East-West Migration in Europe, 2004 - 2015 Conclusions from Southern Enlargement *

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1 Introduction

On the 9th of October 2002 the European Commission recommended to close the accession negotiations with ten accession candidate countries: Estonia, Lithuania, Latvia, Hungary, Poland, Czech Republic, Slovenia, Slovak Republic, Malta, and Cyprus. These CEECs (Central and Eastern European countries) will join the EU on the 1st of May in 2004 preconditioned a positive national referendum. Until the end of April 2003 the people of Malta, Slovenia and Hungary already voted in favour of becoming members of the European Union.

This is a unique challenge for the current members of the European Union. Positive effects of the enlargement process are political stability, intensity of trade in goods and capital and cultural exchange. But there are also negative effects possible. Of major concern for western economies are effects on the labour markets caused by intense migration flows from the accession candidate countries into Western Europe. Especially the current economic situation provides strong incentives for migration. Moreover the agreement of free movement for workers between the countries of the European Union plays an important role in this context. The main questions are the following ones:

Which national arrangements regarding immigration should be considered in order to account not only for the existing migration potential of the CEECs but also for the circumstances on the labour markets of the receiving countries. The future migration potential is of particular interest, because after a transitional period of 7 years maximum, free movement of workers is granted. If migration pressure at this time is still very high, for instance because of a

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restrictive migration policy of the receiving countries, then the resulting migration could have serious effects on wages and employment. That is why there is a lot of interest in the question how many people will migrate.

The presented paper is organized as follows: Section 2 describes the economic situation of the CEECs. Section 3 provides an overview about migration theory and it's implications for existing empirical studies. Regarding the question how many people will migrate, most of the existing studies use historical migration experiences and transfer them on the enlargement situation in order to forecast migration flows. Methods and results of these studies are discussed. In this paper, a forecast of migration from the accession candidate countries from 2004 to 2015 is presented. It is based on the analysis of migration flows following southern enlargement. The analysis of historical migration flows is presented in section 4. In section 5 the estimated coefficients are used for forecasting migration from the first round accession candidates and it is shown which conclusions can be drawn from southern enlargement. Moreover the results of this paper are compared with the results of other existing studies. A short summary and some critical remarks finish this paper in section 6. This section also provides an answer to the question whether the available forecasts can be a basis for political decisions.

2 Economic Situation of the CEECs

In this study, the group of the CEECs consists of the following countries: Latvia, Lithuania, Slovak Republic, Czech Republic, Poland, Hungary, Estonia and Slovenia. Malta and Cyprus are not included. Both countries are small. Their economic situation is significantly better than the situation of the CEECs and not affected by a transition process in recent years. Thus, they would fall into another category and major migration flows from these countries are not expected. Bulgaria and Romania are also not included. Both these countries are not considered to be first round candidates since they will not fulfill the accession criteria until 2004. An accession in 2007 seems to be possible, provided that the fulfillment of the accession criteria can be granted.

In the opinion of the European Commission, the political situation in the CEECs has stabilized since 1997. Moreover, a considerable progress has been achieved in implementing the "aquis communautaire" of the European Union. Economically, the CEECs are functioning market economies and macroeconomic stability has been achieved.[1]

In spite of this positive development, the income differences between the accession candidates and the current EU-members are still very high. The average GDP per capita in purchasing power parities of the CEECs has reached a level of 49% of the EU-members average. But also within the group of the

[1]European Commission (2002), p. 13-20

CEECs there are significant differences in income. The lowest-income country is Latvia with 33% of the average EU-income. In contrast, Slovenia, the wealthiest country of the CEECs, has a per-capita GDP of 69% of the average EU-income. Inflation rates range from 1.3% (Lithuania) to 10.8% (Slovak Republic). According to European Commission (2002), a trend towards lower inflation can be noticed due to the establishment of independent central banks which follow up the aim of price stability. The transition process resulted in high unemployment rates in the CEECs. The average unemployment rate is 12.4%. Particularly high is the rate of unemployment in the Slovak Republic. Here the fraction of unemployed people on the overall labour force is 19.4%. Table 1 summarizes the statistical indicators of the considered CEECs.

These figures indicate, that due to the large economic differences between accession candidates and current EU-members migration is likely to take place. The question is to what extent migration flows are determined by economic and social indicators. Therefore the following section deals with migration theory and findings of empirical studies.

3 Related Literature

In this section, theories of migration behaviour and the results of empirical studies are presented. Furthermore, methodical aspects of recent studies forecasting migration from Eastern Europe are discussed. The findings are used to develop a multivariate regression model for the analysis of migration flows following southern enlargement.

3.1 Neoclassical Migration Theory

In neoclassical migration theory,[2] spatial differences in factor endowments lead to differences in labour supply and demand. Under the assumption that marginal productivities determine factor incomes, wage differentials are generated. The consequence is migration from low-wage countries to high-wage countries until the wage differential vanishes.[3] In empirical studies real wages are approximated by income per capita. In order to ensure comparability, income per capita is usually transformed by purchasing power parities. Many existing studies derive a significant, negative relationship between per capita income in the migrants' home countries and the extent of migration. As expected the per capita income of the receiving country has a positive impact on

[2] Bauer & Zimmermann (1999), p. 13; Delbrueck & Raffelhueschen (1993), p. 342; Massey et al. (1993), p. 433-435

[3] Alecke et al. (2001), p. 64

Table 1: Statistical Indicators of the Accession Candidate Countries, 2001

Country	Population in mio. inhabitants	GDP per capita in PPP (Euro)	GDP per capita in % of the EU-Average	GDP-Growth	Unemployment Rate	Inflation Rate
Czech Republic	10.2	13,300	57	3.3	8.0	4.5
Estonia	1.4	9,800	42	5.0	12.4	5.6
Hungary	10.2	11,900	51	3.8	5.7	9.1
Latvia	2.4	7,700	33	7.7	13.1	2.5
Lithuania	3.5	8,700	38	5.9	16.5	1.3
Poland	38.6	11,700	55	1.1	18.4	5.3
Slovak Republic	5.4	11,100	48	3.3	19.4	10.8
Slovenia	2.0	16,000	69	3.0	5.7	8.6
CEEC-8	73.7	11,275	49	4.1	12.4	6.0

Source: European European Commission (2002), p. 111/112 (adapted by the author)

migration.[4] Thus, migration is increasing in income differentials.

