Chapter 3

Selection and Network Effects - Migration Flows into OECD Countries 1990-2000*

by

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Abstract: This paper presents empirical evidence on immigration flows into the OECD countries during the period 1990–2000. Our results indicate that network effects are strong, but vary between different groups of welfare states. Network effects seem to be less important in the Nordic countries which also seem to attract immigrants from the lowest income level source countries. We do not find clear evidence that selection effects measured by tax pressure have had a major influence on the observed migration patterns until now. This may partly be explained by restrictive migration policies which may have dampened the potential selection effects.

Keywords: International migration, selectivity effects, network effects, immigration policy.
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3.1. INTRODUCTION

In the near future, many rich OECD countries expect to face the problem of declining and ageing populations. Demographic projections by the United Nations suggest that during the next five decades Europe and Japan ceteris paribus might lose 12 and 17% of their population, respectively, United Nations (2000). This will impose an increasing pressure on the welfare systems as public pension payments will absorb a growing share of total national incomes. Immigration of young people to these ageing OECD countries is one of the possible solutions that have been discussed in relation to this problem. However, the opponents of immigration as a solution to the ageing problem fear negative impacts on labor market, public finances and social conditions. Recent studies on immigrants' economic performance in a number of European countries show that they actually tend to be more welfare dependent than natives. Thus increasing the immigration flows may not be a solution to the problem of population ageing but might instead impose a higher fiscal burden on the receiving economies, see for instance Storesletten (2003).

During the latest decades, immigration flows into the OECD countries have changed. While labor migration flows were dominating back in time, refugee immigrants and family union migration from Non-Western or less developed countries are now the main sources of net immigration in many OECD countries, see Chiswick and Hatton (2003). The skill level for these new migrant flows is often fairly low compared to the skill level in destination countries, see for instance Borjas (1994) and Chiswick (1986, 2000). According to SOPEMI (2003), the employment rate for Non-Western immigrants has been much lower than for natives in many European countries. The low employment rates are the main reason for the higher welfare dependency of Non-Western immigrants, see Wadensjö and Orrje (2002).

Why have the immigration flows changed compared to a few decades ago, and why do many developed countries seem to attract groups of immigrants with lower skills? The classical explanation is that relative real wages and employment opportunities are some of the main driving factors of international migration. Other more recent explanations focus on the effects of the welfare state regimes. Generous social services and benefit levels and a high tax pressure are nowadays characteristics of many OECD countries. According to the theory, see Borjas (1987, 1999a, b), the generosity of the welfare state may play an

important role in migrants' decision when choosing country of destination, the so-called "welfare magnet effect".

On the other hand, a number of non-economic factors are also highly important regarding the migration decision, see Zavodny (1997). Beside classic factors such as "love and wars", these include random events, environment, climate, language and aspects of "cultural distance". Regarding the last factor, it is a standard result that the more "foreign" or distant the new culture is and the larger the language barrier is, the less likely an individual is to migrate. However, changes and improvements in communication, continued globalization and declining costs of transportation may imply that the effect of 'distance' has been reduced during the latest decades. Further, network effects may also counteract 'distance'. If the concerned ethnic group is already present in the destination country, this may induce further immigration from the ethnic group concerned. Thus, an interesting question is: how much do the 'pure' economic factors like relative wages or incomes, employment opportunities, tax pressure and social expenditure level explain migration behavior, and how much is explained by other factors like immigration policies, social networks, cultural and linguistic distance, threat to own freedom and safety, random events or love?

Until now, the empirical evidence concerning international migration has been fairly scarce, and most studies have only focused on the migration flows into one country. In this paper, we add to the empirical evidence by analyzing the migration flows into a large number of OECD countries. We estimate a number of regression models on the flow of migrants from 129 countries to 22 OECD countries annually for the period 1990-2000. The large number of destination countries included in the analysis allows us to analyze the migration patterns for groups of OECD countries which are alike with respect to welfare state regimes or migration policy, and in this way we are able to identify patterns which may not be easy to document empirically in the more country-specific studies. We look at how important are selectivity effects in international migration. As we are not able to observe individual characteristics, we look at "country based selection effects". We test whether immigrants from low-income countries, where the educational level is relatively low, tend to go to countries with higher welfare and lower income inequality, and whether immigrants from high-income countries tend to go to countries with a low or high welfare level.[19]

[19] And moreover immigrants from these countries have higher transferability of their skills, see e.g. Duleep and Regets (1997).

Our results indicate that traditional factors such as cultural and linguistic distance are important. Network effects are also strong, but vary between source and destination countries. We do not find clear evidence that selection effects have had major influence on the observed migration patterns until now. This may partly be explained by restrictive migration policies in many OECD countries which may have dampened the potential selection effects.

The rest of the paper is organized as follows: Section 3.2 shortly describes the database collected for this study, and Section 3.3 describes immigration development and trends into the OECD countries. Section 3.4 presents the basic model on international migration we are estimating. Results from the econometric analyses are given in Section 3.5. Finally, Section 3.6 offers some concluding remarks.

3.2. DATA

It is not an easy task to collect data on international migration flows because a number of problems arise with respect to availability, variations of definitions of immigrants and migrations flows, and difficulties in obtaining comparable data from many countries on variables which may contribute to explain migration flows. In order to have more precise data on immigration, we have contacted the statistical bureaus in the 26 selected destination OECD countries and asked them for detailed information on immigration flows and stocks in their respective country during the period 1989-2000. This information is supplemented by published OECD statistics from "Trends in International Migration" publications.[20] Besides flow and stock information, we have collected a number of other time-series variables, which are used in the estimation of migration behavior. These variables are collected from different sources, e.g. OECD, World Bank, UN, ILO and IMF publications. The Appendix contains a list of all the variables used in estimated models, including definitions and data sources for each variable.

In total, the data set contains information on immigration flows and immigration stocks in 26 OECD countries from 129 countries of origin, see Pytlikova et al.

[20] Unfortunately, we are not able to distinguish whether the immigrants are job- or study-related people, tied movers in relation to family re-unions or refugees and asylum seekers.

(2004).[21] Although our data set presents substantial progress over that used in the past research, there are still some problems related. First of all, the data set is unbalanced, i.e. there are missing observations in the panel. For the majority of destination countries, we have information on migration flows and the stocks of immigrants for most of the years, but with different numbers of observation for each destination country, see Appendix, Table 3.A1, for means and standard deviations for all flows, stock and other variables and information for each destination country on the number of years for which we have information. There are missing observations in explanatory variables for some countries of origin as well.

Another important problem is that, different countries use different definitions of an "immigrant" and different sources for their migration statistics.[22] In definitions of immigration flows some countries like Australia, Canada, the Netherlands, New Zealand, Poland, The Slovak Republic and the United States define an "immigrant" by country of origin or country of birth, while some countries like Austria, the Czech Republic, Denmark, Finland, Greece, Iceland, Italy, Norway, and Sweden define an immigrant by citizenship and finally some countries like Belgium, France, Hungary, Germany, Japan, Luxembourg, Portugal, Spain, Switzerland, and the United Kingdom define an immigrant by nationality. For immigration stock, the definition of immigrant population differs among countries as well.[23] The differences in definition of immigrant population in the case of immigration stock are important. The first one, by country of origin/birth takes into account foreign-born population, i.e. first

[21] Table 3.A1 includes 27 OECD countries, but we have to exclude Ireland in all estimations because we do not have country specific information on the immigrant stock in Ireland. In the estimation, we further exclude 4 former Eastern European countries from the group of destination countries because these countries have a very different migration history during the period 1990-2000 because of the breakdown of the communist regimes. Thus, we end up estimating models of migration flows for 22 OECD countries.

[22] For example, Belgium, Germany, Luxembourg, the Netherlands, Switzerland and the Scandinavian countries use data based on population registers, the majority of Southern and Eastern European countries use data based on issuing residence permits, Australia, Canada, New Zealand and Poland use data from censuses, some countries like Greece, the United Kingdom and the United States use labour force surveys and others have information based on social security systems or other sources.

[23] The majority of countries, especially Australia, Austria, Canada, Denmark, Iceland, the Netherlands, New Zealand, Poland, the Slovak Republic, Sweden, the United Kingdom and the United States define immigrant population by country of origin or country of birth, some countries like the Czech Republic, Finland, Greece, Italy, Norway define immigrant population by citizenship and finally some countries like Belgium, France, Hungary, Germany, Japan, Luxembourg, Portugal, Spain and Switzerland define immigrant population by nationality.

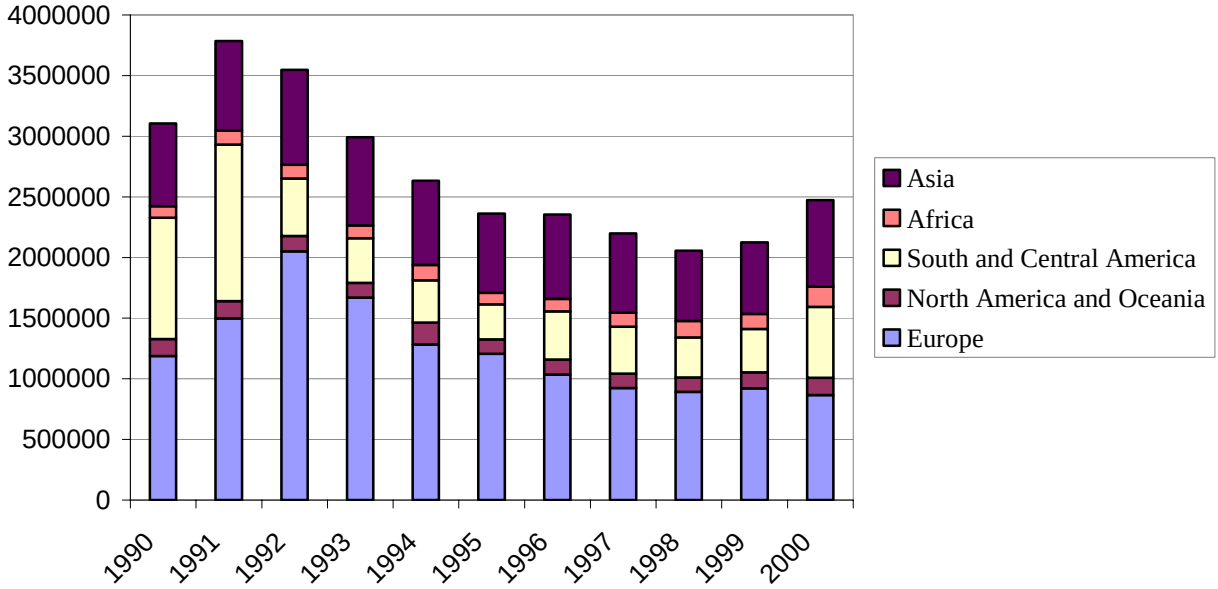
generation of immigrants, and thus it contains also immigrants that have obtained citizenship. The second and third definitions, by citizenship and nationality, include second and higher generation of foreigners, but do not cover naturalized citizens. Thus the nature of legislation on citizenship and naturalization plays a role.

