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ABSTRACT

The Role of Income and Immigration Policies in Attracting International Migrants*

This paper makes two contributions to the literature on the determinants of international migration flows. First, we compile a new dataset on annual bilateral migration flows covering 15 OECD destination countries and 120 sending countries for the period 1980-2006. We also collect data on time-varying immigration policies that regulate the entry of immigrants for our destination countries over this period. Second, we extend the empirical model of migration choice across multiple destinations developed by Grogger and Hanson (2011) by allowing for unobserved individual heterogeneity between migrants and non-migrants. Our estimates show that international migration flows are highly responsive to income per capita at destination. This elasticity is twice as high for within-EU migration, reflecting the higher degree of labor mobility within the European Union. We also find that tightening of laws regulating immigrant entry reduce rapidly and significantly their flow.

JEL Classification: F22, E25, J61

Keywords: international migration, labor movements, immigration policies

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1 Introduction

The first decade of the new millennium has witnessed growing international mobility, especially towards OECD countries (e.g. OECD, 2011). Economic factors, and in particular the large income differentials between countries, are likely to play a very important role in determining migration flows. Other factors affecting the cost of migration are also fundamental in shaping those flows. A particularly interesting question is to what extent and how rapidly immigration policies enacted by receiving countries affect these flows. While some studies (Clark et al. 2007, Mayda 2010) have considered the role of immigration policies on migration flows, the limitation of data on both flows and policies has severely constrained these analyses.

In this paper we make two contributions to the literature on the determinants of international migration flows. The first contribution is in terms of data. Building on Mayda (2010), we extend the existing dataset on bilateral migration flows by including a larger number of receiving (15 OECD destinations) and sending countries (120 countries of origin) and years (1980-2006). We also build a new quantitative measure of immigration policy restrictions to new immigration flows, summarizing the effects of quotas and admission requirements. Following some mechanical rules and carefully reading the content of a few hundred laws we classify them based on whether they tighten or relax the requirements for *entry*.[1]

Secondly, we extend the empirical model of utility-maximizing migration choices in Grogger and Hanson (2011) by allowing for unobserved individual heterogeneity between migrants and non-migrants.[2] Specifically, our model can be cast into the nested logit model by McFadden (1978). Under some distributional assumptions on the unobserved heterogeneity of individuals we then derive an empirical specification that can be estimated using aggregate level data on bilateral migration flows, provided a rich set of fixed effects are included in the estimation. In such a model the aggregate number of migrants from a given origin into a particular destination is a function of income per capita at destination, the cost of migration, and a set of origin-specific factors. As proxies for overall immigration costs we use a number of measures of geographic and cultural distance between countries, plus our measure of policy-driven tightness of entry for immigrants. We estimate the model on a bilateral panel containing information on migration flows and immigration policies over time.

[1] In this paper we do not address policies regarding asylum seekers. For an important reference in the European context see Hatton (2005).

[2] Grogger and Hanson (2011) disaggregate migration flows by education but we do not.

Our main findings are as follows. First, confirming previous literature (such as Mayda 2010 and Grogger and Hanson 2011), we show that destination income per capita is a key determinant of migration choices. A 10 percent increase in income per capita at a particular destination is associated to a 7.6 percent increase in immigration flows. This elasticity doubles for intra-EU migration flows, reflecting the higher integration within the European Union. We also find that when a typical (non-European) immigrant destination, such as the US, Canada or Australia, tightens its entry laws immigration flows fall already after one year. Specifically, a typical one-step tightening of entry laws for these countries reduces new entries by 6 percent the following year. Within the European Union the key laws affecting immigration flows are the treaties regulating the free movement of people within the Union.

Our paper is also related to the literature on the determinants of international flows of goods and people. Gravity regressions have become very popular in analyzing trade flows (e.g. Anderson and van Wincoop 2003, Chaney 2008 and Helpman, Melitz and Rubinstein, 2008) primarily because they can be derived from an equilibrium model with optimizing firms. However, the literature on international migration flows has lagged behind. A large part of the literature on migration flows estimated similar models but often focusing on a single destination (and many origins) and using reduced-form models not well justified by a rational choice framework (Clark et al. 2008, Karemera et al. 2000, Pedersen et al 2004, and Garcia-Gomez and Lopez-Casasnovas 2006, among others). As a result, the empirical estimates, while informative and interesting, lacked a theoretical foundation. Recent work in this area includes Beine et al. (2011), who focus on the role of networks in shaping international migration flows and McKenzie et al. (2012), who exploit a unique dataset for migration out of the Philippines.[3] Our emphasis on the role of immigration policies on regulating inflows is inspired by the studies on the role of restrictions in ending the First Great Migration (Hatton and Williamson 2004, Hatton 2010).[4]

In a more structural fashion Grogger and Hanson (2011) analyzed the scale, selection and sorting across destinations of migrants with different education levels using a model based on optimal migration choices. In econometric terms, their model is an application of the logit model by McFadden (1974). Their specification for the "scale" of migration uses the difference between the logs of the odds of migrating to a specific country and the odds of not migrating at all as the dependent variable. In comparison, our model features only one type of labor (aggregated across education groups), but accommodates unobserved individual heterogeneity. Moreover, our model has a panel dimension that

[3] Borjas (1987) studies the selection of migrants on the basis of the Roy model.

[4] See Chiswick and Hatton (2003) for an even longer term perspective on international migration.

allows us to include a much richer set of fixed effects that control for origin-specific variables which are often not available or very imprecisely measured (as the countries of origin are many and often poor).[5] Our work is also related to the work by Bertocchi and Strozzi (2010) and Mayda (2010) on the evolution of immigration laws and citizenship, and their consequences for migration flows.[6]

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 presents the theoretical model of migration choices and derives the estimating equation. Section 4 presents the results and Section 5 concludes.

2 Data

Our data spans 15 countries of destination and 120 countries of origin over the period 1980-2006.[7] In Section 2.1 we describe in detail the construction and source of the immigration data. In Section 2.2 we present the sources and construction of the variables capturing the tightness of entry laws.

2.1 Migration Flows

Our immigration data measure the yearly inflow of foreign citizens who intend to be residents in the receiving countries. To span the whole period of analysis we merged bilateral immigration data from three sources. The first source is Mayda (2010). That paper uses the original OECD series on flows of migrants that were discontinued in 1994 and extends them up to 2005. The second source is United Nations (2005), which reports very long time series but only for a subset of 15 destination countries. This source goes back to the sixties for some countries, but ends in the early 2000s for all of them. The third source is the International Migration database (IMD) gathered by the OECD and available up to 2007.[8] The latter has the most extensive coverage in terms of destination and sending countries, but it only begins in 1998, and for some destinations it only has few countries as source. We have made sure that the definitions of immigrant are consistent across databases for each receiving country. All datasets use as primary sources the original data released by the statistical offices of each receiving country, which try to maintain internal consistency over time. In our checks we often find an exact coincidence of the figures in overlapping periods. Occasionally there are slight differences introducing

[5] Bertoli and Fernandez-Huertas (2011) examine more general multilateral migration models.

[6] See also Bertocchi and Strozzi (2008) for a historical analysis of the effects of institutions on migration flows for a reduced number of countries.

[7] Table 2 reports the full list of destination countries.

