction and scale of those effects by using the gravity model of immigration that was first applied by Tinbergen in 1962 and furthemore introduce some modifications due to emegence of new significant factors (Card, 2001). The goal of this paper is to pin down the positive causal effect of the EU enlargement on immigration rate from new to old states by applying the abovementioned model techniques.

The outline of the paper is as follows. In Section 1, I review the materials that cover some theoretical aspects of the model (Anderson 1979), (Cheng 2005) and the specifics of EU enlargement (Barrel, Rilley 2008), (Landau, Witman 2007). In Section 1, I review the literature and the research that has been done on this topic so far. In Section 2, I describe the data, construct the model and discuss the estimation strategy by comparing the pooled OLS and fixed effect estimators. In addition the ways of addressing the endogeneity in the variables of interest are covered. In Section 3, the estimation results are presented and analyzed which is followed by the conclusion in section 4 that basically confirms our assumption about the positive causal effect of EU accesion on immigration to old EU states.

1. LITERATURE REVIEW

The optimal migration policy is a crucial topic in the current economic debates and the criteria it should hinge on have been studied a lot during recent years given its barest necessity. First attempts to propose a model of immigration were made by Greenwood (1975), who introduced migrants decision making process in terms of net benefits entailed by migration, and by Borjas (1989), who discussed the characteristics of the pair countries that cause the future immigration flows pointing out the income and development gap as the focal driving force of immigration. However, neither Greenwood nor Borjas provided the estimates of migration elasticities with regard to the determinants they have brought forward in their models. With this purpose currently many economists tend to use the gravity equation as the baseline model of international migration to reveal the impact elasticities.

The nucleus of the gravity model is the Newton's law in physics that depicts the force to be proportional to the two masses and inversely proportional to the distance between them. First the

law was applied to ground the plausibility of the international trade model (Tinbergen 1962) and since then there has been a growing interest in using it as a benchmark model for the further analysis. To fortify the expediency of the model Anderson(1979) and Linnerman (1966) have provided the respective theoretical justifications stemming from the economic theory. As opposed to their views, Bergstrad (1985) believes that "the model suffers from the absence of strong theoretical foundations". In support of Bergrstrad's view, Filipinni and Molini (2003) characterize the gravity model as "facts with no underlying theoretical background". Nevertheless, it's a useful tool to pin down empirical robust results that are consistent with the facts thus posing the workhorse for empirical studies.

Currently the gravity model is used to describe not only bilateral trade flows but also immigration and foreign investments flows. Particularly, immigration is driven by the differences in the attractive economic masses and hindered by the cost of moving to another country. Many authors use the indicator of GDP per capita in a pair of countries to describe the gap in the attractive force that cause immigration and distance as proxy for the migration cost (Kahan 1978, Murayama 1991). Moreover, there are a range of other factors that are considered crucial for the analysis by different researchers. For instance, Linnemann (1966) has introduced population as another measure of country size pointing out the positive link between population of source country and number of its migrants but a negative one in case of destination country. De Rosa (2008) and Jošić (2008) find that cultural ties and sharing common history along with having the same language are among the main determinants while making decision upon the migration and thus, should enter the gravity model so as it yields consistent estimators.

Along with the revelation of migration determinants not the least of the issues researched in