3.3. DESCRIPTION OF MIGRATION TRENDS

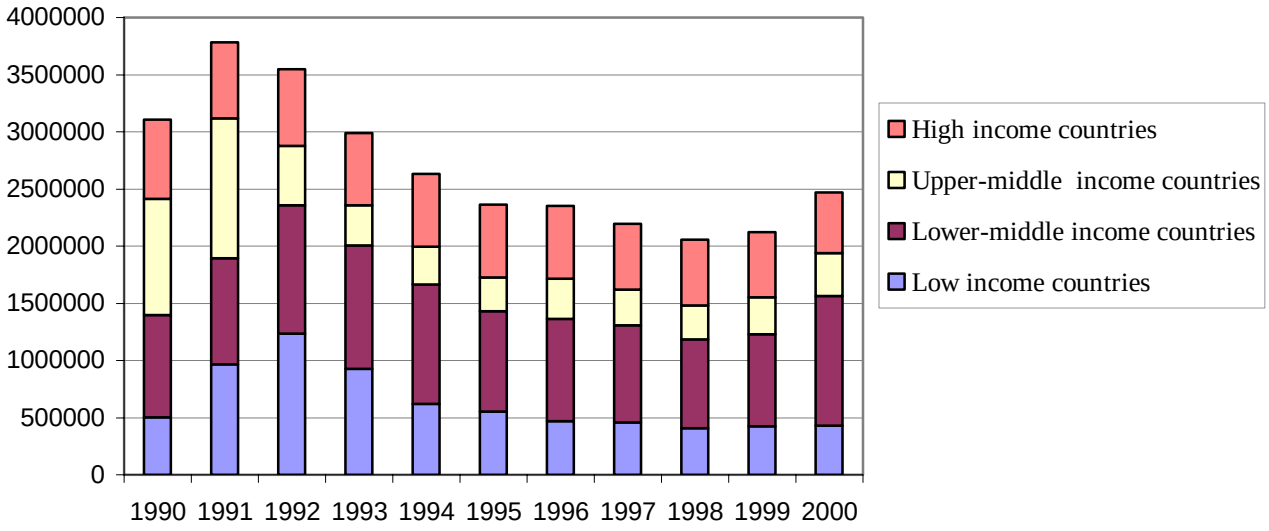
During the 1980s and the beginning of the 1990s, the immigration inflows increased in almost all OECD countries. According to Figure 3.1, which shows the development of total volume of gross immigration inflows into 17 OECD countries (see note 1 in Figure 3.1) during the period 1990-2000, the immigration flows peaked in 1991 reaching more than 3.7 million this year. The breakdown of the Iron Curtain in 1989 and the Yugoslavian civil war gave rise to a large increase of migration within Europe in the early 1990s, but in the most recent years (legal) migration flows seem to have stabilized, mainly due to immigration restrictions, see Hatton and Williamson (2004) and SOPEMI (2001). According to Figure 3.1, the distribution of OECD immigration by source-country continents and by source-country income levels has also been relatively stable since the early 1990s. We observe a slight increase in migration flows at the end of the decade, especially from South America, Africa and Asia. It should be noted that Figure 3.1 describes gross migration flows, not net flows. If there are large differences with respect to out-migration behavior for the different immigrant groups, the net migration flows may be very different from the gross flows. Non-Western immigrants tend to have a much lower return and out-migration rates than Western immigrants in many countries, and thus the stocks of OECD immigrants from different regions may still be changing despite the apparently quite stable development in Figure 3.1.

Figure 3.1. Total volume of gross immigration inflows to 17 OECD countries, 1990-2000.[1]

By source-country continent



By source-country income level

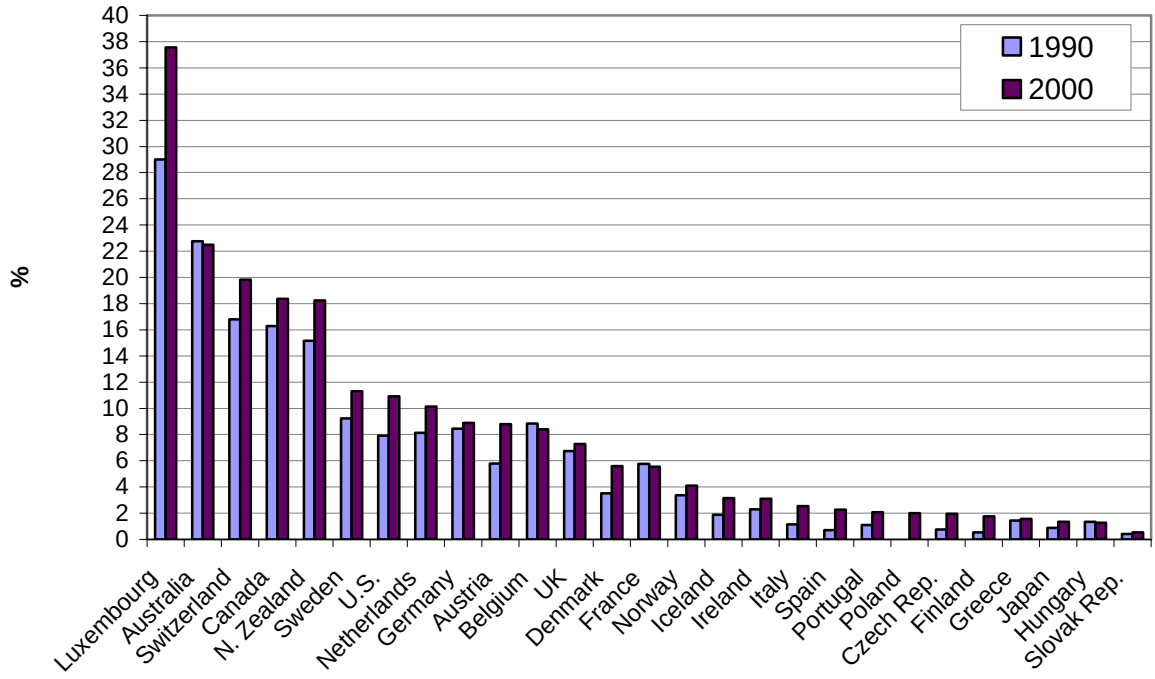


Note 1: The included destination countries are: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hungary, Japan, Luxembourg, New Zealand, Norway, Poland, Spain, Sweden, Switzerland and the United States. These countries are selected because we have annual data for all years, i.e. no missing observations on flows, for these countries. Following countries have been excluded due to missing observations on flows for some years: Austria, the Czech Republic, Greece, Iceland, Ireland, Italy, Netherlands, Portugal, the Slovak Republic and the United Kingdom.

Source: Own calculations.

However, aggregate data tell us relatively little about the migration flows and immigration practices of each country. Figure 3.2 digs one step deeper by showing the stock of foreign population as a percentage of total population in 26 OECD countries in the two years 1990 and 2000. The stocks of immigrants in OECD countries vary considerably, in 2000 ranging from 37 % in Luxembourg to less than 1% in the Slovak Republic. It is also apparent from Figure 3.2, that migration flows have changed in the sense that some of the major immigration countries back in time, for instance Australia and Canada, have experienced a much smaller growth in their immigrant population during the latest decade compared to relatively new immigration countries like Austria, Denmark, Norway and some of the Southern European countries. These countries were during the 1990s among the 'top 20' countries with respect to destination of asylum seekers, see Hatton and Williamson (2004).

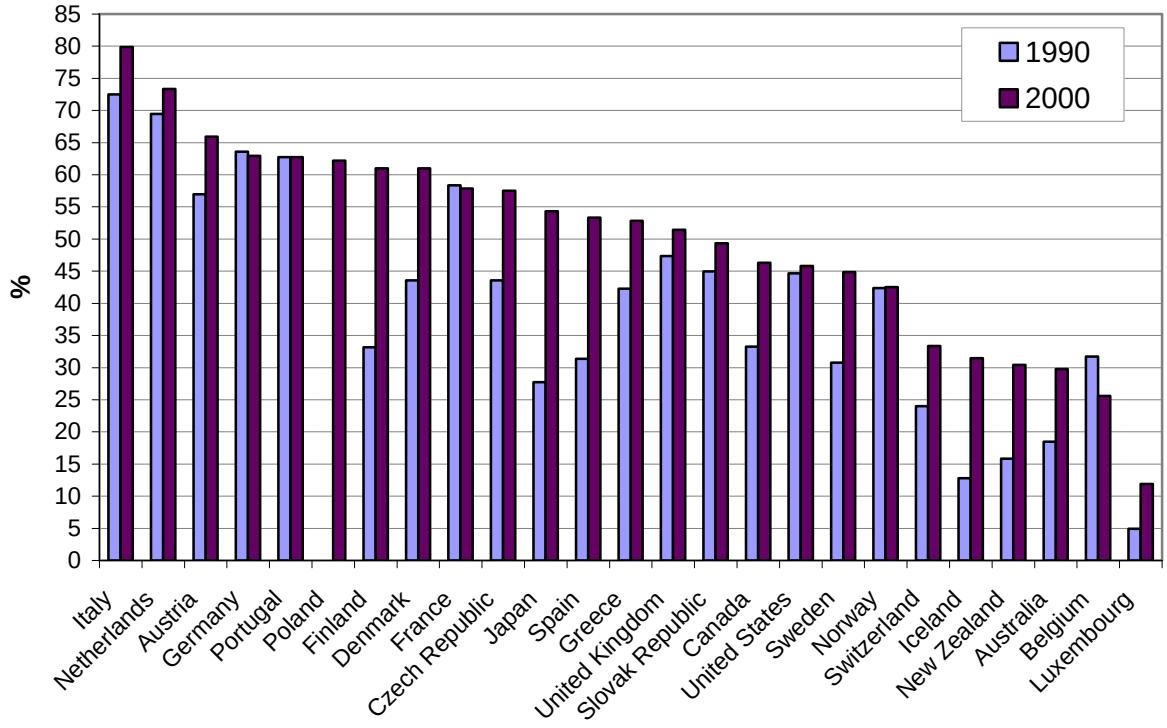
Figure 3.2. Stock of foreign population as a percentage of total population in 1990 and 2000 in selected OECD countries.



