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EU Enlargement: Migration flows from Central and Eastern Europe into the Nordic countries - exploiting a natural experiment

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Abstract

We look at migration flows from 8 Central and Eastern European Countries (CEECs) to 5 Nordic countries over the years 1985 – 2005 and we can exploit a natural experiment that arose from the fact that while Sweden opened its labour market from the day one of the 2004 EU enlargement, the other Nordic countries chose a transition period in relation to the "new" EU members. We employ a differences-in-differences estimator in our analysis. The results show that the estimated effect of the opening of Swedish labour market in 2004 on migration is insignificantly different from zero. Further, we are interested in the overall effect of the "EU entry" on migration. Therefore we look at migration flows from CEECs during the first round EU enlargement towards CEECs in 2004 and compare them with migration flows from Bulgaria and Romania. We again used a DD estimator in our analysis. The estimated effect is positive and significant in all model specifications.

Keywords: International migration, EU enlargement.
JEL-code: J61, F22, O15

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1. Introduction

Recently, the European Union went through two significant enlargements, giving the EU 27 members. In 2004 ten Central- and Eastern European countries[1] joined the European Union, the so-called A8 countries, and Bulgaria and Romania joined the EU on January 1, 2007, the so-called A2 countries. Fearing large migration flows, the majority of the "old" member states have imposed transitional rules for the free movement of labour from the Central and Eastern European countries. The only countries that have opened their labor markets to the A8 members from the date of the EU enlargement in May 2004 were Sweden, UK and Ireland. The rest of the EU countries decided to keep the restrictions on their employment and welfare systems to the new EU entrants. In 2006, five other countries opened their labour markets: Spain, Portugal, Greece, Finland and Italy. However, the rest of the "old" EU-15 member states still hold on to the "transition period"[2].

In this paper we look at migration flows from 8 of the "new" EU countries to 5 Nordic countries over the years 1985 – 2005. Two of these countries, Iceland and Norway, are not members of the EU. They are members of the EEA, and thus have the same rules regarding labor mobility as the EU countries. One reason of why to look at migration from CEE countries to the Nordic countries is that we can exploit a natural experiment that arose from the fact that while Sweden opened its labour market from the day one of the 2004 EU enlargement, the other Nordic countries chose a transition period in relation to the "new" EU members which was an option as part of the enlargement agreement. The opening of the Swedish labour market in 2004 gives us a unique possibility to include the eventual "opening" effect into the regressions. On the basis of coefficients from our regressions, we further conduct forecasts of migration potential from CEE countries from both the "first" and the "second" round EU enlargement where the second is the entry of Bulgaria and Romania to the EU. Having data on migration from CEECs and the variation in labour market "opening" help us to avoid most of the problems that other studies had

[1] The following 10 countries have entered the EU on May 1st 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia.

[2] The "transition period" should in principle end five years after the 2004 enlargement, but it may be prolonged for additional two years in the EU member states, where "migration might threaten to cause serious disturbances on the labor market" (European Commission, 2001). All in all, the "old" EU countries can keep their labor markets restricted to the new members up to 7 years from the enlargement.

to bear, see e.g. Dustmann et al. (2003) and Fertig and Schmidt (2000) for a more detailed discussion of the problems with assessing the migration potential.

2. Literature

There is a relatively rich empirical evidence focusing on identifying migration determinants and on forecasting the possible emigration pressure from CEECs. As regards the forecasts of migration potential, there are, in general, two different approaches in the literature: surveys and econometric analyses. Surveys give estimates of CEE migration potential ranging from 6 to 30% of the populations, see e.g. Wallace (1998), Fassmann and Hintermann (1997). The usual critique of surveys is that the numbers are overestimated because only a minority of those who express an interest in migration actually migrates; see Fassmann and Hintermann (1997). Econometric analyses constitute the richest source of studies on this issue and their forecasts of CEE migration potential vary due to different modeling frameworks, estimation techniques or/and data samples. But the majority of existing studies forecast a long-run migration potential at around 3-5% of the source countries population. Taking into account out- and return migration, the net migration potential is usually estimated around 2% of source countries population, see Pytlikova (2006), and further e.g. Dustmann et al. (2003) or Alvarez-Plata et al. (2003) for a more detailed literature review.

There are, however, several problematic issues connected to those studies and their estimates. Due to data limitations, the majority of the econometric analyses have relied on out-of-sample historical data on migration[3] and/or past enlargement experience, and the estimates were further extrapolated to predict East-West migration, e.g. Bauer and Zimmermann, (1999), Boeri and Brücker (2001), Fertig (2001), Sinn et al. (2001), Alvarez-Plata et al. (2003), Zaiceva (2004). Thus, those studies assume the same migration behavior across the different countries, i.e. that migration decisions in the Central and Eastern European countries will respond to the same factors and in the same way as migration decisions in other source countries, e.g. Southern Europe or non-European countries like India and Pakistan with a very different economic and cultural background. Next, the studies assume invariance across time, i.e. that future migrations react to changes in economic factors in the same way as past migrations. Some studies try at least partly, to avoid the problems, by controlling for unobservable country-specific effects. But the country-specific effects can for obvious reasons not be used in out-of-sample predictions.

[3] I.e. migration waves from other countries than the CEECs.

Some studies therefore try to model the differences in country-specific effects by time-constant factors that are characteristic for those countries or pairs of countries[4], see e.g. Fertig (2001), Dustman et al. (2003). Nevertheless, these variables can reveal a part of the unexplained variation between the countries or pairs of countries, but cannot get rid of it completely. Therefore they still suffer from an omitted variable bias. Consequently, the forecasts based on such (double) out-of-sample estimates might be seriously biased and do not clearly remove uncertainty connected to the expected migration flows from those countries that are in focus. For a more detailed discussion of the problems with assessing the migration potential, see Dustmann et al. (2003) and Fertig and Schmidt (2000). The recent study by Pytlikova (2006) analyses East-West migration potential based on the actual Central and Eastern European migration behaviour during the years 1989 to 2000, which helps the author to avoid the problems related to out-of-sample forecasts and the assumption of invariance of migration behavior across a space. Nevertheless, due to lack of data for the recent years the author keeps the strong assumption that the migration behavior will not change with the openings of the EEA/EU-13 labor markets.