[8] Downloadable at http://stats.oecd.org/Index.aspx?DataSetCode=MIG.

discontinuities as we merge two series from different sources. The national data are based on population registers or residence permits. In both cases these are considered to be accurate measures of the entry of *legal* foreign nationals. Table A1 in the Appendix summarizes the availability from each data source by destination country. To construct the final migration flows, starting with the UN migration data, we have filled in missing origin-destination-year observations using the IMD data. For the remaining cells we have used the data from Mayda (2010). In a small number of cases we have also interpolated observations to fill in missing values in intermediate years. We did this only when a data point for a bilateral migration flow was missing and both the previous and following years were available. While the OECD makes an effort (especially since 1995) to maintain a consistent definition of immigrants across countries, there are some differences between destination country definitions. An important one is that some countries define immigrants on the basis of the place of birth, and others on the basis of nationality. While this inconsistency can make a pure cross-country comparison inaccurate, our analysis focuses on changes within destination countries over time. Therefore it should be exempt from large mis-measurement due to the classification problem.

Figure 1 plots the total immigration rates in our data, defined as the total annual inflows into each destination country (aggregating across all origins), relative to the resident population in the country at the beginning of the year. A few observations are worth noting. First, immigration rates exhibit an upward trend in many countries: Belgium, Denmark, Italy, Norway, and New Zealand. Second, immigration flows were higher during the 1990s than in the 2000s for a group of countries. For example, annual inflows into Germany and Sweden peaked in the first half of the 1990s, reflecting the fall of the Iron Curtain and the subsequent westward migration, and the Yugoslavian war.

Over our period of study, Spain has experienced a striking migration episode. Immigration flows into Spain during the 1980s were practically zero and, in fact, Spain exhibited net outflows during this decade. From the mid 1990s Spain received a spectacular immigration wave, with annual immigration rates much higher than all other countries in our sample (up to 1.5% per year).[9] The main reason behind this immigration wave is the robust economic growth displayed by the Spanish economy starting in the mid 1980s and extending over two decades. It is also worth noting that housing and tourism were the main engines of economic growth, and both sectors have employed a very large fraction of immigrants (Gonzalez and Ortega 2012). At the same time the deep economic crises experienced by

[9] With the Great Recession net immigration into Spain became practically zero in 2010 and negative in 2011.

Argentina and Ecuador during this period, together with the tightened entry requirements into the US, increased the relative attractiveness of Spain as an immigrant destination. Our empirical model is able to accommodate this large country heterogeneity in the relevant factors behind migration flows.

2.2 Immigration Laws

Immigration policy has become very salient in many countries. The issue of allowing in (or trying to keep out) and absorbing existing immigrants is very contentious. The growing immigration pressure has driven some countries to adopt substantial reforms of their immigration laws, aiming at controlling immigration flows. On the other hand the need for the labor provided by some of these immigrants (particularly in agriculture , construction, and personal services) has also pushed governments to create specific favored entry categories or to be lenient ex-post with those that entered illegally by passing amnesties. Among economists there has been a growing interest on the study of the determinants of immigration policy since the seminal paper by Benhabib (1996).[10] It remains unclear to what extent entry restrictions are able to control immigration flows.

An important contribution of this paper is the creation of a database and a classification for tightness of entry of immigration laws for the main OECD immigration countries categorized. Our starting point are the laws collected by Mayda and Patel (2004) and the Social Reforms database of the Fondazione Rodolfo DeBenedetti (FRDB, 2007). Mayda and Patel (2004) documented the main characteristics of the migration policies of several OECD countries between 1980 and 2000 and the changes in their legislations over time. The FRDB Social Reforms Database collects information about social reforms in the EU15 countries (except Luxembourg) over the period 1987-2005. We merged and updated these two datasets obtaining the complete set of immigration reforms in the period 1980-2006 for 12 of our 15 OECD countries.[11] The resulting dataset includes more than 240 laws that we analyzed and classified. The list of immigration laws by country and year and a brief description of each of them can be found in the online appendix to the paper.[12]

[10] For more recent work on the political economy of immigration see: Dolmas and Huffman (2004), Ortega (2005, 2010), Bertocchi and Strozzi (2010), Facchini, Mayda and Mishra (2011), or Facchini and Steinhardt (2011). In these models immigration policy is largely a reflection of voters' attitudes toward immigration. Some recent empirical contributions to this literature are Mayda (2006), Facchini and Mayda (2009), and Ortega and Polavieja (2012) in the European context. Hatton and Williamson (2005) provide evidence of the role of political economy forces as an important driver of the immigration restrictions in the US around 1920.

[11] For France, Japan and Luxembourg we constructed the immigration law variable but their immigration data were very inconsistent and we did not use them in the analysis. For Italy, Finland and New Zealand we were unable to construct the measure of entry laws in a reliable manner.

[12] http://www.econ.ucdavis.edu/faculty/gperi/data_codes/immigration_laws_appendix/immigration_laws_June_2012.xls.

We then constructed an index that captures the direction of the change in *entry tightness* associated to any major immigration law. Specifically, we initialize each country at zero in the first year. If no relevant policy changes occur, the variable remains constant. In the year when an immigration law is passed that entails a tightening of entry conditions the variable increases its value by one. On the contrary, relaxation of entry conditions reduces the degree of tightness by one. A reform is considered as tightening of entry laws if (i) it introduces or decreases quotas for entry, or (ii) it increases the requirements, fees or documents for entry, or (iii) it increases requirements or the waiting time to obtain residence or work permits. There are several reforms that may indirectly affect ease of entry but do not explicitly fit any of the categories above. In those cases we classified them as loosening or tightening, or no change, by scrutinizing the content of each regulation.

Admittedly, this variable captures only one specific dimension of immigration policies, namely how numerically restricted and costly the process of admission to a country is. Besides entry laws, other laws may also be relevant to migration decisions: integration and citizenship, access to public services and employment, and so on. We believe our narrow focus allows us to build a more precise measure that is closely linked to immigration flows.[13]

Figure 2 plots our index variable for *tightness of entry laws*. Recall that the initial value for each country has been set to 0. Hence only the within-country variation over time is meaningful and not the cross-country variation. Given that in all our regressions we include a fixed receiving country effects, and hence, we identify the impact of explanatory variables on the within-country variation over time, this feature of the index does not affect our findings. A quick glance at the evolution of entry tightness over time reveals several episodes of substantial loosening of entry laws. For instance Canada and Germany relaxed their entry requirements since 1990, Sweden since the mid 1990s, and the US between 1980 and the end of the 1990s. We can also identify episodes of tightening of entry laws: Denmark in the 2000s, and the United States beginning in year 2000 (essentially after the events of September 11, 2001). Overall there are more countries that have loosened their entry requirements than countries that have tightened them. However, many countries passed measures in opposite directions, ending up without a clear trend towards tightening or loosening, such as Spain or Belgium.

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[13] In a previous version of this paper (Ortega and Peri 2009) we explored the role of some of these more general aspects of immigration laws. The results were not very robust and we decided to limit our attention to laws affecting entry. At any rate, the web appendix contains a brief description of the amendments to immigration laws concerning entry conditions for all destination countries in our sample. The reader can use them to alter the criteria used to build our specific measure of the tightness of entry laws.