Note 2: Due to data availability the figure shows information on: 1991 instead of 1990 for Austria, Italy and Spain; 1991 and 2001 instead of 1990 and 2000, respectively, for Canada, Luxembourg and New Zealand; 1998 instead of 2000 for Greece; 1993 instead of 1990 for the Czech Republic; 1994 and 1999 instead of 1990 and 2000 respectively for Hungary; 1995 instead of 1990 for the Slovak Republic and 1992 instead of 1990 for the United Kingdom.

Source: Own calculations.

Figure 3.3. Proportion of immigration stock in 1990 and 2000 originating from low– and lower-middle-income countries.



Note 3: Definition of low and lower-middle income is given in the Appendix. Due to data availability the figure shows information on: 1991 instead of 1990 for Austria, Italy and Spain; 1991 and 2001 instead of 1990 and 2000, respectively, for Canada, Luxembourg and New Zealand; 1998 instead of 2000 for Greece; 1993 instead of 1990 for Czech Republic; 1994 and 1999 instead of 1990 and 2000, respectively, for Hungary; 1995 instead of 1990 for Slovak Republic and 1992 instead of 1990 for United Kingdom.

Source: Own calculations.

Figure 3.3 shows immigration stocks originating in countries which according to World Bank classifications are categorized as poor or 'medium poor' (for a precise definition of the categories, see Appendix). As we can see, there are large variations in the composition of immigrant stocks and flows in the OECD countries. In some countries, like Luxembourg and Belgium, the large stock of immigrants mainly stems from other OECD countries (working in EU institutions and the financial sector) while in other countries, to some extent in new immigration countries like Italy, Spain, Austria and Finland, the proportion of immigrants who stem from poor source countries is large. Figure 3.3 indicates that the composition of immigrants has changed in many countries during the single decade. In almost all destination countries, the stock of immigrants coming from poor – low-income countries has increased but the largest relative increases

are found in countries which have experienced the largest relative growth in immigrant stock during the period 1990-2000.[24]

3.4. EMPIRICAL MODEL

The potential migrants are assumed to have a utility-maximizing behavior and compare alternative potential destination countries and choose the country, which provides the best opportunities, all else being equal. Immigrants' decision to choose a specific destination country depends on many factors, which relate to the characteristics of the individual, the individual's country of origin and all potential countries of destination. Under certain conditions, see Zavodny (1997), the number of individuals migrating to country *j*, i.e. whose utility is maximized in country *j*, is given by:

$$M_{ijt} = \beta_1 S_{ijt} + \beta_2 D_{ij} + \beta_3 X_{it} + \beta_4 X_{jt} + \mu_{ijt}, \qquad (3.1)$$

where M_{ijt} is the number of immigrants moving to country *j* from country *i* at time *t*.[25] S_{ijkt} is a variable that affects an individual's utility of living in country *j* at time *t,* given that the individual lived in country *i* at time *t-1.* For example, an individual may want to move to a country where his friends or family members are. This variable reflects network effects. D_{ij} reflects time-independent fixed-out-of-pocket and psychological/social costs of moving from country *i* to country *j*. X_{ikt} and X_{jkt} are vectors of push and pull factors that vary across time and affect individual *k's* choice where *i* denotes source country and *j* denotes destination country, (*i* = 1,…,129, and *j* = 1,….,22); *t* is time period (*t* = 1,…,11). Finally, μ_{ijt} is an error term assumed to be *iid* with zero mean and constant variance.

The migration flow given by (3.1) represents an 'ex ante' measure of the migration flows. The resulting and observed 'ex post' flow may of course also be

[24] The order of the countries with the highest proportion of immigrants coming from poor countries changed during the 1990 – 2000 decade. The most significant "jump", when comparing years 1990 and 2000, can be observed for Finland (from 15th to 6th position), Austria (from 6th to 3rd position), Japan (from 19th to 10th position), Spain (from 17th to 11th position) and Denmark (from 10th to 7th position).

[25] The model does not take into account potential out-migration or return migration. Since the stock of immigrants is the net result of in- and outflow mechanisms, and since out-migration is non-negligible for many immigrant groups, this topic is also very important when explaining the composition of immigrant groups in different countries. However, in this study we only focus on gross immigration.

affected by migration policy, illegal immigration etc. We normalize the immigration flows by population size in source country, i.e. we use (the logarithm of) the emigration rate, m_{ijt}, instead of immigration flow in absolute numbers as the dependent variable. All time-varying explanatory variables are lagged by one year in order to account for information on which the potential immigrants base their decision to move.

In some of the models, we have further experimented with the inclusion of destination countries fixed or random effects, $c_{j,}$ in order to capture unobserved time-constant factors influencing immigration flows, for instance differences in national immigration policy, see for instance Fertig and Schmidt (2000) for the importance of the homogeneity assumptions. Thus, the model to be estimated is:

$$m_{ijt} = \beta_1 s_{ijt-1} + \beta_2 D_{ij} + \beta_3 X_{it-1} + \beta_4 X_{jt-1} + c_j + \mu_{ijt} \qquad (3.2)$$

The network links between sending and receiving countries are captured by the normalized lagged stock of immigrants, s_{ijt-1}, i.e. the stock of immigrants from source country *i*, divided by population in source country *i*. Through the "networks" the potential migrants receive information about the immigration country - about the possibility of getting a job, about economic and social systems, immigration policy, people and culture. It facilitates easier immigration and further easier adaptation of newly coming immigrants into the new environment.

D_{ij} contains variables reflecting costs of moving to a foreign country. First, we include a variable describing cultural similarity denoted *Neighboring Country*. It is a dummy variable assuming the value of 1 if the two countries are neighbors, 0 otherwise. The variable *Colony* is a dummy variable assuming the value of 1 for countries ever in colonial relationship, 0 otherwise. This variable is included because the past colonial ties might have some influence on cultural distance: provide better information and knowledge of potential destination country and thus lower migration costs, which could encourage migration flows between these countries. Further, we include a variable *Linguistic Distance*, which is a dummy variable equal to 1 for common language in two countries, 0 otherwise. In order to control for the direct costs (transportation costs) of migration, we use the measure of the *Distance in Kilometers* between the capital areas in the sending and receiving countries. We also include a variable *Trade Volume*, which is defined as the total trade values (both imports and exports) for all country

pairs.[26] We expect that the business ties represented by the volume of trade could have (positive) effects on international migration. Moreover, this variable is often considered as an indicator of globalization.

The explanatory variables included in X_{it-1} and X_{jt-1} cover a number of push and pull factors such as the economic development measured by GDP per capita in destination and source countries (which are supposed to catch relative income opportunities in the two countries), employment opportunities in the sending and receiving countries, measured by unemployment rates, and demographic and political factors. The hypothesis is that a higher (lower) level of economic development in the destination country will lead to higher (lower) immigration rates because potential immigrants expect to experience better (worse) income opportunities.[27] The effect of GDP per capita growth in the source country may be more mixed. Earlier studies have found an inverted 'U' relationship between source-country GDP and emigration, see Hatton and Williamson (2002). At very low levels of GDP, emigration is low because people are too poor to pay the migration costs. At higher income levels, migration increases, and when GDP levels increase further, migration may again decrease because the economic incentives to migrate to other countries decline. Therefore, in most of the specifications, we allow for non-linear effects of GDP in source countries by using indicators for low, lower middle, upper-middle and high income source countries according to World Bank classifications, see the Appendix.

The GDP variable is supplemented by a variable reflecting the educational level of the source country, measured by adult *Illiteracy Rate*. According to Harris and Todaro (1970), it is expected that a low (high) unemployment rate in the destination (source) country will cause higher immigration flows. We also include a variable capturing population pressure, e.g. population in the source country *i* divided by population in destination country *j*. The higher the relative population in the source country is, the larger migration pressure is expected. A more appropriate measure, that we are not able to include because of data limitations, would be the proportion of the population in the younger adult age

[26] Import and export values from Direction of Trade Statistics are expressed in nominal U.S. dollar prices. The constant prices would be suitable for our analysis, but we decided to use the nominal ones as it is quite a complex task to get suitable export and import deflators.

[27] The causality may also run the other way around, i.e. more immigration implies increased growth. Mayda (2004) analyses whether this type of reverse causality is important and rejects that it is of any significant size.

groups because a large proportion of migration flows has been driven by these age groups, see for instance Fertig and Schmidt (2000).

The political pressure in the source country may also influence migration. Therefore, we include the variable *Freedom House Index* which is intended to measure the degree of freedom, political rights and civil liberties in the countries. The variable is in the form of a discontinuous variable assuming values from one to seven, with one representing the highest degree of freedom and seven the lowest. Violated political rights and civil liberties are expected to increase migration flows.

We include some variables which are assumed to capture potential pull factors relating to the 'welfare magnet' theories, as presented by Borjas (1987, 1999b). We have experimented with different variables: the public social expenditure and the tax revenue, both expressed as a percentage of GDP in the potential destination countries, and measures of the income distribution (Gini-coefficients). However, the tax revenue and social expenditure variables are highly correlated, and we have had difficulties in getting comparable and reliable information for the majority of countries on the Gini coefficient. Thus, in the estimations presented in Section 3.5, only the tax level is included. According to the welfare magnet theory, we expect higher migration flows from low-income countries into countries with higher tax levels (and with higher levels of public social expenditure).

All variables used in the estimations, except dummy variables, are in logs, i.e. the estimated coefficients represent impact elasticities.

3.5. RESULTS

3.5.1 Choice of preferred econometric specification

In Table 3.1 we analyze the stability of the results with respect to the choice of different econometric specifications. Column 1 shows the estimates using pooled OLS and excluding the lagged stock of immigrants from country *i* in country *j*, while Column 2 includes the stock variable. Comparing the two columns indicates that the existing stock of immigrants of a given ethnic origin is an important factor explaining future migration flows. The explanatory power (R-square) of the model increases from 62% to 78% when including the stock variable, and thus this variable is included in all subsequent models. The highly

significant coefficient to the stock variable indicates the existence of strong network effects. [28]

Since we observe the same countries during a number of years, we are able to control for time constant unobserved differences for instance with respect to migration policy regimes between the destination countries. In Columns 3-4, fixed and random effects estimations of (2) are presented. Time constant variables are excluded from the fixed effects estimation. If the unobserved factors c_j correlate with the explanatory variables, the fixed effects panel data model has priority. If they are unrelated, the random effects model is preferred. When comparing the pooled OLS results with the panel models treating destination country in Columns 3-4 as fixed or random effects, the overall impression is that the results regarding sign and statistical significance are quite robust across the different specifications.[29] As expected, the absolute sizes of the coefficients are generally larger when applying OLS on the pooled samples of countries while the panel data estimators which controls for country-specific fixed or random effects are generally smaller in numerical magnitude.

