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Economic determinants of international labour migration in EU/EFTA region 1985-1999

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**42nd Congress of the European Regional Science Association
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Theme: Demographic Trends

Economic determinants of international Labour migration in the EU/EFTA region 1985-1999

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Abstract. This paper aims to estimate the influence of economic determinants on international labour migration in the EU/EFTA region in the period 1985-1999. Migration of Portuguese to Switzerland and Swedish migration to Norway are studied as cases representing respectively low and high skilled labour migration. Quantifying the influence of economic determinants on international labour migration in the EU/EFTA region may contribute to the discussion about the demographic consequences of future economic development in Europe and extension of the European Union.

1. Background, aim and outline

International migration in Europe in the 1960s and early 1970s mainly consisted of low skilled labour migration. The domestic labour force in many Western and Northern European countries could not comply with the very high demand for manual labour. Many labour migrants went from Southern Europe, the Maghreb area and Turkey to Western Europe. Therefore, the labour exporting countries in Southern Europe (Greece, Italy, Portugal, Spain and Yugoslavia) experienced considerable labour emigration in this period. Similar emigration flows also occurred in the Irish Republic and Finland, as a result of large labour flows to the UK and Sweden respectively. After the economic recession of 1973/1974 these flows ended, and many labour migrants returned to their country of origin. Labour migrants who did not return decided to let their family come over. Family and return migration were the most important migration types in the second half of the 1970s and in the beginning of the 1980s. Post-colonial migration was also quite important in this period, especially in the Netherlands and Portugal in the second half of the 1970s. Since the eighties, a new type of international migration emerged, which may be labelled post-industrial migration. It consists of a mixture of high skilled labour, clandestine and asylum migration (White, 1993).

This paper aims to estimate the influence of economic determinants on international labour in the EU/EFTA region in the period 1985-1999. This period is chosen because almost no data are available for earlier years. Labour migration in the EU/EFTA region can be divided in low and high skilled worker flows. The share of high skilled labour migration has increased since the 1980s. Nevertheless, low skilled labour migration on a considerable scale still exists in the EU/EFTA region.

This study may contribute to the discussion about the demographic consequences of future economic development in Europe and extension of the European Union. The effects of the enlargement of the EU with Greece, Portugal and Spain on international labour migration were limited. However, potential labour migrants from these countries had to wait several years before free movement of labour became possible (Penninx & Muus, 1989). By then these Southern European countries had caught up a large part of their economic backwardness. The economic differences between the candidate countries in Central and Eastern Europe are larger than the economic differences between Greece, Portugal and Spain at that time. If this study will reveal that economic determinants have a considerable impact upon low and high skilled labour migration, we may expect large East-West labour flows after the enlargement of the EU with the candidate countries in Central and Eastern Europe.

The outline of the paper is as follows: In section 2 a number of hypotheses are formulated. These are based on theories that attempt to explain the mechanisms behind international labour migration. Time series regression analysis is conducted on two case studies representing respectively low and high skilled labour migration. In section 3 socio-economic determinants of migration from Portugal to Switzerland, which is an example of low skilled, 'classical' labour migration, will be estimated. Section 4 comprises an analysis on employed migration from Sweden to Norway, which is an example of high skilled 'post-industrial' labour migration. Finally, section 5 consists of conclusions and a discussion.

2. Hypotheses

According to neo-classical economic theory international labour flows exist as a consequence of wage differences between countries. These international labour flows create a new international equilibrium in which real wages have the same level in all countries (Borjas, 1989; Massey *et al.*, 1993, 1998; Bauer & Zimmermann, 1995; Öberg, 1997). Therefore, we may formulate the hypothesis (1) that *the income difference between a receiving and a sending country has a positive effect on the amount of labour migration between these two countries.*