As several of the countries in our sample are in Europe we also build three additional policy variables that account for the evolution of the European integration process. We build destination-year indicator variables for the adoption of the Maastricht and Schengen treaties, and an origin-destination-year indicator for sharing a common currency. Regarding the Maastricht treaty dummy, it takes a value of one after 1992 (year of the ratification of the treaty) for countries within the EU-15. For countries that joined the EU later it takes a value of one from the year of adhesion onward (across all origins). The Schengen agreement, adopted in different years by different European countries, regulates and coordinates immigration and border policies among the signatory countries. While it eases intra-EU movement for citizens of the signatory countries, the agreement also implies more restrictive border controls to enter the Schengen area. The corresponding dummy takes a value of one for destination countries participating into the agreement only in the years in which the agreement is in place and 0 otherwise (across all origins).

Data on income per capita is from the Penn World Tables (version 7.0), expressed in US \$ 2000 at purchasing power parity. The other control variables are the logarithm of the distance, a dummy for sharing a contiguous border, a dummy for sharing a common language (not necessarily the official one) by large shares of the population, a dummy for having colonial ties, one for sharing legal origin and one for sharing a common currency. The latter variable is time-varying and even though it mostly reflects the creation and adoption of the European common currency, there are several other instances of countries sharing currency, as we discuss below. These variables are from Glick and Rose (2001) and Head, Mayer and Ries (2010).

3 Determinants of International Migration Flows

This section presents a model of migration choice across multiple locations and derives an estimating equation. Our specification is consistent both with a simple logit model (McFadden, 1974) as well as with a nested logit model (McFadden, 1978). Our migration model extends Grogger and Hanson (2011) by allowing for unobserved individual heterogeneity between migrants and non-migrants. It is plausible that migrants systematically differ from non-migrants along important dimensions that are hard to measure, such as ability, risk aversion and the psychological costs of living far from home. An additional attractive feature of our empirical specification is that it is reminiscent of a generalized gravity equation in which the logarithm of bilateral migration flows is a function of origin and destination country fixed effects and overall bilateral migration costs.

3.1 Migration model

We study the problem of the migration choice across multiple destinations: $d \in D = \{1, ..., N_D\}$. Agent i, born in country of origin $o \in D$, decides whether to stay in o or to migrate to any other country. We denote by $D_o = D \setminus \{o\}$ the set of potential destinations for individuals born in country o, by excluding the country of origin.

The utility from staying at the origin is given by:

$$U_{ooi} = V_{oo} + \nu_{ooi}, \tag{1}$$

where the V_{oo} is deterministic and country-of-origin specific and ν_{ooi} is stochastic and individual specific. The first term captures the average utility of staying in country o while the second is an idiosyncratic individual-specific term. Analogously, the utility from migrating to destination $d \in D_o$ is

$$U_{odi} = V_{od} + \nu_{odi}. \tag{2}$$

In this case the deterministic component of the utility varies by origin and destination pair so as to allow for bilateral costs of migration. Specifically, we shall assume that $V_{od} = W_d - C_{od}$, where W_d is the present value of the expected earnings at destination and C_{od} encompasses the deterministic component of the costs of migrating to country d from origin o. The stochastic terms ν_{ooi} and ν_{odi} in these equations capture unobserved components of the individual utility associated with each choice. Grogger and Hanson (2011) adopt the standard logit assumption, namely, that all stochastic terms are identically and independently distributed as type-I extreme value. While highly tractable, the logit model imposes very strong assumptions on substitution patterns.[14]

We wish to consider a more general stochastic specification. The reason is that it is highly plausible that migrants may differ systematically from non-movers in aspects that are very hard to measure, such as talent, risk-aversion, or the psychological cost of living abroad. That is to say, there may be individual unobserved factors that induce correlations across the disturbance terms of equations (1) and (2). Specifically, we assume that the stochastic term of the stay option is simply $\nu_{ooi} = \varepsilon_{ooi}$ while

[14] This is the well-known property of *independence of irrelevant alternatives*.

for each destination $d \in D_o$ we have $\nu_{odi} = \zeta_i + \varepsilon_{odi}$, where ζ_i is drawn from a probability distribution with mean zero and is uncorrelated with ε_{odi}. These individual random effects, however, are allowed to be correlated. In particular we allow migrants to have correlated utility within a destination. This implies that migrants could be a selected group and our structure takes care of this selection, correlated within destination countries. The random variables ε_{ooi} and ε_{odi} are all identically and independently distributed as type-I extreme value. These assumptions on the stochastic components of the model give rise to the nested-logit model (McFadden 1978), which allows for more general substitution patterns while still remaining analytically tractable.[15] In particular, it allows for closed-form solutions for the choice probabilities of staying in the country of origin (P_o) or migrating to destination $d \in D_o$, P_o :

$$P_o = \frac{e^{V_{oo}}}{e^{V_{oo}} + \left(\sum_{j \in D_o} e^{V_{od}/\tau}\right)^{\tau}} \tag{3}$$

$$P_d = \frac{\left(\sum_{j \in D_o} e^{V_{oj}/\tau}\right)^{\tau}}{e^{V_{oo}} + \left(\sum_{j \in D_o} e^{V_{oj}/\tau}\right)^{\tau}} \frac{e^{V_{od}/\tau}}{\sum_{j \in D_o} e^{V_{oj}/\tau}}. \tag{4}$$

Simple algebra delivers the following *log odds ratios*:[16]

$$\ln \frac{P_d}{P_o} = \left(\frac{V_{od}}{\tau} - V_{oo}\right) - (1-\tau)\left(\ln \sum_{j \in D_o} e^{V_{oj}/\tau}\right) \text{ for } d \in D_o \tag{5}$$

$$\ln \frac{P_d}{P_f} = \frac{V_{od}}{V_{of}} \text{ for } d, f \in D_o. \tag{6}$$

As in the logit model, the odds ratio between two destinations depends only on the relative attractiveness between those two destinations (equation (6)). However, the odds ratio between the origin and any given destination (equation (5)) contains an additional term, which corrects for the correlation across destinations induced by the individual-specific unobserved characteristics (selection).[17]

[15] For a given origin country, the first *nest* contains only the location of origin and the second *nest* contains all other possible locations. See Berry (1994) for a detailed discussion of the nested logit model and its relationship to other random-utility models.

[16] Parameter τ is known as the dissimilarity parameter and governs the degree of correlation across the stochastic terms in the destination equations. Setting $\tau = 1$ corresponds to zero correlation, which delivers the familiar expression for the log odds ratio of the logit model. Under our assumptions, there will be non-negative correlation among the disturbance terms of the destination equations. This implies that $0 < \tau < 1$.

[17] A similar term arises generally in gravity models of trade and migration and is usually referred to as *multilateral resistance* (Anderson and van Wincoop (2003)). This term accounts for the influence of third countries in determining the flows between a given pair of countries. See Bertoli and Fernandez-Huertas (2011) for a general discussion in the context of migration flows.

The probability that an individual chooses one location approximately coincides in the aggregate population with the share of individuals born in country o that choose that particular location.[18] Thus $P_d = n_{od}/\sum_{j=1}^{D} n_{oj}$, where n_{oj} denotes the number of individuals born in country o that choose location j. Hence, expression (5) can be written as

$$\ln n_{od} = \ln n_{oo} + \left(\frac{V_{od}}{\tau} - V_{oo}\right) - (1-\tau)\left(\ln \sum_{j\in D_o} e^{V_{oj}/\tau}\right). \tag{7}$$

It is important to note that except for V_{od} all terms in the right-hand-side of the equation are constant across destinations and only vary by country of origin.[19] Over time different locations will experience different levels of income and wages, which will affect their relative attractiveness and, hence, the shares of migrants that they will receive. By considering a period-specific choice we derive the multi-period version of the previous relationship:

$$\ln n_{od}^{t} = \ln n_{oo}^{t} + \left(\frac{V_{od}^{t}}{\tau} - V_{oo}^{t}\right) - (1-\tau)\left(\ln \sum_{j\in D_o} e^{V_{oj}^{t}/\tau}\right), \tag{8}$$

for any destination $d \in D_o$ in time period t.