A further problem when estimating (3.2) relates to the dynamics in the panel data structure. The fact that the migration stock basically consists of the previous migration flows and having migration stock on the right hand side may imply that the least squared estimators are subject to simultaneous equation bias, see Alvarez-Plata et al. (2003) for a discussion. In the presence of unobserved country specific effects in the error term, the lagged migration stock variable will be correlated with the error term. This leads to biased and inconsistent results, especially in short panels.

One solution is to employ instrumental variable techniques such as Arellano and Bond's (1991) difference GMM estimator or Arellano and Bover's (1995) system GMM estimator, see Blundell and Bond (1998). The difference GMM estimator is based on using lagged levels as instruments in differenced equations. The method has been widely criticized for generally weak performance of used instruments, see Blundell and Bond (1998). Therefore the difference GMM

[28] In order to see whether this result is driven by the drop in observations when including the stock variable (for which a number of countries have missing information in some of the years) as a regressor, we have estimated the model in column (1) without the stock variable and including exactly the same observations as in columns (2) – (5). The explanatory power increased in a similar fashion.

[29] However, a Hausman test actually supports the random effects assumption of zero correlation between explanatory variables and country-specific effects. It gives chi-squared (10) =11.62.

estimator has been extended to system GMM estimator, which uses lagged differences of the variables as instruments for equations in levels, in combination with the usual GMM approach. We use both GMM techniques in one- and two-step procedures; see Table 3.1, Columns 5-8.[30] The GMM estimators may also be criticized for a number of weaknesses, see for instance Alvarez-Plata et al. (2003). One important problem in this study is that the GMM estimator is not well suited to cope with unbalanced panels (Arellano, 2003).[31]

Therefore, we end up using an alternative panel data approach, which is more flexible in this perspective. One obvious choice is to use population averaged generalized estimating equations (GEE) estimator that allows us to add the time-invariant variables and to specify the within-group correlation structure for the panels (it accounts for correlated observations in each group e.g. flows into the same destination country). GEE with the assumed Gaussian distribution and exchangeable correlation is equivalent to random effects maximum likelihood estimator, but allowing the standard errors to be adjusted for clustering.[32]

[30] We test the validity of instruments by the Sargan or Hansen test of over-identifying restrictions, which tests whether the instruments as a group appear exogenous. Our results show that the Hansen test of over-identifying restrictions is satisfied for both GMM estimators (Chi-squared (450) = 640.28 and chi-squared (530) = 766.97 for difference and system robust GMM estimator, respectively). The sufficiency of GMM is further tested by autocorrelation tests derived by Arellano and Bond (1991). For all GMM estimators the second-order serial correlation test in the first differenced equation is unable to reject the null hypotheses of no second-order serial correlation, there are the following values of Arellano-Bond AR (2) tests: z = 0.61, 0.68, 0.75 and 0.78 for difference GMM one-step, difference GMM two-step, system GMM one-step and system GMM two-step, respectively.

[31] Another critique stems from the fact that the application of first differences wipes out the structure of the model given by economic theory, see Alvarez-Plata et al. (2003). There is also a relatively large loss of efficiency in GMM estimators. The results from OLS, fixed effects and GMM estimations of all the models are available from the authors upon request.

[32] We use the XTGEE procedure in STATA and we use function “robust” that denotes using the Huber/White sandwich estimator.

Table 3.1. Estimation of migration flows from 129 source countries (i) to 22 (OECD) destination countries (j), 1990 – 2000.

Dependent variable: m_{ijt} = Log(Gross Flows per 1000 inhabitants of the source)	**OLS**	**OLS**	**FE (c_j)**	**RE (c_j)**	**difference GMM**	**difference GMM two-step**	**system GMM**	**system GMM two-step**	**GEE (c_j)**
Independent variables:									
Sijt-1 Log Stock of	-	0.603 [0.010]***	0.637 [0.008]***	0.614 [0.009]***	0.385 [0.076]***	0.357 [0.075]***	0.577 [0.038]***	0.581 [0.043]***	0.614 [0.033]***
Dijt-1 Neighbouring Country (0/1)	0.424 [0.067]***	0.089 [0.056]	-	-0.01 [0.048]	-	-	-	-	-0.029 [0.144]
Linguistic Distance (0/1)	1.216 [0.061]***	0.329 [0.059]***	-	0.352 [0.051]***	-	-	-	-	0.346 [0.094]***
Colony (0/1)	0.239 [0.086]***	-0.053 [0.077]	-	0.392 [0.070]***	-	-	-	-	0.404 [0.202]**
Log Distance in Kilometres	-0.394 [0.019]***	-0.225 [0.017]***	-	-0.097 [0.017]***	-	-	-	-	-0.085 [0.049]*
Log Trade Volume	0.255 [0.009]***	0.008 [0.008]	0.150 [0.013]***	0.08 [0.013]***	-0.107 [0.046]**	-0.097 [0.042]**	0.020 [0.035]	0.010 [0.032]	0.099 [0.027]***
Xjt-1 Log GDP per cap PPP, j	1.930 [0.090]***	1.205 [0.074]***	1.229 [0.248]***	1.211 [0.184]***	3.038 [0.543]***	2.519[0.490]***	1.169 [0.207]***	1.126 [0.192]***	1.270 [0.993]
Log Unemployment Rate, j	-0.320 [0.033]***	-0.151 [0.027]***	-0.242 [0.030]***	-0.249 [0.030]***	-0.086 [0.040]**	-0.095 [0.034]***	-0.151 [0.041]***	-0.150 [0.037]***	-0.243 [0.074]***
Log Tax Revenue in j/GDP, j	-0.848 [0.092]***	-0.190 [0.077]**	-0.785 [0.348]**	-0.198 [0.246]	0.071 [0.367]	0.098 [0.330]	0.006 [0.180]	-0.037 [0.183]	-0.492 [0.838]
Xit-1 Log(Pop. (j)/Pop- (i))	0.592 [0.008]***	0.198 [0.010]***	0.323 [0.014]***	0.266 [0.013]***	-0.055 [0.485]	-0.082 [0.399]	0.257 [0.036]***	0.270 [0.047]***	0.284 [0.034]***
Log GDP per cap PPP, i	0.034 [0.038]	-0.186 [0.033]***	-0.340 [0.031]***	-0.239 [0.032]***	-0.281 [0.243]	-0.308 [0.234]	-0.212 [0.124]*	-0.180[0.145]	-0.263 [0.084]***
Log Unemployment Rate, i	0.109 [0.023]***	-0.086 [0.020]***	-0.010 [0.018]	-0.030 [0.018]*	-0.034 [0.041]	-0.025 [0.039]	-0.062 [0.050]	-0.064 [0.049]	-0.025 [0.027]
Log Illiteracy Rate, i	0.017 [0.019]	-0.209 [0.017]***	-0.225 [0.014]***	-0.208 [0.014]***	1.436 [0.433]***	1.233 [0.404]***	-0.287 [0.040]***	-0.276 [0.051]***	-0.208 [0.042]***
Log Freedom HouseIndex, i	0.043 [0.045]	0.144 [0.039]***	0.205 [0.033]***	0.165 [0.033]***	0.022 [0.100]	0.020 [0.094]	0.132 [0.107]	0.130 [0.102]	0.172 [0.086]**
Fixed/Random Effects of Destination, c_j	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant Term Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No of observations	8783	6566	6566	6566	4913	4913	6258	6258	6566
Adjusted R-squared (GEE: Scale)	0.62	0.78	0.84	0.78					1.263

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

Table 3.1 indicates that the estimated coefficients of key variables like lagged stock of immigrants, tax pressure and GDP level are fairly robust across specifications, except for the differences which exist between pooled OLS versus panel estimators and difference estimators, probably partly due to unobserved time constant factors. Thus, we show both OLS and GEE results in Tables 3.2-3.3 below.

3.5.2 Aggregate results

In Table 3.2, we show the estimation results from OLS and GEE estimations based on aggregated models which include all 22 OECD countries. In Columns 1-2, we show results parallel to the model in Table 3.1, only exception is that income level in source country is represented by 4 indicators (highest level is excluded) instead of a continuous GDP variable in order to allow for non-linear effects. In Columns 3-4, we interact these 4 indicators with the stock and tax pressure variables, in order to dig deeper into potential selection and network effects.

Concentrating on the results from the GEE random effects estimation in Column 1, Table 3.2, the elasticity of the flow of immigrants from country *i* with respect to the stock of immigrants in country *j* is estimated to be about 0.59, implying that on average an increase in the stock of immigrants of 10 % from a given source country induces an increase in annual gross flow of about 5.9 % of new immigrants from this source country. Since we control for other country-specific factors, this result is mainly explained by the existence of network effects which seem to be both statistically significant and quantitatively of a considerable size. Similar results are found in Zavodny (1997) and Hatton and Williamson (2002).

In Columns 3-4, we also allow the stock effects to vary across source-country income level groups. Here we find that the stock effects are higher for immigrants stemming from low-income countries (62%) than for immigrants from upper-middle or high-income countries (55-56%). Thus, network effects seem to be slightly stronger for immigrants stemming from low-income groups compared to immigrants from high-income groups when estimating on the total sample of all OECD destination countries and all source countries. When splitting the estimations according to destination countries, this pattern across source country income levels seems to stem mainly from migration flows to the

Anglo-Saxon or liberal welfare states (USA, Canada, Australia and New Zealand as discussed below).

In all regressions estimated by panel data techniques the dummy variable for source and destination countries being neighbors is found to be insignificant, while it is positively significant in the OLS estimations. The other distance-related dummy variables, i.e. linguistic distance and a dummy for the source country having in the past been a colony to the destination country, are consistently found to have the expected positive impact on migration flows with most coefficients being significant. Finally, in this group of variables, the distance between countries measured in kilometers and the pair wise trade volume between source and destination countries are both significant with expected signs. Increasing distance and smaller trade volume imply lower migration flows and vice versa.

The next block of variables in Table 3.2 contains the pull factors in the destination countries. GDP per capita in destination country has a positive and – except in one GEE specification – highly significant coefficient. For instance, Column 2 indicates that a doubling of GDP increases the immigration flow by about 100%. We also find that higher unemployment in destination countries has a significantly dampening impact on migration. If the unemployment rate doubles, the immigration flow is reduced by about 25% according to GEE results.

Direct welfare state attractors among the pull factors are measured by the tax pressure needed to finance the welfare state. In the OLS estimation, Column 1, the effect is found to be negative, and the effect is insignificant in Column 2, where we control for other country-specific time constant factors. Zavodny (1997) also found that controlling for country-specific factors and network effects resulted in welfare state variables becoming insignificant regarding immigration to the USA. When splitting the tax coefficient according to source-country income level in Columns 3-4, the tax effect seems to be most negative for immigrants from poor and middle income countries, and even significantly positive for immigrants from the high income level countries, a results which is against a ‘welfare magnet’ theory.

