Cultural and institutional barriers in migration between OECD countries

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One of the basic principles of the European Union and the European Economic Area is the freedom of movement of workers. In practice, migration between EU countries is extremely low. One attractive explanation for the low mobility pattern in Europe is the existence of cultural and institutional barriers to migration. Even if in principle workers are free to move, they are in practice confronted with a series of obstacles hampering their movement. Linguistic and cultural differences, housing transaction costs and a lack of portability of pension rights across countries are all potential obstacles to migration. Our study uses a unique set of new indicators enabling us to test the effects of cultural and institutional barriers on migration between OECD countries. We use data for 22 OECD countries, covering the period 1990-2003. Our results provide strong evidence for the negative effect of cultural differences and institutional obstacles on migration flows between countries.

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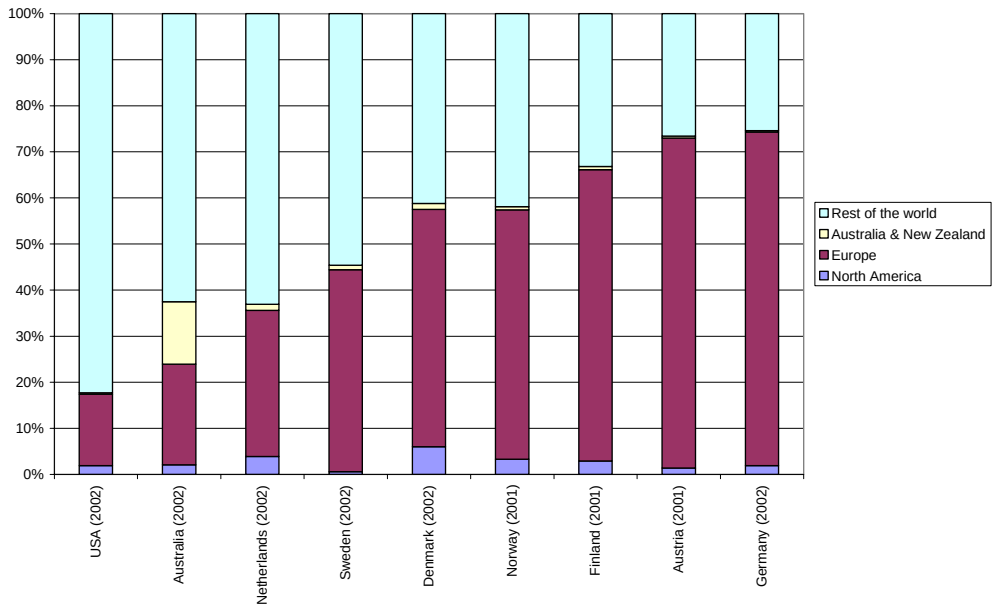
1 Introduction

One of the basic principles of the European Union and the European Economic Area is the freedom of movement of factors of production and, in particular, of workers. In practice, there is little movement between EU countries. The European Commission estimates that the annual cross-border mobility of EU citizens is less than 0.4% of the resident population.

There is an extensive literature on the theoretical determinants of international migration (see Ghatak and Levine (1996), Borjas (1999) and Hatton and Williamson (2002) for recent surveys). Most of the existing empirical work focuses on total immigration. Only few studies carry out a separate analysis of international flows between developed countries. These flows constitute a large part of international migration flows, especially in European countries. Figure 1.1 shows the composition of immigration flows in selected OECD countries, by region of origin. The immigration flows from developed countries represent more than 50% of the total immigration flows in Denmark, Norway, Finland, Austria and Germany. Even in the United States, the immigration from developed countries represents more than 15% of the total immigration.

Figure Error! Style not defined..**1** **Composition of international immigration flows in selected OECD countries**



The factors determining or hampering migration between developed countries deserve a separate analysis, for several reasons: First, the levels of income and social protection in developed countries are such that it is no longer necessary to migrate in order to survive.

Second, citizens of developed countries are much less confronted with restrictive immigration policies. Probably the best example hereof is the European Union, where people are free to move across borders. Third, the political climate is much more stable in the developed world, such that migration for political reasons is unlikely to be important. Fourth, networks of local communities probably play a smaller role for migration between developed countries. Finally, some obstacles may be binding for migration between developed countries, while they are not in developing countries. We think in particular about the role of institutional and cultural barriers.

The existence of cultural and institutional barriers to migration provides a popular explanation for the low mobility pattern in Europe is . Even if in principle workers are free to move, they are in practice confronted with a series of obstacles hampering their movement. First, there are indeed large cultural and language differences between countries. Second, there are important national regulations, which indirectly discriminate against EU immigrants, by treating them differently. For example, qualifications and skills acquired in other EU countries are not always recognized, supplementary pension rights are not automatically transferable, etc.

The European Commision has published several communications aiming at "removing the obstacles to labour mobility within Europe" and at finding solutions to avoid the asymmetric treatment of nationals and EU-non-nationals.

Even though there is a strong suspicion on the role of institutional and cultural differences in explaining low mobility, there is almost no empirical evidence. The objective of this paper is to fill this gap. We propose an empirical analysis of gross migration flows between developed countries. Next to the traditional determinants of migration, such as income and unemployment differentials, the stock of foreigners, etc., we include a series of new indicators measuring cultural and institutional barriers between countries.

We start by reviewing existing theories on the traditional determinants of migration in general and within the developed world in particular (Section 2). Section 3 extends the analysis to the cultural and institutional dimension and introduces a new series of indicators to measure barriers of migration in these fields. We present the empirical analysis in Section 4, including a short description of the data used and an overview of recent empirical studies. We conclude in Section 5.

2 Traditional determinants of migration

In this section, we discuss the more traditional determinants that explain international migration between developed countries. These determinants can be classified into a few broad categories: economic incentives, demographic explanantions, physical distance and network effects. We briefly describe the theories which are probably most relevant in this context (see e.g. Braunerhjelm et al. (2000) for a detailed overview).

Economic incentives

We take the seminal work of Harris and Todaro (1970) as a starting point. The basic idea behind their model is that individuals base their migration decision on the differential between the expected income at destination and the expected income at home. The model predicts that economic differentials should lead to compensating migration flows. Economic differentials should then decrease over time. At first sight, the observed picture of migration flows in the developed world does not fit with this theoretical framework. We observe persistent and large economic differentials between countries. Table 2.1 presents unemployment rates and GDP per person employed for 21 OECD countries in 2000. Unemployment rates vary from 2.3% in Iceland to 13.9% in Spain. The GDP per person employed ranges from 32.397 GK $ in Greece to 58.212 GK $ in the United States. These differentials suggest that there are huge economic incentives to migrate between countries.

Tabel 1.1 Economic variables in OECD countries (2000)

	Standardized Unemployment rates	GDP per person employed (constant prices 1990, GK dollars)
Australia	5,9	45.505
Austria	3,6	44.111
Belgium	6,6	54.049
Canada	6,8	47.243
Denmark	4,5	44.379
Finland	9,8	43.539
France	10,0	51.641
Germany	7,7	41.956
Greece	11,1	32.397
Iceland	2,3	38.211
Ireland	4,3	50.036
Italy	10,5	46.933
Luxembourg	2,3	57.575
Netherlands	3,3	43.513
New Zealand	6,0	34.856
Norway	3,4	50.270
Spain	13,9	40.382
Sweden	5,8	43.586
Switzerland	2,7	39.223
United Kingdom	5,5	44.008
United States	4,0	58.212

Source: Unemployment rates (OECD), GDP per person employed (Groningen Growth and Development Centre Database)

Demographic explanations

The composition of the population may also explain migration patterns, if some segments of the population are more inclined to migrate than others are. Especially age, education and female participation may influence migration in developed countries.

1) Age structure: Young cohorts are more mobile than old cohorts are (see Fertig and Schmid (2002)). All else equal, the ageing of the population in the developed world would lead to a fall in the average migration rate. We can think of several reasons why older workers are less likely to migrate (Tassinopoulos and Werner (1999)): Older workers have acquired more specific human capital, which could be lost in case of migration; older workers have fewer years to recoup their migration investment; or older workers face higher migration costs (harder to learn a foreign language, etc.).

2) Education structure: Higher skilled workers are also more likely to migrate than low-skilled workers (e.g. Wildasin (2000) for the United States, Mauro and Spilimbergo (1998) for Spain and Gianetti (2001) for Italy). There is also a large evidence based on micro data. Education increases significantly the probability of moving. The reason why this is the case could either be that high-skilled workers face lower migration costs or that they gain more from migrating. High-skilled workers are more likely to speak another language or have better qualities of adaptation, which makes it less costly for them to migrate. Similarly, if migration costs are to some extent fixed, the relative burden of migration costs will be higher for low-skilled than high-skilled workers. The former may be credit-constrained and not be able to pay the migration costs (see Pedersen et al. (2004)). High-skilled workers may also gain more by migrating, if for example wage differentials are larger for high-skilled workers than low-skilled ones.

3) Female participation: Coordinating migration decisions of two-earners households may be more difficult than of one-earner households. We could expect that countries with high participation rates of women have a lower propensity to migrate.

Physical distance

The physical distance between the place of origin and the place of destination could discourage migration for two reasons: It is a psychic cost (and direct migration cost) and it reduces the quality of information about the destination. The further away the country, the less likely people will be informed about job opportunities, income differentials, etc. The argument was already mentioned by Sjaastad (1962). We could use the same argument for migration costs: the further away the country of destination, the worse the information people have about costs they will need to incur when migrating. Cultural and linguistic distances will be discussed in the next section.

Networks

The recent literature stresses the importance of networks in the migration decision. The main idea is that the presence of a national community in the country of destination could increase its attractiveness (Carrington et al. (1996)). All over the world, we find “Little Italy’s”, “Chinatowns”, etc. showing that ethnic groups tend to cluster in some geographical areas. There are many ways these communities could ease the immigration of their national counterparts. For example, they could provide information about the local customs and values, job opportunities, etc. They could also provide a substitute to the social network in the country of origin. It may indeed be easier to migrate to a geographical area with a high concentration of people sharing the same language and culture.

It is not certain, however, that networks play an important role in international migration between developed countries. Gross and Schmitt (2002) find that cultural communities are more attractive for immigrants from non-OECD source countries than from OECD source countries. Most empirical studies find a strong correlation between the size of the national community in the country of destination and the importance of migration flows. One should be careful in the interpretation of this coefficient. Palloni et al. (2001) discuss the fact that the existence of networks is not the only theory that could explain the positive correlation. Other theories lead exactly to the same predictions. First, migration decisions often involve households and families, instead of individuals. Migration decisions of the same family will be correlated, even in the absence of network effects. Families can use migration as a risk-diversification device, or establish a migration pattern together (joint decision making). Second, there is the “common characteristics and constraints” theory, saying that individuals living in the same region are likely to share common characteristics and constraints influencing the migration decision. Controlling for a wide set of characteristics of the country of origin and destination can help reducing the influence of this effect in the observed correlation. Especially cultural and linguistic factors may play a role in this respect. In the next section, we discuss these potential determinants and propose a way to measure their importance.

3 Cultural and institutional barriers to migration

The determinants discussed in the last section are certainly relevant for explaining migration patterns between developed countries, but ignore some potential important factors. As Boeri et al. (2002, p. viii) put it: “.. the list of potential determinants spans far beyond the usual shopping list of economists..” This paper tries to do justice to this observation by extending the analysis of migration flows to cultural and institutional factors.

Cultural barriers

The last section discussed among others the importance of physical distance for immigration. The cultural distance between countries may play a role as well. The explanation is especially appealing to explain mobility patterns between European countries, since there exists large linguistic and cultural differences between them. Differences in culture, language, values and norms translate into migration costs that reduce the attractiveness of migration.

Culture is a very hard concept to measure. Broadly defined, culture is the set of communication habits, norms, values which are shared by a community. There are many potential problems associated with measuring subjective aspects of culture. For this reason, we concentrate first on objective characteristics of culture: language and religion.