3.2 Estimating Equation

Let us consider how we can estimate the relationship we just derived on the basis of panel data on bilateral migration flows.[20] Equation 8 can be rewritten as

$$\ln n_{odt} = \alpha_{ot} + \beta V_{odt} + \epsilon_{odt}, \tag{9}$$

which features origin-by-year fixed effects (α_{ot}) capturing all time-varying terms that are constant across destinations $d \in D_o$ and only vary by year and country of origin, namely the first and third term in the right hand side of expression (8). The term ϵ_{odt} accounts for measurement error due to the fact that we approximate probabilities with frequencies in the finite sample.

Now we can be more specific about the variables that determine the average attractiveness of a particular destination for all individuals. We assume that V_{odt} is as follows:

[18] This is an application of the law of large numbers.

[19] Bertoli et al (2010) use micro-data to estimate a similar model, which allows them to identify coefficient τ.

[20] See Berry (1994) for an analogous exercise where data on aggregate market shares is used to estimate the structural parameters of a consumer's problem consisting in choosing among alternative products.

$$V_{odt} = \beta W_{dt} + \alpha_d + \pi T_{dt} + \gamma_2 X_{od}. \tag{10}$$

For a particular destination d, the term W_{dt} denotes the expected earnings at that destination in year t, which we shall proxy with income per capita. α_d represents a destination country fixed effect that accounts for time-invariant characteristics of the receiving country that also influence migration decisions, such as institutions, culture and attitudes toward immigration that vary much across countries, but very slowly within country over time. The variable T_{dt}, which varies over time and across countries, stands for the *tightness of entry laws* described above. Presumably, when a particular destination tightens its entry requirements, the cost of choosing that destination increases (and the utility falls) as it becomes more costly to enter the country. Finally the term X_{od} accounts for country-pair specific variables that affect the cost of migration from a given origin to a particular destination. This cost is a function of bilateral geographical distance, cultural distance (measured by a common language), past colonial ties between the two countries, whether the two countries share a common currency, and so on.

4 Results

4.1 Descriptive Statistics

Table 1 reports descriptive statistics for the main variables used in the analysis. Specifically, this table reports averages across years and country pairs. The observations span the period 1980-2006 annually, with missing values for some countries. The average bilateral migration flow is 1,498 individuals, with a very large standard deviation. Several countries have zero migration flows between them in some years. The largest flows, experienced between Mexico and the US in the years around 2000 and between Poland and Germany in the years around 1990 were as large as 300,000 people per year. As one would expect, the average income (GDP) per person at destination is much larger than average GDP per capita among countries of origin (by a factor of almost 4). We proxy for migration costs using bilateral distance and dummy variables for contiguous countries, common language, common legal origin, colonial ties (the countries were in the same colonial empire), and a common currency.[21] Finally, we also have three policy variables. The average of the entry tightness variable takes on a

[21] We point out that the latter is time-varying.

negative value which indicates that across years and countries, entry laws were loosened more often than they were tightened. We also include Maastricht and Schengen indicator variables. On average, these indicators take the value of one for 21 to 25 percent of the origin-destination-year observations.

Table 2 reports destination country averages across years. Column 1 reports the average yearly flow of immigrants (across years) for the average bilateral pair involving each specific destination country and all origins. Germany and the United States report the highest average bilateral migration flows. Columns 2 reports the average population size (in millions) in the country of destination and Column 3 shows the average population in the country of origin for that destination. Similarly, Columns 4 and 5 report GDP per person for the destination country and for the average country of origin for that destination. Clearly, income per person is several times larger in the destination country than in the average of the countries of origin. These ratios range from 1.5 (for destination New Zealand) to 5.7 (destination Norway), as reported in Column 6. The average across all destinations is 3.8.

4.2 Income per Capita and Bilateral Costs as Determinants of Migration Flows

We now estimate our main migration model in equation (9). Mainly, the dependent variable is the log of annual migration flows (plus one) between a particular country pair. This allows us to maintain the exact logarithmic specification, obtained from our model, and at the same time keep the information from the zero-migration pairs. Our main hypothesis is that income per capita at destination has a positive effect on migration flows, given income per capita at the origin. Variables that proxy for higher costs of migration (such as geographical or cultural distance) are expected to have a negative effect while having colonial ties or a common currency is likely to facilitate migration between a given pair of countries.[22]

Let us emphasize that, relative to the existing literature, which mainly uses cross-sectional data (such as Grogger and Hanson 2011) or data relative to only one destination country (such as Clark et al 2007) this paper uses a full panel specification with multiple origins, multiple destinations and several years. This allows us to control much more carefully for origin and destination country specific factors, identifying the effects of income and immigration policies based solely on within-destination-country variation over time.

Table 3 presents the results from estimating specification (9). The explanatory variables are the

[22]These variables have been known to play an important role in determining migration decisions since Taylor (1994).

logs of income per person at destination and origin (lagged one year), the log of distance, and dummy variables for sharing a border, sharing a common language, having a common currency, or having colonial ties. Across specifications we vary the sets of fixed effects that we include (in the form of dummy variables). In the theoretically justified specification (Columns 4 and beyond) we include a full vector of origin-year dummy variables. They capture factors, including the unobserved heterogeneity between migrants and non migrants, that vary across origin and year but not destination. Column 1 does not include any fixed effects and Column 2 includes only destination fixed effects. In these two sets of specifications, the point estimates of the income coefficients are not as expected (the sign of the destination income is negative), suggesting the presence of origin-year specific confounding effects. Column 3 includes both origin fixed effects and destination fixed effects. This specification, which is closer to what our theoretical model implies, delivers the expected signs: income per capita at destination is positively associated with migration flows while income per capita at origin appears to have a negative effect. A one percent increase in income per capita at destination is associated to a 0.54 percent increase in migration flows from each origin country. Likewise a one percent increase in income per capita at the origin appears to reduce migration flows to each destination by about 0.33 percent.

Column 4 is the first column including the whole vector of origin-year fixed effects, besides destination fixed effects and hence is the one *consistent with our model*. In this case, note that the effect of income per capita in the country of origin is absorbed by the origin-year fixed effects and hence we do not have an estimate of it. As expected, income per capita in the destination country has a positive and significant effect on migration flows. The effect is estimated precisely (at around 0.6), and the results are very robust. Hence this specification reveals that it is very important to use panel data and to control for unobserved shocks and heterogeneity in order to obtain the correct estimates of the effect of income on migration flows. The signs of the control variables are also all as expected and significant. Geographic distance reduces migration flows while common language, currency, legislation or a shared colonial past all increase bilateral migration flows. In Column 5 we restrict the analysis to the subsample of European origin and European destination country pairs. We notice a large increase in the point estimate of per capita income at destination as determinant of the flows. The estimated coefficient suggests an elasticity of destination income per capita of 1.82. At the same time most of the controls now exhibit much lower point estimates (in absolute value). This suggests that for within Europe barriers to migration are much less important, and migration is much more sensitive to economic conditions at destination, once we control for income per capita and other time-varying factors at the origin. Column 6 reports the estimates when we restrict the analysis to the subsample of non-European destinations (and all origins). These estimates are very similar to those obtained in Column 4 using the whole sample (elasticity 0.57).