Next, we come to a block of source-country push factors. The first of these is a simple pair wise population ratio between destination- and source-country populations. The coefficient is significantly positive in all specifications in Table 3.2, implying that immigrants tend to flow to larger countries, cet. par.

Table 3.2. GEE(c_j) estimations of migration flows from 129 source countries (i) to 22 (OECD) destination countries (j), 1990 – 2000.

Dependent variable: m_{ijt} = Log (Gross Flows per 1000 Inhabitants)	OLS	GEE (c_j)	OLS	GEE (c_j)
Independent variables:				
Sijt-1				
Log(Stock of Foreigners/Pop.*(j)*)	0.587 [0.009]***	0.594 [0.009]***	-	-
Stock*Lowest GDP level	-	-	0.616 [0.017]***	0.638 [0.034]***
Stock*Lower-middle GDP level	-	-	0.62 [0.011]***	0.621 [0.034]***
Stock*Upper-middle GDP level	-	-	0.562 [0.015]***	0.571 [0.040]***
Stock*High GDP level	-	-	0.546 [0.012]***	0.535 [0.030]***
Dijt-1				
Neighbouring Country (0/1)	0.093 [0.055]*	-0.029 [0.051]	0.156 [0.055]***	0.058 [0.151]
Linguistic Distance (0/1)	0.317 [0.058]***	0.342 [0.054]***	0.309 [0.058]***	0.339 [0.085]***
Colony (0/1)	-0.009 [0.076]	0.429 [0.074]***	-0.02 [0.075]	0.431 [0.207]**
Log(Distance in Kilometres)	-0.237 [0.017]***	-0.093 [0.018]***	-0.231 [0.017]***	-0.104 [0.047]**
Log(Trade Volume)	0.015 [0.008]*	0.118 [0.014]***	0.014 [0.008]*	0.109 [0.021]***
Xjt-1				
Log(GDP per cap PPP, *j*	1.166 [0.073]***	1.048 [0.237]***	1.170 [0.073]***	1.125 [0.996]
Log(Unemployment Rate, j)	-0.172 [0.027]***	-0.256 [0.032]***	-0.172 [0.027]***	-0.249 [0.072]***
Log(Tax Revenue in j/GDP, j)	-0.191 [0.076]**	-0.536 [0.326]		
Tax*Lowest GDP level	-	-	-0.691 [0.245]***	-0.845 [0.752]
Tax*Lower-middle GDP level	-	-	-0.772 [0.119]***	-0.933 [0.747]
Tax*Upper-middle GDP level	-	-	-0.433 [0.173]**	-0.919 [0.773]
Tax*High GDP level	-	-	0.482 [0.110]***	-0.164 [0.927]
Xit-1				
Population (j)/Population (i)	0.215 [0.009]***	0.310 [0.015]***	0.219 [0.010]***	0.310 [0.028]***
Income level:				
Lowest level (0/1)	0.394 [0.081]***	0.598 [0.083]***	4.874 [0.963]***	3.35 [2.347]
Lower-middle level (0/1)	0.694 [0.058]***	0.794 [0.058]***	5.444 [0.569]***	3.767 [1.611]**
Upper-middle level (0/1)	0.175 [0.048]***	0.275 [0.047]***	3.525 [0.726]***	3.063 [1.139]***
Highest level (excluded)	-	-	-	-
Unemployment Rate, i	-0.108 [0.020]***	-0.052 [0.018]***	-0.115 [0.020]***	-0.065 [0.024]***
Illiteracy Rate, i	-0.214 [0.015]***	-0.202 [0.014]***	-0.222 [0.015]***	-0.204 [0.045]***
Freedom House Index, i	0.028 [0.038]	0.07 [0.035]**	0.033 [0.038]	0.065 [0.066]
Random Effects of Destination, c_j	No	Yes	No	Yes
Constant Term Included	Yes	Yes	Yes	Yes
No of observations	6688	6688	6688	6688
Adj. R-square (OLS)/Scale (GEE)	0.788	1.263	0.790	1.225

Notes: 10, 5 and 1% levels of confidence are indicated by *, ** and ***, respectively. Standard errors are in parentheses. The number of observations varies between Column 1 and Columns 2-3 because for some source countries there is only information on income level (indicator variables) but no exact information on GDP per capita.

Instead of entering GDP per capita in source countries, we include 3 indicators for income level in source country, allowing for non-linear effects of GDP. We find the expected inverted U-curve, migration flows are higher from source

countries with middle-low and middle-high incomes compared to the countries with the lowest or highest income levels, see Hatton and Williamson (2002). This indicates that migration costs are important and in the poorest source countries this may be a barrier to emigration. This result is supported by the coefficient of the variable indicating unemployment level in source country. The coefficient tends to be negative. In a regional context inside a country this would be a counterintuitive result as higher unemployment is expected to push people to other regions. Here, however, we deal with international mobility which is expected to be much more costly in both financial and other terms. The negative coefficient of the illiteracy rate indicates the same tendency. Migration to the rich OECD countries increases when the educational level in source countries increases. Finally, we have included the Freedom House Index among the source-country push factors. The effect is positive indicating that lower degrees of freedom create out-migration incentives, part of it being in the form of refugees. However, the effect seems to become insignificant when we allow for non-linear effects of the source-country income level.

3.5.3 Disaggregated results for groups of destination countries.

One important potential criticism of the results above is that the observed migration flows may be highly influenced by differences in migration policy among countries and over time. Thus, the observed patterns may not reflect the underlying 'true migration pressure' which OECD countries face from the relatively poor countries. Hatton and Williamson (2004) document, that the EU15 countries have been the main destination region for the large refugee flows from mainly poor countries which took place during the 1990s. We are not able to control directly for 'migration policy' which may act through a number of parameters. Instead, we select two groups of destination countries: the Anglo-Saxon countries (the USA, Canada, Australia, New Zealand) which back in time were the typical in-migration countries and the Western European countries. The Anglo-Saxon countries are to a larger extent than Non-Anglo-Saxon countries characterized by selective immigration policies where immigrants are supposed to provide for themselves either by work or by being provided for by their family. The impact from these policies shows up very clearly in the ratios between immigrant and native unemployment rates, cf. OECD (2001), which are close to 1 for the Anglo-Saxon countries. For the Western European countries, on the other hand, the ratios are high which may reflect that immigration policies are characterized by entry of tied movers and refugees from less developed countries

who are difficult to integrate in labor markets that are both more regulated and in many cases have higher relative minimum wages than found in the Anglo-Saxon countries. A comprehensive discussion of these differences can be found in Boeri et al. (2002).

If the difference in migration policy regimes and labor markets matters for the observed migration flow patterns, we expect to find differences regarding the sign to the welfare state proxy variable and differences regarding the importance of destination-country unemployment rates and the illiteracy rates in source countries between the two groups of destination countries. The prior expectation is that the Anglo-Saxon countries attract immigrants from source countries with more educational skills as approximated by the illiteracy rate and income levels and further attract immigrants when unemployment is relatively low.

In Table 3.3, we show the results from estimating a model parallel to Columns 2-3 in Table 3.2, but now also interacting with an indicator variable for being an Anglo-Saxon country, i.e. the estimated coefficients in Columns 1 and 3 are the coefficients for Western European countries, and Columns 2-4 are the difference for Anglo-Saxon countries for the concerned coefficient. We actually find quite large differences between the Anglo-Saxon and Western European countries for some variables. For the Anglo–Saxon countries, there is a much larger variation across source-country income levels with respect to the network effect compared to Western Europe where the stock effect varies between 57% for middle-high and highest income source countries to 62% for immigrants from the lowest income levels. For Anglo-Saxon countries, the stock effect for the lower middle income level group is 9% higher, i.e. about 62%+9%= 71%. For the upper-middle income groups, the difference between Anglo-Saxon and Western Europe countries is exactly opposite. This may reflect, either that tightened migration policy in the Western European countries has dampened migration flows in the 1990s from poor countries more than it is the case for Anglo-Saxon countries, or it might reflect that networks are much more important for poor immigrants arriving to the Anglo-Saxon countries compared to the Western European countries which have much more generous and extended welfare services. We pursue this issue in the next sections.

The tax pressure variables are only significant in the OLS regressions, which may of course be biased if unobserved factors correlate with the tax measure. With this reservation in mind, concentrating on the OLS estimations we find the same structure as in Table 3.2, i.e. the higher tax level destination countries seem

to attract immigrants from less poor countries, and this tendency also seems to dominate when splitting into Anglo-Saxon and Western European countries.[33]

Table 3.3. Selected coefficients from estimations of migration flows from 129 source countries (i) to 23 (OECD) destination countries (j), 1990 – 2000. Disaggregating by migration policy regimes.

	OLS		GEE(c_j)	
Dependent variable: m_{ijt} = Log (Gross Flows per 1000 Inhabitants)	Main Effects	Interaction with Anglo-Saxon indicator (USA, Ca, Australia, New Zealand)	Main Effects	Interaction with Anglo-Saxon indicator (USA, Ca, Australia, New Zealand)
Independent variables:	(Western Europe = EU15+No+ Switz.)		(Western Europe = EU15+No+ Schwitz.)	
Sijt-1				
Stock*Lowest GDP level	0.610 [0.017]***	-0.036 [0.157]	0.630 [0.035]***	-0.056 [0.062]
Stock*Lower-middle GDP level	0.625 [0.011]***	0.143 [0.052]***	0.618 [0.037]***	0.092 [0.041]**
Stock*Upper-middle GDP level	0.571 [0.016]***	-0.181 [0.072]**	0.574 [0.049]***	-0.156 [0.051]***
Stock*High GDP level	0.569 [0.013]***	-0.229 [0.062]***	0.563 [0.034]***	-0.164 [0.103]
Dijt-1	yes	yes	yes	Yes
Xjt-1				
Log(GDP per cap PPP, *j*	1.735 [0.077]***	-0.570 [0.254]**	1.488 [0.998]	-0.512 [0.744]
Log(Unemployment Rate, j)	-0.116 [0.026]***	1.019 [0.328]***	-0.255 [0.078]***	1.722 [0.500]***
Log(Tax Revenue in j/GDP, j)				
Tax*Lowest GDP level	-1.027 [0.258]***	0.027 [2.061]	-0.675 [0.793]	0.796 [1.864]
Tax*Lower-middle GDP level	-1.387 [0.127]***	1.759 [0.953]*	-0.947 [0.815]	2.472 [1.883]
Tax*Upper-middle GDP level	-1.092 [0.187]***	0.165 [1.352]	-0.873 [0.814]	1.136 [1.983]
Tax*High GDP level	-0.234 [0.117]**	0.116 [0.762]	-0.363 [0.982]	0.225 [2.244]
Xit-1				
[Population (j)/Pop. (i)]/100	26.000 [9.812]***	-0.002 [0.001]**	29.784 [2.972]***	-0.001 [0.0004]**
Income level:				
Lowest level (0/1)	3.485 [1.025]***	-0.668 [6.997]	1.879 [2.441]	-2.568 [2.880]
Lower-middle level (0/1)	5.112 [0.602]***	-6.740 [3.347]**	3.020 [1.939]	-8.336 [2.310]***
Upper-middle level (0/1)	3.328 [0.790]***	-0.478 [4.759]	2.094 [1.342]	-3.138 [1.756]*
Highest level (excluded)	-	-	-	-
Unemployment Rate, i	-0.108 [0.020]***	0.019 [0.083]	-0.055 [0.023]**	-0.051 [0.026]*
Illiteracy Rate, i	-0.245 [0.015]***	0.326 [0.062]***	-0.230 [0.043]***	0.301 [0.047]***
Freedom House Index, i	0.035 [0.038]	0.161 [0.147]	0.056 [0.069]	0.177 [0.105]*
Random Effects of Destination,	No		Yes	
Constant Term Included	Yes		Yes	
No of observations	6688		6688	
Adj. R-sq (OLS)/Scale (GEE)	0.805		1.093	

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

[33] We have made another set of estimations where we only look at the flows from 102 non-OECD countries into the 26 OECD countries. This does not change the finding of significantly negative coefficients to the tax pressure variable of about the same magnitude in the two country groups.