The indicators of cultural and linguistic differences are often very rough and approximate (a dummy variable for common language), which makes is hard to assess their effects. Our study uses a new set of measures of cultural distance that are more refined. We will discuss these indicators here briefly. More details about the construction of these indicators can be found in the companion paper (Belot and Ederveen (2004)).

Linguistic distance

We constructed an indicator measuring the degree of linguistic distance between two countries. For this indicator, we first measure linguistic distance by calculating the probability of drawing two individuals, one in each country, speaking a different mother language:

$$DISTLANG1_{A,B} = 1 - \sum_i s_{i,A} s_{i,B}.$$

The distance is equal to 1 minus the probability of drawing two people speaking the same language. $s_{i,A}$ and $s_{i,B}$ are the respective shares speaking language i in countries A and B. It ranges from nearly 1 for high linguistic distance to 0 for no linguistic distance.

We refine this indicator by correcting for linguistic proximity. We used the language classification tree used by linguists (Greenberg (1956)), and considered five ramifications. Each ramification corresponds to a different level of desegregation. The first level distinguishes between large language families (Indo-Europeans, Altaic, etc.). The second level distinguishes between groups within each family, and so on. The fifth level corresponds to the individual languages. For each level we computed the distance indicator as defined above. We obtain five indicators, denoted $dist^I$, $dist^{II}$, $dist^{III}$, $dist^{IV}$ and $dist^V$. We built a summary indicator attributing a weight to each distance indicator: For the first level, 0.2, the second level 0.4, the third level 0.6, the fourth level 0.8 and the fifth level 1[3]. Formally, the indicator is computed as follows:

[3] This is a method also used in Laitin (2000), attributing exactly the same weights.

$$dist_{A,B} = dist^{V}_{A,B} - 0.8(dist^{V}_{A,B} - dist^{IV}_{A,B}) - 0.6(dist^{IV}_{A,B} - dist^{III}_{A,B}) - 0.4(dist^{III}_{A,B} - dist^{II}_{A,B}) - 0.2(dist^{II}_{A,B} - dist^{I}_{A,B}).$$

The choice of the correlation structure between the different levels in the language classification tree is to some extent arbitrary. To our knowledge, linguists have not developed a commonly used measure of the distance between languages. The data are presented in the appendix. We observe clusters of countries that are linguistically close to each other:

- Southern countries: France, Italy, Spain, Portugal and to some extent Luxembourg
- Scandinavian countries: Denmark, Iceland, Norway and Sweden.
- Anglo-Saxon countries: Canada, Ireland, New Zealand, United Kingdom, United States
- Germanic countries: Austria, Germany, Switzerland
- Belgium and the Netherlands
- Greece
- Finland

Religious distance

We did the same exercise for religion. Given that the large majority of the population in OECD countries belongs to one of the three Christian groups (Catholicism, Protestantism and Orthodoxy), we computed a single distance indicator without coorrecting for religious proximity. The method is exactly the same as for the language indicator.

Data are reported in the appendix. We clearly observe clusters of countries sharing the same religious beliefs: Southern countries and Austria, Belgium, France, Luxembourg and Ireland are widely dominated by Catholicism, while Nordic (Scandinavian) countries are protestant. The Netherlands, Germany and Switzerland and the Anglo-Saxon countries have a mixed religious structure, where both Catholicism and Protestantism represent large religious groups.

Cultural distance (Hofstede)

Another way of measuring cultural differences is by measuring norms and values directly. Hofstede (1991) did a lot of work in that respect. He proposed a measure of cultural orientation of countries, based on a survey of 117,000 IBM employees across 50 countries and 3 multi-country regions. The data were collected at two different points in time: 1968 and 1972. The cultural orientation is measured by five cultural dimensions:

1. Individualism versus collectivism
2. Power Distance (“the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally”)
3. Uncertainty avoidance
4. Masculinity versus feminity

5. Confucian dynamism (Ranges from long-term orientation to short-term orientation and was introduced in 1991).

We used these indicators to compute a composite index of cultural distance between countries, following the strategy proposed by Kogut and Singh (1988):

$$CD_{i,j} = \frac{1}{4}\sum_{k=1}^{4}\frac{(I_{i,k} - I_{j,k})^2}{V_k}$$

where $CD_{i,j}$ is the cultural distance between country i and country j, $I_{i,k}$ is the Hofstede's score for country i with respect to the cultural dimension k. As Kogut and Singh, we based the composite index on the first four dimensions (we exclude the long-term orientation).

Finally, V_k is the variance of the indicator of dimension k for all countries included in the sample of Hofstede.

Data are reported in the appendix. Again, we can identify clusters of countries that are culturally close to each other:

Tabel 2.1 Clusters of cultural proximity (Hofstede dimensions)

	Power distance	Individualism	Uncertainty avoidance	Masculinity
Anglo-saxon countries, Germany, Switzerland and Austria	Low	High	Low	High
Nordic countries	Low	High	Low	Low
Southern countries	High	Low	High	High

Source: Belot and Ederveen (2004)

Since the data are relatively old, we may be sceptical as whether they are appropriate measures for the cultural distance between countries in the nineties. More recent data are available from the World Value Survey, a project carried on worldwide and coordinated by Professor Ronald Inglehart. The Survey covers 65 countries in the world, including 18 of the countries included in our data set. Baker and Inglehart (2000) did a factor analysis based on the various waves of the survey and summarized the data around two major dimensions (dimension1 and dimension2 here after): 1) Traditional versus secular-rational and 2) survival versus self-expression values. Traditional societies are defined with respect to a series of variables such as the level of tolerance for abortion, divorce and homosexuality, the emphasis of male dominance in economic and political life, the importance of family life and parental authority and the emphasis on religion. The survival/self-expression dimension corresponds to the level of trust, tolerance, subjective well-being, political activism, and self-expression.

We computed an indicator of cultural distance between 2 countries (i and j) as follows:

$$DistInglehart_{i,j} = \sqrt{(Dimension1_i - Dimension1_j)^2 + (Dimension2_i - Dimension2_j)^2}$$

Institutional barriers

Finally, one common explanation for the low mobility between developed countries (and in particular between EU countries) is the presence of institutional barriers, which survived to the European construction and represent *de facto* obstacles to mobility:

- The lack of portability of supplementary pensions (both within countries and across countries). In particular, vesting periods to acquire rights may be quite long, rights may not be fully portable across employers, etc.
- Housing transaction costs and housing policies
- The lack of recognition of professional qualifications: The regulation of professions requiring specific skills or diplomas varies a lot across countries. Some countries discriminate against foreigners by not recognising the professional qualifications acquired abroad.

In addition, for countries outide the European area immigration policies and regulations may present obstacles to immigration.

We introduce a series of indicators measuring the importance of these "institutional obstacles" associated with migration. We focus on the ones that are most often mentioned in the literature on European mobility.

Migration policy

Countries differ in their immigration policies and regulations. Developed countries, and in particular the European Union, often have a dual system, i.e. imposing different regulations according to the country of origin. The most striking example is of course the one of the Member States of the European Union and the European Economic Agreement which allow the free movement of workers across borders. We directly measure for the effect of "open borders" by introducing a dummy variable equal to 1 if both countries allow free movement of workers between them (European Union, European Economic Area or New Zealand-Australia).

Housing transaction costs

We use a measure of transaction costs associated with the transfer of housing ownership (see Belot and Ederveen (2004)). These include four components: (i) Transfer taxes and registration duties, (ii) Notary fees, (iii) Real estate agents' fees and (iv) Mortgage fees. We also use information on the home ownership rate, collected by Oswald (1997).

We present in Table 3.2 the data on home ownership rates and total transaction taxes (as percentage of the purchase cost). At the top of the scale, we find the Southern European countries. Greece, Belgium, Italy and Portugal have average transaction costs of more than 15% of the purchase value of the house. In Spain and France, transaction costs are more than 12% on average. At the bottom of the scale, we find the Anglo-Saxon countries (Australia, New Zealand and the United Kingdom), with transaction costs below 4% of the purchase value. An important exception here is the United States, where transaction costs are comparable to other European countries (Austria, Denmark, Finland, the Netherlands), and represent around 9-10% of the purchase value. The reason why the transaction costs are particularly high in the US lies in the high brokerage fees (6-7% of the purchase value), in comparison with other European countries.

Note that in countries where real estate agents' fees are relatively high (e.g. France, Italy), the majority of housing transactions take place without the intermediation of a real estate agent (65% of the transactions in Italy, and more than 50% in France).

Tabel 2.2 Home ownership rates and housing transaction taxes

	Home ownership (%)	Transaction costs (%)
Australia	70	4.5
Austria	55	8.5
Belgium	62	18.0
Canada	61	5.5
Denmark	51	4.5
Finland	67	11.0
France	54	15.0
Germany	38	10.0
Greece	76	15.0
Iceland	-	-
Ireland	81	9.0
Italy	67	19.0
Luxembourg	70	14.0
Netherlands	44	9.0
New Zealand	71	3.5
Norway	59	7.0
Portugal	67	15.5
Spain	76	11.5
Sweden	42	7.5
Switzerland	30	8.0
United Kingdom	68	4.0
United States	64	9.0

Source: Oswald (1997), Belot and Ederveen (2004)

Index of portability of supplementary pensions

According to the European Commission, the lack of portability of pension rights across jobs and across borders represents a major obstacle to labour mobility. Workers can rarely fully protect their rights when they change jobs, or migrate to another country. The problem concerns mainly the second pillar of the pension system, i.e. the supplementary occupational rights. In the companion paper (Belot and Ederveen (2004)), we constructed an indicator of the portability of supplementary pension rights across countries.

The indicator relies on information on the regulations concerning the acquisition of rights (minimum vesting periods) and the protection of rights (transferability of rights, indexation rules, etc.). The indicator ranges from 0 (not portable) to 1 (fully portable rights).

The problem of portability of occupational pension schemes is not equally important in all OECD countries. The coverage rate varies a lot across countries, and so does the relative importance of the supplementary pension in the total pension income. Obviously, portability matters more in countries where the coverage rate and the share of supplementary pension income are relatively large. Based on information on the coverage rates and the relative share of supplementary pension in the total pension income, we identified a series of countries where pension portability probably matters most: Canada, Denmark, France, Iceland, Netherlands, Norway, Sweden, Switzerland, UK, United States.

In Figure 4.1 we show the pattern of portability in the two groups. It turns out that the portability is on average better in countries where it matters most.

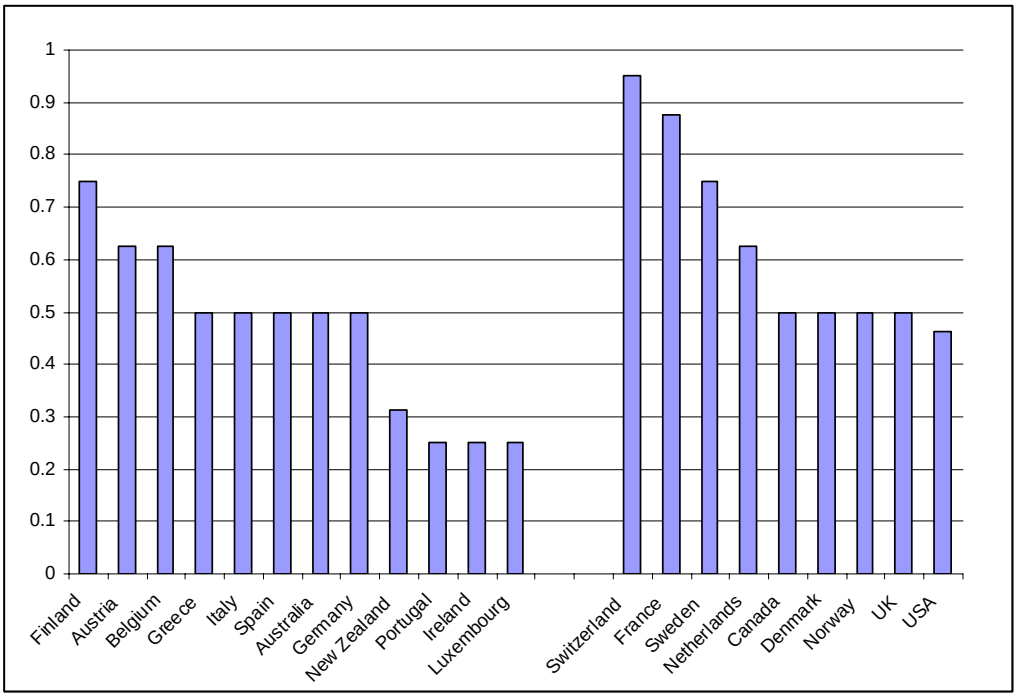


Figure 3.1 Pension portability in OECD countries, source: Belot and Ederveen (2004)

4 Estimation of the migration equation

In this section we present our estimation strategy. However, before turning to the estimation results, we first give a brief description of the data we use for the migration flows and discuss some recent empirical studies that have estimated migration regressions.