On the microeconomic level, migration is treated as an investment in human capital. The original model by Sjaastad (1962) was extended by Todaro (1969): not only income itself is considered but also the probability of achieving income. The individual aim then is to maximize expected income and, thus, expected utility. The individual migrates if the expected income in the receiving country is higher than the expected income in the home country plus migration costs. The probability of achieving income is often approximated by using unemployment or employment rates. In general, the labour market situation in the receiving country is better than that in the sending country. In this case some studies detect a significant positive relationship between labour market differentials and migration.

GDP per capita and overall unemployment rates are aggregate variables, that do not take into account the heterogeneity of migrants.

Neoclassical determinants of migration are used by Bauer & Zimmermann (1999). But Alecke et al. (2001) demonstrate that forecasts, that are based solely on per capita income and unemployment rates tend to overestimate future migration.[5] This indicates, that also socio-economic variables have to be considered.

3.2 Network Effects and Migration

The theory of network effects points out, that costs of migration are decreasing with the stock of migrants already living in the receiving country. The reason for this is the so called network effect. A network between people of the same home country is based on common culture and origin, a common language, or on their historical background. Only the first migrant has to pay the full migration costs. Every following migrant benefits from the experiences of those who are already living there. This includes advantages regarding information, finding a job, and having a social environment. Thus, material and psychological costs of migration are reduced. This in turn leads to an increased migration. An appropriate measurement of networks seems to be the number of registered migrants living in the receiving country, suggested by Straubhaar (2001). But it has to be kept in mind that migrants who already obtained the citizenship of the receiving country are not included in these numbers. From this it follows that existing networks and their effects are probably larger than suggested by the data. However, because of a lack of appropriate data, this study nevertheless uses the stock of migrants already living in the receiving country as a measure to approximate network effects.

[4] Straubhaar (2001), p. 20; Bauer & Zimmermann (1999), p. 102; Hille & Straubhaar (2001), p. 95; Fertig (2001), p. 714

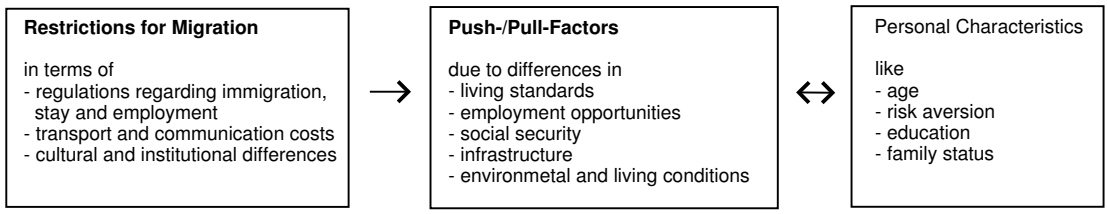
[5] Alecke et al. (2001), p. 70

3.3 Push-/ Pull-Models

These models identify various push and pull factors as the underlying forces of migration. Pull factors are positive factors of the origin or the host countries. They are the reason for people to stay in their home country or to be attracted to the receiving country. Push factors are negative factors pushing people out of the home country or preventing them to move into the receiving country. Such models integrate the above mentioned theories, because differences in income and employment as well as network effects can be considered as push or pull factors.

However push and pull factors regarding migration decisions are determined by two other aspects. On the one hand, there are existing migration barriers such as migration costs or institutional restraints, like restrictive immigration policies. On the other hand, characteristics of the individuals such as risk aversion or age play an important role in evaluating the push and pull factors. Figure 1 illustrates the context.

Figure 1: Determinants of the Migration Decision



Source: Mester (2000), p. 106-107

In empirical studies there is the problem of finding quantitative measures of the various push and pull factors. Moreover, there should be no significant correlation between the regressors of a multiple regression model in order to avoid problems of multicollinearity. In real data, however, these variables are often highly correlated, especially institutional factors. A way to deal with this problem is it to find a variable reflecting the entirety of country-specific factors that determine the migration between two countries.

Straubhaar (2001) suggests to use the distance between the capitals of the participating countries to picture cultural, geographical and institutional differences.[6] Nevertheless, he himself does not find a significant impact between distance and bilateral migration flows. Thus, it seems to be rather unlikely that country specific effects can be gathered through a distance variable. Alecke &

[6]Straubhaar (2001), p. 17

Untiedt (2001) clarify that a distance variable is only an appropriate choice in case there is a perfect collinearity among country-specific effects.[7]

Those effects can be ascertained by using a fixed or a random effects model. In both types of models, country-specific effects are constant over time. Within a fixed effects model, a correlation between country-specific effects and regressors is assumed. Some studies [8] use fixed effects models to analyze migration figures, because test results indicate that country-specific effects have a significant impact on migration. A problem appears if one intends to use a fixed effects estimation for forecasting migration flows for "out-of-sample" countries. In most studies the Eastern European countries are not included in the analyzed samples. In these cases, the country-specific effects are unknown. Fertig (2001) approaches this problem in the following way. In a first step, he estimates country-specific effects by using a fixed effects estimator. In a second regression, the influence of time-invariant variables on these effects is identified. The time-invariant variables used by Fertig (2001) are the distance between the involved countries and the value of the Human Development Index. Because both variables are known, the country-specific effects of "out-of-sample" countries can be calculated on the basis of the second regression. This approach is also used by Bruecker (2001). But it should be mentioned, that only about 60% of the variance of the estimated fixed effects can be explained.[9] Finally it can not be verified to what extend these approaches deliver a correct calculation of country-specific effects regarding out-of-sample countries or in which ways they can be an origin of additional errors [10]

3.4 Migration Measures

The question how many people will migrate can be answered using different measures of migration. Within recent studies the following measures are subject of the analysis and aim of the forecast:

- gross migration, gross migration rates
- net migration, net migration rates
- the stock of migrants in the receiving countries.