Keynesian economy is critical of the neo-classical view on (international) migration. In Keynesian theory labour supply depends on nominal wage, not on real wage. This distinction originates in the different views on the role of money in the economy. In the neo-classical point of view money is solely a medium of exchange. The Keynesian point of view is different, because here money is not only a medium of exchange but also a medium of saving. Because of the latter function of money, potential migrants are also attracted to high nominal wage regions. Therefore, a new international equilibrium, as neo-classical economy foresees, may not exist. It is obvious that intentions to re-migrate or to send remittances increase the importance of the nominal wage level compared to the real wage level. Nevertheless in Keynesian theory migration is an equilibrium recovering mechanism too. However, in this theory international migration removes unemployment differences instead of real wage differences (Hart, 1975; Van Dijk, 1986). This aspect of Keynesian theory lies behind hypothesis (2) which states that *the unemployment difference between a sending and a receiving country has a positive effect on the amount of labour migration between these two countries.*

The dual labour market theory argues that international migration is mainly caused by pull factors in the developed - migrants receiving - countries. Piore (1979) gives three possible explanations for the demand for foreign workers in modern industrial societies: general labour shortages, the need to fill the bottom positions in the job hierarchy and labour shortages in the secondary segment, which is characterised by a labour-intensive method of production and predominantly low skilled employment, of a dual labour market. On the basis of the dual labour market theory we may formulate hypothesis (3): *Unemployment in the receiving country has a negative effect on international labour migration to this particular country.* This hypothesis refers to low skilled labour migration, whereas the hypotheses 1 and 2 refer to both high skilled and low skilled labour migration.

Economic determinants, however, are not the only factors that play a role in international migration. Social and cultural factors are also important. Of special importance is the effect of migrant networks. Within a large migrant population, migrant networks may be formed, involving interpersonal linkages between (migrant) populations in origin and destination areas. The emergence of migrant networks may help potential migrants of the same ethnic origin, for instance by contributing to financing the journey, helping to find a job or appropriate accommodation, or by giving information about education possibilities or access to social security (Esveldt *et al.*, 1995). When international migration occurs on a large scale it can become institutionalised. According to institutional theory a large inflow of international migration induces profit and non-profit organisations, which can be legal as well as illegal, to provide for instance (clandestine) transport, labour contracts, (counterfeit) documents, dwellings or legal advice for migrants (Massey *et al.*, 1993). These

organisations are often embedded in migrant networks. Considering network and institutional theory we may formulate hypothesis (4): *Migrant stocks, which are the result of recent (labour) migration have a positive effect on international labour immigration (both high and low skilled).*

Another important social variable is education. The educational level of a population may influence the emigration propensity of a country. According to the relative deprivation theory the amount of inequality in a society will have a positive effect on (labour) emigration (Stark & Taylor, 1989). Educational expansion may result in more equal opportunities considering the final achieved educational level, as school choices and performances at older ages are less determined by socio-economic status than at younger ages (Mare, 1981). More educational equality leads to more income and status equality as educational attainment has a positive impact upon occupational status and income (Blau & Duncan, 1967; Hauser & Sewell, 1986; Van Eijck, 1996). This aspect of the relative deprivation approach forms the basis of hypothesis (5): *The educational level in a sending country has a negative effect on the amount of low skilled labour emigration from this country.*

Table 1 summarizes the five hypotheses that form the basis of the empirical part of the paper. In the next two sections these will be tested on two separate labour migration flows: Portugal to Switzerland, and Sweden to Norway.

Table 1. Five labour migration hypotheses

1	The income difference between a receiving and a sending country has a positive effect on the amount of labour migration between these two countries.
2	The unemployment difference between a sending and a receiving country has a positive effect on the amount of labour migration between these two countries.
3	Unemployment in the receiving country has a negative effect on low skilled international labour migration to this particular country.
4	Migrant stocks which are the result of recent (labour) migration have a positive effect on international labour immigration.
5	The educational level in a sending country has a negative effect on the amount of low skilled labour emigration from this country.