4.1 Data on gross migration flows

To do justice to the wide range of potential determinants, we constructed a data set covering migration flows and a large number of different indicators for 22 OECD countries for the period 1990-2003. Here, we restrict ourselves to a discussion on our dependent variable, the gross migration flow from one country to another. Details about coverage and sources for all variables can be found in the appendix.

Consistent data on gross migration flows are hard to obtain. The data we use have their limitations as well, but we believe that their quality is sufficient to run sensible regressions. We should however be aware of the limitations of our data set.

First, the data measures movements in *population* rather than in *labour*. It is an aggregate measure composed of different types of migrants with different motives. Van Leuvensteijn and Parikh (2001) conclude on the basis of an empirical study for Germany that in general population migration may be used to examine labour migration issues.

Second, the data is not perfectly homogenous across countries. Countries register migration flows in different ways. The most common way of registering foreigners is by citizenship. Some countries, however, register the foreign population according to their country of birth or country of previous residence. These registration methods are consistent with each other as long as migrants make a once-in-a-lifetime move, or have been migrating between two countries only.

Third, another important difference between countries is the timing of the registration (duration of stay). The European Economic Agreement has modified the registration requirements for citizens of these countries. This is mainly a problem for the UK data, since the UK stopped requiring a grant settlement. The number of people registered from EEA countries therefore underestimates the actual flows. Moreover, the UK stopped registering migrants from EEA countries since 1998.

We first collected data from the OECD, based on the Continuous Reporting System on Migration (SOPEMI). The drawback of these data is that they include flows from a selected number of countries of origin only. Small inflows will be grouped by region or under the label “other countries”. In order to constitute a more detailed data set, we used information provided by the Migration Policy Institute, using the same sources as the OECD (national statistical

offices), but reporting more detailed information. These data were available for Australia, Austria, Denmark, Finland, Germany, the Netherlands, Norway, Sweden, the United Kingdom and the USA[4]. For the other countries, we contacted the National Statistical Offices.

4.2 Recent empirical studies

Our study has two main contributions to the existing literature. First, and most important, it assesses the effects of cultural and institutional barriers on international migration. To the best of our knowledge, our study is the first to present an empirical estimation of the relevance of these variables.

A second contribution of our study is the use of gross migration flows between countries. Most studies use the net immigration rates, i.e. simply the difference between the growth rate of the population and the natural growth rate. The problem is that the net immigration rate confuses information about inflows and outflows, and is a unilateral measure. Since migration inflows and outflows rarely involve two countries only, this type of measure makes it impossible to test the Harris-Todaro theory that assumes that migration decisions are based on economic differentials between pairs of countries. Gross inflows and outflows between two countries provide much better information than net immigration rates.

There are a few recent studies that also use gross flows between countries. One rare example from the previous century is Van Wissen and Visser (1998), who use data on gross migration flows between the fifteen countries of the EU (before May 2004) for the year 1994. They find strong effects of the variables measuring the stocks of foreigners in the country of origin and of destination. On the other hand, differentials in GDP do not have a significant effect, neither do physical distance and language proximity (the author introduces dummies for four language groups and classify the countries accordingly).

Two recent papers (Mayda (2004) and Pedersen et al. (2004)) analyze the determinants of gross migration flows into OECD countries, testing for a series of migration theories.

Mayda (2004) uses OECD data on 14 OECD countries, over the period 1980-1996. She finds that the earnings differentials stimulate migration, and that this effect is dominated by the pulling effect of the GDP per worker at destination. The GDP per worker at origin does not have a strong effect, which could be explained by a combination of fixed migration costs and binding poverty constraints. Physical distance matters as well, but sharing a common language does not. Finally, sharing a common colonial past has a surprising negative effect on emigration rates.

One drawback of the OECD data is that they do not report all flows between countries. Small flows in particular are likely to be underreported. Pedersen et al. (2004) have constructed an

[4] These data are on-line on the website www.migrationinformation.org

impressive data set including 27 OECD destination countries and 129 source countries, for the period 1990-2000. One of their interesting findings is that the determinants of emigration differ across countries. They grouped countries in various ways (according to the income level and the type of welfare state) and identified clear patterns in migration determinants. Hence, they find strong evidence of network effects in all countries, but these effects are stronger when destination countries offer a limited social protection to immigrants. They also could not find evidence for the welfare magnet hypothesis (i.e. immigrants being attracted by generous welfare systems in developed countries). Finally, they find a different result from Mayda (2004) with respect to the effect of sharing a common language or a colonial past. In their specification, both have a positive effect on migration flows.

4.3 Econometric specification

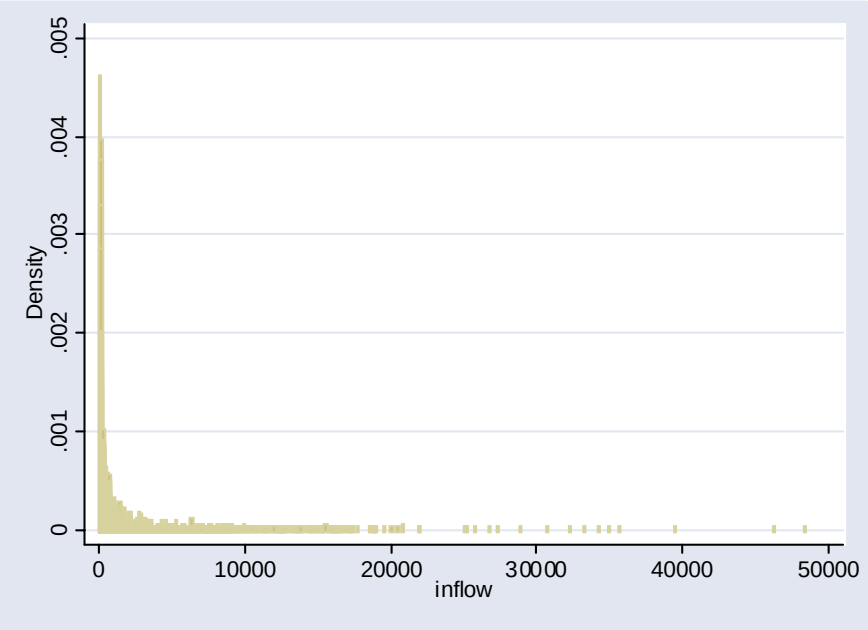
All theoretical models come down to a specification of the following form:

$$M_{j,k,t} = g(\overline{Y}_{j,t}, \overline{Y}_{k,t}, \overline{C}_{j,k}, \overline{W}_{j,t}),$$

where $M_{j,k,t}$ is the migration flow from country j to country k, $\overline{Y}_{j,t}$ and $\overline{Y}_{k,t}$ are country-specific elements, $\overline{C}_{j,k}$ are the costs of migration from country j to country k and $\overline{W}_{j,t}$ is an aggregate measure of the individual-component in the migration costs and income: share of young people in the total population, participation rate of women, etc. Note that not all variables vary over time.

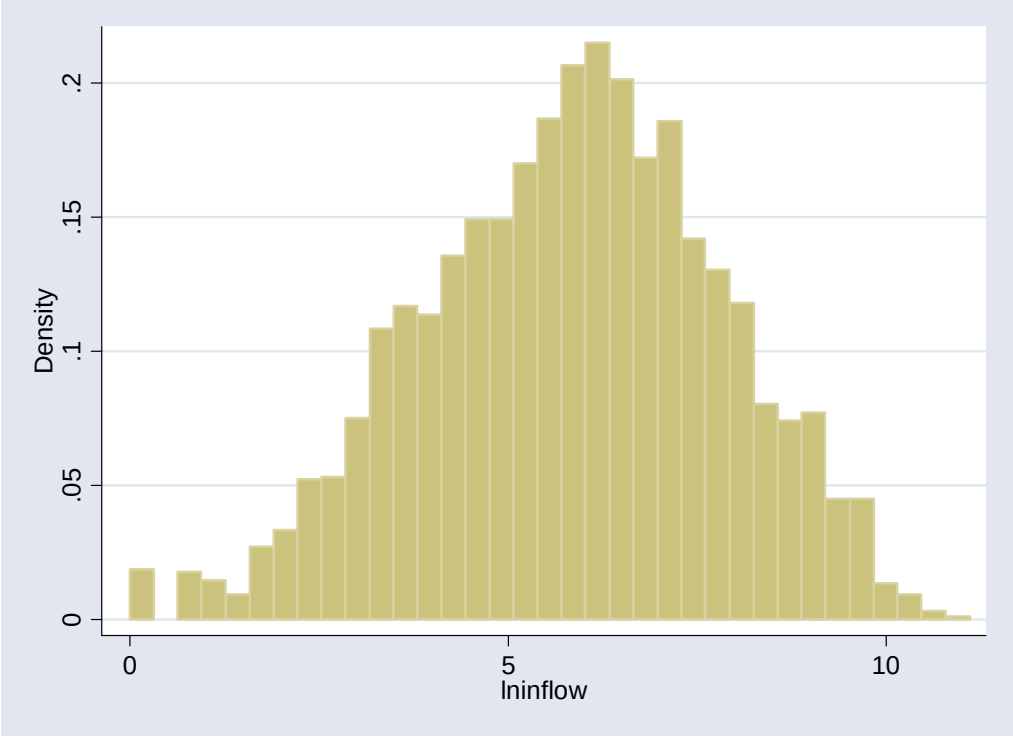
Figure 4.1 shows an histogram of our dependent variable, the total inflow from country j to country k, where inflows have been grouped by intervals of 10 people. The distribution is extremely skewed to the left, with a very high frequency of small numbers. A second important characteristic of our dependent variable is its discrete and non-negative nature. For these reasons, standard linear regression techniques may not be the most appropriate method to analyze these data.

Figure Error! Style not defined..**1** **Histogram of inflows (width = 10)**



There are two alternative methodologies one could use to deal with this type of data in a better and more efficient way. First, we could simply transform the dependent variable in its logarithm, which would come down to estimating a general linearized model. Figure 4.2 shows the distribution of the logarithm of the inflows. It is obvious that linear techniques would be appropriate in that case.

Figure Error! Style not defined..**2** **Histogram of ln(inflow)**



A second option is to assume a different distribution for the dependent variable. The Poisson regression model has been widely used to study such data (Cameron and Trivedi (1986), Greene (1997) and Congdon (1993)). The dependent variable is assumed to be a random draw from a Poisson distribution, with mean and variance $\lambda_{n,h}$ with $\lambda_{h,n} = \exp(Z'_{h,n}\ \beta)$,
where $Z'_{h,n,}$ is a vector of all characteristics mentioned here above.
The probability function is then:

$$P(M_{h,n} = k) = \frac{\lambda_{h,n}^{k}\ \exp(-\lambda_{h,n})}{k!}$$

In order to generate consistent estimates, the Poisson model imposes among others that the mean and the variance are equal. Generally this condition is not fulfilled; in particular, the variance is often larger than the mean (over-dispersion). A first look at our data indicates that we are indeed confronted with over-dispersion (formal tests in the analysis will confirm this). One way of dealing with over-dispersion is to act on one possible source of over-dispersion: individual heterogeneity. The negative binomial model of Cameron and Trivedi (1986) introduces a random component into the Poisson parameter. Formally:

$\log \lambda_{h,n} = \beta' \overline{Z}_{h,n} + \log u_{h,n}$,

where u_i follows a gamma distribution with unit mean and variance θ.

$$f(M_{j,k} / \lambda_{j,k}, u_{j,k}) = \frac{(\lambda_{j,k} u_{i,k})^k \exp(-\lambda_{j,k} u_{i,k})}{k!}$$

and therefore:

$$f(M_{j,k} / \lambda_{j,k}) = \int \frac{(\lambda_{j,k} u_{i,k})^k \exp(-\lambda_{j,k} u_{i,k})}{k!} g(u_{j,k}) du_{j,k}$$

The expected mean of the dependent variable $E(M_{j,k})=\lambda_{j,k}$ and the variance is $\text{var}(M_{j,k}) = \lambda_{j,k}\left(1+\frac{1}{\theta}\lambda_{j,k}\right)$ which implies over-dispersion.