Following the advantages and disadvantages of the different measures are described.

Bauer & Zimmermann (1999) use gross migration rates for an analysis of immigration into the European Union. With this approach, a forecast of

[7] Alecke & Untiedt (2001), p. 381
[8] Alecke & Untiedt (2001);Fertig (2001);Bauer & Zimmermann (1999)
[9] Bruecker (2001), p. 36
[10] Straubhaar (2001), p. 10 and Flaig (2001), p. 70 are also critical.

temporary migration into the European Union is possible. A prediction of permanent migration is not provided by the authors.

To account for permanent migration Straubhaar (2001) looks at both gross and net migration rates from southern enlargement countries into the European Union. In his study the net migration is immigration minus emigration. The ratio of this difference and the population of the sending country in the respective year is called net migration rate. With such an approach, the different factors affecting gross migration into both directions cannot be distinguished. Bauer & Zimmermann (1999) indicate that this could lead to problems if both migration streams are correlated.[11] Coefficients for variables having the same impact on migration in both directions tend to be overestimated. Coefficients for variables with different impacts on immigration and remigration tend to be underestimated.[12]

Sinn (2001) and Bruecker et al. (2002) investigate the long-term equilibrium of the stock of migrants in the receiving countries. In the forecast the expected net migration is derived from the development of the stock of migrants. These studies predict permanent migration but do not account for temporary migration. This is a considerable disadvantage, because most of the migration from East European Countries can be expected to be of temporary nature.

In this paper I try to avoid the problems mentioned above and use a different approach. Gross migration figures for immigration and remigration between the involved countries are seperately analyzed. Regarding the Eastern European countries, expected immigration and remigration is forecasted. Thereby the stock of migrants is modeled endogenously. As a result it is possible to forecast temporary as well as permanent migration. A similar approach can be found in Vogler-Ludwig (2001).

3.5 Empirical Studies

An early attempt to quantify future East-West migration in Europe is due to Layard et al. (1992). They draw their conclusion on the basis of migration flows from Southern Europe to other European Countries and North America in the 1950s and 1960s and on migration from Mexico into the United States in the 1970s and 1980s. In their opinion, at least 3% of the population of the Eastern European population will leave their home countries.[13]

Bruecker (2001) estimates an error-correction model regarding the stock of migrants by using the seemingly unrelated regression method. The estimation is based on historical migration experiences from 18 countries to Germany from 1967 to 1998. Ten CEECs including Bulgaria and Romania are considered in

[11] Bauer & Zimmermann (1999), p. 23
[12] Brosnan (1987), p. 315
[13] Layard et al. (1992), p. 24

the forecast. According to Bruecker (2001), 15 years after the introduction of free movement for workers there will be a stock of migrants in Germany in the range of 2.0 to 2.4 million persons. The composition of migrants with respect to their country of origin is not considered. Bruecker (2001) also forecasts a long-run permanent migration of 2% to 3% of the population of the sending countries.[14]

Flaig (2001) forecasts the stock of migrants living in Germany within 15 years following EU-Enlargement. The forecasts is based on an analysis of migration flows from Greece, Italy, Portugal, Spain and Turkey into Germany. The available data covers the time period from 1974 to 1997. The forecast considers migration from Poland, Romania, Slovakia, Czech Republic and Hungary to Germany. In the high-convergence scenario, the stock of immigrants in Germany will reach a number of 2.7 million people within ten years after enlargement. According to the low-convergence scenario, their number is about 3.1 million. An average of 3% to 4% of the population of the chosen CEECs will stay permanently in Germany. Furthermore Flaig (2001) demonstrates the sensivity of the results regarding the choice of the estimation method. With a fixed effects estimation, the figure of the stock of migrants is higher than in case country-specific effects are ignored. It is also shown that the forecast results heavily depend on the intercept parameter, which is chosen or estimated. In this context, Flaig (2001) points out that the choice of the intercept term is highly arbitrary.

A forecast of gross migration rates from 7 CEECs[15] into the EU member countries is presented by Bauer & Zimmermann (1999). They analyze migration after southern enlargement for the time period from 1985 to 1997. Differences in income and employment are the only considered determinants of migration. In the analysis a fixed effects estimator is used. The sample is divided into two subsamples. The first sample covers the time when mobility for Greece (1985-1987), Portugal and Spain (1985-1991) was restricted; the second sample covers the time of free mobility. In the first sample the forecasted migration rates range from 0.22% to 4.06%. For the second sample the numbers are significantly higher. For the period of free mobility, Bauer & Zimmermann (1999) calculate migration rates between 0.13% and 27.73%.[16] Thus, restrictions to mobility matter. Extremely high migration rates are reported for Romania (more than six times as high as the migration rate calculated for the case of restricted mobility) and Bulgaria (more than seven times as high). Finally Bauer & Zimmermann (1999) point out "that it is reasonable to expect long-run emigration rates from the East to the West of between 2-3% of the population in the sending region".[17]

[14] Bruecker (2001), p. 45

[15] Poland, Czech Republic, Slovakia, Hungary, Slovenia, Romania, Bulgaria

[16] Bauer & Zimmermann (1999), p.45

[17] Bauer & Zimmermann (1999), p.46

Vogler-Ludwig (2001) analyzes gross migration in both directions between European Countries[18] and Germany from 1974 to 1997. Estimating gross migration into both directions allows for an endogenous development of the stock of migrants in the receiving countries. Furthermore the development of the population in the sending countries is taken into account. The amount of permanent migration can be shown. Also it is possible to account for temporary migration. The coefficients of an OLS estimation are used for forecasting future migration flows. Vogler-Ludwig (2001) expects a net migration into Germany of 1.1 million people from Poland, Czech Republic, Slovakia and Hungary within the period 2004 to 2015. This is a share of 1.7% of the population in the considered CEECs. The results indicate also, that there is a migration peak about 2 years after enlargement. The numbers are significantly reduced until 2010 due to raising return migration.