There are differences in the effects of the economic factors as well. The coefficients of the GDP per capital level in the Western European countries are positive for the lowest, lower- middle, and upper-middle income levels (though only significant in OLS estimations), while for the Anglo-Saxon destination countries the GDP effect is significantly smaller than in Western Europe (OLS estimates). This indicates that Western Europe tends to get relatively more immigrants from the 'non-rich' countries, while the liberal countries get significantly fewer immigrants from the lower-middle GDP countries, which according to the results in Table 3.2 are the countries with the largest emigration flows.

These results may be interpreted as giving some support to a selection hypothesis in the sense that the liberal countries with more selective immigration policies seem to have succeeded in getting more immigrants from the less poor countries, compared to Western Europe which has had a non-selective immigration policy, which has mainly allowed immigration of refugees and family unionization immigration from outside Europe, while Europe has been much more restrictive with respect to labor migration from outside Europe. However, this estimated effect is counteracted by the estimated illiteracy rate, which indicates that Western Europe get relatively fewer illiterate immigrants compared to the Anglo-Saxon countries.

In order to dig deeper in the question about selection effects in international migration flows in the 1990s, we have split the destination countries into subgroups according to type of welfare state in Table 3.4. The hypothesis is that immigration flows may be affected by the generosity of the different welfare state regimes, and different rules with respect to obtaining rights to the welfare schemes for immigrants. It is not straightforward to do this grouping of destination countries since there are a number of parameters which may be relevant to use. We have applied a grouping of the destination countries partly inspired by Esping-Andersen (1990): Social democratic welfare states (Denmark, Finland, Iceland, Norway and Sweden); liberal or residual welfare states (UK, USA, Canada, Australia, New Zealand and Japan); continental/conservative and Southern European welfare states (Austria, Belgium, France, Germany,

Luxemburg, the Netherlands and Switzerland, Greece, Italy, Portugal and Spain).[34]

The idea behind this division is to capture the fact that the tax pressure variable – and thus implicitly the level of social expenditure – only tells something about the level of public sector services, but not whether for instance immigrant groups or non-citizens are eligible to different benefits or services. In some welfare state regimes (mainly the conservative European continental countries), the social services are generous, but many public income transfers and services are only available for individuals who have earned their rights to the system for instance by being in the labor force, i.e. newly arrived immigrants are not eligible to a number of social services and transfers. In the Southern European welfare states, the church and the family play a major role with respect to social services, and thus in these countries the individual immigrant does not get access to many of the features of these welfare states. This is contrary to the social democratic welfare states which are characterized by high social welfare levels, fairly universal rules and welfare schemes that to a large extent are collectively financed by high income and consumer taxes. In these countries, many immigrant groups have almost the same rights as native citizens as soon as they get permanent residence permit.[35]

Looking at Table 3.4, the results confirm our a priori expectations concerning selection effects to some extent, but they also show that network effects and the classical migration factors are important and vary between the different types of welfare states. For the Continental and Southern European countries, the stock or network effect varies from 68% for immigrants from the group of lower-middle income countries to 59% for immigrants from high income source countries.

[34] Countries like UK and the Netherlands are difficult to classify. Since the general level for the universal services and income transfers are quite low in the UK, we classify the UK as a residual welfare state, despite it has in principle the same universal schemes as the social democratic countries. The Netherlands is also sometimes categorized in the group of 'social democratic' welfare states.

[35] However, it should be noted that during the latest decade, partly as a political reaction to the immigration pressure, the eligibility rules and other conditions for receiving welfare services have been tightened, also in the social democratic welfare states, see Hatton and Williamson (2004).

Table 3.4. Selected coefficients from estimations of migration flows from 129 source countries (i) to 23 (OECD) destination countries (j), 1990 – 2000. Disaggregating by welfare state regimes, GEE(c_j).

Dependent variable: m_{ijt} = Log (Gross Flows per 1000 Inhabitants)	Main Effects (Continental+Southern Europe = Austria, Bel, Fra, Ger, Lux, Neth, Switz, Greece, Ita, Por, Spa)	Interaction with: Soc. Dem. Indicator (Den, No, Swe, Fin, Iceland)	Interaction with: Liberal Indicator (UK, USA, Ca, Australia, New Zea, Jap)
Independent variables:			
Sijt-1			
Stock*Lowest GDP level	0.650 [0.018]***	-0.059 [0.028]**	-0.154 [0.036]***
Stock*Lower-middle GDP level	0.684 [0.038]***	-0.201 [0.038]***	-0.087 [0.083]
Stock*Upper-middle GDP level	0.650 [0.055]***	-0.166 [0.077]**	-0.061 [0.126]
Stock*High GDP level	0.592 [0.033]***	-0.045 [0.045]	-0.198 [0.072]***
Dijt-1	yes	yes	Yes
Xjt-1			
Log(GDP per cap PPP, *j*	1.901 [1.190]	-0.949 [0.558]*	-1.158 [0.787]
Log(Unemployment Rate, j)	-0.105 [0.071]	-0.164 [0.098]*	-0.075 [0.573]
Log(Tax Revenue in j/GDP, j)			
Tax*Lowest GDP level	-2.395 [1.358]*	1.078 [1.799]	3.337 [2.125]
Tax*Lower-middle GDP level	-2.780 [1.259]**	3.429 [1.551]**	5.637 [1.924]***
Tax*Upper-middle GDP level	-3.200 [1.167]***	3.511 [1.430]**	5.116 [2.177]**
Tax*High GDP level	-2.476 [1.096]**	3.035 [1.480]**	2.700 [2.110]
Xit-1			
[Population (j)/Pop. (i)]/100	29.646 [2.899]***	-0.000[0.000]***	-0.000 [0.000]
Income level:			
Lowest level (0/1)	0.321 [1.442]	7.476 [2.439]***	-2.303 [1.926]
Lower-middle level (0/1)	2.084 [1.907]	-2.197 [2.735]	-10.175 [3.481]***
Upper-middle level (0/1)	2.919 [2.624]	-2.103 [3.585]	-8.267 [3.654]**
Highest level (excluded)			
Unemployment Rate, i	-0.045 [0.033]	-0.017 [0.046]	-0.142 [0.054]***
Illiteracy Rate, i	-0.241 [0.054]***	0.034 [0.086]	0.190 [0.113]*
Freedom House Index, i	0.047 [0.075]	-0.043 [0.134]	0.158 [0.096]*
Random Effects of Destination, c_j		No	
Constant Term Included		Yes	
No of observations		6688	
Scale (GEE)		1.009	

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

For the Nordic 'social democratic' countries, the network effects tend to be significantly smaller, except for immigrants from the highest income countries. Thus, the stock of former immigrants from a given poor source country does not seem to have far the same importance for the Scandinavian welfare states compared to the rest of Europe. This may reflect an interaction between the network and selection effects. Networks may not be as important in countries like

the Nordic countries, where high and fairly universal social safety nets exist. Another explanation might be that the networks need to have a certain "maturity" to be effective. As the Nordic countries (except Sweden) are relatively "young" immigration countries, the network effect might not have the structure we observe for the old immigration countries yet. Such a hypothesis would indicate that the migration networks will gradually become more important for immigrants coming from the poor countries, perpetuating the flow of immigrants from these countries.

The indicators for GDP level in source country also show a remarkable variation across groups of welfare states. The social democratic welfare states receive a significantly larger proportion of immigrants from the poorest source countries compared to other European countries, while for the liberal welfare state the inflow is significantly higher for the poorest and the richest source income countries, compared to Continental and Southern European countries.

The above results give some support to the existence of both selection and network effects. When splitting into different type of welfare state regimes, the coefficients of the tax pressure variable do not support a hypothesis on a 'welfare magnet pattern'. Again, one should note that the lack of support to the selection theory may of course reflect that migration flows have been 'distorted' by migration policy restrictions.[36]

Thus, in total, we do find some evidence of both network and selection effects in the immigration flows to OECD countries during the latest decade, but the results mainly favor the network hypothesis, while the results concerning selection effects are somewhat mixed. Migration restriction and migration policy may have reduced the observed migration flows, and migration policy may have worked endogenously in the sense that it has become more restrictive in welfare states with large public sectors and high tax pressure levels. But despite the different migration policy initiatives, we still see strong network effects. To the extent that

[36] In order to test for the robustness of our results, in alternative estimations not shown here, we have disaggregated the regressions into groups of source countries (low, lower-middle, upper-middle and high income), instead of destination countries. If selection effects were strong and worked as predicted by the 'welfare magnet' hypothesis, we should expect that a high tax pressure in destination countries had a more negative effect for immigration flows from rich countries compared to the more poor countries. We do not find this pattern in our data, i.e. we do not find that the immigrant flows from more poor countries are less negatively affected by a high tax pressure compared to the flows from more rich countries. The tendency seems to be the opposite. The results are available from the authors upon request.

the stock of immigrants reflects past migration patterns which of course may have been subject to selection effects, we may have that part of the selection effects are captured by the stock effects.