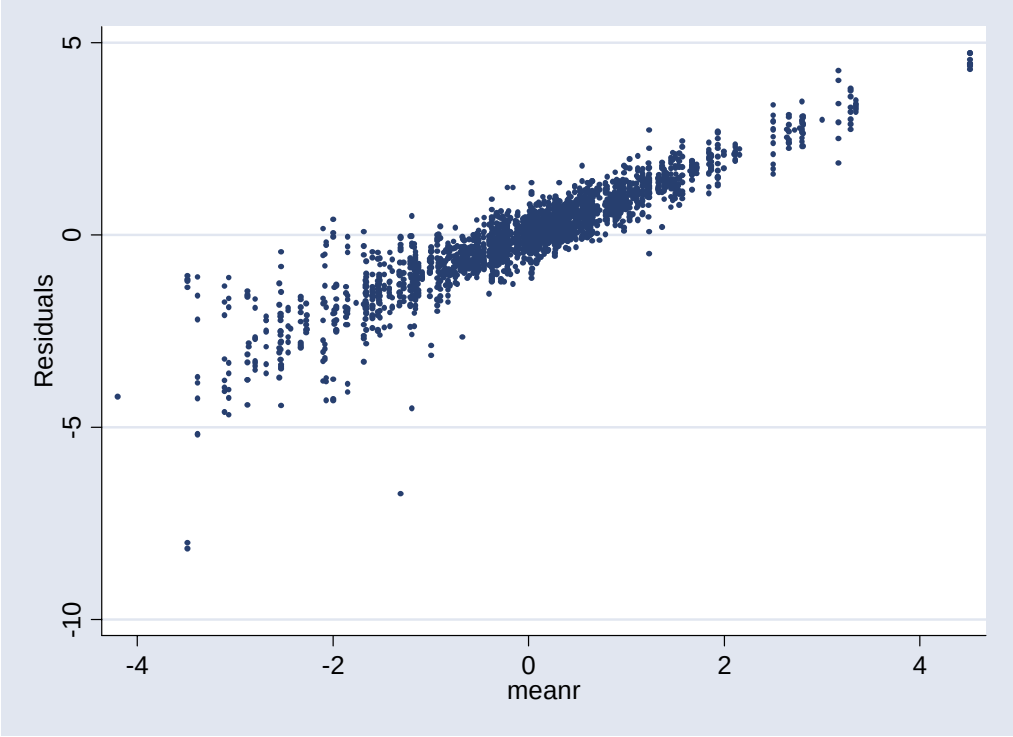
Both specifications, the linear model with the log-transformed dependent variable and the negative binomial model are examples of generalized linear models.

These generalized models may require additional adjustments in order to take account of the structure of the data. First, our data has a panel structure, i.e. we have repeated observations for each panel. The assumption of independency of observations across time (*within* panels) is unlikely to be satisfied. To test this, we analyze the residuals of a linear regression of the log-transformed dependent variable including all cultural and institutional variables as covariates.[5]. Figure 4.3 plots the residuals by panel (each vertical line consists of the residuals of the same panel). We ordered them according to the mean of the residuals for each panel. If the observations were independent of each other within panels, the residuals would be on average 0, and not systematically of the same sign. However, the figure shows that the residuals of the same panel are in most cases of the same sign. A Wooldrigde (2002) test confirms the presence of autocorrelation in the error terms of the same panels: The F-statistic F(1,309) = 8.957, which rejects the hypothesis of no first-order correlation at the 1% level.

One way of correcting for the within-panel correlation is to estimate a population-averaged negative binomial model which specifies the within-correlation structure of the panel directly. This would also enable us to estimate the effects of time unvarying covariates.

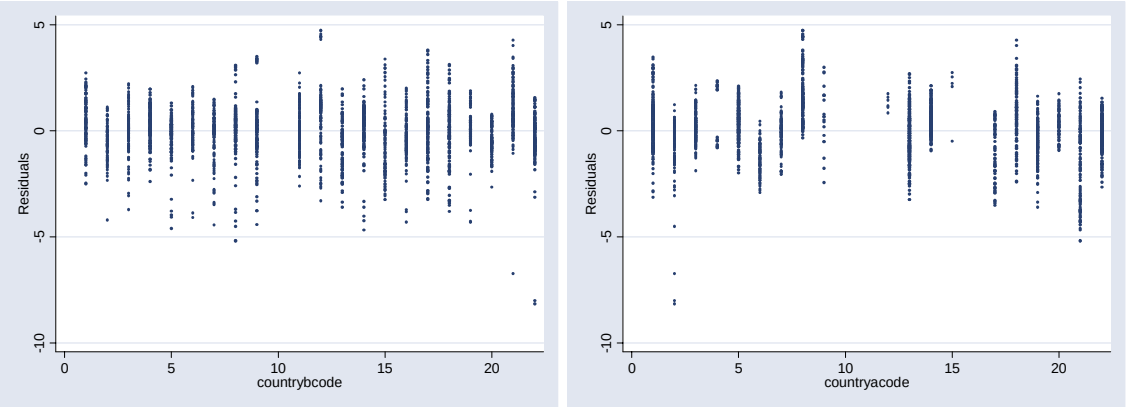
[5] The exact results are not presented here, but are available from the authors upon request.

Figure Error! Style not defined..**3** **Residuals ordered by average residual**



A second characteristic of our data is that we observe for each country a series of inflows and outflows. Flows involving the same country are likely to be correlated if we do not control for country-specific factors. For example, there might be reasons why the United States attracts migrants of all countries which are not directly observed. We could therefore face a problem of correlation *between* the error terms of different panels. We investigate this problem in Figure 4.4, grouping the residuals of our linear regression by country of origin and destination respectively. Again, if the observations were independent of each other within groups, the residuals would be on average 0, and not systematically of the same sign. The figure shows that the problem of cross-correlation is mainly present between groups involving the same country of destination. The structure of the residuals grouped by country of origin is much less worrying. We therefore introduce fixed effects for the country of destination to correct for the correlation between panels. This comes of course at a cost, since we will not be able to estimate the effects of institutional barriers in the country of destination.

Figure Error! Style not defined.**.4** **Residuals by country of origin (left) and destination (right panel)**



4.4 Estimation results

Because of the reasons mentioned in the previous section, we decided to estimate a population-averaged specification, allowing for an autoregressive correlation structure within panels and controlling for fixed effects for the country of origin. We concentrate here on the results of the negative binomial specification. These are presented in table 4.1, which can be found at the end of the paper. The results of the linear specification with the dependent variable transformed in its logarithm are comparable and are available from the authors upon request.

4.4.1 Traditional variables

Let us start with discussing the traditional economic variables first (Table 4.1). The signs of the GDP-variables correspond to what we would expect, i.e. migration flows tend to go from poorer countries to richer countries. The effect of the unemployment rates is maybe more surprising. We find in all specifications that both unemployment rates, i.e. of the country or origin and of destination, lower the migration flows. The hypothesis that unemployed people may be credit-constrained and not be able to migrate seems to find some support here. One extension we will look at is whether the generosity of the unemployment benefit system has any influence on migration flows.

The other variables aggregating individual characteristics that may matter in migration do not have the effect we would expect. We find that the share of tertiary workers has a negative impact on emigration and the participation rate of women increases emigration flows. Maybe these indicators capture some attributes of more developed countries, often characterized by a higher level of human capital and a higher participation rate of women.

Finally, we find that the physical distance, measured in kilometres between capital cities has a negative effect on migration flows. Sharing a border, on the other hand, significantly increases the flows.

4.4.2 Cultural barriers

Let us now concentrate on the variables measuring the cultural distance between countries. We first start by introducing a more refined measure of linguistic distance based on identical languages. In order to identify the added value of this indicator, we introduce the traditional dummy variable capturing the sharing of a common language as well. The results are presented in Table 4.1 Column (1). The common language dummy has a positive and significant effect, as usually found in the literature. More interesting is the fact that our refined indicator turns out to be negative and significant as well. This means that not only the fact that countries share a common official language is important, but the importance of the populations speaking the common language matters as well.

In Column (2), we substitute our indicator by the one taking account of the proximity between languages. Again, the coefficient turns out to be negative and very significant. As we would expect, speaking the same language stimulates migration more than speaking closely related languages. The effect of speaking closely related languages is very strong as well, however.

In Column (3), we introduce the variable measuring the degree of religious distance. Religious distance has also a significant negative effect on migration, next to the effect of linguistic distance.

In Table 4.2, Column (1), we look at the effect of cultural distance based on the Hofstede dimensions. This variable has a negative but not significant effect. We lose a lot of information by introducing this variable. After having checked that the changes in coefficients of the other variables came from the reduction in sample and not from the inclusion of the Hofstede variable, we decided to leave it out for the rest of the analysis. We did the same with the variable measuring the importance of local networks (i.e. the size of the population of the same nationality as the immigrants in the country of destination). We found a positive and significant effect (see Table 4.2, Column (2)), but again, because of the important loss of information, we decided to leave it out for the rest of the analysis. The significant positive effect of “local networks” shows that even when controlling for many characteristics of the country or origin and destination, including cultural links, network effects subsist. This suggests that countries can be as culturally close as possible, there remain a role for local networks of foreign population, even in developed countries.

From this exercise, we conclude that cultural links seem to play a very important role, well beyond the simple sharing of a common language. All cultural variables, except the one based

on the Hofstede indicators, have a significant effect on migration. Cultural links seem to be crucial determinants of migration flows.

4.4.3 Institutional obstacles

Because of the inclusion of fixed effects for the country of destination, we are unable to estimate the effects of some institutional obstacles in the country of destination. Some of these institutions are indeed identical for all countries of origin and do not vary over time (e.g. housing transaction taxes, portability of pensions). Despite of that, our results provide interesting evidence of the presence of institutional barriers (see Table 4.3).

Consider first the effects of immigration laws. The dummy identifying pairs of countries which have an "open-borders" policy turns out to be negative. This is a surprising result as we could have expected that the opening of borders would have a positive influence on migration. One explanation could be that migration between developed countries is dominated by flows between countries which have closed borders (i.e. involving the United States).

Immigration laws in countries which have closed borders have a negative effect on immigration, as we would expect.

Next, we investigated the effects of the portability of supplementary pensions across borders. We find a positive effect, but it is not significant. The effect is significant however when using the other specification, with the log-transformed dependent variable. We will interpret this as some evidence of a positive effect of the portability of supplementary pensions on migration.

We mentioned before that supplementary pensions are not as important in all countries. In Column (2), we look at the effect of portability only in countries where supplementary pensions are important and introduce a dummy variable identifying these countries. We find that these countries have a higher propensity to emigrate, and surprisingly, that the degree of portability has a negative effect on emigration. Of course, we have little variation in our indicator and should be careful before jumping into any conclusion. This said, one hypothesis could be that there is a reverse causality: countries experiencing a lot of emigration could have tried to limit the portability of supplementary pensions. We could then find a higher degree of portability in countries with little emigration.

Finally, we find that housing transaction costs in the country of origin have a negative effect on emigration. Although the effect is of expected sign, we may be surprised by this result as these costs are a typical example of sunk costs, which should be neglected by rational agents in their migration decision. In Column (3), we investigated whether this effect depends on home ownership. We found a negative coefficient for the interaction variable, suggesting that indeed transaction costs deter migration more in countries where the home ownership rate is relatively high.