Straubhaar (2001) also draws conclusions from southern enlargement. He applies a gravity model, which is estimated by OLS to migration flows from Greece, Portugal and Spain to Western and Northern European Countries. On basis of the estimated coefficients, Straubhaar (2001) forecasts overall migration from eight CEECs.[19] According to Straubhaar (2001), there will be gross migration into the Western European countries about 3% to 4% and net migration about 1.5% to 2% of the population of the considered CEECs within 15 years after enlargement. In annual figures this means a gross migration of 200,000 to 250,000 persons and a net migration of 75,000 to 100,000 people. The reported range is due to different income scenarios.

Migration flows from 17 European countries to Germany from 1960 to 1994 are subject of the paper by Fertig (2001). The dependent variable is the change in the net migration rate. Fertig (2001) considers country-specific fixed effects. For the out-of-sample countries of the study those effects are estimated by using distance and Human Development Index values as regressors. Two scenarios of convergence are developed. In the optimistic scenario, the CEECs are growing at a 2% higher rate than Germany. In the pessimistic scenario, the growth rates are equal. For some candidates of the first round[20], annual net migration to Germany under the assumption of free movement would be 431,000 to 448,000. This would be an annual average of 36,000 to 37,000 people.

To summarize, a large range of migration potentials has been forecasted. Because of the diversity of the approaches (theoretical backgrounds, samples, estimation methods etc.), a comparision of the particular studies is difficult. Some studies report high migration figures, e.g. Sinn (2001), Flaig (2001), Bruecker (2001) and Vogler-Ludwig (2001). In contrast, migration figures

[18] not including Luxembourg,but including Turkey

[19] Poland, Slovenia, Czech Republic, Hungary, Slovakia, Estonia, Lithuania, Latvia

[20] Czech Republic, Estonia, Hungary and Poland.

forecasted by Bauer & Zimmermann (1999), Fertig (2001) and Straubhaar (2001) seem to be relatively low.

The following sections derive a new forecast of east-west migration on the basis of the historical migration flows after southern enlargement. It will be seen, that a number of problems arise both in the estimation and in the application of the estimated parameters for the forecast. These difficulties will become obvious during the course of the investigation and they will be subject of a deeper discussion.

4 Analysis of Historical Migration Movements

4.1 Data

The data underlying the following analysis covers a time period from 1985 to 2000. The accession countries were Spain, Portugal and Greece. Greece joined the European Union in 1981 and the accession of Spain and Portugal took place in 1986. For all countries a transitional period until the introduction of free movement for workers was agreed upon. The analysis of migration flows between these accession countries and the members of the European Union[21] fulfills two necessary requirements. Firstly, migration was not restricted between the southern enlargement countries and the EU-members.[22] Secondly, the situation of the former accession candidate countries shall be as similar as possible to the situation of the accessing CEECs.

4.2 The Regression Model

The variables that are considered in the regression model are presented in Table 2.

The index i denotes the home countries Spain, Greece, and Portugal, j denotes the member countries of the European Union.

M^{ij} denotes in a first regression gross migration figures regarding immigration from southern enlargement countries to Northern and Western European countries. In a second regression M^{ij} accounts for gross migration figures regarding emigration from European countries into the accession candidate countries. Data for migration figures as well as for the stock of migrants are taken from the "NewCronos" database of Eurostat.[23]

[21] Germany, Belgium, Netherlands, Great Britain, Ireland, France, Denmark, Italy. Also Spain, Portugal and Greece are included. Austria, Finland and Sweden are considered since 1995. No data was available for Luxembourg.

[22] The special situation of free movement for workers is later on described by a dummy variable.

[23] Eurostat (2002)

Table 2: List of Variables

M^{ij}	gross migration between country i and country j
GDP^j	income per capita of country j in purchasing power parities
$GDPA^i$	income per capita of country i in purchasing power parities
A^i	unemployment rate of country i
B^{ij}	stock of migrants from country i already living in country j
FZ^{ij}	dummy variable for the free movement of workers

GDP^j denominates the gross national product per capita in purchasing power parities of the receiving countries. The correspondent variable for the countries of origin is $GDPA^i$. Referring to migration theory a positive impact on migration can be expected for GDP^j and a negative one for $GDPA^i$.

A^i denotes unemployment rates of the countries of origin. The higher A^i the worse are the chances of employment. That is why an increase of A^i is expected to lead to higher migration. In some first regressions the impact of the unemployment rates of the receiving countries was included too, but no significant impact on migration could be detected. This is not surprising since unemployment rates mainly picture employment opportunities for natives. According to Fertig (2001), migrants often face different employment situations because migrant workers are often concentrated in special fields of industry.[24]

B^{ij} denotes the stock of migrants already living in the receiving country. This variable approximates network effects. A positive effect on migration is expected.

All exogenous variables enter the regression with a one-period lag. This accounts for the fact that migration decisions are based on experiences and not spontaneous reactions to short-term economic developments.[25]

FZ^{ij} is a dummy variable. A value of 1 indicates that in the respective year free movement of workers was possible. Free movement of workers was introduced for Greece in 1988 and for Spain and Portugal in 1992. The agreement allows workers to move freely within the member states of the European Union and to stay for the purpose of employment. Also "any discrimination based on nationality between workers of the Member States as regards employment, remuneration and other conditions of work and employment" is prohibited.[26] For the analysis, a positive impact of the free movement of workers on migration is expected.

The descriptive statistics of the variables are presented in Table 3.