Fig.1

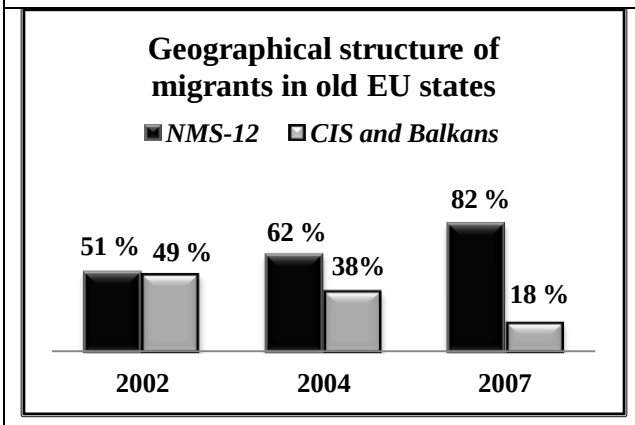
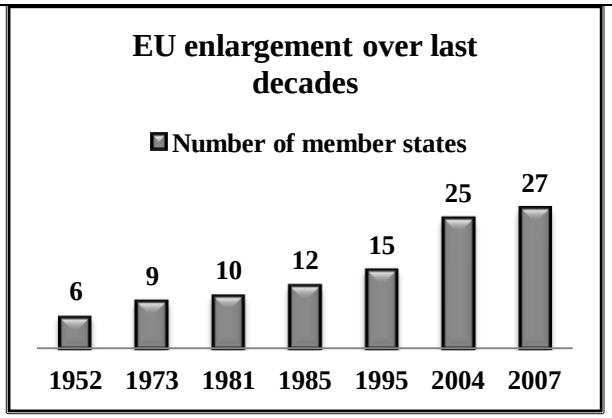


Fig.2



Source: Delbecq,Waldorf (2010)

the field still remains sensitivity of immigration flows to various policy changes. The sensitivity issue is of great interest for the EU states when making decision on the enlargement of its borders. Fig.1, Fig.2 show that after EU enlargement in 2004 and 2007 the proportion of immigrants in western EU states from new member states and CIS, Balkan countries has drastically changed in favor of the former. But still if the immigration rate increase after EU enlargement it's not necessarily caused by EU enlargement (Delbecq, Waldorf 2010). Cuaresma (2009) notes that even though new members embrace all the privileges of membership many of them still have restricted access to the labor market of Western Europe.

2. MODEL AND ESTIMATION STRATEGY

In this paper I will apply gravity equation to estimate the immigration flows to old EU states. The baseline gravity model used in the econometric literature is introduced the following way:

$$Y_{ij} = X_i^{\beta 1} X_j^{\beta 2} D_{ij}^{\beta 3} \quad (1)$$

where Y_{ij} is immigration flows from country i to country j,

X_i and X_j are GDP per capita of countries i and j (attractive forces of migration),

D_{ij} is distance between country i and j.

Moreover, I augment the model by including a range of extra variables that are significant for the estimation results to be consistent with the real life. EV_{ij} will be the vector of those variables which comprises as stated in previous section the population size in a pair of countries as well as the common border, colony and common language factors. In addition, I find it reasonable to introduce in the equation the factors of foreign population in the destination country along with the rule of law[2] to control for the institutional development in the countries. The reasoning that support additional 2 factors in the equation is that on one hand, the more there are natives of country i in country j the more people of country i will prefer country j to any other country for possible migration; on the other hand the better the institutional environment in country i as opposed to j the less migration from i to j will be. The dummy variables EU_{ij} and POL_{ij} will account for the EU membership of pair countries and the restriction of the migrants integration on the labour market. As mentioned in the previous section, despite EU membership the new

[2] Rule of law index is an index aggregated over the nine factors: limited government powers, absence of corruption, order and security, fundamental rights, open government, effective regulatory enforcement, access to civil justice, effective criminal justice, informal justice // http://worldjusticeproject.org/rule-of-law-index/download-2011-data

states of 2004 and 2007 have had restricted access to some of the old states labour markets which poses an impedement for the migration to those countries. Cuaresma (2009) states that none of EU old states relaxed the entrance restrictions on their labor markets for any of non-EU country. Thus it appears sufficient to contemplate two gravity equations: 1st one to find the causal effect of EU enlargement on immigration in old EU states, 2nd one to reveal the effect of migration policy change on the immigration flows. In both cases, the treatment group will consist of countries that have become EU members in years of 2004, 2007 and control group covers CIS and Balkan countries that are not EU members. The two gravity equations will have the following representations:

$$imm_{ijt} = \beta_0 + \beta_1 * pop_{ijt} + \beta_2 * gdp_{ijt} + \beta_3 * stock_{ijt} + \beta_4 * rlaw_{ijt} + \beta_5 * EU_{ijt} + D_{ij} + S_t + u_{ijt} \quad (2)$$

$$imm_{ijt} = \beta_0 + \beta_1 * pop_{ijt} + \beta_2 * gdp_{ijt} + \beta_3 * stock_{ijt} + \beta_4 * rlaw_{ijt} + \beta_5 * EU_{ijt} + \beta_6 * POL_{ijt} + D_{ij} + S_t + u_{ijt} \quad (3)$$

where POP_{ijt} is product of population in source country i and destination country j,

GDP_{ijt} is ratio of gdp per capita in destination country j to the gdp per capita of source country i,

$Stock_{ijt}$ is stock of natives of country i living in country j,

$Rlaw_{ijt}$ is ratio of the rule of law index in destination country j to the one of source country i,

EU_{ijt} is a dummy variable for EU-membership; equals 1 if both countries i and j are EU members, 0 - otherwise,

POL_{ijt} is migration policy dummy; equals 1 if country j has mild or no immigration restrictions for the citizens of country i, 0 – otherwise,

D_{ij} are country-pair fixed effects that don't change over time, including dummies of common language, colony, common border between countries i and j as well as the variable of distance between them;

S_t are time fixed effects that don't change over the country-pairs.

All the small letters in models (2) and (3) correspond to the logs of the above described variables.

The expected sign for all the β slope coefficients are positive. To get to that point we can assess our gravity equations by pooled OLS or fixed effect estimators. It's worth mentioning that pooled OLS would yield a biased estimators due to unobserved heterogeneity as it's likely that the explanatory variables would be correlated with the error term through time invariant omitted variables; in addition pooled OLS estimation is based on a between comparison. To

address the issue of possible endogeneity in variables the fixed effect estimator can be used since in this case the data is time-demeaned and we get rid of time invariant heterogeneity. Moreover, fixed effect estimator consistently estimate the gravity model even if we are dealing with unbalanced panel data .

The possible restrictions that we face when using fixed effect estimator is the serial correlation which makes the estimation statistics invalid. To overcome that restriction *xtregar* in Stata can be applied to make the fixed effect model consistent with the AR(1) disturbances (Brüderl 2005). Another source of endogeneity can arise because of the period effects. It may be the case that after some period the immigration from every country i to every country j increase, this kind of systematic shock will be correlated with our explanatory variables which as a result will cause endogeneity and biased fixed effect estimators. Brüdhel (2005) suggests to include time dummies for all years but one to create the so-called waves as the way of overcoming endogeneity in variables and providing unbiased FE estimators.

The current analysis is based on the data that covers the pre-accession and post-accession periods from 1998:2008. Table 1 shows which countries the sample comprises; thus in the long run we will have 1848 observations.

Table 1. Countries in the sample (Migration Analysis)

Destination country	**Source country**	
The Netherlands	Bulgaria	Croatia
Spain	Czech Republic	Macedonia
Italy	Estonia	Turkey
Austria	Cyprus	Albania
Finland	Latvia	Bosnia & Herzegovina
Sweden	Lithuania	Belarus
Germany	Hungary	Moldova
	Malta	Russia
	Poland	Ukraine
	Romania	Armenia
	Slovenia	Azerbaijan
	Slovakia	Georgia
Number of DC - 7, number of SC -24		

The data for most of the variables is taken from the Eurostat database[3], for the policy variables EU_{ijt} and POL_{ijt} I use the data[4] from European Commision report of 2009. For the data on the rule of law index , that measures the institutional development of the country, the source used is World Justice Project Database[5].