In conclusion, we find some evidence of the effects of institutional barriers. Our indicators are not as precise as we would like them to be, but this first effort provides some evidence of the effects of institutional barriers on migration.

4.4.4 Extensions

We performed a series of robustness checks, by excluding countries with little information or partial information. We have mentioned in the description of the data that we had partial information for some countries: Canada, Italy, New Zealand, Portugal, Switzerland and the United Kingdom. We compared the extended specification including and excluding these countries. As we would expect, we do not lose much information by excluding them. The results remain essentially the same.

A more interesting extension we did was to include information about the generosity of the unemployment benefit systems in the country of origin and of destination. We used data on the gross replacement rates, provided by the OECD.

Since we did not have information for all countries, our sample was substantially reduced when including these two variables. The results are shown in Table 4.4. Recall that we have found that the unemployment rates, both in the country of origin and destination, had a negative effect on migration. We find here that the gross replacement rate in the country of origin has a significant negative effect on emigration. This confirms the hypothesis that unemployed workers may not be willing to move because they have a sufficient income in their home country.

Note that the unemployment rate variables are not significant anymore, but this is due to the reduction in sample. The second column shows the results based on the same small sample, excluding the replacement rates variables. The coefficients for all variables are very similar.

4.4.5 Other specifications

We compared our results under different specifications (see Table 4.5). First, we estimated a linear regression where the dependent variable is the logarithm of the migration flows, correcting for autocorrelation within panels (column (2)). The results are remarkably similar to the original model (column (1)), although the estimates are less accurate, except for the effect of the portability of supplementary pensions, which is now significant and positive. Second, we estimated a between-effects model, based on the cross-sectional averages (column (3)). Again, the estimates do not differ much from the original model. The cultural and institutional variables turn out to have an even larger effect. The effect of the portability of supplementary pensions is significant in this specification as well, showing a strong positive effect on migration outflows. Next, we estimated a model excluding fixed effects for the country of destination (column (2)). We could then estimate the effects of coefficients specific to the

country of destination (housing transaction taxes and portability of supplementary pensions). We should be careful however with the results, as these coefficients may capture the effects of other unobserved factors specific to the country of destination. As we have discussed here above, this is likely to be the case, given the correlation between the error terms associated with the same country of destination.

The results show indeed important differences with the original model. We find no significant effect of religious distance, and the effects of institutional variables have coefficients of the wrong sign.

A more appropriate way of considering institutional obstacles in the country of destination may be to combine the institutional variables of the countries of origin and destination. We constructed two variables, simply adding up the values for the respective institutional variables in the countries involved in the migration flow. We extend our original PA model and substitute our new variables to the country-specific indicators of portability of pensions and housing transaction costs. We estimate a BE model as well. The results are presented in Table 4.6.

We find that the sum of portability variables is positive, although significant in the BE specification only. The sum of housing transaction costs has a significant and negative effect in both specifications. Note that the effects of the new variables are close to the ones of the variables specific to the country of origin. This suggests that institutional obstacles in the country of origin matter more in the migration decision than institutional obstacles in the country of destination.

Summarizing, we are confident that our results are robust to variations in specifications, as long as we control for the unobserved heterogeneity in the country of destination.

5 Conclusions

This paper provides unique evidence for the role of cultural and institutional barriers in migration between developed countries. We propose a series of new indicators measuring these barriers in a more precise way than ever been done in the literature. First, we introduce more refined measures of the cultural distance between countries, correcting for the proximity between languages and religions. Second, we use indicators for several major institutions, suspected to discourage migration: the lack of portability of supplementary pension rights across borders, the housing transaction costs and the restrictiveness of immigration laws.

We present an empirical analysis of migration flows between 22 OECD countries over the period 1990-2003. We find strong evidence of the importance of cultural links between countries, going well beyond the simple sharing of a common language. Migration flows between countries with closely related languages (e.g. German and Dutch) are likely to be much larger than between countries with unrelated languages (e.g. German and Greek). Similarly, the

proximity in religions also stimulates migration. This may be surprising as the practice of religion is relatively low in developed countries. But we may expect that countries that used to share some religious beliefs actively in the past are more likely to share the same norms and values today. So the indicator of religious distance could be seen as a proxy for cultural distance in terms of norms and values.

Next, we find interesting evidence of institutional obstacles between developed countries. First, immigration laws, when relevant, discourage migration. Surprisingly, countries with open borders (allowing the free movement of people between them) experience less migration between them than countries with closed borders (e.g. the US). We conclude that opening the borders between EU countries had no positive effect on migration. Second, we find that housing transaction costs reduce emigration, especially in countries where they matter the most (countries with high ownership rates). Third, we find some evidence for the effect of the lack of portability of supplementary pension rights, although the effect is less clear. We find a positive effect of portability on migration, but not significant. Furthermore, we find that the countries where supplementary pensions are important have a higher propensity to migrate.

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Tables with regression results

Table 4.1 Estimation results (I)

	(1)	(2)	(3)
Dependent variable	**inflow**	**inflow**	**inflow**
lagged GDP/cap dest.	0.0000	0.0000	0.0001
	(0.0000)**	(0.0000)**	(0.0000)**
lagged GDP/cap origin	0.0000	-0.0001	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)**
lagged unempl. rate dest.	-0.0303	-0.0255	-0.0253
	(0.0032)**	(0.0055)**	(0.0060)**
lagged unempl. rate origin	-0.0069	-0.0007	-0.0019
	(0.0031)*	(0.0054)	(0.0058)
population dest.	-0.0071	-0.0066	-0.0065
	(0.0031)*	(0.0051)	(0.0055)
population origin	0.0080	0.0090	0.0097
	(0.0010)**	(0.0010)**	(0.0010)**
share tertiary educated origin	-0.0020	-0.0084	-0.0047
	(0.0073)	(0.0070)	(0.0070)
share young origin	-0.0095	0.0678	0.0762
	(0.0443)	(0.0430)	(0.0426)*
partic. rate women origin	0.0073	0.0227	0.0214
	(0.0030)**	(0.0044)**	(0.0047)**
distance (km)	-0.0001	-0.0001	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)**
border sharing	0.7723	0.8839	0.7408
	(0.2017)**	(0.1914)**	(0.1918)**
Comlang	-0.6779		
	(0.2684)**		
linguistic distance (same languages)	-3.9986		
	(0.4389)**		
linguistic distance		-2.3726	-2.0915
		(0.3024)**	(0.3156)**
religious distance			-0.9659
			(0.2350)**
Constant	10.5028	5.6075	5.9587
	(1.4166)**	(1.3431)**	(1.3410)**
Observations	2698	2698	2698
Number of panels	314	314	314

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

Table 4.2 Regression results (II)

	(1)	(2)	(3)	(4)
Dependent variable	Inflow	Inflow	Inflow	Inflow
lagged GDP/cap dest.	0.0001	0.0001	0.0001	0.0001
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lagged GDP/cap origin	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
lagged unempl. rate dest.	-0.0155	-0.0151	-0.0197	-0.0250
	(0.0080)*	(0.0079)*	(0.0070)**	(0.0066)**
lagged unempl. rate origin	0.0015	0.0026	0.0043	0.0044
	(0.0075)	(0.0074)	(0.0068)	(0.0064)
population dest.	-0.0154	-0.0146	-0.0117	-0.0079
	(0.0065)**	(0.0064)*	(0.0064)*	(0.0060)
population origin	0.0090	0.0091	0.0073	0.0078
	(0.0011)**	(0.0011)**	(0.0013)**	(0.0013)**
share tertiary educated origin	-0.0013	0.0007	0.0094	0.0006
	(0.0086)	(0.0084)	(0.0100)	(0.0100)
share young origin	0.0815	0.0824	0.0804	0.0701
	(0.0458)*	(0.0459)*	(0.0534)	(0.0535)
partic. rate women origin	0.0165	0.0150	0.0107	0.0080
	(0.0061)**	(0.0061)**	(0.0057)*	(0.0055)
distance (km)	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
border sharing	0.8198	0.8509	0.6509	0.6850
	(0.2176)**	(0.2174)**	(0.2230)**	(0.2240)**
linguistic distance	-2.0794	-2.1487	-1.4527	-1.8768
	(0.3527)**	(0.3437)**	(0.3944)**	(0.3932)**
religious distance	-0.4321	-0.5687	-0.5585	-0.4803
	(0.2917)	(0.2791)*	(0.3536)	(0.3544)
cultural distance (Hofstede)	-0.5437			
	(0.3733)			
network destination			0.0018	
			(0.0004)**	
Constant	4.7225	4.6974	4.1857	5.7342
	(1.4688)**	(1.4684)**	(1.6586)**	(1.6594)**
Observations	1997	1997	1504	1504
Number of panels	246	246	196	196

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

Table 4.3 Regression results (III)

	(1)	(2)	(3)
Dependent variable	inflow	inflow	inflow
lagged GDP/cap dest.	0.0001	0.0001	0.0000
	(0.0000)**	(0.0000)**	(0.0000)**
lagged GDP/cap origin	-0.0001	-0.0001	0.0000
	(0.0000)**	(0.0000)**	(0.0000)*
lagged unempl. rate dest.	-0.0314	-0.0299	-0.0257
	(0.0063)**	(0.0060)**	(0.0058)**
lagged unempl. rate origin	-0.0073	-0.0059	-0.0016
	(0.0061)	(0.0058)	(0.0058)
population dest.	-0.0052	-0.0050	-0.0016
	(0.0056)	(0.0054)	(0.0053)
population origin	0.0107	0.0099	0.0080
	(0.0010)**	(0.0011)**	(0.0012)**
share tertiary educated origin	-0.0150	-0.0166	-0.0272
	(0.0077)*	(0.0086)*	(0.0090)**
share young origin	0.1102	0.1071	0.0925
	(0.0447)**	(0.0474)*	(0.0498)*
partic. rate women origin	0.0126	0.0144	0.0064
	(0.0053)**	(0.0052)**	(0.0060)
distance (km)	-0.0001	-0.0001	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)**
border sharing	0.8070	0.9052	1.1098
	(0.1970)**	(0.1999)**	(0.2217)**
linguistic distance	-1.7564	-1.6023	-1.5048
	(0.3344)**	(0.3321)**	(0.3581)**
religious distance	-1.1024	-1.0673	-0.9043
	(0.2351)**	(0.2363)**	(0.2686)**
open borders	-1.0916	-1.1002	-1.4013
	(0.5140)*	(0.4932)*	(0.4869)**
restrictiveness of immigr. laws dest.	-0.1648	-0.1651	-0.2080
	(0.0707)**	(0.0679)**	(0.0670)**
portability index origin	0.4686		
	(0.3266)		
housing transaction costs origin	-0.0577	-0.0442	-0.0264
	(0.0182)**	(0.0204)*	(0.0524)
dummy suppl. pensions important origin		0.6670	1.0275
		(0.4524)	(0.5002)*
portability index X large importance origin		-0.9486	-1.5070
		(0.5694)*	(0.6955)*
housing transaction costs X home ownership origin			-0.0003
			(0.0007)
Constant	7.2294	7.1454	7.9899
	(1.4436)**	(1.4579)**	(1.5379)**
Observations	2698	2698	2326
Number of panels	314	314	271

Standard errors in parentheses
* significant at 5% level; ** significant at 1% level

Table 4.4 Regression results (IV)