[24] Fertig (2001), S. 715

[25] see also Straubhaar (2001), p. 17

[26] Treaty establishing the European Community, chapter III article 48

Table 3: Descriptive Statistics

Variable	Immigration		Remigration	
	Mean	Standard Deviation	Mean	Standard Deviation
$\ln M$	6.247	2.086	6.230	2.046
$\ln GDP$	9.767	0.219	9.794	0.220
$\ln GDPA$	9.447	0.176	9.479	0.169
$\ln A$	2.292	0.539	2.302	0.548
$\ln B$	8.335	2.270	8.320	2.281
FZ	0.762	0.427	0.808	0.395

Based on the mentioned insights of migration theory and the findings of recent studies, the following multivariate regression model is specified.

$$\begin{aligned} \ln M_t^{ij} &= \beta_0 + \beta_1 \ln GDP_{t-1}^{j} + \beta_2 \ln GDPA_{t-1}^{i} + \beta_3 \ln A_{t-1}^{i} + \\ &\quad \beta_4 \ln B_{t-1}^{ij} + \beta_6 FZ_t^{ij} + u_t \end{aligned} \tag{1}$$

A log-linear regression is preferred, because to what extent a change in an exogenous variable is followed by a change in migration flows is determined by the level of both variables.

4.3 Estimation Methods

The regression model is estimated by Ordinary Least Squares. All OLS estimations are characterized by very low values of the Durbin-Watson statistic, indicating a strong positive autocorrelation. If there is autocorrelation, the estimated coefficients are consistent and unbiased but not efficient. The necessary condition of error-term independence for estimating by OLS is violated. Some authors of other studies seem to find no evidence for the error terms to be correlated.[27] Vogler-Ludwig (2001) introduces a time trend allowing for autocorrelation. Fertig & Schmidt (2001) argue that the possibility of shocks that lead to a correlation of migration figures over time has to be taken into account.[28]

[27] Straubhaar (2001), p. 19; Hille & Straubhaar (2001), p. 83

[28] Fertig & Schmidt (2001), p. 116

One reason for autocorrelation is, that all considered variables display only relatively small changes across time and so the given values are not independent from each other. Another reason could be an insufficient specification of the estimated model. In order to eliminate this a Ramsey RESET test is done. The computed values are 0.13 for immigration and 3.66 for remigration. They verify that the model is well specified both for immigration and remigration.

To account for autocorrelation a Prais-Winsten transformation of the variables is carried out.[29] The results of these estimations are shown in Table 4.

Table 4: Prais-Winsten Estimation

Variables	Migration		Remigration(1)		Remigration(2)	
	Coefficients	T-Stat.	Coefficients	T-Stat.	Coefficients	T-Stat.
Constant	-6.304	-1.66	-12.735	-3.24	-0.128	-0.24
GDP	2.35	4.37	.580	0.90	-	-
GDPA	-1.849	-3.36	0.666	1.07	-	-
A	0.390	2.64	0.381	2.52	-	-
B	0.714	16.26	0.728	13.42	0.751	12.71
FZ	0.152	1.38	-0.033	-0,30	-	-
Number of observations		277		260		280
R^2		0.87		0.86		0.83
Durbin-Watson Statistic		1.51		1.66		1.76

For the immigration equation the following results are reported. An increase of GDP per capita in the receiving countries by 1% leads to an increase of immigration by 2.35%. An increase of the GDP per capita in the home country is followed by less migration, probably because of the better living situation. If the rate of unemployment in the home country and thus the probability of achieving less or no income rises by percentage point, 0.39% more people will migrate. Existing networks in the receiving countries have a strong positive impact on migration. The free-movement dummy has a positive sign, but is insignificant. A possible explanation for this is that almost 3% of the population of the southern accession countries had already migrated when the countries joined the European Union. Thus, the introduction of

[29] Greene (2000), p. 546-549

free movement for workers could not have a substantial impact on migration patterns any more.

The results for remigration are presented in column 2. Only the unemployment situation in the southern enlargement countries and the stock of migrants in the receiving countries have significant impacts on migration. In another estimation (not documented here) in which only these two exogenous variables were considered, the unemployment rate was only weak significant on a 5% level and showed not the expected influence. In column 3, the results of an estimation with the stock of migrants as the only exogenous variable are presented. The R^2 for this regression is 0.83 and, thus, is only slightly lower compared to the regression in column 2. As can be seen, economic factors matter only for immigration but not for remigration. The estimated coefficient 0.751 indicates that about three quarters of migration is of temporary nature.

Another source of autocorrelation could be hidden cross-section specific effects (country-specific effects). In this study, the unit of observation is a pair consisting of the emigration and the immigration countries. Cross-section specific effects picture effects that can hardly be observed or quantified, e.g. differences between the two countries in infrastructure, educational systems, or political stability. They have different values for each country pair and are assumed to be constant over time.

In order to test for cross-section specific effects, a Breusch-Pagan test is performed. The hypothesis is that the variance of the cross-section specific effects is zero and the error terms are not affected by those effects. The empirical test statistics, as shown in Table 5, reject this hypothesis.

As explained before, in case the cross-section effects are uncorrelated with the regressors, a random-effects model has to be chosen. In case there is a correlation between cross-section specific effects and regressors, a fixed-effects model is the appropriate choice.

Table 5 displays the results of the random-effects estimation.

Regarding immigration the results do not change much compared to those of the Prais-Winsten Estimation. The coefficient of GDP per capita of the two countries seems to differ only slightly. Only the unemployment rate of the home country plays no significant role any longer. A reason for this could be that the impact of the unemployment rate is affected by unobservable factors like, for instance institutional regulations. The dummy variable for the free movement of workers changes its sign but remains insignificant.

The estimation verifies that economic factors matter only for immigration. Again there is no significant impact of economic factors on remigration. So in column 3 only the stock of migrants has been taken into account. Since the R^2 remains constant, I will use the parameter-estimates of column 3 for the simulations.

