Article title: Why do they migrate to Portugal? A Dynamic Probit Panel Data Model.

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Abstract

This paper explores determinants of immigration to Portugal. It finds evidence that use of Portuguese as the mother tongue in the home country and prior Portuguese immigration from each country are the main determinants of how many people immigrate to Portugal from that country. Depending on each subgroup considered (refugees, students, or workers), additional evidences arise. For refugees and for foreign workers, human rights violations explain additional immigration; for foreign students a smaller income per capita (in the home country) is a significant determinant.

Keywords: Immigration; Dynamic Probit Model; Portuguese economy

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1. Introduction

The study of the determinants of immigration is important for two main reasons. First, it helps to improve the social and economic integration of immigrants into the host countries. Understanding what dimensions motivate them to leave their home countries helps to give us a better knowledge of their purposes and to better accommodate these purposes in the host reality. Second, the study of these determinants improves the efficacy of migration policies because, for instance, a refugee and a worker from abroad have different expectations of the country they arrive in. Toward this aim, this work studies the motivations of immigrants that have been arriving in Portugal for the last decade.

[insert here Figure 1]

Figure 1 is extracted from *The Economist (25/07/2007)* and it is based in OECD (2006). It clearly shows how more people are moving to OECD countries than ever before.

Portugal is a clear example of a (OECD) country that changed its main characteristic as an emigration country toward an immigration country for the last decade. Figures 2 and 3 show this phenomenon.

[insert here Figure 2]

[insert here Figure 3]

At the moment, several works have described the immigration composition in Portugal. Recurring to Mourao (2008), we confirm that 55% of the Portuguese immigrants (at the year of 2006) came from the Lusophone countries. The overall top-5 home countries are

Cape Verde (16% of Portuguese immigrants at 2006), Brazil (16%), Ukraine (9.25%), Angola (8.12%), and Guinea-Bissau (5.99%). Other home countries with significant proportions are United Kingdom (5% of Portuguese immigrants at 2006), Spain (4%), Germany (4%), Moldavia (3%), Russia (3%), and China (2.3%). Although an increasing trend has been observed for the most recent years, the proportion of immigrants on Portuguese population rounds the 5%, when the EU-27 average rounds the 6% (Mourao, 2008).

To our knowledge, our research is a pioneer work for a number of reasons. First, although Portugal has been watched as a source of European emigration (resulting in a considerable amount of academic research in this area), this country has seen continuous immigration for the last decade. The novelty of this phenomenon (Portuguese immigration) is only now capturing the attention of social scientists. This work tries to explore the social and economic determinants of Portuguese immigration using a set of variables mostly pointed by the literature for other countries, going further from some descriptive works and theses previously edited (see, for example, Marques and Góis, 2007, or the publications of the Portuguese Observatory for Immigration[2]).

Section 2 shows our variables and methodology. Section 3 shows our results. Section 4 concludes and makes explicit some political implications from the results that we achieved.

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[2] http://www.oi.acidi.gov.pt/index.php

2. Variables and Methodology

According to data from the Official Portuguese Bureau of Statistics (Instituto Nacional de Estatísticas, INE) and the Portuguese Bureau for Foreign People and Border Issues (Serviço de Estrangeiros e Fronteira, SEF), the number of Portuguese immigrants is equivalent to the sum of the number of residence applications by foreign citizens that have been accepted and the number of renewal applications for residence.

This work studies more deeply the composition of Portuguese immigrants, namely their three functional subgroups: asylum applicants, foreign students looking for secondary education (or education at a lower level), and other applicants for residence (in this third case, most of the immigrants are foreign workers in the Portuguese economy).

So our dependent variables are *asylum, students,* and *other immigrants*. These variables are binary ones. For the cases in which there were asylum applications by citizens from a country i in year t to the Republic of Portugal, the corresponding value in *asylum* is 1; otherwise the corresponding value is 0. The same proceeding was carried on *students* and *other_immigrants*[3].