	(1)	(2)
Dependent variable	inflow	inflow
lagged GDP/cap dest.	0.0002	0.0002
	(0.0000)**	(0.0000)**
lagged GDP/cap origin	-0.0001	-0.0001
	(0.0000)**	(0.0000)**
lagged unempl. rate dest.	-0.0023	-0.0043
	(0.0073)	(0.0074)
lagged unempl. rate origin	-0.0088	-0.0080
	(0.0063)	(0.0064)
population dest.	-0.0354	-0.0358
	(0.0058)**	(0.0059)**
population origin	0.0087	0.0099
	(0.0012)**	(0.0012)**
share tertiary educated origin	-0.0150	-0.0170
	(0.0087)*	(0.0087)*
share young origin	0.1596	0.1395
	(0.0501)**	(0.0498)**
partic. rate women origin	-0.0043	-0.0031
	(0.0061)	(0.0062)
distance (km)	-0.0001	-0.0001
	(0.0000)**	(0.0000)**
border sharing	0.9052	0.9154
	(0.2243)**	(0.2238)**
linguistic distance	-1.3795	-1.3939
	(0.3600)**	(0.3588)**
religious distance	-0.9733	-0.8652
	(0.2824)**	(0.2814)**
open borders	-4.9840	-4.9548
	(0.6355)**	(0.6484)**
restrictiveness of immigr. laws dest.	-0.6871	-0.6824
	(0.0865)**	(0.0883)**
portability index origin	0.1926	0.0774
	(0.4023)	(0.4022)
housing transaction costs origin	-0.0946	-0.0903
	(0.0203)**	(0.0202)**
gross repl. rate dest.	-0.0035	
	(0.0035)	
gross repl. rate origin	-0.0124	
	(0.0031)**	
Constant	9.3217	9.4639
	(1.6484)**	(1.6521)**
Observations	1699	1699
Number of panels	260	260

Standard errors in parentheses
* significant at 5% level; **

significant at 1% level

Table 4.5 Regression results : Other specifications

	(1)	(2)	(3)	(4)
Model	PA	PA	BE	No country FE
Dependent variable	inflow	lninflow	lninflow	inflow
gdpcapalag	0.0001	0.0001	0.0001	0.0000
	(0.0000)**	(0.0000)**	(0.0003)	(0.0000)**
gdpcapblag	-0.0001	-0.0001	-0.0001	0.0000
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
uralag	-0.0314	-0.0385	-0.5241	-0.0460
	(0.0063)**	(0.0099)**	(0.2801)	(0.0062)**
urblag	-0.0073	-0.0032	0.0463	-0.0008
	(0.0061)	(0.0092)	(0.0264)	(0.0063)
popalag	-0.0052	-0.0045	-0.1168	0.0111
	(0.0056)	(0.0079)	(0.1677)	(0.0009)**
popblag	0.0107	0.0116	0.0139	0.0112
	(0.0010)**	(0.0010)**	(0.0011)**	(0.0010)**
tertiaryb	-0.0150	0.0043	0.0172	-0.0297
	(0.0077)*	(0.0074)	(0.0096)	(0.0079)**
shareyoungb	0.1102	0.1081	0.1577	0.0880
	(0.0447)**	(0.0427)**	(0.0477)**	(0.0454)*
partwomenb	0.0126	0.0151	0.0076	0.0104
	(0.0053)**	(0.0067)*	(0.0112)	(0.0055)*
distkm	-0.0001	-0.0001	0.0000	-0.0001
	(0.0000)**	(0.0000)**	(0.0000)	(0.0000)**
border	0.8070	0.7926	0.7912	0.8397
	(0.1970)**	(0.1866)**	(0.2068)**	(0.1906)**
distlang	-1.7564	-1.5651	-1.8700	-1.6470
	(0.3344)**	(0.3257)**	(0.3539)**	(0.3004)**
distrel	-1.1024	-1.0447	-1.1077	0.0269
	(0.2351)**	(0.2267)**	(0.2472)**	(0.2382)
open	-1.0916	-0.6389	1.4586	-1.1844
	(0.5140)*	(0.7338)	(1.5186)	(0.5383)*
immilawcloseda	-0.1648	-0.1054	0.0642	-0.1857
	(0.0707)**	(0.1011)	(0.2265)	(0.0730)**
portabilityb	0.4686	0.8883	1.8045	-0.3122
	(0.3266)	(0.3188)**	(0.3966)**	(0.3359)
transtotfeeb	-0.0577	-0.0361	-0.0739	-0.0425
	(0.0182)**	(0.0185)*	(0.0221)**	(0.0181)**
portabilitya				-0.3503
				(0.3645)
transtotfeea				0.0298
				(0.0146)*
Constant	7.2294	5.5580	7.8833	8.0900
	(1.4436)**	(1.5271)**	(8.2172)	(1.5241)**
Observations	2698	2640	2744	2465
Number of panelnr	314	308	355	294

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

Table 4.6 – Estimation results with "total" institutional barriers

	(1)	(2)
Model	PA	BE
Dependent variable	lnflow	lninflow
lagged GDP/cap dest.	0.0001	0.0002
	(0.0000)**	(0.0003)
lagged GDP/cap origin	-0.0001	-0.0001
	(0.0000)**	(0.0000)**
population dest.	-0.0044	-0.1344
	(0.0058)	(0.1663)
population origin	0.0111	0.0144
	(0.0011)**	(0.0012)**
partic. rate women origin	0.0124	0.0025
	(0.0057)*	(0.0113)
lagged unempl. rate dest.	-0.0294	-0.4948
	(0.0068)**	(0.2785)
lagged unempl. rate origin	-0.0057	0.0401
	(0.0067)	(0.0269)
share tertiary educated origin	-0.0157	0.0193
	(0.0080)*	(0.0097)*
share young origin	0.1333	0.1724
	(0.0460)**	(0.0486)**
distance (km)	-0.0001	0.0000
	(0.0000)**	(0.0000)
border sharing	0.8857	0.8391
	(0.1970)**	(0.2056)**
linguistic distance	-1.6341	-1.7598
	(0.3388)**	(0.3545)**
religious distance	-0.9017	-1.0598
	(0.2457)**	(0.2548)**
open	-2.5951	1.5225
	(0.7389)**	(1.5050)
restrictiveness of immigr. laws dest.	-0.3627	0.0764
	(0.1001)**	(0.2244)
totalportability	0.3989	1.9224
	(0.3386)	(0.4082)**
total housing transaction costs	-0.0595	-0.0821
	(0.0189)**	(0.0225)**
Constant	7.8228	4.8289
	(1.6055)**	(8.1877)
Observations	2465	2511
Number of panelnr	294	335

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

6 Appendix

Description of the variables
DESCRIPTION OF THE VARIABLES
Dimensions

COUNTRYACODE	COUNTRYA
COUNTRYBCODE	COUNTRYB
1	Australia
2	Austria
3	Belgium
4	Canada
5	Denmark
6	Finland
7	France
8	Germany
9	Greece
10	Iceland
11	Ireland
12	Italy
13	Luxembourg
14	Netherlands
15	New Zealand
16	Norway
17	Portugal
18	Spain
19	Sweden
20	Switzerland
21	United Kingdom
22	United States of America

YEAR
Annual data, 1990-2003

Name	Description	Source
INFLOW (COUNTRYA, COUNTRYB, YEAR)	Immigration inflow from COUNTRYB to COUNTRYA (in thousands)	See next section
GDPCAPA (COUNTRYA, YEAR) **GDPCAPB** (COUNTRYB, YEAR)	Gross Domestic Product per Capita (constant prices 1990, $)	Groningen Growth and Development Centre, Total Economy Database
URA (COUNTRYA, YEAR) **URB** (COUNTRYB, YEAR)	Standardized unemployment rates	OECD on-line statistics
SCHOOLA (COUNTRYA, YEAR) **SCHOOLB** (COUNTRYB, YEAR)	Average number of years of schooling of the total population in 1990	Barro and Lee (2000)
POPULATIONA (COUNTRYB, YEAR) **POPULATIONB** (COUNTRYA, YEAR)	Total population of COUNTRYB (in thousands)	World Bank

DISTKM (COUNTRYA, COUNTRYB)	Distance in kilometers between capital cities of COUNTRYA and COUNTRYB	Western Cotton Research Laboratory – U.S. Department of Agriculture (Internet Source: http://www.wcrl.ars.usda.gov/cec/java/capitals.htm)
BORDER (COUNTRYA, COUNTRYB)	Dummy variable 0 – No common border 1 – Common border	World Atlas
SHAREYOUNGB (COUNTRYB)	Share of young people (20-39) in COUNTRYB as percent of the total population, 1998	International Labor Organization, Fertig and Schmid (2002)
PARTWOMENB (COUNTRYB, YEAR)	Participation rate of women in COUNTRYB (%)	OECD on-line statistics
TERTIARYB (COUNTRYB, YEAR)	Share of tertiary educated workers in the total population (non-university and university), 1996	OECD, Education at a Glance, 1999.
COMLANG (COUNTRYA, COUNTRYB)	Dummy variable = 1 if (one of) the major language(s) of COUNTRYA and COUNTRYB is common.	English: Australia, Canada, Ireland, New Zealand, United Kingdom, United States French: Belgium, Canada, France, Switzerland German: Austria, Germany, Switzerland Italian: Italy, Switzerland Dutch: Belgium, Netherlands
DISTLANG1 (COUNTRYA, COUNTRYB)	Probability of drawing two individuals speaking different mother languages	Belot and Ederveen (2004)
DISTLANG (COUNTRYA, COUNTRYB)	Index of the linguistic proximity between countries (varies between 0 (no proximity) to 1 (perfect similarity))	Belot and Ederveen (2004)
DISTREL (COUNTRYA, COUNTRYB)	Index of the religious proximity between countries (varies between 0 (no proximity) to 1 (perfect similarity))	
DISTHOF (COUNTRYA, COUNTRYB)	Index of cultural distance between countries, as captured by the four Hofstede (1991) indicators	Hofstede (1991) Calculations by Belot and Ederveen (2004)
FORPOPB (COUNTRYA, COUNTRYB, YEAR)	Stock of Foreign Population in COUNTRYA by nationality (COUNTRYB)	OECD Trends in International Migration Statistics and Migration Policy Institute for Australia (1991,1996,2001), Austria (1991,2001), Canada (1991, 1996, 2000, 2001), Denmark (1990-2003), Finland (1990,1995,2002), Germany (1995-2002), Greece (1991,2001) and USA (1995-2003) For Australia, Canada, USA: Stock of Foreign Population in COUNTRYA by country of birth (COUNTRY B) Linear interpolation for the years in between
OPEN (COUNTRYA, COUNTRYB, YEAR)	Dummy variable equal to 1 if COUNTRYA and COUNTRYB have open borders	
HOMEB (COUNTRYB)	Home Ownership rate 1990	Website Andrew Oswald Mac Lennan et al. (1998)
TRANSTOTFEEB (COUNTRYB)	Total transaction taxes and fees (including real estate agents' fees), associated with housing transaction, in	Various sources, see Belot and Ederveen (2004)

	percent of the purchase value	
PENSPORB (COUNTRYB)	Index of the cross-border portability of supplementary pensions' rights (varies between 0 (not portable) and 2 (totally portable)	Belot and Ederveen (2004)
GRRB (COUNTRYB, YEAR)	Summary measure of benefit entitlement (Average Gross Replacement rates)	OECD 2002, Benefits and Wages, OECD Indicators Only available for odd years. Linear interpolation for even years.
PUBSOCEXPA (COUNTRYA, YEAR) **PUBSOCEXPB** (COUNTRYB, YEAR)	Share of Public Social Expenditures as a percentage of GDP	OECD Social Expenditures Database 1960-1998

6.1 Data source for data on migration inflows

COUNTRY	VARIABLE	PERIOD	DATA SOURCE
Australia	Inflow by country of birth complete	1990 - 2002	Migration Policy Institute
Austria	Inflow by country of nationality complete	1996-2001	Migration Policy Institute
Belgium	Inflow by country of nationality Almost all countries of origin	1993-2002	Institut National de Statistiques (Belgium)
Canada	Inflow of permanent settlers by country of origin 2 countries of origin	1991-2000	OECD
Denmark	Inflow by country of previous residence complete	1990-2002	Migration Policy Institute
Finland	Inflow by country of nationality complete	1997-2001	Migration Policy Institute
France	Inflow by country of nationality complete	1994-1999	Institut National d'Etudes Demographiques (France)
Germany	Inflow by country of nationality complete	1995-2002	Migration Policy Institute
Greece	Usual resident population by place of residence one year before the Census (2001) All countries	2001	National Statistical Service of Greece
Iceland	Inflow by country of previous residence complete	1990-2003	Icelandic Statistics
Ireland	Resident population by place of residence on year before the census (2002) Almost all countries	1994-2001	Central Statistics Office (Ireland)
		1996, 2002	Central Statistical Office Ireland
Italy	Inflow of foreign population by nationality	1998-2000	OECD

	2 countries		
Luxembourg	Inflow of foreign population by nationality complete	1990-2003	Statec Luxembourg
Netherlands	Inflow of foreign-born population by country of birth complete	1995-2002	Migration Policy Institute
New Zealand	Inflow of permanent and long-term arrivals by country of birth 3 countries	1999-2000	OECD
Norway	Inflow of foreign population by country of nationality complete	1999-2001	Migration Policy Institute
Portugal	Inflow of foreign population by country of nationality 7 countries	1992-2000	OECD
Spain	Data on immigration by country of origin (previous residence): Spanish + Foreigners	1998-2003	INE Spanish National Statistical Institute
Sweden	Inflow of foreign population by country of nationality complete	1992-2001	Migration Policy Institute
Switzerland	Inflow of foreign population by country of nationality 10 countries	1991-2000	OECD
United Kingdom	Inflow of foreign population by country of nationality complete	1991-2001	Migration Policy Institute
United States	Inflow of foreign-born population by country of birth complete	1990-2002	Migration Policy Institute

6.2 Data availability

See next Table.