To compare fixed and random-effects models a Hausman-test is performed,

Table 5: Random-Effects Estimation

Variables	Immigration		Remigration(1)		Remigration(2)	
	Coefficients	T-Stat.	Coefficients	T-Stat.	Coefficients	T-Stat.
Constant	-8.536	-3.15	-7.721	-3.43	-0.145	-0.22
GDP	2.450	4.21	-.162	-0.29	-	-
GDPA	-1.632	-3.03	1.018	1.94	-	-
A	0.257	1.82	0.143	1.11	-	-
B	0.670	11.2	0.646	9.13	0.743	9.80
FZ	-0.035	-0.32	0.007	0.07	-	-
R^2		0,88		0,74		0,74
Breusch-Pagan Test		185		311		807

which is χ^2 distributed. The computed values are for migration 12.1 and 0.01 for remigration(2). This points out that there is no significant correlation between cross-section specific effects and regressors. Thus the random-effects model should be preferred.

5 Assessing Migration from the Candidate Countries

Based on the estimates reported in the previous section, now migration following EU-Enlargement is forecasted. The time period considered is 2004 to 2015. Using historical migration experiences the forecast relies on two crucial assumptions. On the one hand migration patterns in both situations are assumed to be equal. This implies, that the estimated coefficients can be used for the forecast. On the other hand, a constant economic development is assumed. That means that exogenous shocks such as wars or recessions are not considered. With the forecast, two questions are answered.

- What will be the extent of migration?
- Which receiving countries are most severely affected by immigration?
- Which accession countries will experience the highest emigration?

5.1 Forecast Assumptions

The forecast is based on data of the year 2000. Information about the stock of migrants is also taken from 1999[30], 1998[31] and 1991[32]. The reason for this is the limited availability of data. The following assumptions regarding the development of exogenous variables are made.

- Income per capita in the current members of the European Union is assumed to grow at a constant rate of 2%. In a baseline scenario, income per capita grows at 4% p.a. in the accession candidates countries, while in the second scenario income per capita in these countries grows at 5.5% per year.[33]
- The rates of unemployment are taken to remain on their 2000 levels. At the moment no studies forecasting the development of unemployment rates, especially for the CEECs, are available.
- The stock of migrants of the home country already living in the receiving country is modeled endogenously. That means the stock of migrants B^{ij} in period t is determined by B^{ij} in period $t-1$ plus immigration in period $t-1$ less remigration in period $t-1$. Natural changes of the stock of migrants (fertility and mortality) as well as nationalized migrants are not considered.
- It is assumed that free movement of workers is granted.
- The forecast is based on the coefficients of the random-effects estimation as presented in Table 5, columns 1 and 3.

Table 6 summarizes the forecast assumptions.

5.2 Forecast Results

The random-effects model exposes the given limits of the chosen model as can be seen in Table 7. It becomes evident that it is not appropriate to directly transfer the experiences made after southern enlargement to low-income countries like Lithuania, Latvia and Estonia. In these cases, permanent migration figures between 11% to 19% of the respective population are indicated. This is due to the fact, that these countries have very low per-capita incomes in comparison to the income of the EU-members. The income per capita in Latvia

[30] Denmark, France, United Kingdom

[31] Greece

[32] Austria, data from SOS-Menschenrechte (2002)

[33] See Gács (1999), p. 138, who calculates an average income growth of 5.5 % p.a. for the accession candidates.

Table 6: Forecast Assumptions for Assessing Migration from the CEECs

Parameters	Development
GDP per capita in EU member states	2% p.a.
GDP per capita in CEECs	4% * and 5.5% ** p.a.
Unemployment rate in the CEECs	constant
Stock of migrants living in the European Union	endogenous development
Dummy-Variable for free movement of workers	constant 1
* Scenario 1; ** Scenario 2	
CEECs: Czech Republic, Slovenia, Slovak Republic, Poland, Hungary Lithuania, Latvia, Estonia EU-Members 2003: Belgium, Denmark, Germany, Greece, Spain, Netherlands, France Great Britain, Austria, Italy, Portugal, Finland, Sweden, Ireland	

is about 33% of the EU average (Lithuania 38%, Estonia 42 %). This lies well below the income level of the southern enlargement countries at the time of accession, which was 49% on average.

An analogous comparison of the rates of unemployment shows that unemployment is much higher in the mentioned accession candidate countries than it was in the southern enlargement countries in the 1980s. This suggests, that the experiences from southern enlargement are of very limited use for a projection of migration flows from Latvia, Lithuania, and Estonia. Including the countries in question leads to a forecast bias. Thus, these countries are excluded from the projection. The remaining countries are the Czech Republic, Hungary, the Slovak Republic, Slovenia and Poland.

An additional problem arises with respect of migration to Luxembourg. Luxembourg is not included in the analysis of historical migration flows because of a lack of data. The per-capita income of Luxembourg is as twice as high as the average income of the other receiving countries. So their migration experiences cannot reflect the immigration pattern of Luxembourg. Consider-

Table 7: Forecast Results

Country	Low-Convergence Scenario			High-Convergence Scenario		
	Emigration (in 1000)	Gross Emigration Rate	Net Emigration Rate	Emigration (in 1000)	Gross Emigration Rate	Net Emigration Rate
Czech Republic	103	1.0	0.4	77	0.8	0.2
Estonia	227	16.6	11.8	191	14.0	9.8
Hungary	191	1.9	0.9	144	1.4	0.5
Latvia	556	23.5	19.0	346	14.6	11.1
Lithuania	673	18.2	14.9	419	11.3	8.8
Poland	1,543	4.0	2.8	1,138	2.9	1.9
Slovak Republic	166	3.1	2.1	112	2.1	1.2
Slovenia	31	1.5	0.3	23	1.2	0
CEEC-8	3,491	4.7	3.4	2,451	3.3	2.2
CEEC-5	2,034	3.1	1.0	1,494	2.3	0.9
	Stock of Migrants (in 1000)		Net Immigration Rate	Stock of Migrants (in 1000)		Net Immigration Rate
	2000	2015		2000	2015	
Austria	40	179	1.7	40	134	1.2
Denmark	6	98	1.7	6	66	1.1
Germany	398	798	0.5	398	677	0.4
EU-15	606	1,806	0.3	606	1,415	0.2

Estonia, Latvia, and Lithuania are not included in the numbers of immigration.

ing Luxembourg in the forecast leads to astronomical immigration figures, so Luxembourg is also not included.