In this paper we try to get rid of the last assumption. For this purpose we enhanced the existing international migration dataset – both back and forwards in time - and collected data for the years 2000 to 2006 and the years 1985 to 1989, creating a consistent time-series for the years 1985-2006. Due to this, we are able to analyze both the effects of the fall of iron curtain and the recent 2004 enlargement on migration. We focus on Nordic destination countries because of (almost) perfect data availability[5] and the possibility of exploiting the natural experiment that happened during the 2004 EU enlargement: Sweden opened its labor market, others stayed closed.

3. Destination countries – labor markets and immigration policies

The destination countries for the migration flows we are looking at here are the five countries, consisting of the Scandinavian countries, Denmark, Norway and Sweden, and Finland and

[4] Fertig (2001) followed by Boeri and Brücker (2001), Alvarez-Plata et al. (2003) and Zaiceva (2004) estimates fixed effects in the two-step procedure, where the unobservable country-specific effects are regressed by distance, language and development index (or other time-constant variables, e.g. traveling time, neighboring country etc. in further studies). Nevertheless, the authors are able to explain only 40-50% of country-specific effects.

[5] The Nordic countries have very good register data statistics making it possible to create (almost) perfect panel of data, just few observations are missing. Obviously there are also limited data available for Estonia, Latvia, Lithuania and Slovenia for the years prior to1992.

Iceland. The migration flows from the CEECs are job related, so it should be noticed that the Nordic labor markets differ from the European average in a number of ways. Participation rates for married women are high, the public sector is a big employer, unionization is well above the European average and so is the coverage with collective agreements. The wage structure is fairly compressed, with relatively high minimum wages, and a social security system with more emphasis on universal rights and less emphasis on earnings history, compared with most other European countries.

As mentioned in the introduction, Sweden was the only Nordic country giving entry to the labor market for citizens from the CEECs on the same conditions as other EU/EEA citizens. In Denmark, citizens from the CEECs are free to enter for setting up a self-employment business, while entry to take a job is based on acceptance of an application for a residence and work permission. This is given if the person enters a full time job on conditions that are usual or conventional for the Danish labor market. The same system has in principle been applied during the whole period since entry of the CEECs to the EU. In Finland, CEECs citizens were treated as other people coming from outside the EU/EEA countries. The transition period restrictions were ended in may 2006. Iceland has followed the same course as Finland and given up the transition period restrictions in may 2006. Finally, Norway has in principle the same system as in Denmark, where firms or individuals can apply for a residence and work permit for entry into full time jobs on usual conditions relative to the Norwegian labor market.

The number of work permits issued to individual applicants from A8 countries does however not reflect the different approaches to the transition period. This is evident from Table 1.

Table 1. Cumulated number of individual work permits issued to A8 citizens between May 2004 and May 2006.

Denmark	Finland	Iceland	Norway	Sweden
10.671	5.605	5.845	41.731	10.598

Source: Dølvik and Eldring (2006).

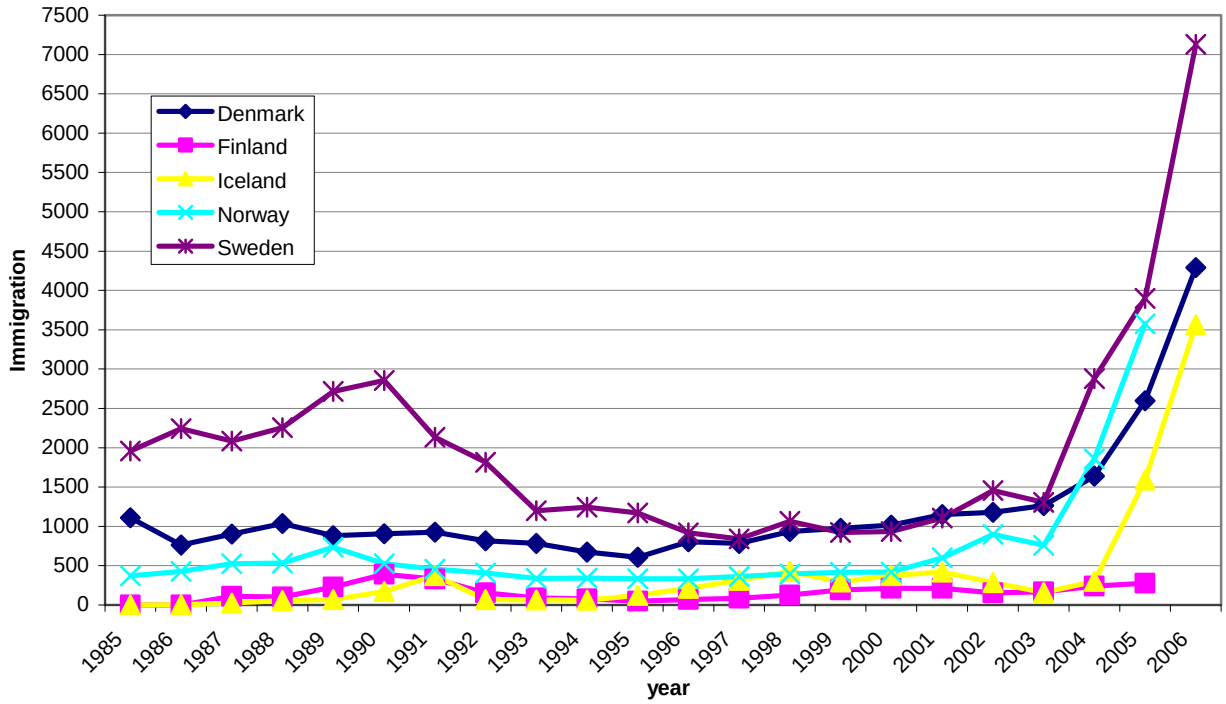
In absolute terms by far the greatest number of CEEC work permits has been given in Norway. Relative to the population in the destination country, Iceland has the greatest intake from the CEEC.

Next, we go on to look at the actual development in the migration flows from A8, from 1985 to 2006, i.e. including the last half decade before the fall of the communist regime. Under this regime, migration from the CEECs was tightly restricted and most of those who emigrated did so as political refugees. With the fall of the Iron Curtain in 1989, this situation changed and Central and Eastern Europeans became relatively free to migrate to other countries.[6] Many indeed have chosen to experience the newly acquired freedom of movement in order to improve their economic conditions or simply to experience living and working in another country without a fear of not being able to return and not to see relatives in their home countries again. The magnitude of this change is illustrated in the graphs below.