X means that the series is available for all years

- means that it is not available for any year.

Linear interpolation for the following variables: FOROPOPB, SOCA, SOCB, GRRB

	Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Iceland	Ireland
INFLOW	1991-2000	1998-2000	1991-2000	1991-2000	1990-1999	1992-2000	1991-2000	1990-1999	1998	1990-2003	1994-2001
GDPCAPA/B	X	X	X	X	X	X	X	X	X	X	X
URA/B	X	1994-2000	X	X	X	X	X	X	X	1991-2000	X
SCHOOLA/B	X	X	X	X	X	X	X	X	X	X	X
POPULATIONA/B	X	X	X	X	X	X	X	X	X	X	X
DISTKM	X	X	X	X	X	X	X	X	X	X	X
BORDER	X	X	X	X	X	X	X	X	X	X	X
SHAREYOUNGB	X	X	X	X	X	X	X	X	X	X	X
PARTWOMENB	X	1994-2002	X	X	X	X	X	X	X	1991-2002	X
TERTIARYB	X	X	X	X	X	X	X	X	X	X	X
COMLANG	X	X	X	X	X	X	X	X	X	X	X
DISTLANG1	X	X	X	X	X	X	X	X	X	X	X
DISTLANG	X	X	X	X	X	X	X	X	X	X	X
DISTREL	X	X	X	X	X	X	X	X	X	X	X
DISTHOF	X	X	X	X	X	X	X	X	X	X	X
FORPOPB	1991, 1996, 2001	1995, 2000	1990, 1995, 2000	1991, 1996, 2001	1990, 1995, 2000	1990, 1995, 2000	1990, 1999	1990, 1995, 2000	1991, 2001	-	1995, 2001
OPEN	X	X	X	X	X	X	X	X	X	X	X
HOMEB	X	X	X	X	X	X	X	X	X	-	X
TRANSTOTFEEB	X	X	X	X	X	X	X	X	X	-	X
PENSPORB	X	X	X	X	X	X	X	X	X	X	X
GRRB	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	-	Odd years 1961-1999
SOCB	1990-95, 1998	1990-95, 1998	1990-95, 1998	1990-95, 1998	1990-96, 1998	1990-95, 1998	1990-95, 1998	1990-95, 1998	1990-93, 1995, 1998	1994, 1995	1990-96, 1998

	Italy	Luxembourg	Netherlands	New Zealand	Norway	Portugal	Spain	Sweden	Switzerland	UK	USA
INFLOW	1998-2000	1991-2000	1991-2000	1999-2000	1991-2000	1992-2000	1998-2003	1991-2000	1991-2000	1992-2000	1991-2000
GDPCAPA/B	X	X	X	X	X	X	X	X	X	X	X
URA/B	X	X	X	X	X	X	X	X	1991-2000	X	X
SCHOOLA/B	X	X	X	X	X	X	X	X	X	X	X
POPULATIONA/B	X	X	X	X	X	X	X	X	X	X	X
DISTKM	X	X	X	X	X	X	X	X	X	X	X
BORDER	X	X	X	X	X	X	X	X	X	X	X
SHAREYOUNGB	X	X	X	X	X	X	X	X	X	X	X
PARTWOMENB	X	X	X	X	X	X	X	X	1991-2002	X	X
TERTIARYB	X	X	X	X	X	X	X	X	X	X	X
COMLANG	X	X	X	X	X	X	X	X	X	X	X
DISTLANG1	X	X	X	X	X	X	X	X	X	X	X
DISTLANG	X	X	X	X	X	X	X	X	X	X	X
DISTREL	X	X	X	X	X	X	X	X	X	X	X
DISTHOF	X	X	X	X	X	X	X	X	X	X	X
FORPOPB	1990, 1995, 2000	1990, 1995, 2000	1990, 1995, 2000	-	1990, 1995, 2000	1990, 1995, 2000	1990, 1995, 2000	1990, 1995, 2000	1990, 1995, 2000	1990, 1995, 2000	1995-2003
OPEN	X	X	X	X	X	X	X	X	X	X	X
HOMEB	X	-	X	X	X	-	X	X	X	X	X
TRANSTOTFEEB	X	X	X	X	X	X	X	X	X	X	X
PENSPORB	X	X	X	X	X	X	X	X	X	X	X
GRRB	Odd years 1961-1999	-	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999	Odd years 1961-1999
SOCB	1990-95, 1998	1990-95, 1998	1990-96, 1998	1990-96, 1998	1990-95, 1998	1990-96, 1998	1990-95, 1998	1990-95, 1998	1990, 1995, 1998	1990-95, 1998	1990-95, 1998

6.3 Summary statistics

Table 6.1 Summary statistics

		No obs.	Mean	Std. dev.	Min.	Max.
INFLOW	(units)	3053	1646	3714	0	48309
GDPCAPA/B	(GK $)	6468	18888	4325	9952	34462
URA/B	(%)	6279	7,55	3,86	1,5	23,9
POPA/B	(millions)	6468	32,20	56,93	0,255	290,3426
SCHOOLA/B	(years)	6174	8,64	1,74	4,13	11,74
TERTIARYB	(%)	6174	21,81	8,69	8	48
SHAREYOUNGB	(%)	6468	29,62	1,31	26,8	32,37
PARTWOMENB	(%)	6237	63,61	11,20	41,1	85,7
DISTKM	(km)	6468	4895	5930	173	19838
DISTLANG1		6468	0,93	0,20	0,042569	1
DISTLANG		6468	0,61	0,22	0,038857	0,986891
DISTREL		6468	0,69	0,27	0,0397	1
DISTHOFSTEDE		4830	0,30	0,22	0	0,999366
FORPOPB	(thousands)	2654	49,13	124,29	0	1119,591
HOMEB	(%)	5292	58,89	13,30	30	81
TRANSTOTFEEB	(%)	6174	9,95	4,51	3,5	19
PENSPORB		6468	0,89	0,41	0	1,5
GRRB	(%)	3780	31,50	11,31	2,5	67
SOCA/B	(%)	4011	23,81	5,28	13,54	36,91
COMLANG		6468	share 0	0,887446		
			share 1	0,112554		
OPEN		6468	share 0	0,564626		
			share 1	0,435374		

Table 6.2 Average migration flows between countries

Emigration country	Immigration country: AUS	AUT	BEL	CAN	DEN	FIN	FRA	GER	GRE	ICE	IRE	ITA	LUX	NLD	NOR	NZL	POR	SPA	SWE	SWI	UK	USA
AUS		213	180		285	61	305	1816	1477	25	4997		10	764	122	3569		360	223		2104	1931
AUT	105		211		114	20	526	11135	293	13	150		35	330	58			480	81	1595		501
BEL	62	152			138	16	4102	2039	763	19	431		1099	2116	58			2819	76			620
CAN	743	202	480		249	63	1503	2253	853	38	605		29	676	137			408	174	850	967	15064
DEN	144	197	398			71	632	2591	133	995	162		152	372	1910			580	1530			589
FIN	56	247	411		322		494	2976	65	42	149		64	416	1321			846	2993			433
FRA	269	644	6941		577	115		14333	1091	45	2015		1623	1778	386		376	7213	429	5254		2983
GER	776	7140	3016		1542	192	8319		11406	143	1952	4381	660	5346	1047		559	12627	946	9542		7214
GRE	205	464	627		104	31	710	17248		4	114		71	636	41			150	234			1430
ICE	7	35	53		1074	24	59	232	6				25	68	479				406			128
IRE	732	111	344		116	25	783	3286	85	7			78	501	54			810	116			5557
ITA	252	1354	2529		465	80	5005	36445	2356	24	775		517	1255	153		186	3798	246	6476		2431
LUX	2	37	218		6	0	371	660	73	24	58			39	2			95	2			24
NLD	356	564	6715		526	62	2010	7619	503	41	746		247		342		222	2612	298	1394		1302
NZL	13346	35	48		77	10	66	397	26	14	488		5	305					59		1364	862
NOR	43	106	269		1378	67	487	1034	90		122		25	323	31				1924		94	467
POR	178	450	1696		82	5	7162	18947	36	20			2531	780	56			3324	61			2291
SPA	71	301	1140		427	63	3896	7942	387	33	1661		126	1157	127		481		224	2534		1437
SWE	167	438	562		1155	704	1196	3335	536	586	373		111	531	3688			1419				1188
SWI	240	470	191		125	23	1422	3331	383	16			36	404	59				88		194	868
UK	10978	946	2874	5725	1184	213	8002	12824	7549	140	23201		358	4648	885	476	577	17588	939	2710		14356
USA	1402	994	2903	6056	1424	215	4495	15799	4704	274	5615	5845	242	3193	704	1253	307	3041	935	2826	4034	