3.6. CONCLUSIONS

Based on the database and the model structure, we present the results from empirical work on the migration flows into 22 OECD countries from 129 countries during the years 1990-2000. A very robust key result of our econometric analysis is that the network effects measured as the coefficient of the stock of immigrants of own national background already resident in a country have a large positive effect on immigration flows, and thus networks play an important role in explaining current immigration flows. Further, linguistic closeness, former colonial and current business ties are important factors, although the magnitude of the impact on migration flows varies for different groups of destination countries. Geographic distance, on the other hand, has a negative impact on migration flows as expected suggesting that the costs of migration play an important role.

The impact from economic factors is measured by entering GDP per capita (PPP adjusted) and unemployment rates in both destination and source countries and tax pressure. Migration flows tend to react positively to higher income gaps and to react negatively to depressed labor markets in destination countries. We have tested the simple welfare magnet hypotheses by allowing the effect of tax revenue in destination country on migration flows to vary across different source countries. We do not find any significant variation in the effect of the tax pressure on migration flows across source countries. Contrary to the welfare magnet hypotheses, we find for some groups of destination countries that the coefficient of the tax pressure in destination countries becomes more negative for the immigrants coming from poor countries. This might be explained by the fact that big relative public sectors correlate with restrictive immigration policies.

When estimating separate models for different groups of destination countries which are grouped in order to make the destination countries more homogenous within groups with respect to migrations policy and welfare state regimes, we find a number of interesting results favoring both the network and the selection theories. The network effect variation across income levels of source countries varies a lot in the case of Anglo-Saxon /liberal type of destination countries with

large network effect for low-income countries and much smaller for high-income source countries. Contrary to that, the network effect does not vary much across source-country income groups for Western European destination countries, which might simply reflect the more restrictive immigration policies. Thus, this suggests that there might be some selection through the migration networks.

The Scandinavian countries have, to a much larger extent than the other welfare states, an overweight of immigrants from the poorest source countries, when controlling for other determinants of migration flows. This pattern is not observed for the liberal welfare states like for instance the US, where newly arrived immigrants do not have the same access as natives to get services and income transfers from the welfare state as it is the case in Scandinavian countries. The liberal welfare states tend to have an overweight of immigrants from the highest income countries, when controlling for other factors.

Due to data availability, migration flows in the present approach are based on aggregate measures, i.e. no distinction can be made between the three main flows of migrants, being job- or study-related people (mostly intra-OECD), tied movers in relation to family re-unions and finally refugees. In the long run, welfare magnet mechanisms might influence these flows in the direction pointed out in Borjas (1999b). In the short to intermediate run, however, job movers are only in incomplete ways entitled to social benefits in source countries, the flows of tied movers are by nature strongly influenced by the stock of immigrants in a destination country, i.e. the network effect, and finally the flow of refugees consists of convention refugees, where entry depends on political decisions, and spontaneous individual asylum seekers, where the conditions for granting a residence permit depend on national immigration policies.

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APPENDIX:

Description and definitions of the basic variables and sources.

Gross flow of migrants from country i to country j per 1000 inhabitants in country j

Source: National statistical offices and "Trends in International Migration" SOPEMI 2000 OECD.

Stock of foreigners from country i in country j

Source: National statistical offices and "Trends in International Migration" SOPEMI 2000 OECD.

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 1995 international $), PPP: GDP per capita is gross domestic product divided by midyear population. GDP 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 **international** dollars.

Source: World Bank.

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.

Illiteracy rate, adult total (% of people ages >15): Adult illiteracy rate is the percentage of people ages 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life.

Source: World Bank (United Nations Educational, Scientific, and Cultural Organization.)

Public social expenditure as a percentage of GDP (SNA93): Social expenditure is the provision by public institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during circumstances which adversely affect their welfare, provided that the

provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer. Such benefits can be cash transfers, or can be the direct ("in-kind") provision of goods and services.

Source: OECD Social Expenditure Database (SOCX).

Tax revenue (% of GDP): Tax revenue comprises compulsory transfers to the central government for public purposes. Compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. Data are shown for central government only.

Source: World Bank: International Monetary Fund, Government Finance Statistics Yearbook and data files, and World Bank and OECD GDP estimates.

Distance between countries – distance between capitals in km.

Source: MapInfo, own calculations.

Freedom House Index – represents scores of political rights, civil liberties, and freedom. These are measured on a one-to-seven scale, with one representing the highest degree of freedom and seven the lowest.

Source: Annual Freedom in the World Country Scores 1972-73 to 2001-2002.

Common language in two countries - in the form of dummy for the common language in two countries value 1, 0 otherwise.

Source: Ethnologue: Languages of the World, 14th edition. http://www.ethnologue.com/web.asp

Colony – in the form of dummy for countries ever in colonial relationship – value 1, 0 otherwise.

Source: The dataset freely available at the web page of Andrew K. Rose and used for the paper: Rose, A. (2002): "Do We Really Know that the WTO Increases Trade?" *NBER Working Paper No. 9273.*

Neighboring dummy – in the form of dummy for neighboring countries - value 1, 0 otherwise.

Trade Volume represents bilateral trade flows that are based on IMF Direction of Trade data; the IMF data lists total trade values (both imports and exports) for all country pairs for all years, 1989-2000.

Source: IMF

Dummies for Low-, Lower-middle, Upper-middle and High – Income countries

World Bank definitions of low-income countries, lower-middle-income countries, upper-middle-income countries and high-income countries: Economies are divided according to 2002 GNI per capita, calculated using the World Bank Atlas method. The groups are: *low income*, $735 or less; *lower middle income*, $736 - $2,935; *upper middle income*, $2,936 - $9,075; and *high income*, $9,076 or more.

1: High-income countries
Andorra; Aruba; Australia; Austria; Bahamas; Bahrain; Belgium; Bermuda; Brunei; Canada; Cayman Islands; Channel Islands; Cyprus; Denmark; Faeroe Islands; Finland; France; French Polynesia; Germany; Greece; Greenland; Guam; HongKong, China; Iceland; Ireland; Israel; Italy; Japan; Korea, Rep.; Kuwait; Liechtenstein; Luxembourg; Macao, China; Monaco; Netherlands; Netherlands Antilles; New Caledonia; New Zealand; Northern Mariana Islands; Norway; Portugal; Qatar; San Marino; Singapore; Slovenia; Spain; Sweden; Switzerland; United Arab Emirates; United Kingdom; United States; Virgin Islands (U.S.)

2: Upper-middle-income countries
American Samoa; Antigua and Barbuda; Argentina; Barbados; Botswana; Brazil; Chile; Costa Rica; Croatia; Czech Republic; Dominica; Estonia; Gabon; Grenada; Hungary; Isle of Man; Latvia; Lebanon; Libya; Lithuania; Malaysia; Malta; Mauritius; Mayotte; Mexico; Oman; Palau; Panama; Poland; Puerto Rico; Saudi Arabia; Seychelles; Slovak Republic; St. Kitts and Nevis; St. Lucia; Trinidad and Tobago; Uruguay; Venezuela;RB

3: Lower-middle-income countries
Albania; Algeria; Armenia; Belarus; Belize; Bolivia; Bosnia and Herzegovina; Brazil; Bulgaria; Cape Verde; China; Colombia; Cuba; Dominican Republic; Djibouti; Ecuador; Egypt, Arab Rep.; El Salvador; Fiji; Guatemala; Guyana; Honduras; Iran, Islamic Rep.; Iraq; Jamaica; Jordan; Kazakhstan; Kiribati; Macedonia, FYR; Maldives; Marshall Islands; Micronesia, Fed. Sts.; Morocco; Namibia; Paraguay; Peru; Philippines; Romania; Russian Federation; Samoa; Serbia and Montenegro; South Africa; Sri Lanka; St. Vincent and the Grenadines; Suriname; Swaziland; Syrian Arab Republic; Thailand; Tonga; Tunisia; Turkey; Turkmenistan; Ukraine; Yugoslavia, Fed. Rep.; Vanuatu; West Bank and Gaza;

4: Low-income countries

Afghanistan; Angola; Azerbaijan; Bangladesh; Benin; Bhutan; Burkina Faso; Burundi; Cambodia; Cameroon; Central African Republic; Chad; Comoros; Congo, Dem. Rep.; Congo, Rep.; Côte d'Ivoire; Equatorial Guinea; Eritrea; Ethiopia; Gambia; Georgia; Ghana; Guinea; Guinea-Bissau; Haiti; India; Indonesia; Kenya; Korea, Dem. Rep.; Kyrgyz Republic; Lao PDR; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Moldova; Mongolia; Mozambique; Myanmar; Nepal; Nicaragua; Niger; Nigeria; Pakistan; Papua New Guinea; Rwanda; São Tomé and Principe; Senegal; Sierra Leone; Solomon Islands; Somalia; Sudan; Tajikistan; Tanzania; Timor-Leste; Togo; Uganda; Uzbekistan; Vietnam; Yemen, Rep.; Zambia; Zimbabwe

Source*:* World Bank

Table 3.A1: Descriptive statistics of basic variables for OECD destination countries (means, standard deviations and number of years observed in the data set)