3. Migration from Portugal to Switzerland: Low skilled, ‘classical’ labour migration

Although the level in the 1960s and 1970s was much higher, Portugal continued to send immigrants to other countries in the 1980s and 1990s. France, Germany, Switzerland and Luxembourg were important European destinations of Portuguese low skilled labour migrants. Switzerland has a long history of importing foreign labour. The Swiss labour force comprised more than 700000 (18% of the total) foreigners (OECD, 2001). Most foreign workers in Switzerland are Italians, but the number of Yugoslavs, Spaniards and Portuguese is also large (United Nations, 1998). In this section the migration of Portuguese to Switzerland serves as a model for low skilled labour migration in Europe. Portugal is not the only sending country of low skilled labour migrants in Europe in the 1980s and 1990s. Neighbouring country

Spain, for instance, has been a sending country of migrant workers who harvest grapes for the wine industry in France and work in construction in Switzerland (United Nations, 1998).

The dependent variable is the total emigration of Portuguese nationals to Switzerland divided by the midyear population aged 20-45 per thousand (source Eurostat, 2001). The variables used in the analysis are listed in *Table 2*.

Table 2. Independent variables Portuguese migration from Portugal to Switzerland

Variable	Operationalisation	Source
GDP per capita Switzerland – GDP per capita Portugal	1990 US\$ converted at Geary Khamis PPPs	Groningen Growth and Development Centre (GGDC) (2001)
Unemployment Portugal – unemployment Switzerland	Total unemployment as percentage of the total labour force	OECD and Eurostat in the eur macro data database (Gärtner, 2000)
Unemployment Switzerland	Total unemployment as percentage of the total labour force	OECD and Eurostat in the eur macro data database (Gärtner, 2000)
Portuguese migrant stock in Switzerland	Portuguese migrants in Switzerland per 1000 at the beginning of the year	Eurostat (2001)
Educational level in Portugal	Average years of school of the total population aged 25 and over	Barro & Lee (2000) ⁱ

i Barro & Lee (2000) estimated the average years of school of the total population aged 25 and over with a 5-year bridge (1960, 1965, ..., 2000). A second order function was fitted to this data to obtain complete the time series from 1960 until 1998.

As a first step the correlations between the explanatory variables were calculated. All correlations between the independent variables are high and very significant. Therefore, in a first step separate models with each of the variables were estimated. Autoregression terms were used to rid the models of autocorrelation. Autoregression terms of the first and second order had to be used in the models with unemployment in Switzerland, the difference in unemployment between Portugal and Switzerland, the size of the Portuguese migrant stock per capita in Switzerland and educational level in Portugal. However, these models appeared to be non-stationary ($AR(1) > 1$). Therefore, we decided to estimate models, in which first differences are used. *Table 3* shows the correlations between the potential independent variables based on first differences.

Table 3. Correlation matrix with all potential independent variables (first differences) to explain total migration rates from Portugal to Switzerland ($T = 14$; for correlations with $\ln(\text{migrant stock})$ 13)

	Pearson correlation coefficients				
	1	2	3	4	5
1 $GDP_{S_{wi}} - GDP_{P_{or}}$					
2 $Unem_{P_{or}} - Unem_{S_{wi}}$.37				
3 $Unem_{S_{wi}}$	-.34	-.39			
4 $\ln(\text{migrant stock})$	-.24	-.58*	.33		

5 Education _{Por}	-0.01	.41	-0.20	-0.97**
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* significant p < 0.05 (two sided test)
** significant p < 0.01 (two sided test)

The correlation between the natural logarithm of the migrant stock and educational level in Portugal is very large and significant. These effects of these variables cannot be distinguished from each other and therefore these coefficients were not estimated jointly in one model. Moreover, the effects of the difference in unemployment between Portugal and Switzerland and unemployment in Switzerland were not estimated jointly as well. In total, four different models (A, B, C, and D) were estimated.

Table 4. Results of time series regression analyses to explain first differences of the natural logarithm of total migration rates from Portugal to Switzerland in the period 1985-1999 All variables are measured as first differences.