Columns 7-10 perform several robustness checks. In Column 7 we replace all missing values for bilateral migration flows by zeros, which increases the sample size by about 50 percent. This is because in many instances some countries do not report small bilateral flows. Hence a reasonable approximation is to replace those entries with a zero value. The estimated coefficient for the income variable is only slightly larger (0.78) than that shown in Column 4. Column 8 restricts the estimation to the subsample of 1985-2005, for which we have relatively fewer missing values than for the whole sample period (1980-2006). Again, the point estimate (0.56) is essentially unaffected. Column 9 includes a full set of origin-destination dummy variables, which absorb all time-invariant bilateral variables that affect migration flows.[23] This is a very demanding specification as we absorb all bilateral-specific factors as well as all origin by time factors. Still, we obtain that the destination income per capita plays a highly significant role in determining migration flows, with a slightly lower elasticity of 0.38. Finally, Column 10 reports the estimates obtained on a subsample where only 5-year periods are considered (1985, 1990, 1995, 2000 and 2005). Short-term confounding factors and reverse causality of immigration on income are arguably less of a concern with longer time lags in the explanatory variables. The estimated elasticity of migration to income per person at destination is 0.41, very significant and quantitatively close to our preferred estimate (0.63).

Overall, Table 3 provides clear evidence that the empirical specification, derived from an optimal choice framework and described in Section 3 and implemented in regressions (4) to (10) provides reasonable and fairly robust estimates. Income per person in the destination country is a very important determinant of migration. It is even more relevant in attracting immigrants between countries with low barriers to migration (such as within Europe). Changes in income per person have a short-run (one year) as well as a medium run (five years) effect on immigration flows.

[23] Sharing a common currency is a time-varying variable.

4.3 The Role of Immigration Restrictions

In this section we extend the previous regression model by including a vector of time-varying immigration policies. Policy makers and researchers are interested in evaluating the effectiveness of immigration restrictions in controlling immigration flows. Historically, restrictions have played a crucial role but it is unclear whether the same is true in the current context with lower transportation and communication costs and stronger economic incentives.[24] Specifically, we consider our measure of *tightness of entry laws* and two indicator variables to account for the increasing degree of economic interaction within Europe, namely indicators for the presence of the Maastricht and Schengen treaties, and bilateral dummies for having a common currency.[25]

The Maastricht Treaty, formally known as the Treaty of the European Union, was signed in February 1992 and became operative from 1993. It ushered in the first major step from a common market toward greater economic and political ties among its member countries. The treaty led to the creation of the Euro and reorganized the main institutions of the European Union. For our purposes it is worth noting that the Maastricht Treaty increased cooperation in asylum, immigration, and foreign policy, but it had no major implications for immigration from outside the European Union. The Treaty also restated the principle of an internal market, characterized by the free movement of goods, persons, services, and capital. It also lifted the remaining restrictions on migration from Spain and Portugal to other EU countries, while citizens of the other EU member states were already free to move and work within the EU.

The Schengen Agreement was signed in June 1985 and implemented ten years later. Initially, only five countries signed the agreement but over time the number of countries signing in has increased. Its main goal was to create a large area with free internal labor mobility and a common external frontier. Specifically, this treaty laid the guidelines for harmonization of entry and short stays by non-EU citizens, asylum matters, and police and judicial cooperation among the country members. The Schengen Agreement can be interpreted as a tightening of the EU border vis-a-vis the rest of the world. For instance, the harmonization mandated by the Agreement forced to severe some ties with former colonies. Spain was asked to eliminate its visa waiver programs with some former colonies (e.g. Colombia in 2001 and Ecuador in 2003). The Agreement also led to the swift removal of border posts,

[24] See Taylor's (1994) account of the reasons behind the sharp drop in international migration in the interwar period.

[25] The latter is fundamentally about the creation and adoption of the Euro, but not exclusively. For example, some country pairs that shared a currency in 1995 follow: Australia and Tuvalu, Belgium and Luxembourg, Denmark and Greenland, Spain and Andorra, or the US and Panama.

which despite its strong symbolism, did not add much to the existing effective free internal mobility of European workers within the European Union.[26]

On the basis of their content we would expect a positive effect of the Maastricht treaty on subsequent migration flows. Specifically, it probably enhanced migration flows within the European Union, leaving unaffected inflows from outside. Regarding the Schengen Agreement we expect a negative effect on migration flows since it increased migration requirements (and, implicitly, migration costs) for non-EU migrants, while probably not having an effect on internal migration. Of course, the two variables are highly correlated, however, the correlation coefficient is well below one (0.70). Countries differed in their timing of accession to the EU. In addition, some countries have opted out of one of the treaties. In particular, the UK signed the Maastricht Treaty (in 1993) but opted out of the Schengen Agreement, as well as Ireland. In addition, some non-EU members also participate in the Schengen Agreement (Iceland, Norway, Liechtenstein and Switzerland).

Table 4 reports our estimates of specification (9) including the immigration policy variables. As in the previous table, the dependent variable is the log of annual migration flows (plus one). Besides lagged income per capita at destination and the same set of control variables and fixed effects as in specification 4 of Table 3, we now include the time-varying immigration policy variables. Columns 1 and 2 include the policy variables progressively. The coefficient on income per capita is slightly larger than in the previous table (0.76-0.78 as opposed to 0.63 in Column 4 in the previous table), and highly significant. The degree of tightness of entry laws has a significant negative effect, indicating that as countries tighten their entry conditions immigration flows fall already the following year. The Maastricht and Schengen indicator variables in Column 2 have the expected signs: the former is associated with an increase in total migration flows while the latter had a negative effect. Sharing a common currency also appears to have a significant and positive effect on the size of migration flows.

Column 3 restricts the analysis to European country pairs. Two points are worth noting. First, the coefficient on income doubles, suggesting a much larger elasticity of migration flows to income per capita within the European economic area, as was the case in the previous Table as well. Second, the coefficient of the Maastricht treaty takes on a larger positive value, reflecting the large effect that the process of European economic integration has on within-Europe migration flows. The Schengen Agreement now is not statistically significant, supporting our expectation that its main effect was to

[26] For more details see http://europa.eu/legislation_summaries.

reduce inflows from outside the European Union. The coefficient on entry tightness now appears to be positive and significant. This reflects the tightening of entry laws by European countries *vis a vis non-EU immigrants* at the same time as internal restrictions to worker mobility were being eliminated. Column 4 reports the estimates for the subsample of non-European destination countries (and all origins). As expected, the point estimate on income per capita at destination is now lower (0.42), but still highly significant. Also the coefficient on entry tightness is still negative and significant, and much larger in absolute value (-0.06 versus -0.02 earlier).

In order to allow for a differential effect of entry laws on migration from within the European Union, we include an interaction of entry tightness and an European origin country indicator variable. As expected, in Columns 5 through 8 we find a negative effect of entry tightness on inflows from outside the European Union, while negligible effects on within-Europe migration flows (that is, the sum of the two coefficients), which are mostly affected by accession to the EU and the subsequent adoption of the Maastricht treaty. Column 6 shows that the results are robust to dropping the observations for the first few years and for the last year, which feature more missing values.