4. Development in migration flows and stocks from the CEECs

In Figure 1 we show the annual flow of migrants from four of the CEECs to the five Nordic countries since 1985. The fairly high level to Sweden prior to 1990 is most probably refugees.

Figure 1: *Immigration flows from Hungary, Poland and Czech and Slovak Republics to 5 Nordic countries. 1985-2006.*



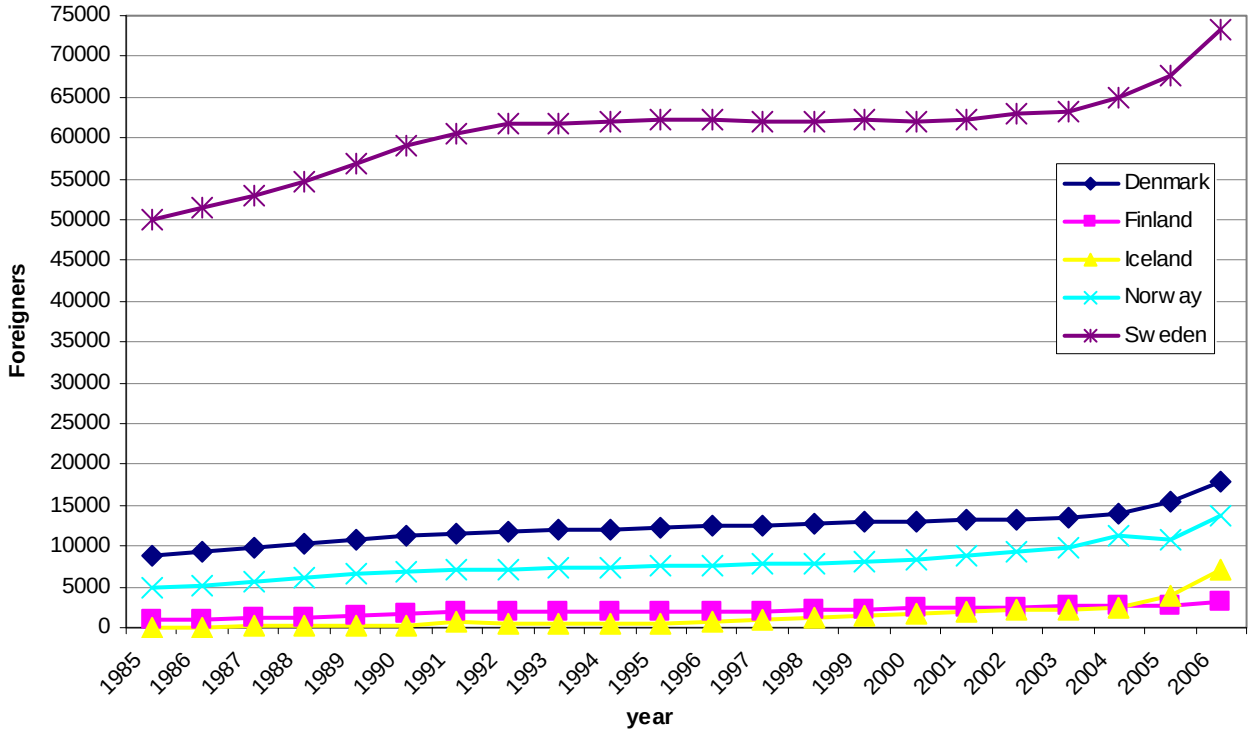
Source: National statistical offices; Own calculations.

[6] Although "degrees of freedom" and "timings of freedom" were different across those countries.

The EU entry appears in the Swedish profile as a 5-fold increase in the annual number of entrants from 2003 to 2006. For Denmark, the relative increase is a tripling, while the increase is extremely fast and big for Iceland, also considering the small native population. Until 2005, very little increase occurs with Finland as destination from those four countries of origin.

For the same four source countries, Figure 2 shows the stock of people living in each of the Nordic countries. The EU opening effect is visible, especially for Sweden.

Figure 2: *Foreign population from Hungary, Poland and Czech and Slovak Republics living in 5 Nordic countries. 1985-2006.*



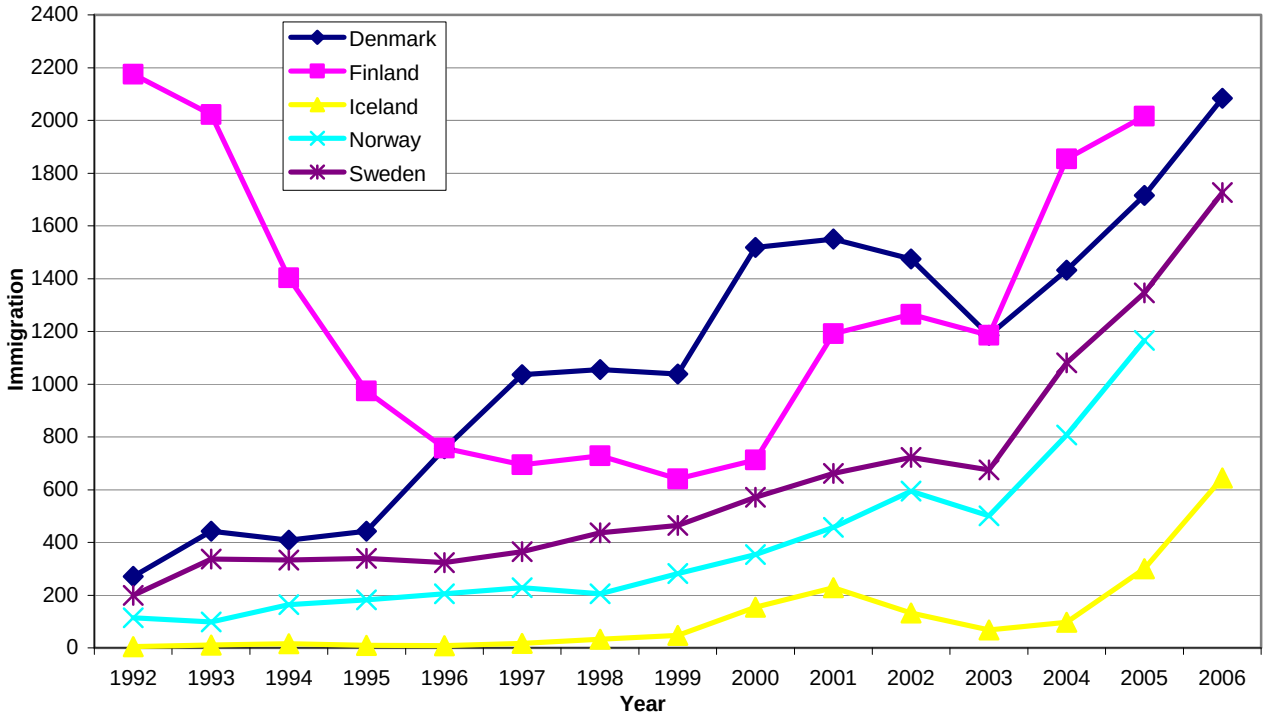
Source: National statistical offices; Own calculations.