	Model A	Model B	Model C	Model D
	Coefficients (t-values)			
Constant	-0.17* (-2.47)	3.23** (3.41)	-0.21** (-3.23)	3.16 (1.67)
GDP _{Swi} – GDP _{Por} x 10 ⁴	3.75* (2.41)	2.77 (1.59)	2.62* (2.11)	1.32 (1.14)
Unem _{Por} – Unem _{Swi}	0.02 (0.28)	-0.00 (-0.07)		
Unem _{Swi}			-0.11* (-2.97)	-0.10* (-2.35)
Ln(migrant stock)	1.94** (3.63)		2.27** (4.37)	
Education _{Por}		-35.65** (-3.40)		-35.04 (-1.69)
AR(1)			0.28 (0.70)	0.59 (1.80)
T	13	14	12	13
Adjusted R ²	0.59	0.53	0.79	0.71
Durbin-Watson statistic	1.25	1.14	2.02	1.67

* significant p < 0.05 (one sided test)
** significant p < 0.01 (one sided test)

The difference in GDP per capita between Switzerland and Portugal is the only variable which is present in all models. This variable has a positive everywhere, and the coefficients in the models A and C are significant. This can be seen as a support of the neo-classical economic view on international labour migration, which is the theoretical basis for hypothesis 1. The difference in unemployment between Switzerland and Portugal has hardly any effect on international migration from Portugal to Switzerland in model A and B. On the contrary, the models C and D reveal negative significant effects of unemployment in Switzerland. This may be an indication that the dual labour market theory (hypothesis 3) is a more realistic view on low skilled international labour migration than Keynesian theory (hypothesis 2). The effect of the Portuguese migrant stock in Switzerland is significant and has the expected positive sign, according to hypothesis 4. This may be an indication that network and institutional theory play a role in migration from Portugal to Switzerland. The results of the analyses also support hypothesis 5 and the overlapping generations

approach with respect to the effect of the educational level in sending countries on low skilled international labour migration. The coefficients of educational level have a positive sign in both model B and D. The coefficient in model B is very significant.

Autoregression terms of the first order had to be used in the models C and D. The Durbin-Watson test was inconclusive for these models. However, there was evidence of autocorrelation according to the Q-statistics. Model C without an autoregression term revealed mere significant effects with the expected sign. Model D without an autoregression term also revealed effects with the sign that should be expected. However, the effect of the difference of GDP per capita between Switzerland and Portugal was not significant.

The adjusted R^2 for each of the models varies from 0.53 in model B to 0.79 in model C. *Figure 1* shows the actual and fitted trend (using model C results) of Portuguese migration to Switzerland.

Figure 1. Actual and fitted migration of Portuguese nationals (divided by the midyear population aged 20-45 per thousand) to Switzerland 1985-1999

i Actual migration of Portuguese to Switzerland in 1987 is used to obtain the fitted trend.

4. Migration from Sweden to Norway: High skilled ‘post-industrial’ labour migration.

High skilled labour migration exists between all countries in the EU/EFTA region. In contrast with low skilled labour flows, skilled labour flows often have about the same size as their counterflows. The number of employed migrants from Sweden to Norway (source ILO, 1999) divided by the midyear population aged 25-44 (source Eurostat, 2001) per thousand is the dependent variable in the analyses. Here, employed migration means migration of a person with a status of employee in November in the same year as the arrival. Portuguese migration to Switzerland was divided by the midyear population aged 20-44. Here, the age of 25 was taken as minimum, since high skilled persons enter the labour market later in life. The independent variables in the analyses are: GDP per capita in Norway minus GDP per capita in Sweden, unemployment in Sweden minus unemployment in Norway, the Swedish migrant stock in Norway and educational level in Sweden. The operationalisations and sources of these variables are comparable to those listed in Table 2.

Table 6. Correlation matrix with all potential independent variables to explain employed migration rates from Sweden to Norway (T = 11)

	Pearson correlation coefficients			
	1	2	3	4
1 $GDP_{Nor} - GDP_{Swe}$				
2 $Unem_{Swe} - Unem_{Nor}$.98**			
3 $\ln(\text{migrant stock})$.74**	.70*		
4 $Education_{Swe}$.93**	.90**	.92**	

* significant $p < 0.05$ (two sided test)

** significant $p < 0.01$ (two sided test)

As can be seen from *Table 6*, the correlations are again every high. Therefore, two models (E and F) with two independent variables could be estimated. In addition, separate models (A, B, C and D) with each of the variables were estimated.