Column 7 reports the estimates for a specification that replaces the origin-year dummies by an origin-specific cubic time trend. Of course, this is less flexible than the whole set of origin-year dummies but it is much faster to implement.[27] As we can see, the coefficient on income per capita at destination falls slightly (from 0.76 in Column 5 to 0.54) but retains its significance. The effect on tightening entry laws remains largely unchanged. Column 8 employs a more simplistic origin-specific linear time trend, with very similar results. On the basis of these findings, we conclude that origin-specific polynomial time trends are able to replace reasonably well the large set of origin-year dummies and hence can be used instead of the more demanding model with country by year effects in shorter panels.

Column 9 reports an important robustness check, where we employ long (5-year) differences, as we did already in the last column of Table 3. The number of observations is drastically reduced as we only consider 5-year differences. The results, however, confirm the findings in Column 4, with a positive and significant effect of destination income per capita and a negative and significant effect of entry tightness. It appears, in fact, that in the medium run the impact of immigration laws tightening entry conditions is stronger than in the short run. This is very reasonable as immigrant inflow may take some time to respond to the immigration laws of a country.

[27]It also allows for the estimation of more computationally demanding nonlinear models within a short amount of time.

Let us emphasize that these estimates are based on a very demanding specification, featuring hundreds of fixed effects. As a result, the identifying variation behind our estimates is very specific: within-destination variation over time, after controlling for origin-year variation. We are not aware of any previous analysis that provided estimates of the roles of per capita income and immigration restrictions based on such a demanding specification.

In conclusion, the estimates in Table 4 deliver a preferred elasticity of migration flows to destination per capita income of 0.76 (Column 2). However, this estimate averages the very high elasticity for within-Europe migration flows (1.90, Column 3) and a lower value (0.42, Column 4) for migration flows to non-European destinations. Analogously, legislation that tightens entry laws is associated with reductions in migration flows (about 2 percentage points for the typical restrictive law) but this effect largely arises from non-European destinations. For European country pairs, the treaties governing the European integration process are the fundamental aspects of immigration policy. The Maastricht treaty increased significantly the intra-European mobility, while the Schengen agreement has reduced immigration flows from outside the European Union. Our results suggest that as barriers to internal labor mobility within the EU have fallen there has been a tightening of entry laws vis-a-vis immigration from the rest of the world.

5 Conclusions

This paper moves two important steps in the direction of establishing and implementing a common framework to analyze the economic and policy determinants of international migrations, following the steps of the more developed empirical literature on international trade flows. First, we propose a discrete-choice migration model with unobserved heterogeneity at the individual level that incorporates a rich structure for migration costs. We exploit the nesting structure that arises from our model to derive an estimating equation for aggregate bilateral migration flows, which we estimate using a large annual panel of origin-destination countries over time. This provides a stronger identification for the roles of income and migration policies in determining migration flows. Second we gather a new dataset containing new information on immigration policies (tightness of entry laws and economic integration within Europe) over time for the main immigrant destinations.

We find several interesting results. First, a one percent increase in income per capita at a given destination is associated with a 0.76 percent increase in immigration flows. This elasticity is twice as large for intra-EU migration flows, reflecting the higher degree of mobility within the European Union. Second, when a typical (non-European) immigrant destination, such as the US, Canada or Australia, tightens its entry laws immigration flows fall by about six percent annually. Third in Europe the Maastricht treaty has significantly increased internal migration by around 10%, while the Schengen treaty has decreased immigration from outside the EU.

Overall, our results suggest that the existing large income per capita differences between rich and poor countries will continue to generate large international worker mobility. However, national immigration policies also play a large role in determining the size of these flows, as had already been the case in the past (Hatton and Williamson, 2005). We also find that regional European economic integration has had a large effect on the size and pattern of migration flows for European destinations. Ultimately, these policies reflect voters' views of the socioeconomic effects of immigration on the receiving countries. Immigration researchers should therefore continue to make progress in the study of the channels through which economies absorb immigration flows, paying particular attention to the additional channels operating in the current context of increasing economic interdependence.[28]

[28] Some recent contributions that emphasize the role of trade openness in mediating the economic effects of immigration are Iranzo and Peri (2009), di Giovanni et al. (2012), and Ortega and Peri (2012).

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Tables and Figures

Table 1: Summary Statistics for the Main Variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
Bilateral Migration flow	45,565	1498.21	7239.56	0	455075
GDP/Pop in Destination	41,515	23990.49	9750.22	4354.15	66964.37
GDP/Pop in Origin	38,877	6560.86	9833.51	62.95	89563.63
Migration costs:					
Distance	41,515	7366.26	4402.26	160.93	19516.56
Contiguous	41,515	0.02	0.14	0	1
Common language	41,515	0.19	0.40	0	1
Common currency	41,515	0.02	0.13	0	1
Common legislation	41,515	0.22	0.42	0	1
Colonial ties	41,515	0.04	0.21	0	1
Tightness of Entry Laws	35,805	-0.90	1.99	-6	2
Maastricht	35,805	0.25	0.43	0	1
Schengen	35,805	0.21	0.41	0	1

Note: Common language takes a value of one if a substantial share of the population in the two countries share a common language.

Table 2: Main Variables in Destination country: average over the considered period

Destination country	(1) Yearly Average Bilateral Flow of immigrants	(2) Population in Destination	(3) Population in Origin	(4) GDP/Population Destination	(5) GDP/Populatio n Origin	(4) / (5)
Australia	737	18.1	34.1	21,305	6,068	3.5
Belgium	1,023	10.1	49.2	21,498	7,208	3.0
Canada	1,002	28.6	28.7	20,105	5,541	3.6
Denmark	300	5.2	35.6	27,541	5,510	5.0
Finland	102	5.0	32.2	22,132	5,402	4.1
Germany	5,019	80.6	32.4	22,430	5,540	4.0
Italy	1,443	57.0	29.6	17,945	5,279	3.4
Netherlands	781	15.3	30.0	22,335	5,578	4.0
New Zealand	727	3.7	73.4	15,114	10,317	1.5
Norway	169	4.3	29.2	31,486	5,496	5.7
Spain	2,028	39.6	33.3	13,087	5,504	2.4
Sweden	309	8.7	30.1	25,096	5,370	4.7
Switzerland	2,747	7.0	54.4	36,427	8,277	4.4
United Kingdom	1,223	59.0	46.9	25,445	8,368	3.0
United States	3,991	261.2	27.4	26,421	5,505	4.8

Note: The period considered for all countries is 1980-2006, however, some countries have missing data in the early part of the sample. Columns 2 and 3 are in millions of individuals. Columns 4 and 5 are in PPP year-2000 USD

Table 3: Income per capita, bilateral costs and migration flows.