Figure 3 shows the annual flows, not from 1985, but from 1992 for the Baltic countries and Slovenia.[7] Here Finland stands out, presumably due to geographical and historical proximity and

[7] The reason why we made separate graphs for Baltic countries and Slovenia grouped together is that in those countries the migration flow and stock numbers are registered after acquiring independence status from former USSR and Former Yugoslavia, respectively. Numbers for years prior 1991/1992 obviously do not exist. Further as regards the first half of the 1990s , there might be the situation that some people were registered into the category "former USSR" or "former Yugoslavia". Finally, the development in migration stocks might also reflect different return migration behaviour over the time.

a language close to Estonian. The strong decline in the flow to Finland in the early 1990s presumably reflects the impact from the very deep depression/recession in the Finnish economy in these years.

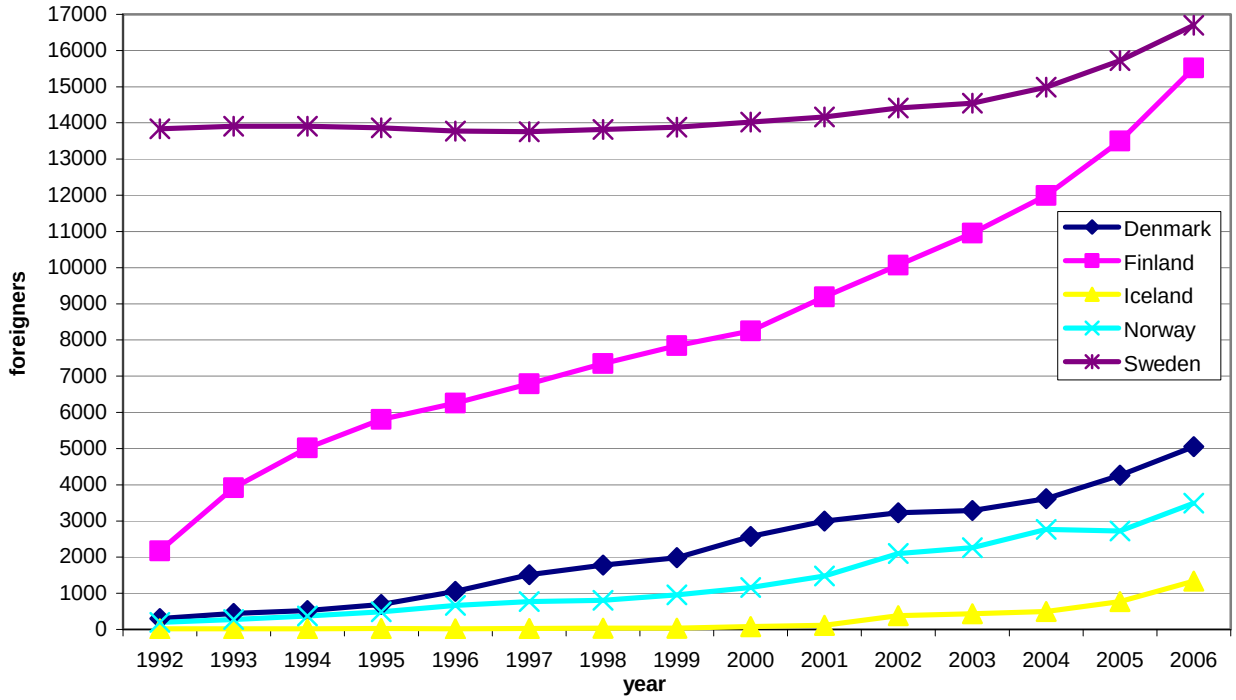
Figure 3: Immigration flows from Estonia, Latvia, Lithuania and Slovenia to 5 Nordic countries. 1992-2006.



Source: National statistical offices; Own calculations.

The development in migration flows to Finland is reflected in the development in the stock of immigrants, see Figure 4. The stock of immigrants from Estonia and the other Baltic countries is increasing at a higher speed in the beginning of the 1990s, next it remains relatively stable and finally it increases strongly again during the most recent years. We find a visible increase in both migration flows and stocks from the 4 source countries after the 2004 enlargement in all Nordic destination countries.

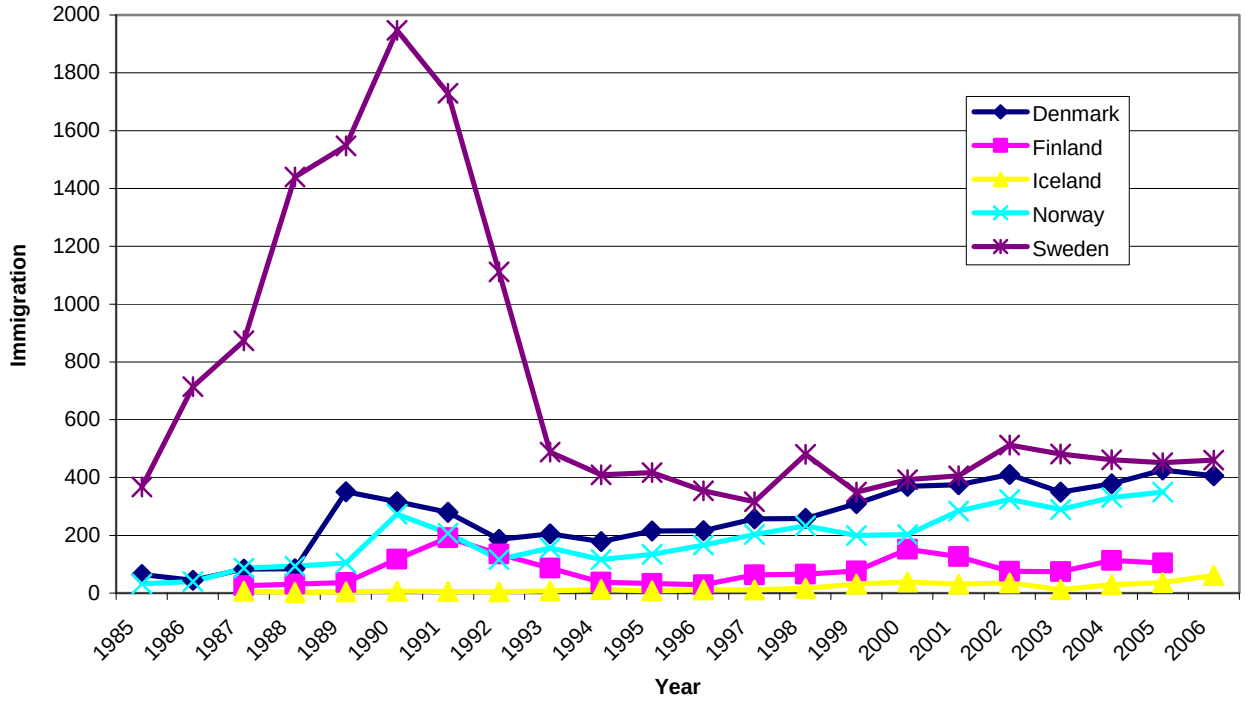
Figure 4: *Foreign population from Estonia, Latvia, Lithuania and Slovenia living in 5 Nordic countries. 1992-2006.*