Table 7. Results of time series regression analyses to explain the natural logarithm of employed migration rates from Sweden to Norway 1989-1999 (T = 11)

	Model A	Model B	Model C	Model D	Model E	Model F
	Coefficients (t-values)					
Constant	-3.00** (-9.56)	-2.00** (-10.95)	-4.16** (-3.30)	-14.62** (-3.51)	-2.51* (-2.67)	-2.01 (-1.65)
$GDP_{Nor} - GDP_{Swe} \times 10^{-4}$	4.29** (4.94)				4.83** (-2.67)	
$Unem_{Swe} - Unem_{Nor}$		0.19** (4.15)				0.19* (2.80)
Ln(migrant stock)			2.09* (2.05)		-0.54 (-0.55)	0.01 (0.01)
Education _{Swe}				1.23** (3.13)		
Adjusted R ²	0.70	0.62	0.24	0.47	0.68	0.57
Durbin-Watson statistic	1.80	1.78	1.21	1.58	1.75	1.79

* significant p < 0.05 (one sided test)

** significant p < 0.01 (one sided test)

All coefficients in the four models with only one independent variable are significant and have a positive sign. These positive signs in the models A, B and C support the hypotheses 1, 2 and 4 (see section 2). The positive significant effect of the educational level in Sweden is an indication that we are actually dealing with high skilled migration here. The positive significant effects of the differences in GDP per capita and unemployment show that neo-classical and Keynesian economic processes also underlie high skilled labour migration next to low skilled labour migration. Migrant networks and institutions may have a positive impact upon employed migration from Sweden to Norway because of the positive significant effect of the natural logarithm of the Swedish migrant stock in Norway. However, the results of the multivariate analyses demonstrate that high skilled labour migration is mainly influenced by economic factors. Similar to the models A and B, the coefficients of the economic variables are significant and positive. On the contrary, the effect of the Swedish migrant stock in Norway is not significant in both models. This effect is even negative in model E. The adjusted R², which is quite large in all models except in model C, is lower in the models E and F compared to the models A and B. *Figure 2* provides the actual trend of employed migration from Sweden to Norway and the trend of GDP per capita in Norway minus GDP per capita in Sweden. This figure illustrates that both trends have a common pattern. However, the peaks and lows of the migration trend are more extreme in the second half of the 1990s.

Figure 1. Employed migration from Sweden to Norway and the difference in GDP per capita between Norway and Sweden 1989-1999

As is shown in table 6, the correlation between the two economic variables is very high (0.98). Therefore, no model could be estimated with both differences in GDP per capita and unemployment. Both variables are quite good predictors of employed

migration from Sweden to Norway (see table 7). In order to find out the separate effects of both variables we also tried a model of first differences that included both variables. Even with first differences the correlation between the differences in GDP and unemployment is .81. Therefore, the result of this analysis is somewhat tentative as collinearity problems may occur here as well. The results of this analysis are reflected in *Table 8*.

*Table 8. Results of time series regression analyses to explain first differences of the natural logarithm of employed migration rates from Sweden to Norway 1989-1999 (T = 10)
All variables are measured as first differences*

	Coefficients (T-values)
Constant	-0.40* (-2.07)
$GDP_{Nor} - GDP_{Swe} \times 10^{-3}$	1.78** (3.35)
$Unem_{Swe} - Unem_{Nor}$	-0.31 (-1.54)
Adjusted R ²	0.60
Durbin-Watson statistic	1.95

i first differences for the independent variables.
* significant $p < 0.05$ (one sided test)
** significant $p < 0.01$ (one sided test)

The model shows that the GDP difference between Norway and Sweden has again a positive and significant effect, although the size of the coefficient is smaller. The unemployment difference between Sweden and Norway should have a positive effect, but it turns out to be negative, and not significant. Therefore, we may tentatively conclude that the GDP difference is a more important predictor of high skilled labour migration from Sweden to Norway.