Other studies like those by Straubhaar (2001) or Hille & Straubhaar (2001) do not consider these facts, which are not obvious if forecasts are not country specific. So it is likely that their forecasts are upward biased.

Under the above-mentioned assumptions and conclusions, a gross migration of about 2.5 to 3.5 million people can be expected in a time period from 2004 to 2015.[34] The figures depend on the development of income convergence. This corresponds to a share of of the population of the accession candidate countries between 2.3% and 3.1%. Only about 1% of the population of the accession candidates are going to stay permanently in the receiving countries. In absolute terms permanent migration ranges from 0.8 to 1.4 million people within the respective time period.

The temporal development of immigration can be seen in Figure 2. Especially in the high-convergence scenario, annual immigration raises at a decreased speed, due to a better economic development in the home countries.

The stock of migrants from the Czech Republic, the Slovak Republic, Slovenia, Hungary and Poland raises from 606,000 people in 2004 to 1,415,000 people in 2015 in the high-convergence scenario. By the end of the considered time period, the annual increase of the stock of migrants is reduced. If the convergence speed is slower, the stock of migrants will be 1,807,000 people in 2015. Within this scenario, there is no balance between immigration and remigration. This leads to an increasing growth of migrant stocks. Figure 3 shows this development.

In absolute terms, Germany and Austria are mostly affected by migration from the considered CEECs. Some 46% of all immigrants will head for these countries every year. In terms of immigration quotas (in relationship to the population of the receiving countries) Denmark and Sweden too, are strongly affected. One reason is the economic situation of these countries which is characterized by a high income per capita and relatively low unemployment rates. This creates strong incentives for migration. Another reason is the minor geographical distance towards the accession candidate countries. This reduces migration costs related information or search of work and accommodation as well as transport costs.

5.3 Comparison

How do the results reported in the previous section compare to those of other studies on future East-West migration in Europe? As mentioned earlier, such a comparison is difficult. In particular, different studies consider different groups

[34]The countries considered are the Czech Republic, the Slovak Republik, Slovenia, Hungary and Poland

Figure 2: Gross Migration from the CEECs into the EU, 2004-2015

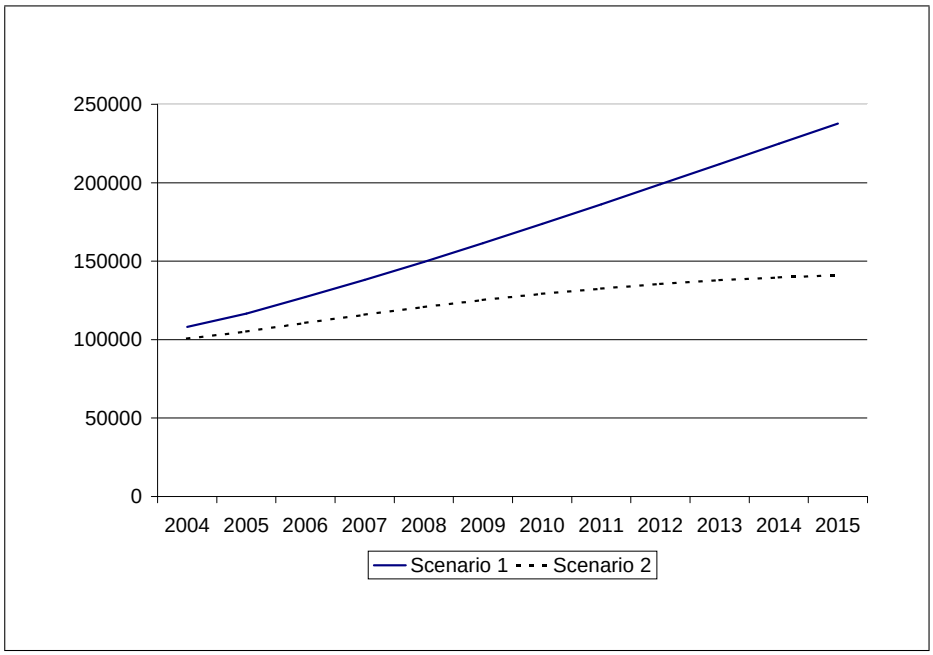
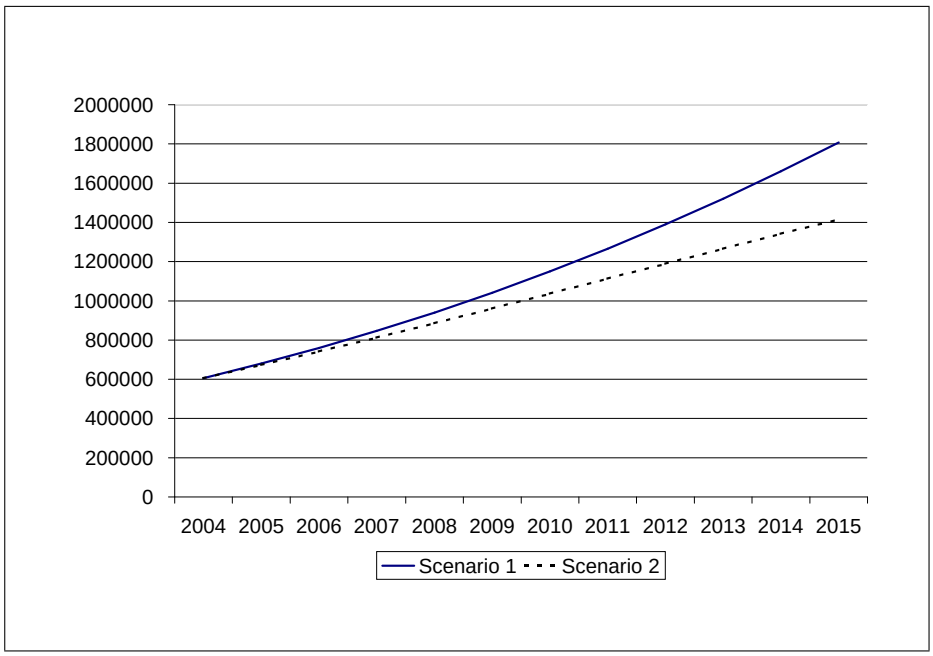


Figure 3: Development of the Stock of Migrants, 2004-2015



of emigration countries. This is to be taken into account for a comparison.