Specification:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dep. Variable: ln(1+Migration)										
Lagged Ln(GDP/Pop) Destination	-0.14***	0.62***	0.54***	0.63***	1.82***	0.57***	0.78***	0.56***	0.38***	0.41***
	[0.05]	[0.10]	[0.06]	[0.06]	[0.17]	[0.14]	[0.07]	[0.07]	[0.04]	[0.13]
Lagged Ln GDP/Pop Origin	0.22***	0.21***	-0.33***							
	[0.01]	[0.01]	[0.02]							
Ln Distance	-0.56***	-0.76***	-0.99***	-0.98***	-0.52***	-1.61***	-0.89***	-0.99***		-1.03***
	[0.02]	[0.02]	[0.01]	[0.01]	[0.06]	[0.03]	[0.02]	[0.01]		[0.03]
Contiguous	1.39***	0.89***	0	-0.04	0.65***	-0.79***	0.49***	-0.06		-0.12
	[0.09]	[0.08]	[0.05]	[0.05]	[0.06]	[0.16]	[0.07]	[0.05]		[0.12]
Common language	1.04***	0.27***	0.54***	0.58***	-0.37***	1.01***	0.82***	0.58***		0.62***
	[0.04]	[0.03]	[0.03]	[0.03]	[0.08]	[0.04]	[0.03]	[0.03]		[0.06]
Common currency	0.29***	0.03	0.53***	0.96***	0.27***	0.94***	0.71***	0.91***	0.53***	0.86***
	[0.10]	[0.09]	[0.06]	[0.06]	[0.07]	[0.12]	[0.08]	[0.06]	[0.05]	[0.13]
Common Legislation	0.36***	0.19***	0.38***	0.33***	0.78***		0.27***	0.34***		0.30***
	[0.03]	[0.03]	[0.02]	[0.02]	[0.05]		[0.02]	[0.02]		[0.05]
Colonial ties	0.80***	1.31***	1.37***	1.48***	0.57***	0.30***	1.46***	1.52***		1.47***
	[0.06]	[0.06]	[0.04]	[0.04]	[0.10]	[0.09]	[0.05]	[0.04]		[0.09]
Observations	37852	37852	37852	40307	4,374	14,643	59314	34610	40,307	7,540
R-squared	0.16	0.37	0.77	0.79	0.79	0.88	0.67	0.8	0.94	0.80
Fixed effects										
Year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Destination	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Origin	no	no	yes	yes	yes	yes	yes	yes	yes	yes
Origin-year	no	no	no	yes	yes	yes	yes	yes	yes	yes
Origin-destination	no	no	no	no	no	no	no	no	yes	no
Sample	All	All	All	All	Europe	non-Europe	All - Zeros	1985-2005	All	All (5-year)

Note: All models include an intercept. Column 5 includes only European country pairs. Column 6 includes only non-European destinations (and all origins). Column 10 uses only data for years 1985, 1990, 1995, 2000, and 2005. Standard errors are in parenthesis. ***, **, * significant at 1%, 5%, 10% level.

Table 4: The Role of Immigration Policy: Tightness of Entry Laws

Dep. Variable: ln(1+Migration)	1	2	3	4	5	6	7	8	9
Lagged Ln GDP/Pop Dest.	0.78***	0.76***	1.90***	0.42***	0.76***	0.71***	0.54***	0.50***	0.71**
	[0.07]	[0.08]	[0.22]	[0.14]	[0.08]	[0.09]	[0.05]	[0.04]	[0.33]
Entry Tightness	-0.02***	-0.02***	0.07***	-0.06***	-0.03***	-0.04***	-0.02***	-0.02***	-0.05***
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]
Entry Tightness *European Origin					0.04***	0.05***	0.04***	0.04***	
					[0.01]	[0.01]	[0.01]	[0.01]	
Maastricht		0.10***	0.29***		0.10***	0.14***	-0.00	-0.00	
		[0.04]	[0.08]		[0.04]	[0.04]	[0.03]	[0.03]	
Schengen		-0.11***	0.05		-0.11***	-0.11***	-0.03	-0.03	
		[0.03]	[0.07]		[0.03]	[0.03]	[0.03]	[0.03]	
Common currency	1.02***	1.02***	0.10	1.04***	1.02***	0.96***	1.02***	1.01***	0.86***
	[0.06]	[0.06]	[0.08]	[0.11]	[0.06]	[0.07]	[0.06]	[0.06]	[0.26]
Ln Distance	-0.98***	-0.98***	-0.64***	-1.52***	-0.98***	-0.98***	-0.98***	-0.98***	-1.59***
	[0.02]	[0.02]	[0.07]	[0.03]	[0.02]	[0.02]	[0.01]	[0.01]	[0.07]
Continguous	-0.08	-0.08	0.53***	-0.53***	-0.07	-0.09	-0.07	-0.08	-0.69*
	[0.06]	[0.06]	[0.07]	[0.17]	[0.06]	[0.06]	[0.05]	[0.05]	[0.37]
Common language	0.67***	0.67***	-0.46***	1.06***	0.66***	0.67***	0.67***	0.67***	1.08***
	[0.03]	[0.03]	[0.08]	[0.04]	[0.03]	[0.03]	[0.03]	[0.03]	[0.09]
Common Legislation	0.25***	0.25***	0.84***		0.25***	0.25***	0.25***	0.25***	
	[0.02]	[0.02]	[0.05]		[0.02]	[0.02]	[0.02]	[0.02]	
Colony	1.42***	1.42***	0.15	-0.17*	1.43***	1.51***	1.43***	1.43***	-0.15
	[0.04]	[0.04]	[0.12]	[0.10]	[0.04]	[0.04]	[0.04]	[0.04]	[0.23]
Observations	34,749	34,749	3,620	13,469	34,749	29,746	34,749	34,749	2,537
R-squared	0.80	0.80	0.79	0.90	0.80	0.80	0.79	0.78	0.91
Fixed effects									
Destination	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Origin-year	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Origin - Time trend	No	No	No	No	No	No	Cubic	Linear	No
Sample	All	All	Europe	Non-Europe	All	1985-2005	All	All	Non-Europe (5-year)

Note: All specifications include destination and origin-year fixed effects. Column 3 includes only European country pairs. Column 4 includes only non-European destinations (and all origins). The sample in columns 9 is analogous to columns 4 but uses only data for years 1980, 1985, 1990, 1995, 2000 and 2005. Standard errors are in parenthesis. ***, **, * significant at 1%, 5%, 10% level.

Figure 1: Yearly immigration flows as percentage of resident population; 15 OECD Countries