Table 6.3 Linguistic distance between countries

	AUS	AUT	BEL	CAN	DEN	FIN	FRA	GER	GRE	ICE	IRE	ITA	LUX	NLD	NOR	NZL	POR	SPA	SWE	SWI	UK	USA	
AUS	0,00	0,45	0,57	0,44	0,62	0,98	0,79	0,46	0,79	0,62	0,19	0,78	0,63	0,42	0,61	0,25	0,78	0,79	0,64	0,56	0,20	0,28	
AUT	0,45	0,00	0,53	0,53	0,58	0,97	0,78	0,15	0,78	0,57	0,34	0,78	0,49	0,35	0,57	0,39	0,78	0,78	0,60	0,35	0,35	0,41	
BEL	0,57	0,53	0,00	0,56	0,65	0,98	0,52	0,53	0,77	0,64	0,49	0,53	0,54	0,35	0,64	0,53	0,52	0,53	0,66	0,54	0,50	0,52	
CAN	0,44	0,53	0,56	0,00	0,66	0,98	0,62	0,53	0,79	0,66	0,33	0,62	0,59	0,51	0,65	0,39	0,61	0,62	0,68	0,57	0,34	0,39	
DEN	0,62	0,58	0,65	0,66	0,00	0,95	0,78	0,58	0,78	0,35	0,55	0,78	0,69	0,56	0,34	0,59	0,78	0,78	0,18	0,65	0,56	0,59	
FIN	0,98	0,97	0,98	0,98	0,95	0,00	0,99	0,97	0,99	0,96	0,97	0,99	0,98	0,97	0,96	0,98	0,99	0,99	0,93	0,98	0,97	0,98	
FRA	0,79	0,78	0,52	0,62	0,78	0,99	0,00	0,79	0,77	0,78	0,77	0,10	0,46	0,78	0,78	0,79	0,08	0,10	0,79	0,60	0,77	0,73	
GER	0,46	0,15	0,53	0,53	0,58	0,97	0,79	0,00	0,78	0,58	0,35	0,78	0,50	0,36	0,57	0,40	0,78	0,78	0,60	0,36	0,36	0,41	
GRE	0,79	0,78	0,77	0,79	0,78	0,99	0,77	0,78	0,00	0,77	0,76	0,77	0,78	0,77	0,77	0,79	0,77	0,77	0,79	0,79	0,77	0,78	
ICE	0,62	0,57	0,64	0,66	0,35	0,96	0,78	0,58	0,77	0,00	0,54	0,77	0,69	0,55	0,11	0,58	0,77	0,78	0,38	0,65	0,55	0,59	
IRE	0,19	0,34	0,49	0,33	0,55	0,97	0,77	0,35	0,76	0,54	0,00	0,76	0,57	0,31	0,54	0,10	0,76	0,77	0,57	0,48	0,04	0,13	
ITA	0,78	0,78	0,53	0,62	0,78	0,99	0,10	0,78	0,77	0,77	0,76	0,00	0,46	0,77	0,77	0,79	0,08	0,09	0,79	0,60	0,77	0,73	
LUX	0,63	0,49	0,54	0,59	0,69	0,98	0,46	0,50	0,78	0,69	0,57	0,46	0,00	0,58	0,68	0,60	0,44	0,46	0,70	0,50	0,58	0,58	
NLD	0,42	0,35	0,35	0,51	0,56	0,97	0,78	0,36	0,77	0,55	0,31	0,77	0,58	0,00	0,55	0,36	0,77	0,77	0,58	0,49	0,32	0,38	
NOR	0,61	0,57	0,64	0,65	0,34	0,96	0,78	0,57	0,77	0,11	0,54	0,77	0,68	0,55	0,00	0,58	0,77	0,77	0,37	0,64	0,55	0,58	
NZL	0,25	0,39	0,53	0,39	0,59	0,98	0,79	0,40	0,79	0,58	0,10	0,79	0,60	0,36	0,58	0,00	0,78	0,79	0,61	0,52	0,12	0,20	
POR	0,78	0,78	0,52	0,61	0,78	0,99	0,08	0,78	0,77	0,77	0,76	0,08	0,44	0,77	0,77	0,78	0,00	0,07	0,78	0,66	0,77	0,74	
SPA	0,79	0,78	0,53	0,62	0,78	0,99	0,10	0,78	0,77	0,78	0,77	0,09	0,46	0,77	0,77	0,79	0,07	0,00	0,79	0,60	0,77	0,73	
SWE	0,64	0,60	0,66	0,68	0,18	0,93	0,79	0,60	0,79	0,38	0,57	0,79	0,70	0,58	0,37	0,61	0,78	0,79	0,00	0,67	0,58	0,61	
SWI	0,56	0,35	0,54	0,57	0,65	0,98	0,60	0,36	0,79	0,65	0,48	0,60	0,50	0,49	0,64	0,52	0,66	0,60	0,67	0,00	0,49	0,52	
UK	0,20	0,35	0,50	0,34	0,56	0,97	0,77	0,36	0,77	0,55	0,04	0,77	0,58	0,32	0,55	0,12	0,77	0,77	0,58	0,49	0,00	0,14	
USA	0,28	0,41	0,52	0,39	0,59	0,98	0,73	0,41	0,78	0,59	0,13	0,73	0,58	0,38	0,58	0,20	0,74	0,73	0,61	0,52	0,14	0,00	

Source: Belot and Ederveen (2004)

Table 6.4 **Religious distance between countries**

	AUS	AUT	BEL	CAN	DEN	FIN	FRA	GER	GRE	ICE	IRE	ITA	LUX	NLD	NOR	NZL	POR	SPA	SWE	SWI	UK	USA
AUS	0	0,78	0,8	0,79	0,76	0,77	0,77	0,81	1	0,76	0,76	0,78	0,75	0,85	0,75	0,83	0,75	0,74	0,74	0,77	0,83	0,78
AUT	0,78	0	0,39	0,63	0,95	0,96	0,34	0,72	0,98	0,94	0,28	0,35	0,24	0,72	0,94	0,86	0,24	0,23	0,94	0,62	0,85	0,75
BEL	0,8	0,39	0	0,65	0,99	1	0,34	0,73	1	0,99	0,29	0,35	0,24	0,73	0,99	0,88	0,24	0,23	0,99	0,64	0,88	0,78
CAN	0,79	0,63	0,65	0	0,67	0,68	0,61	0,71	0,99	0,66	0,58	0,62	0,56	0,76	0,65	0,75	0,56	0,55	0,64	0,65	0,75	0,67
DEN	0,76	0,95	0,99	0,67	0	0,19	0,97	0,65	1	0,17	0,97	0,98	0,98	0,79	0,13	0,53	0,98	0,99	0,12	0,63	0,56	0,49
FIN	0,77	0,96	1	0,68	0,19	0	0,98	0,66	1	0,19	0,97	0,99	0,99	0,8	0,15	0,54	0,99	1	0,14	0,64	0,57	0,50
FRA	0,77	0,34	0,34	0,61	0,97	0,98	0	0,7	1	0,97	0,22	0,29	0,18	0,7	0,97	0,86	0,18	0,16	0,97	0,6	0,86	0,75
GER	0,81	0,72	0,73	0,71	0,65	0,66	0,7	0	1	0,65	0,68	0,71	0,67	0,8	0,63	0,75	0,67	0,66	0,63	0,69	0,76	0,69
GRE	1	0,98	1	0,99	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
ICE	0,76	0,94	0,99	0,66	0,17	0,19	0,97	0,65	1	0	0,96	0,98	0,97	0,78	0,12	0,52	0,97	0,98	0,12	0,63	0,55	0,49
IRE	0,76	0,28	0,29	0,58	0,97	0,97	0,22	0,68	1	0,96	0	0,24	0,11	0,68	0,97	0,85	0,11	0,09	0,96	0,56	0,85	0,73
ITA	0,78	0,35	0,35	0,62	0,98	0,99	0,29	0,71	1	0,98	0,24	0	0,19	0,72	0,98	0,87	0,19	0,18	0,98	0,61	0,87	0,76
LUX	0,75	0,24	0,24	0,56	0,98	0,99	0,18	0,67	1	0,97	0,11	0,19	0	0,67	0,98	0,85	0,06	0,04	0,98	0,54	0,84	0,72
NLD	0,85	0,72	0,73	0,76	0,79	0,8	0,7	0,8	1	0,78	0,68	0,72	0,67	0	0,78	0,83	0,67	0,66	0,77	0,75	0,83	0,78
NOR	0,75	0,94	0,99	0,65	0,13	0,15	0,97	0,63	1	0,12	0,97	0,98	0,98	0,78	0	0,5	0,98	0,99	0,07	0,61	0,53	0,46
NZL	0,83	0,86	0,88	0,75	0,53	0,54	0,86	0,75	1	0,52	0,85	0,87	0,85	0,83	0,5	0	0,85	0,85	0,49	0,72	0,72	0,67
POR	0,75	0,24	0,24	0,56	0,98	0,99	0,18	0,67	1	0,97	0,11	0,19	0,06	0,67	0,98	0,85	0	0,04	0,98	0,54	0,84	0,72
SPA	0,74	0,23	0,23	0,56	0,99	1	0,16	0,66	1	0,98	0,09	0,18	0,04	0,66	0,99	0,85	0,04	0	0,99	0,54	0,85	0,72
SWE	0,74	0,94	0,99	0,64	0,12	0,14	0,97	0,63	1	0,12	0,96	0,98	0,98	0,77	0,07	0,49	0,98	0,99	0	0,6	0,53	0,45
SWI	0,77	0,62	0,64	0,65	0,63	0,64	0,6	0,69	1	0,63	0,56	0,61	0,54	0,75	0,61	0,72	0,54	0,54	0,6	0	0,73	0,65
UK	0,83	0,85	0,88	0,76	0,56	0,57	0,86	0,76	1	0,55	0,85	0,87	0,84	0,83	0,53	0,72	0,84	0,85	0,53	0,73	0	0,68
USA	0,78	0,75	0,78	0,67	0,49	0,5	0,75	0,69	1	0,48	0,73	0,76	0,72	0,78	0,46	0,67	0,72	0,72	0,45	0,65	0,68	0

Source: Belot and Ederveen (2004)

Table 6.5 Cultural distance between OECD countries (Hofstede dimensions)

	AUS	AUT	BEL	CAN	DEN	FIN	FRA	GER	GRE	IRE	NLD	NZL	NOR	POR	SPA	SWE	SWI	UK	USA
AUS	0,00	0,20	0,22	0,02	0,34	0,20	0,23	0,05	0,50	0,05	0,28	0,03	0,37	0,62	0,26	0,44	0,04	0,02	0,00
AUT	0,20	0,00	0,39	0,23	0,66	0,40	0,47	0,08	0,41	0,14	0,64	0,13	0,69	0,64	0,37	0,83	0,08	0,23	0,23
BEL	0,22	0,39	0,00	0,21	0,71	0,28	0,02	0,16	0,13	0,38	0,37	0,30	0,49	0,22	0,06	0,68	0,21	0,35	0,24
CAN	0,02	0,23	0,21	0,00	0,24	0,11	0,19	0,06	0,45	0,06	0,18	0,03	0,25	0,50	0,19	0,30	0,06	0,04	0,02
DEN	0,34	0,66	0,71	0,24	0,00	0,13	0,58	0,45	1,00	0,35	0,10	0,26	0,07	0,79	0,52	0,03	0,46	0,35	0,35
FIN	0,20	0,40	0,28	0,11	0,13	0,00	0,19	0,20	0,42	0,26	0,04	0,16	0,05	0,30	0,14	0,12	0,24	0,28	0,22
FRA	0,23	0,47	0,02	0,19	0,58	0,19	0,00	0,19	0,16	0,39	0,26	0,31	0,36	0,16	0,04	0,52	0,24	0,36	0,25
GER	0,05	0,08	0,16	0,06	0,45	0,20	0,19	0,00	0,28	0,07	0,35	0,05	0,43	0,42	0,16	0,54	0,01	0,09	0,07
GRE	0,50	0,41	0,13	0,45	1,00	0,42	0,16	0,28	0,00	0,59	0,64	0,52	0,70	0,09	0,09	0,96	0,35	0,66	0,54
IRE	0,05	0,14	0,38	0,06	0,35	0,26	0,39	0,07	0,59	0,00	0,39	0,03	0,45	0,72	0,36	0,49	0,04	0,03	0,05
NLD	0,28	0,64	0,37	0,18	0,10	0,04	0,26	0,35	0,64	0,39	0,00	0,26	0,02	0,45	0,25	0,06	0,39	0,36	0,29
NZL	0,03	0,13	0,30	0,03	0,26	0,16	0,31	0,05	0,52	0,03	0,26	0,00	0,32	0,61	0,28	0,38	0,04	0,04	0,04
NOR	0,37	0,69	0,49	0,25	0,07	0,05	0,36	0,43	0,70	0,45	0,02	0,32	0,00	0,47	0,31	0,03	0,47	0,45	0,39
POR	0,62	0,64	0,22	0,50	0,79	0,30	0,16	0,42	0,09	0,72	0,45	0,61	0,47	0,00	0,08	0,68	0,51	0,79	0,65
SPA	0,26	0,37	0,06	0,19	0,52	0,14	0,04	0,16	0,09	0,36	0,25	0,28	0,31	0,08	0,00	0,47	0,21	0,38	0,29
SWE	0,44	0,83	0,68	0,30	0,03	0,12	0,52	0,54	0,96	0,49	0,06	0,38	0,03	0,68	0,47	0,00	0,57	0,48	0,45
SWI	0,04	0,08	0,21	0,06	0,46	0,24	0,24	0,01	0,35	0,04	0,39	0,04	0,47	0,51	0,21	0,57	0,00	0,07	0,05
UK	0,02	0,23	0,35	0,04	0,35	0,28	0,36	0,09	0,66	0,03	0,36	0,04	0,45	0,79	0,38	0,48	0,07	0,00	0,01
USA	0,00	0,23	0,24	0,02	0,35	0,22	0,25	0,07	0,54	0,05	0,29	0,04	0,39	0,65	0,29	0,45	0,05	0,01	0,00