Source: National statistical offices; Own calculations.

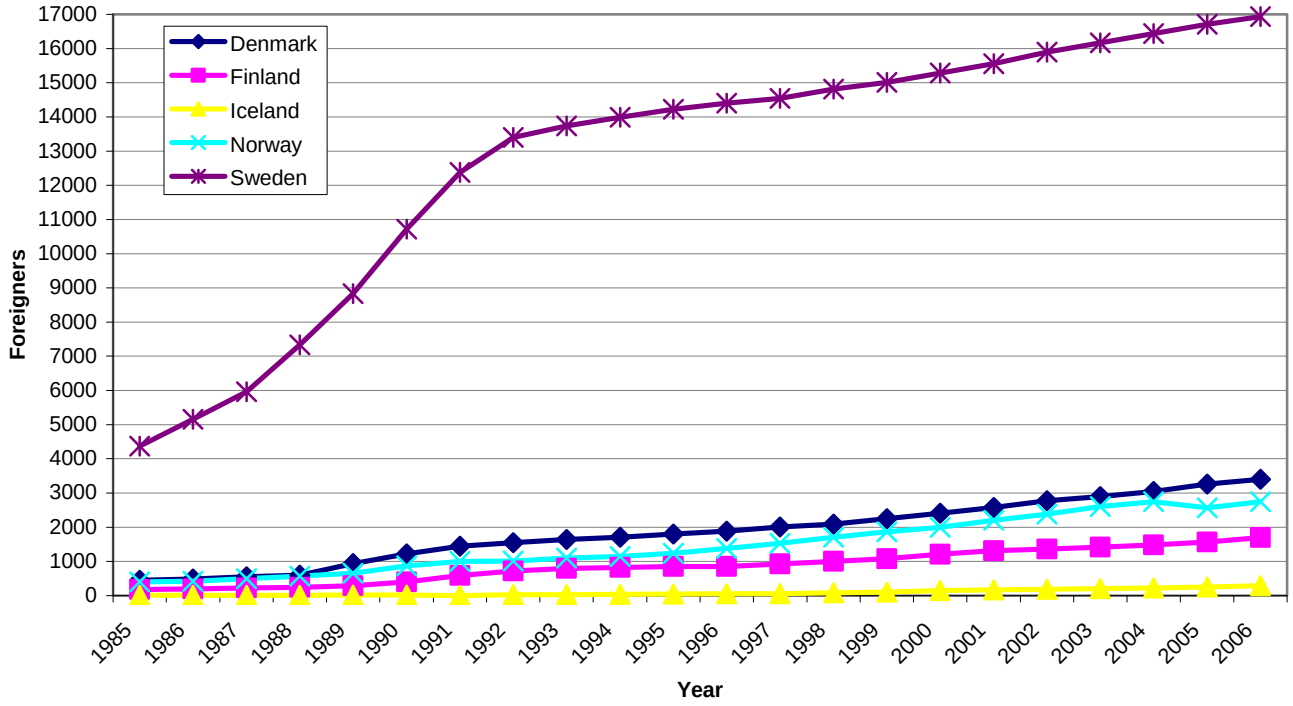
Finally, Figures 5 and 6 show development in migration flows and stocks from A2 countries to the Nordic countries. We can observe increased migration flows prior to and after the "revolutionary" year 1989, which reflects flows of refugees and an "acquired freedom of movement", respectively. These patterns are especially significant for Sweden, which can be seen also from the development in A2 foreign population. Sweden also stands out as having the largest stock of immigrants from those two countries reflecting a refugee inflow before 1990. Further, the migration flows are fluctuating around a fairly low level in all Nordic countries during the second half of the 1990s and in the 2000s. However, the stocks of A2 immigrants are increasing over time reflecting rather low return migration tendencies of Bulgarians and Romanians.

Figure 5: *Immigration flows from Bulgaria and Romania to 5 Nordic countries. 1985-2006.*



Source: National statistical offices; Own calculations.

Figure 6: *Foreign population from Bulgaria and Romania living in 5 Nordic countries. 1985-2006.*



Source: National statistical offices; Own calculations.

Table 2 shows the development in the foreign population from the CEECs as a proportion of the population in the Nordic countries. In 1990, the proportion of the population coming from A8 countries was relatively low ranging between 0,008 and 0,85 percent in Finland and Sweden, respectively. In 2006, the A8 foreign population had increased strongly in all Nordic countries, ranging between 0,38 and 2,9 percent in Norway and Iceland, respectively. As regards the last once, Iceland experienced the strongest immigration from A8 countries as a proportion of their population. The steep increase is almost entirely driven by Poles[8].

Table 2: Central and Eastern European stock of immigrants in the Nordic countries as a percentage of the destination countries' populations. 1990 and 2006.