Mean (St.d.) Numb. of Obs. Years with information	Australia	Austria	Belgium	Canada	Czech Republic	Denmark	Finland	France	Germany	Greece	Hungary	Iceland	Italy
Immigration Flows*	3 830 (4 320) 183 89-00 (12)	1 508 (2 446) 238 86-00 (5)	927 (1 707) 630 90-00 (11)	2 029 (4 267) 1 046 89-00 (12)	83 (398) 1 003 93-00 (8)	206 (560) 1 520 89 -00 (12)	65 (264) 1 524 89-00 (12)	824 (1 604) 1 143 89-00 (12)	15 951 (31 208) 546 89-00 (12)	184 (458) 1 134 89–97 (8)	1 151 (3 395) 158 89-99 (11)	25 (96) 630 92-00 (9)	3412 (6 251) 146 96-00 (5)
Sum of immigration flows **	58 409 (19 760)	29 038 (29 310)	48 656 (12 478)	176 902 (55 537)	6 973 (5 085)	26 091 (6 413)	8 262 (2 136)	78 465 (20 171)	725 797 (192 338)	17 297 (11 208)	15 158 (9 125)	1 325 (1 514)	14 515 (27 865)
Immigration Stock ***	148 943 (236 324) 108 90,95-96,99-00 (5)	5 811 (19 172) 249 91,96-99,00 (6)	15 755 (38755) 656 89-00 (12)	50 787 (1 595 564) 377 91,96,01 (3)	1 582 (6 389) 894 93-00 (8)	1.776 (3 918) 1 520 89-00 (12)	649 (1 758) 1 085 89-00 (12)	41 416 (113 211) 159 90, 99 (2)	57 261 (204 320) 1 364 89-00 (12)	1 188 (2 613) 1 136 89-98 (9)	8 084 (14 883) 74 94-97,99(5)	82 (272) 1 528 89-00 (12)	15 034 (22 491) 519 91-00 (10)
Sum of Immigration Stock******	1 340 486 (1 575 127)	120 581 (219 624)	861 306 (16 602)	1 157 930 (1 620 004)	117902 (89 299)	225 023 (38 322)	58 697 (23093)	548 757 (1 222 297)	6 508 701 (775 077)	112 498 (65 207)	49 850 (59 270)	10 457 (3 145)	650 211 (401 031)
Population (in thousands)	18 000 (725) 1 548 89-00 (12)	7 959 (153) 1 548 89-00 (12)	10 100 (99) 1 548 89-00 (12)	29 100 (1 089) 1 548 89-00 (12)	10 300 (18) 1 548 89-00 (12)	5 227 (69) 1 548 89-00 (12)	5 088 (68) 1 548 89-00 (12)	57 700 (7387) 1 548 89-00 (12)	78 400 (7 058) 1 548 89-00 (12)	10 400 (166) 1 548 89-00 (12)	10 200 (103) 1 548 89-00 (12)	266 (8) 1 548 89-00 (12)	57 300 (342) 1 548 89-00 (12)
GDP per capita PPP (constant 1995 int.$)	21 219 (1 757) 1 548 89-00 (12)	22 591 (1 597) 1 548 89-00 (12)	21 632 (1 259) 1 548 89-00 (12)	22 480 (1 451) 1 548 89-00 (12)	11 743 (749) 1 290 91-00 (10)	23 899 (1 529) 1 548 89-00 (12)	19 864 (1 529) 1 548 89-00 (12)	21 095 (948) 1 548 89-00 (12)	30 047 (1 287) 1 548 89-00 (12)	13 225 (906) 1 548 89-00 (12)	4 612 (3 816) 89-00 (12)	22 866 (1 584) 1 548 89-00 (12)	20 989 (953) 1 548 89-00 (12)
Unemployment rate (% of the labour force)	8.153 (1.472) 1 548 89-00 (12)	5.013 (0.602) 1 548 89-00 (12)	8.431 (1.264) 1 548 89-00 (12)	9.142 (1.432) 1 548 89-00 (12)	4.823 (2.322) 1 419 90-00 (11)	7.146 (1.647) 1 548 89-00 (12)	11.007 (4.495) 1 548 89-00 (12)	10.794 (1.180) 1 548 89-00 (12)	7.592 (1.146) 1 548 89-00 (12)	9.509 (1.506) 1 548 89-00 (12)	8.562 (2.703) 1 419 90-00 (11)	3.044 (1.336) 1 548 89-00 (12)	10.624 (1.186) 1 548 89-00 (12)
Trade Volume between two countries *j* and *i*. (in thousands)	782 (2521) 1 434 89-00 (12)	890 (4 190) 1 445 89-00 (12)	2 325 (8 332) 1 448 89-00 (12)	2 765 (23 942) 1 448 89-00 (12)	433 (1 716) 803 93-00 (8)	635 (2044) 1 445 89-00 (12)	484 (1 309) 1 451 89-00 (12)	4 177 (13 302) 1 447 89-00 (12)	7 197 (18 123) 1 444 89-00 (12)	293 (845) 1 369 89-00 (12)	308 (1 249) 1011 90-00 (11)	36 (96) 1 180 89-00 (12)	3195 (9 118) 1 432 89-00 (12)
Tax revenue (% of GDP)	29.073 (1.096) 1 419 89-99 (11)	42.533 (1.342) 1 548 89-00 (12)	44.575 (1.159) 1 548 89-00 (12)	37.167 (0.711) 1 548 89-00 (12)	40.025 (14.401) 1 032 93-00 (8)	48.892 (1.151) 1 548 89-00 (12)	45.642 (1.194) 1 548 89-00 (12)	44.158 (1.059) 1 548 89-00 (12)	36.800 (1.782) 1 548 89-00 (12)	32.142 (3.210) 1 548 89-00 (12)	42.620 (3.033) 1 548 89-00 (12)	32.633 (2.068) 1 548 89-00 (12)	41.633 (1.952) 1 548 89-00 (12)
No. of years with complete info on all variables	5	5	11	3	8	12	12	2	12	8	5	9	5

* Mean and st.d. for each particular migration flow from country *j* to country *i*

** mean and st.d. for the sum of migration flows to country *i*

*** mean and st.d. for stock of immigrants originating from country *j* residing in country *i*

**** mean and st.d. for the sum of stocks of immigrants in country *i*

(continued)

Table 3.A1(cont): Descriptive statistics of basic variables for OECD destination countries (means, standard deviations and number of years observed in the data set)

Mean (St.d.) Numb. of Obs. Years with information	Japan	Luxembourg	Netherlands	New Zealand	Norway	Poland	Portugal	Slovak Republic	Spain	Sweden	Switzerland	United Kingdom	United States
Flows of immigrants to the country *	15 423 (16 862) 163 89-00 (12)	886 (814) 93 89-00 (12)	938 (1 754) 823 95-00 (6)	3 962 (4 944) 106 89-00 (12)	529 (936) 638 89-00 (12)	409 (516) 150 89-00 (12)	209 (534) 238 92-00 (9)	17 (90) 499 97-00 (4)	1190 (5030) 525 89-00 (12)	365 (1 216) 1440 89-00 (12)	889 (3 088) 1460 89-00 (12)	879 (1 473) 707 91-00 (10)	7 566 (35 316) 1463 89-00 (12)
Sum of immigration flows to the country **	209 494 (36 018)	6 867 (394)	64 350 (18 716)	34 996 (4 373)	28 101 (4 969)	5 118 (1 917)	4 153 (5 928)	704 (998)	52 047 (86 327)	43 821 (11 941)	108 145 (35 081)	51 805 (29 475)	922 410 (332 837)
Stock of immigrants in the country ***	34 548 (110 834) 246 90,95,97-00 (6)	3 825 (9 460) 387 89-00 (12)	10 792 (31 109) 773 90,95-00 (7)	11 330 (35 080) 125 91,96,01 (3)	2 798 (4 072) 663 89-00 (12)	20 204 (55 505) 37 01 (1)	6 172 (8 300) 264 89-00 (12)	201 (696) 757 95-00(6)	11 997 (19 930) 447 91-00 (10)	9 056 (23 666) 1155 89-00 (12)	10 356 (40 218) 1456 89-00 (12)	51 590 (90 234) 655 92-00 (9)	300 190 (791 623) 620 90, 94-00 (8)
Sum of immigration stock in the country ******	708 234 (720 044)	123 348 (17 246)	695 195 (620880)	118 018 (206 090)	154 599 (16 952)	62 295 (278 686)	135 780 (34 750)	12 672 (12 812)	446 883 (243 560)	871 670 (75 939)	1 256 522 (91 264)	2 815 967 (1452974)	15 500 000 (11 100 000)
Population (in thousands)	125 000 (1 155) 1 548 89-00 (12)	409 (18) 1 548 89-00 (12)	15 400 (327) 1 548 89-00 (12)	3 617 (165) 1 548 89-00 (12)	4 350 (83) 1 548 89-00 (12)	38 500 (227) 1 548 89-00 (12)	9 894 (59) 1 548 89-00 (12)	5 366 (20 629) 1 548 89-00 (12)	39 200 (217) 1 548 89-00 (12)	8 744 (125) 1 548 89-00 (12)	697 (168) 1 548 89-00 (12)	58 500 (703) 1 548 89-00 (12)	262 000 (8 789) 1 548 89-00 (12)
GDP per capita PPP (constant 1995 int$)	22 476 (964) 1 548 89-00 (12)	35 351 (6 780) 1 548 89-00 (12)	21 770 (1 745) 1 548 89-00 (12)	16 568 (1121) 1 548 89-00 (12)	27 812 (2 912) 1 548 89-00 (12)	7 332 (975) 1 548 89-00 (11)	13 460 (1228) 1 548 89-00 (12)	9 301 (960) 1 548 89-00 (12)	15 214 (1 262) 1 548 89-00 (12)	19 930 (1 124) 1 548 89-00 (12)	25 670 (422) 1 548 89-00 (12)	20 020 (1 467) 1 548 89-00 (12)	28 069 (1 872) 1 548 89-00 (12)
Unemployment rate (% of the labour force)	3.12 (0.928) 1 548 89-00 (12)	2.417 (0.787) 1 548 89-00 (12)	5.591 (1.503) 1 548 89-00 (12)	7.698 (1.499) 1 548 89-00 (12)	4.709 (0.965) 1 548 89-00 (12)	12.507 (2.415) 1 548 90-00 (11)	5.464 (1.180) 1 548 89-00 (12)	12.886 (3.037) 1 290 91-00 (10)	18.868 (3.171) 1 548 89-00 (12)	5.675 (2.418) 1 548 89-00 (12)	3.048 (1.638) 1 548 89-00 (12)	7.552 (1.709) 1 548 89-00 (12)	5.574 (1.054) 1 548 89-00 (12)
Trade Volume between two countries *j* and *i*. (in thousands)	5351 (18 454) 1 369 89-00 (12)	189 (742) 376 97-00 (4)	2 549 (8 809) 1 409 89-00 (12)	200 (686) 1 299 89-99 (11)	571 (1 751) 1 429 89-00 (12)	417 (1 585) 1 428 89-00 (12)	417 (1 402) 1 421 89-00 (12)	189 (702) 785 95-00 (6)	1544 (4 841) 1 433 89-00 (12)	1 025 (2 788) 1 436 89-00 (12)	1 173 (4 239) 1 434 89-00 (12)	3 879 (10 402) 1 413 89-00 (12)	10 432 (33 280) 1 441 89-00 (12)
Tax revenue (% of GDP)	28.158 (1.350) 1 548 89-00 (12)	41.100 (1.188) 1 548 89-00 (12)	42.892 (1.423) 1 548 89-00 (12)	36.900 (1.012) 1 548 89-00 (12)	41.492 (0.846) 1 548 89-00 (12)	37.584 (1.960) 1 290 91-00 (10)	32.058 (1.679) 1 548 89-00 (12)	33.256 (1.817) 645 96-00 (5)	33.692 (0.831) 1 548 89-00 (12)	50.925 (1.984) 1 548 89-00 (12)	32.717 (1.759) 1 548 89-00 (12)	35.492 (1.210) 1 548 89-00 (12)	26.942 (2.118) 1 548 89-00 (12)
No. of years with complete info on all variables	6	4	6	3	10	1	9	4	10	12	12	9	8

* Mean and st.d. for each particular migration flow from country *j* to country *i*

** Mean and st.d. for the sum of migration flows to country *i*

*** Mean and st.d. for stock of immigrants originating from country *j* residing in country *i*

**** Mean and st.d. for the sum of stocks of immigrants in country *i*