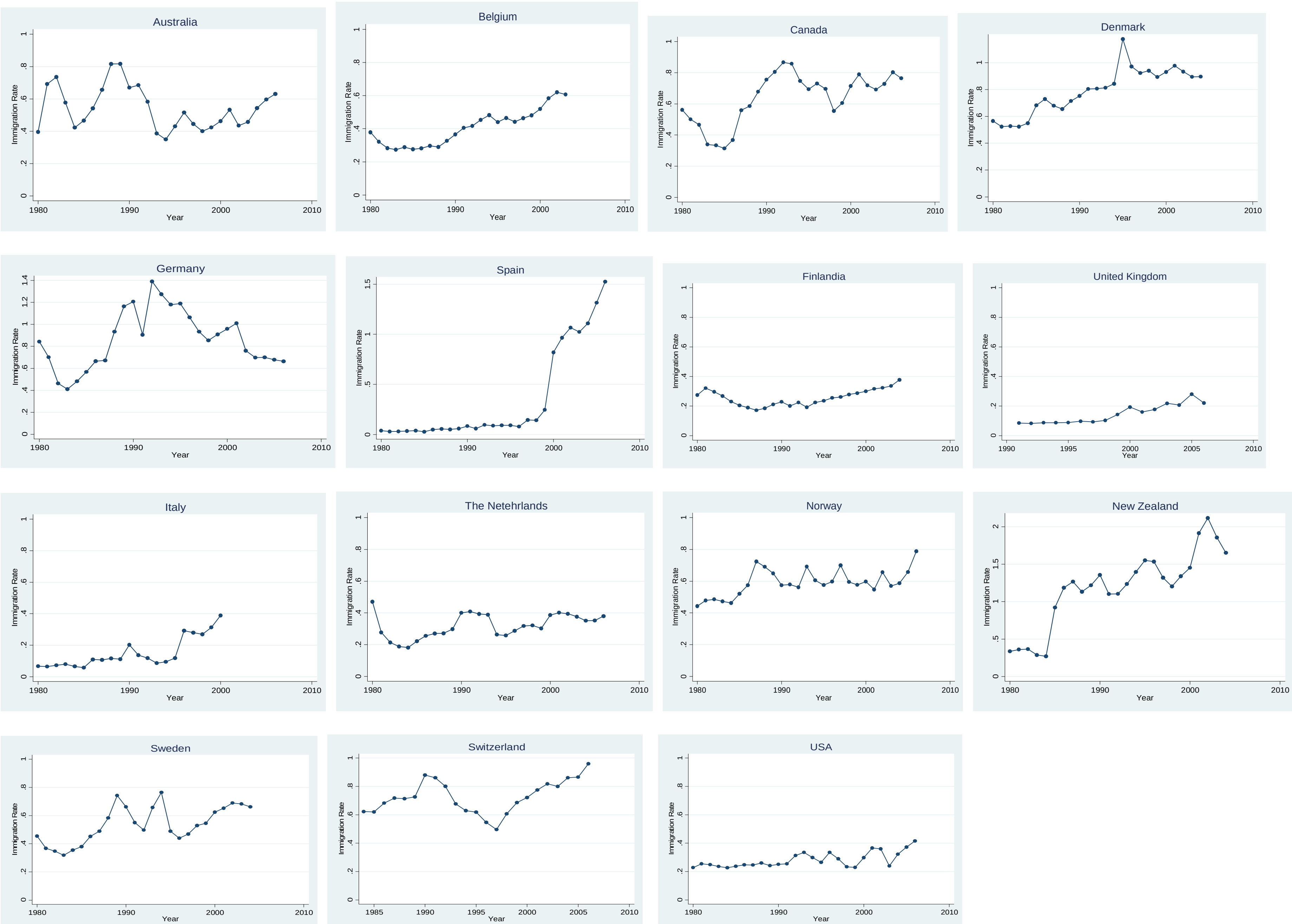
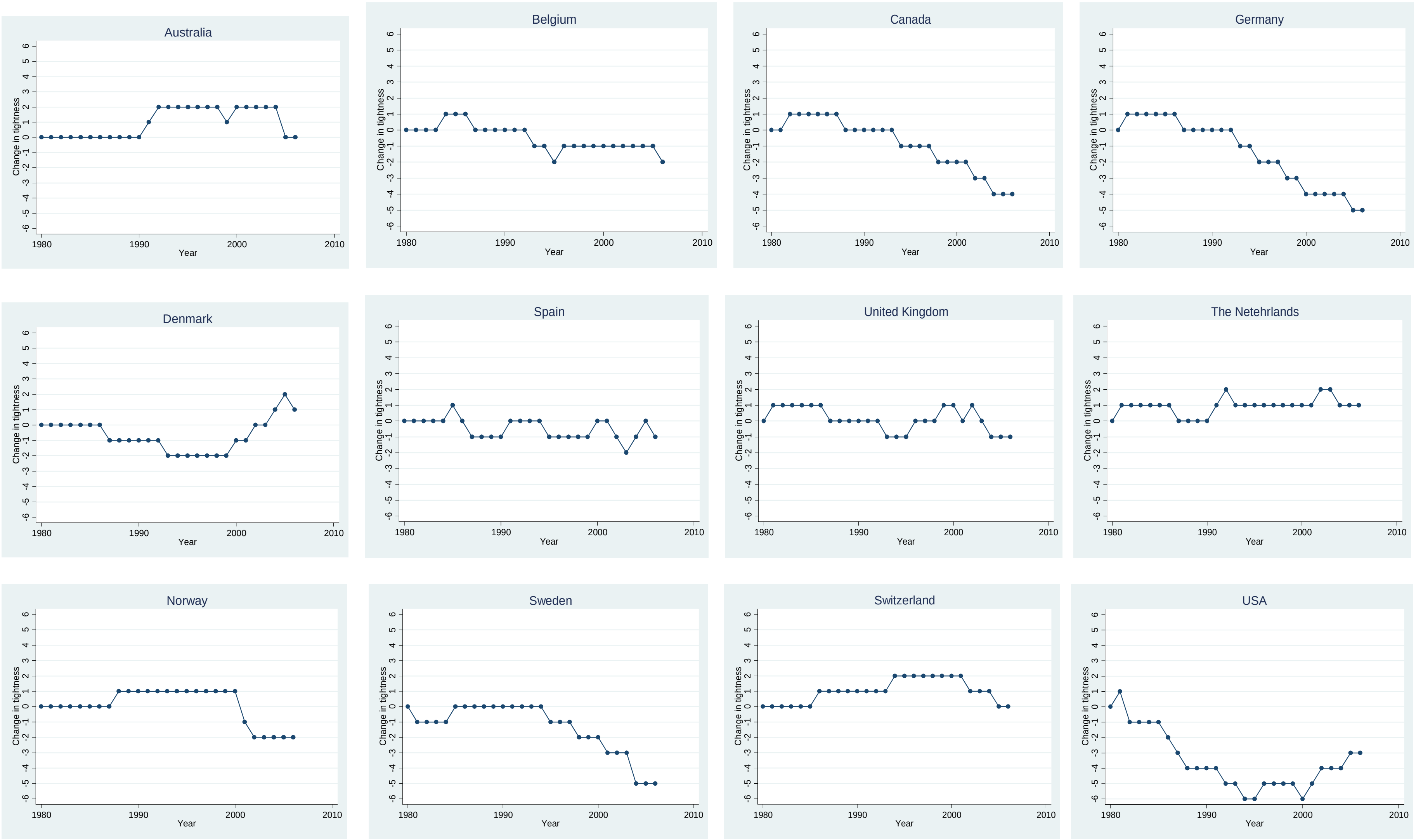


Figure 2: Changes in tightness of immigration entry laws over time; 12 OECD countries.



APPENDIX

Table A1: Sources of the Immigration Data

Sources of the Data:	**Mayda 2009**	**United Nations**	**International Migration Database**
country	years	years	years
AUSTRALIA	1983-2005	1960-2004	1998-2006
BELGIUM	1984-2005	1960-2003	1998-2006
CANADA	1980-2005	1961-2004	1998-2006
DENMARK	1990-2004	1980-2004	1998-2006
FINLAND	n.a.	1980-2004	1998-2006
GERMANY	1984-2005	1965-2004	1998-2006
ITALY	n.a.	1980-2000	1998-2006
NETHERLANDS	1984-2005	1960-2004	1998-2006
NEW ZEALAND	n.a.	1950-2004	1998-2006
NORWAY	1984-2005	1980-2003	1998-2006
SPAIN	n.a.	1980-2004	1998-2006
SWEDEN	1980-2005	1960-2004	1998-2006
SWITZERLAND	1984-2005	n.a.	1998-2006
UNITED KINGDOM	1982-2006	1964-2003	1998-2001
UNITED STATES	1980-2006	1946-2004	1998-2006