	DENMARK		FINLAND		ICELAND		NORWAY		SWEDEN	
	1990	2006	1990	2006	1990	2006	1990	2006	1990	2006
CZECH and SLOVAK REPUBLICS, CZECHO-SLOVAKIA	0,019	0,029	0,005	0,010	0,020	0,130	0,021	0,032	0,099	0,087
HUNGARY	0,026	0,029	0,010	0,018	0,015	0,031	0,032	0,029	0,176	0,153
POLAND	0,172	0,272	0,019	0,032	0,109	2,266	0,107	0,238	0,416	0,576
ESTONIA*	0,002	0,013	0,042	0,278	0,001	0,037	0,002	0,016	0,134	0,109
LATVIA*	0,002	0,024	0,001	0,012	0,003	0,114	0,002	0,016	0,023	0,033
LITHUANIA*	0,002	0,054	0,001	0,007	0,002	0,312	0,001	0,042	0,003	0,034
SLOVENIA*	0,00002	0,002	0,00002	0,010	-	-	0,00007	0,002	0,001	0,010
Total A8	***0,22302***	***0,423***	***0,07802***	***0,367***	***0,15***	***2,89***	***0,16507***	***0,375***	***0,852***	***1,002***
BULGARIA	0,005	0,015	0,005	0,013	0,007	0,048	0,011	0,025	0,023	0,045
ROMANIA	0,019	0,048	0,003	0,020	0,0004	0,053	0,010	0,035	0,103	0,144
Total A2	***0,024***	***0,063***	***0,008***	***0,033***	***0,0074***	***0,101***	***0,021***	***0,06***	***0,126***	***0,189***
TOTAL	**0,24702**	**0,486**	**0,08602**	**0,4**	**0,1574**	**2,991**	**0,18607**	**0,435**	**0,978**	**1,191**

*Note 1: *year 1992 instead 1990*

Source: National statistical offices; Own calculations.

5. Data

The analysis is based on information on immigration flows and stocks of foreigners in 5 Nordic destination countries from 10 Central and Eastern European source countries for the years 1985–

[8] From the discussions among Polish job seekers on the Internet, the authors can see that part of the sudden migration inflows from Poland might be caused by confusion of Iceland with Ireland.

2006[9], see Appendix for a list of countries included. Besides the flow and stock information, the dataset contains a number of other time-series variables, which might help to explain the migration flows between the countries. For purposes of the current paper, only information on GDP per capita, unemployment rates, population and distance have been used. These variables were collected from different sources, e.g. OECD, the World Bank and others; see Appendix for definitions, sources of the variables and summary statistics. For a more comprehensive description of the dataset, see Pedersen et al. (2004, 2005).

5. Econometric analysis of Central and Eastern European emigration to Nordic countries

The paper estimates two different effects on migration from CEECs, the "EU enlargement" effect and "opening of labor market" effect. As regards the "EU enlargement" effect the main aspect of our estimation strategy is to compare migration flows from the countries of origin that entered the EU in 2004 with the migration flows from Bulgaria and Romania that entered the EU during the second round of enlargement towards Central and Eastern European countries in January 2007. In order to estimate the "opening of labor market" effect we compare migration flows from A8 countries into Sweden, which opened its labor market from the first day of 2004 enlargement, with migration flows into other Nordic countries, which decided to keep a transition period for their labor markets. From the methodological point of view the two events are seen as "natural experiments" and thus it is suitable to employ a differences-in-differences (DD) estimator in our analysis.

The starting point of this approach is that, other things equal, one would expect that potential emigrants in A8 countries would more likely go to the country, whose labour market has been opened up compared to other countries that keep the transition periods, i.e. meaning additional effort in getting proper documents etc. for a potential emigrant. Similarly one could also think

[9] The original OECD migration dataset covers 27 OECD destination and 129 source countries over the period of years 1989-2000, see Pedersen, Pytlikova and Smith (2004) for a detailed description of the dataset. In this paper, we restricted it to a sample of 5 Nordic destination countries and 10 CEE countries of origin For the purposes of the paper we additionally included Slovenia and extended the existing time period by the years 1985-1989 and 2001-2006.

that the EU enlargement – although many of the "old" EU15 countries kept transition periods – has had an effect on migration to those countries[10].

Opening of the Swedish labour market

In order to estimate the 2004 Swedish labor market opening we need to specify our DD model. First, we define a dummy for treatment period, which is equal to 1 for post treatment period, i.e. period after year 2004, 0 otherwise. Further we define a dummy for treatment group equal 1 if destination country is Sweden and 0 for control group consisting of all other Nordic countries. The model then has the following form:

$$\ln m_{ijt} = \beta_0 + \beta_1 Sweden + \beta_2 Post2004 + \beta_3 Sweden * Post2004 + \varepsilon_{ijt} \qquad (1)$$

where m_{ijt} denotes gross flows of migrants from country *i* to country *j* divided by the population of the country of origin *i* at time *t*[11], where $i=1,\ldots,8;\ j=1,\ldots,5$ and $t=1,\ldots,22$.

The results of the DD analysis are shown in column 1 in Table 3. Contrary to what we would expect the DD estimator attaches negative sign and it is statistically insignificant.

The simple DD estimation specification can be extended into a "regression adjusted" DD estimator by adding a matrix of destination and source countries characteristics that from a theoretical point of view are likely to affect the migration rates.

$$\ln m_{ijt} = \beta_0 + \beta_1 Sweden + \beta_2 Post2004 + \beta_3 Sweden * Post2004 + \beta_4 \ln(GDP_j / GDP_i)_{t-1} + \\ + \beta_5 \ln e_{jt-1} + \beta_6 \ln e_{it-1} + \beta_7 \ln s_{ijt-1} + \beta_8 dist_{ij} + \beta_9 neighbour + \varepsilon_{ijt} \qquad (2)$$

We include difference in earnings, which is approximated by relative differences in economic development measured by GDP per capital in PPP and enters the model as a ratio, GDP_j / GDP_i. The employment opportunities in the sending and receiving countries measured by employment rate (1-unemployment rate) are denoted as e_j and e_i respectively. Further we add a variable capturing network links between sending and receiving countries that helps to lower the costs of

[10]The intuition behind is that a potential emigrant in a source country in the pre-2004 years knew that the 2004 enlargement is approaching and therefore kept waiting with migration till the day of enlargement. Then although most of the EU countries decided to keep transition periods, he/she decided to migrate to a "dream" country anyway. It might be also due to informational imperfections, when potential emigrants do not know the immigration procedures and that some countries opened up while other kept restrictions.

[11]We estimate the model with net migration rates on the left-hand side as well, but we come back to that later on in the paper.

migrating are captured by including the normalized stock of immigrants, s_{ij}, i.e. the stock of immigrants from source country *i*, divided by population in destination country *i*. Variable $dist_{ij}$ denotes a distance in kilometers between two countries, which serves as a proxy for the direct costs of migration. Finally we add a dummy equal to 1 if two countries are neighbouring, 0 otherwise.