5. Conclusions and discussion

The aim of this paper was to estimate the influence of socio-economic determinants on international labour migration in the EU/EFTA region in the period 1985-1999. Labour migration was divided in low and high skilled labour migration. Migration of Portuguese nationals to Switzerland and employed migration from Sweden to Norway were taken as case studies of low and high skilled labour migration, respectively. Time series regression analyses were conducted to derive effects of socio-economic determinants of both migration flows.

The best regression model for low skilled labour migration appeared to be a model of first differences of a limited set of variables: differences in GDP per capita, unemployment in the receiving country and the migrant stock as independent variables (model C). The effects of all socio-economic variables were significant and had the expected sign. The significant negative effect of unemployment in Switzerland supports the dual labour market view on low skilled labour migration, all the more since differences in unemployment between Switzerland and Portugal had hardly any effect on Portuguese migration to Switzerland.

The regression analyses revealed that economic determinants (differences in GDP per capita and unemployment) have a considerable impact upon high skilled migration from Sweden to Norway. The Swedish migrant stock in Norway plays a less important role. This is not surprising as high skilled labour migrants often have

already a job, a dwelling and a permit to stay, things that are often arranged within migrant networks or by migrant institutions, before they start their journey. A regression analysis with first differences demonstrated that GDP per capita had a larger impact upon high skilled labour migration than unemployment. A possible explanation for this finding can be found if we see the labour market as a 'job-competition model' (Thurow, 1975). According to this model an increase in unemployment often has a disproportionate large influence on the availability of jobs at the bottom of the labour market. Even if many (middle) management jobs get lost, the employment situation at the bottom of the labour market also deteriorates. Displacement of workers with little education by workers with a higher education is the underlying mechanism of this phenomenon. On the other hand, a change in GDP per capita generally occurs more proportional in all segments of the labour market, perhaps even more in the higher segments. Therefore, changes in GDP per capita may have a larger effect on high skilled workers than changes in unemployment. However, displacement of workers with little education by workers with a higher education leads to lower wages of high skilled workers. Hence, changes in unemployment will have an impact upon the income and migration probabilities of high skilled workers as well.

The recognition of diplomas between states may also be an important determinant of high skilled labour migration in the EU/EFTA region. European policies aim to stimulate the recognition of diplomas. Therefore, future high skilled labour migration in the EU/EFTA region will probably increase under constant socio-economic circumstances.

The consequences of EU enlargement for international low skilled labour migration in Europe depend on the way 'free movement of persons' is captured in the agreements with the candidate countries about joining the EU. If citizens of the candidate countries are allowed to work in the rest of the EU immediately after joining the EU, large East-West labour flows will probably exist. Especially Germany and Austria fear massive (labour) migration. Therefore, it is likely that similar to with the enlargement of the EU with Greece and Portugal and Spain, a transitional agreement with respect to free movement of persons will be formulated. Low skilled labour migration from Central and Eastern European member states to the rest of the EU can be compared with labour migration from Portugal to Switzerland in this scenario. As we saw in section 3, the dual labour market theory provides an adequate description of the mechanisms underlying low skilled labour migration in this situation. Unemployment in old EU member states will probably be an important determinant of low skilled East-West labour migration in the EU. Changes in the average educational level in Central and Eastern Europe will play an insignificant role in future developments of low skilled East-West labour flows, as educational level is already very high in the former communist countries. Educational level in many Central and Eastern European countries is even approaching the natural upper limit. Thus, with respect to educational level contemporary and former low skilled labour migration from less developed regions in the EU cannot be compared with future low skilled migration from Central and Eastern European member states to the rest of the EU.

The amount of high skilled East-West labour migration will depend less on the way 'free movement of persons' is captured in the agreements with the candidate countries about joining the EU, because many high skilled labour migrants are already offered a job by companies, which also take care of their work and residence permit. Although

we cannot completely compare future high skilled East-West labour migration with migration between two Nordic countries, we may tentatively state that differences in GDP per capita and differences in unemployment have a large impact upon high skilled East-West labour migration after the enlargement of the EU in Eastern direction.

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