3. ESTIMATION RESULTS

In Table 2 I report two regression results from fixed effects estimation. In model (A) I use the augmented gravity equation (2) with time dummy variables and in model (B) I add to the model the variable that accounts for the restrictions on the labor markets of western European countries for NMS countries in pre and post – accession periods. First of all, the *policy* variable is introduced since irrespective of EU accession migration from NMS countries to old states still can be hindered by the range of restrictions imposed by the latter. Secondly, omitting this variable would cause omitted variable bias in the other explanatory variables as well: for instance, the immigration restrictions can be applied to those NMS countries nationals of which live in big numbers in the western European countries. Besides, the higher the gap in institutional development (the higher is value of rlaw) is the more rigid migration restrictions between those countries would be.

Turning to the results, we find in both regressions that the estimates of interest are statistically significant. The expected signs for β-s hold, yielding positive effect of *gdp, pop, stock* and *rlaw* on immigration to old states. Holding all other factors fixed in model (A) immigration increase to old states caused by EU Enlargement makes up about 61% which indicates quite solid consequences for the old states. However, in model B we see that the estimate goes down to the level of 46 % increase in immigration flows. Moreover, as we can see in the table the estimates for stock and rlaw are much higher in Model B which justifies our assumption that the respective estimates in Model A are underestimated due to omitted variable bias.

[3] http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database
[4] http://www.euractiv.com/
[5] http://worldjusticeproject.org/rule-of-law-index/

Table 2. FE-estimation results for models (2) and (3).

Log(immigration)	Model	
	(A)	**(B)**
C	- 40.4 (10.99) **	-34.7(10.91) ***
gdp	0.021 (0.011) *	0.019 (0.011) *
pop	1.274 (0.338) ***	1.100 (0.336)***
stock	0.626 (0.022) ***	0.846 (0.010) ***
rlaw	0.034 (0.166)	0.085 (0.164)
t98	- 0.233(0.060)	- 0.274 (0.060)
t99	- 0.186 (0.059)	- 0.227 (0.058)
t00	0.144 (0.062)	0.107 (0.062)
t01	0.184 (0.058)	0.136 (0.058)
t02	0.110 (0.005)	0.063 (0.057)
t03	0.176 (0.007)	0.1301 (0.059)
t05	- 0.117 (0.049)	- 0.116 (0.049)
t06	- 0.128 (0.051)	- 0.198 (0.052)
t07	- 0.069 (0.050)	- 0.133 (0.051)
t08	- 0.009 (0.051)	- 0.155 (0.052)
EU_accession	0.613 (0.044)***	0.467 (0.052)***
Policy	-----	0.305 (0.058)***
Country pairs	168	168
Total observations	1848	1848
Adjusted R^2	0.963	0.964
Time effects?*	*yes*	*yes*
Bilateral fixed effects?	*no*	*no*

Note: *,**,*** correspond to the 10%, 5%, 1% significance levels respectively
*As proposed by Brüderl (2005) we include time dummies to overcome endogeneity caused by period effects

4. CONCLUSION

Starting from 90s the European Union has adopted the policy of integration through enlargement of its borders to create the network that can break the bipolar political and economic reality of 90s. The biggest step to fulfill this goal was made in 2004 when 10 more members joined the EU. This along with the advantages brought forward a range of challenges among which the mass immigration to old states can be considered the most vital one. Thus, it's very important to find the causal effect of EU enlargement on immigration to the developed western European countries in order to develop the appropriate migration policy.

The main factors that influence the immigration to old EU states can be considered the income gap, the gap in institutional development, the stock of foreign nationals residing in those states and last but not the least the fact that a country has become an EU member.

In this paper, I have shown with the help of regression analysis that immigration to old EU states caused by EU enlargement is quite solid and despite the fact that a range of countries apply the policy of rigid restrictions for the NMS nationals to enter their labor markets still the positive causal effect of EU membership stays on a high level. These findings can be further used to work out the migration policy for old EU states that is targeted to master the mass migration issue in their countries without violation of the EU integration guidelines.

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