Table 3: Swedish labor market opening and migration flows –DD estimates of migration flows from 8 CEE source countries (i) to 5 Nordic destination countries (j), 1985-2006.

Dependent variable:	Gross flows per source country population $\ln m_{ijt}$		
Independent variables:	(1)	(2)	(3)
	OLS	OLS	OLS
Dummy Post 2004 years	1.492	0.813	0.450
	[0.214]***	[0.147]***	[0.135]***
Dummy for Sweden	1.439	0.833	0.013
	[0.189]***	[0.105]***	[0.108]
DDopen = post2004*Sweden	-0.474	-0.014	0.232
	[0.455]	[0.226]	[0.174]
lnGDP ratio *t-1*	-	1.370	0.866
		[0.182]***	[0.166]***
Employment rate *j*, $\ln(e_j)_{t-1}$	-	12.923	10.172
		[1.495]***	[1.354]***
Employment rate *i*, $\ln(e_i)_{t-1}$	-	-4.053	-2.190
		[0.858]***	[0.804]***
lnDistance	-	-2.145	-1.468
		[0.099]***	[0.106]***
Dummy for neighbours	-	-0.703	-0.294
		[0.134]***	[0.117]**
Migration stock, $\ln(s_{ij})_{t-1}$	-	-	0.280
			[0.030]***
Constant Term Included	-5.339	-31.591	-30.664
	[0.081]***	[7.986]***	[7.090]***
No. of observations	692	535	481
Adj. R-square	0.15	0.69	0.73

Notes: 10, 5 and 1% levels of confidence are indicated by *, ** and ***, respectively. Standard errors are in parentheses.

From an economic theory point of view, the relative differences in economic development and employment should be lagged in order to account for the collection of information, on which the potential immigrants base their decision to move. Further, there might be a reverse causality with respect to the effect of migration flows on earnings and employment.[12] One way to avoid the problems of endogeneity in the model is to instrument earnings and employment variables with their lags. As regards the migrants' network, the variable is endogenous, too, as in fact the stock is a function of previous stock plus migration flows minus out-migration. Therefore, all the explanatory variables enter the model as lagged.

Besides the explanatory variables covered in the model above, there are, naturally, other variables that can help to explain migration behavior and that might be included in the econometric analysis.[13] But in this paper we would like to keep the specification simple as the estimated model will be further used in forecasting exercise[14].

In column 2 of Table 3 we include all the explanatory variables mentioned above except the stock of immigrants. In column 3, the entire model is estimated. In the full model the DD estimator changed its sign, but it is still statistically insignificant.

EU enlargement effect

In the next part we would like to see how the event of the 2004 EU enlargement affected emigration from the new members. For that purposes we again use a dummy for treatment period, which is equal to 1 for post treatment period, i.e. period after year 2004 and 0 otherwise. Further we define a dummy for treatment group equal 1 if source country is one of the new EU members that enter the EU in 2004 and 0 for other CEE countries, which enter the EU in 2007, Bulgaria and Romania. The simple DD model then has the following form:

$$\ln m_{ijt} = \beta_0 + \beta_1 CEEC1 + \beta_2 Post2004 + \beta_3 CEEC1 * Post2004 + \varepsilon_{ijt} \qquad (3)$$

[12] There is another huge stream of literature that focuses on the effect of immigration on the labor market, see e.g. Chiswick (1996), Filer (1992), Hunt (1992) and Chiswick and Hatton (2002).

[13] For instance variables capturing language, cultural barriers, education, trade and other, see e.g. Karemera et al. (2000), Pedersen et al. (2004, 2005), Pytlikova (2005), Belot and Ederveen (2005) and Mayda (2005) for discussions on determinants of migration.

[14] As it is relatively difficult to make reliable predictions of other explanatory variables themselves, the model should stay as uncomplicated as possible. Moreover, the model above is typically used in previous studies assessing East-West migration potential. Thus, it is possible to compare our results with the ones from the previous studies.

And the "regression adjusted" DD estimator has the following form:

$$\ln m_{ijt} = \beta_0 + \beta_1 CEEC1 + \beta_2 Post2004 + \beta_3 CEEC1 * Post2004 + \beta_4 \ln(GDP_j / GDP_i)_{t-1} + \\ + \beta_5 \ln e_{jt-1} + \beta_6 \ln e_{it-1} + \beta_7 \ln s_{ijt-1} + \beta_8 dist_{ij} + \beta_9 neighbour + \varepsilon_{ijt} \quad (4)$$

Table 4: EU enlargement and migration flows –DD estimates of migration flows from 10 CEE source countries (i) to 5 Nordic destination countries (j), 1985-2006.

Dependent variable:	Gross flows per source country population $\ln m_{ijt}$		
	(1)	(1)	(1)
Independent variables:	OLS	OLS	OLS
Dummy Post 2004 years	0.655	0.340	0.124
	[0.375]*	[0.183]*	[0.110]
Dummy for CEEC1	0.546	-0.276	0.159
	[0.153]***	[0.153]*	[0.122]
DDenlarg = post2004*CEEC1	0.796	0.414	0.347
	[0.420]*	[0.222]*	[0.150]**
lnGDP ratio *t-1*	-	0.980	0.797
		[0.173]***	[0.148]***
Employment rate *j*, $\ln(e_j)_{t-1}$	-	12.755	9.563
		[1.362]***	[1.078]***
Employment rate *i*, $\ln(e_i)_{t-1}$	-	-4.070	-1.671
		[0.739]***	[0.637]***
lnDistance	-	-2.265	-1.444
		[0.103]***	[0.093]***
Dummy for neighbours	-	-0.429	-0.359
		[0.136]***	[0.110]***
Migration stock, $\ln(s_{ij})_{t-1}$	-	-	0.323
			[0.022]***
Constant Term Included	-5.620	-29.116	-30.348
	[0.134]***	[7.058]***	[5.452]***
No. of observations	896	670	614
Adj. R-square	0.09	0.66	0.76

Notes: 10, 5 and 1% levels of confidence are indicated by *, ** and ***, respectively. Standard errors are in parentheses.

The results in the Table 4 show that the DD estimator of interest has a statistically significant large positive effect. The result does not change across model specifications. This means that the event of the EU enlargement had a positive effect on migration from the new EU members.