Bruecker (2001) and Flaig (2001) forecast the stock of migrants living in Germany. According to Bruecker (2001) the foreign population from 10 CEECs reaches a level of 2.1 to 2.4 million people. In contrast Flaig (2001) predicts a migrant stock of 2.7 to 3.1 people from 5 CEECs [35] excluding Bulgaria, which can be expected to be a high emigration country. So Flaig's (2001) prediction is much higher than that of Bruecker (2001). The numbers of my projection are much lower than the predictions of Bruecker's (2001) and Flaig's(2001) figures. The stock of migrants living in Germany in 2015 will be around 800.000 people in the pessimistic scenario. This is about 4 times lower than the numbers forecasted by Flaig (2001) even if Romania is excluded.

Some studies predict a very high migration potential. For instance Sinn (2001) forecasts a stock of migrants from 1,774,000 to 2,049,000 persons in Germany.[36] This is more than twice as much as the 800,000 persons forecasted here. According to Bruecker (2001), the following reasons are the cause of the very high figures of Sinn (2001). Firstly a linear relationship between the endogenous and the exogenous variables is assumed. Secondly the heterogeneity of data as well as country-specific effects are not taken into account.[37]

Fertig (2001) predicts an annual net migration to Germany of 36,000 persons in average. Considering the same countries as Fertig (2001) does, the calculated annual net migration of 35,000 persons in my study differs not much from the 36,000 Fertig (2001) expects. However, this includes migration from Estonia, which seems to be very high in the here presented model. A country specific view on migration figures is not provided by Fertig (2001). Thus, a more detailed comparison is not possible.

In the study by Bauer & Zimmermann (1999), gross migration rates range from 0.13 % (Slovenia) until 6% (Poland) under the assumption of free mobility. They differ not much from the gross migration rates presented here. Bauer & Zimmermann (1999) also calculate very high migration rates for Romania and Bulgaria. The per-capita income in those countries is much lower than the per-capita income of the southern enlargement countries. The same problem arises here with respect to Lithuania, Latvia, and Estonia. Bauer & Zimmermann (1999) predict long-run emigration rates ranging from 2% to 3% of the sending countries' population. Compared to the studies by Bruecker (2001) and Flaig (2001) these values are small, but they are rather close to the results presented here.

The same applies to the study by Straubhaar (2001). Depending on the income scenario, the results indicate an annual gross migration from 140,000 to 300,000 people. A range of 204,000 to 291,000 people has been calculated in

[35] Poland, Romania, Slovakia, Czech Republik and Hungary

[36] This indicates a permanent migration that ranges from 8% to 11% of the population of the Germany. Romania is included in the forecast.

[37] Dustmann (2001), p. 45

the presented study. But the reported results include migration from Estonia, Lithuania and Latvia. According to Straubhaar (2001), permanent migration will rise annually by 50,000 up to 100,000 persons. These numbers are calculated on basis of the estimation results for the net migration rate of the southern enlargement countries. In contrast, the results of this study predict a range of 134,000 to 210,000 persons for permanent migration. The difference seems to be that here the stock of migrants is calculated endogenously.

I do not share Straubhaar's(2001) opinion that projection differences of about 1 million people are not "dramatic".[38] Keeping in mind that Germany and Austria will be the regions expecting the highest number of immigrants, this differences are significant. By the way differences in predictions are often higher than just 1 million, as has been seen.

6 Summary and Conclusions

A forecast of migration flows between the first-round accession candidate countries and Western European countries for a period from 2004 to 2015 has been presented in this paper. Potential developments of gross and net migration flows between country pairs have been derived. The results indicate that a projection of migration flows which is based on the experiences of southern enlargement seems to be unsuitable for low-income countries like Lithuania, Latvia, and Estonia. An overall gross migration between 2.25% and 3% of the population of the considered CEECs is predicted.[39] Net migration is about 1% of the respective CEEC population. A comparison with the results of other existing studies shows that there is a considerable variance in the forecasts.

There are several problems and shortcomings of such an analysis. The first one is the limited availability of data. This applies in particular to migration flows and stocks of migrants within European countries. Migration data before 1985 are not available. Moreover the consideration of country-specific effects in an "out-of-sample" forecast raises questions.[40] Firstly, it is not clear, what exactly is measured by country-specific effects. Secondly, one cannot say to what extent different approaches are able to picture these effects for "out-of-sample" countries.

Regarding the forecast assumptions, two aspects can be questioned. The first aspect is the fundamental assumption that historical migration patterns just carry over to the CEECs. Taking into account the decline of transport and communication costs, a tendency of a more temporary nature of migration seems likely. Another aspect is the assumption of a constant development of

[38] Dustmann (2001), p. 28

[39] These figures refer to migration from Poland, Slovakia, Slovenia, Hungary and Czech Republic.

[40] For a detailed discussion see section 3.3.

exogenous factors over a period of twelve years.

The mentioned problems and the variety of results lead to the conclusion that forecasting scenarios regarding migration from the CEECs can hardly be used for political decisions. Dustmann (2001) points out that almost every migration scenario can be forecasted with appropriate assumptions and choice of approaches.

Because of that, a high flexibility of migration policy has to be ensured. The possibility of a fast adjustment of arrangements to changing migration flows is very important. A possibility would be regulation by immigration quotas. This would be a way to share the advantages of migration and to avoid negative impacts on wages and employment.

Furthermore not only the number of migrants coming is important but also their cultural and social integration. Especially in this area, much remains to be done.

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