6. Preliminary Conclusions

In this paper we look at migration flows from 8 of the "new" EU countries to 5 Nordic countries over the years 1985 – 2005. This enables us to exploit a natural experiment that arose from the fact that while Sweden opened its labour market from the day one of the 2004 EU enlargement, the other Nordic countries chose a transition period in relation to the "new" EU members which was an option as part of the enlargement agreement. We employ a differences-in-differences estimator in our analysis. The very preliminary results show that the estimated effect of the opening of Swedish labour market in 2004 on migration is insignificantly different from zero.

Further, we have been interested in the overall effect of the "EU entry" on migration. Therefore we looked at migration flows from CEECs during the first round EU enlargement towards CEECs in 2004 and compared them with migration flows from Bulgaria and Romania. We again used a DD estimator in our analysis. The estimated effect is positive and significant in all model specifications.

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APPENDIX:

Data

A. List of countries included in the emigration flows' analysis:

Destination countries

Denmark, Finland, Iceland, Norway, Sweden

Source countries

The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic, Slovenia

Bulgaria and Romania

B. Description and definitions of the variables used in the paper and their source:

Gross flow of migrants from country i to country j

Source: National statistical offices.

Stock of foreigners from country i in country j

Source: National statistical offices.

Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship - except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin.

Source: World Bank.

GDP per capita (constant 2000 international $) based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2000 international dollars.

Source: World Bank, International Comparison Programme database

Unemployment, total (% of total labour force): Unemployment refers to the share of the labour force that is without work but available for and seeking employment. Definitions of labour force and unemployment differ by country.

Source: World Bank: International Labour Organisation, Key Indicators of the Labour Market database.

Distance between countries – distance between capitals in km.

Source: MapInfo, own calculations.

C. Summary statistics

```
-------------------------------------------------------------------------------
-> toj = Denmark

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      flowij |       204    236.9461    368.1451          1       3627
     stockij |       204     1690.27    2943.656          1      14679
        popj |       230     5244674    103329.4    5114000    5418313
   gdppcpppj |       230     25857.6    2438.451   22459.12      30163
          uj |       220       6.625    1.782785        4.2       10.7

-------------------------------------------------------------------------------
-> toj = Finland

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      flowij |       182    128.2473     345.253          0       2134
     stockij |       202    937.5149    2184.506          0      14515
        popj |       231     5085853    105866.2    4918000    5245071
   gdppcpppj |       231    22901.84    2658.498   19319.86      27947
          uj |       220       9.405    4.196011        3.1       16.6

-------------------------------------------------------------------------------
-> toj = Iceland

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      flowij |       231    48.12554    248.4781          0       3328
     stockij |       153     227.281    695.0578          0       6572
        popj |       231    267900.6    16081.35     241000     295112
   gdppcpppj |       231    25652.88    2785.538    22081.7      31749
          uj |       220        2.75    1.483409         .4        5.3

-------------------------------------------------------------------------------
-> toj = Norway

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      flowij |       186    128.6667    286.7657          0       3265
     stockij |       231    987.8485    1652.519          3      10899
        popj |       231     4367845    142927.8    4153000    4618450
   gdppcpppj |       231    29861.16    4232.016   23638.74      35956
          uj |       220         4.1    1.188875        1.9          6

-------------------------------------------------------------------------------
-> toj = Sweden

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      flowij |       194    357.9072    645.9441          0       6347
     stockij |       214    9071.958    11241.98         78      51743
        popj |       231     8727447      210809    8350000    9024040
   gdppcpppj |       231    23505.15    2301.467   20216.25      27784
```

```
          uj |       220       5.705    2.879263        1.6       10.1

-------------------------------------------------------------------------------
-> fromi = Bulgaria

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     8391476    413344.7    7740928    8981000
   gdppcpppi |       105     6313.24     737.925   5230.276       7866
          ui |        70    14.69286    4.657931        1.7       21.4

-------------------------------------------------------------------------------
-> fromi = Czech Republ

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105    1.03e+07    55404.39   1.02e+07   1.04e+07
   gdppcpppi |        70    15244.07    1841.093   12835.33      19067
          ui |        75    5.613333    2.419757         .7        8.8


-------------------------------------------------------------------------------
-> fromi = Estonia

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     1453543    85714.11    1345005    1569000
   gdppcpppi |        95    9313.116    2231.008   6458.988      14515
          ui |        75    7.886667    4.222985         .6       13.6

-------------------------------------------------------------------------------
-> fromi = Hungary

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105    1.03e+07    157273.3   1.00e+07   1.06e+07
   gdppcpppi |       105    12211.96    1738.442   9959.218      16177
          ui |        75    7.766667    2.574214        1.7       12.1

-------------------------------------------------------------------------------
-> fromi = Latvia

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     2505644    137412.7    2300027    2684000
   gdppcpppi |       105    8293.664    1901.028   5520.783      12192
          ui |        60    12.30833    5.137509        2.3       20.6

-------------------------------------------------------------------------------
-> fromi = Lithuania

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     3580554    92651.14    3415046    3704000
   gdppcpppi |        80    9222.456    1933.679   6498.074      12864
          ui |        65    12.28462    5.709757         .3       17.4

-------------------------------------------------------------------------------
-> fromi = Poland
```

```
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105    3.82e+07    402691.9   3.72e+07   3.87e+07
   gdppcpppi |        80    9387.797    1764.593   7037.505      12505
          ui |        75    14.19333     3.66161        6.5       19.9

------------------------------------------------------------------------------
-> fromi = Romania

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105    2.26e+07    483189.9   2.16e+07   2.32e+07
   gdppcpppi |        80    6493.121    749.7474   5594.983       8236
          ui |        65    7.130769    1.652831          3       10.4

------------------------------------------------------------------------------
-> fromi = Slovak Repub

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     5333735    60030.85    5193000    5395100
   gdppcpppi |       105    10900.32     1527.99   8380.809      14722
          ui |        70    14.44286    3.628134        6.6       19.3

------------------------------------------------------------------------------
-> fromi = Slovenia

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        popi |       105     1990246    8760.032    1966800    2001700
   gdppcpppi |        80    8779.248    3324.506       1994      19269
          ui |        55    7.327273    .9982308        5.9        9.1

------------------------------------------------------------------------------
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
      distij |      1210    1499.609    845.9114       86.5       3700
   neighbour |      1210    .0909091    .2875987          0          1
```