Our independent variables were suggested by the relevant economic literature. Obviously, we could try to use a larger set of variables also studied by demographic works, namely, brands, cultural patterns, or institutional features. However, mostly of values for these variables are not as disposable as those here used for Portuguese

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[3] Observing the reported values (SEF, available on-line), we confirmed that the average proportion of immigrants requiring asylum applications was 0.3% of all Portuguese immigrants; the average proportion of immigrants studying at Portugal was 5.2% of all Portuguese immigrants; and the average proportion of active immigrants (*other_immigrants*) was the remaining 94.5%.

immigrants[4]. Another initial remark that must be done relates to the exiguous number of studies concerning determinants for Portuguese immigration. The reasons behind this fact are due to the youth of this phenomenon (as already pointed, Portuguese immigration has become statistically significant for the last ten years) and to the concentration of the existing literature on a number of works describing determinants for particular nationalities (African nationalities or East European nationalities). Therefore, we had also to recur to overall studies concerning migration determinants, like the following studies.

According to Jennissen (2003), the population values of home countries are significant determinants of the immigration numbers of host countries. Countries with higher populations or with more significant population density tend to supply a higher number of people migrating to other countries. The associated socioeconomic reasons are many. Some of the classic explanations point to the greater scarcity of the home labor market, which increases the probability that a national citizen will migrate searching for a job that pays him or her a higher wage for the same unit of individual effort; this is the classic explanation for immigration from less developed countries to richer ones. But other reasons have recently been identified, namely that higher-population countries are also characterized by a more diversified pattern of skills; in a globalized world this is positively correlated with the probability of leaving the home country and looking for better opportunities to develop individual skills. Therefore, we also considered the log

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[4] Another research technique often used by other Social Sciences is personal interviewing. This technique is more interesting when our individuals sample is relatively small and when the research team intends to detail particular determinants of the phenomenon that is being studied. In this case, we are more concerned with common determinants that may help on explaining why individuals opt for migrating for Portugal.

value of living people and the log value of population density from the home countries that supplied immigrants to Portugal as explicative variables in our models.

Mayda (2005) or Mansoor and Quillin (2007) pointed out that the deterioration of living standards in a country may also generate significant human flow from a so-characterized country to another where standards are better. These authors specifically refer to human rights violations or the amount of conflict in the home countries as factors that create population movement. To test these dimensions, we used two indexes: the weighted conflict index (from the database *Cross National Time Series Data Archive*, CNTSDA) and the Religious Freedom Index (from Mourao, 2008). The weighted conflict index is an index computed by the CNTSDA that refers to an aggregation of a country's values, including the annual number of assassinations, general strikes, guerrilla warfare, government crises, purges, riots, and revolutions. The Religious Freedom Index is an index computed by Mourao (2008) that accesses data from the reports of the organization *Aid to the Church in Need*; this index evaluates a country's respect for religious freedom defined by the Universal Declaration of Human Rights.

Borjas (1999) or Cebrian and Malo (2007) found that a country characterized by a lower GDP per capita and a lower level of economic development has more significant human flow into richer countries. Therefore, we have also considered the GDP per capita of the home countries of Portuguese immigrants as an explicative variable. Soroka (2006) controlled this dimension with media access as a proxy for political pluralism, which was measured (also in our work) by the number of television sets per capita.

Finally, Marques and Góis (2007) developed a descriptive work on Portuguese immigration from the lusophone African countries (*Países Africanos de Língua Oficial Portuguesa,* PALOP) and from the Eastern Europe countries. In their work, they claim that the Portuguese language of some home countries and the previous immigration from that country into Portugal are significant determinants for trying to explain the migration flow to Portugal since the mid-1990s. Therefore, we also identified by a binary explicative variable those countries whose national language is Portuguese (Brazil, Cape Verde, Angola, Mozambique, Guinea-Bissau, San Tome and Principe, and East Timor).

We expected that increases in all but one of these variables in a given country would produce a higher probability of existing immigrants from that country in Portugal. The only exceptions are the increases of the Religious Freedom Index that, due to its construction, should produce a lower probability of the residents of a specific country immigrating to Portugal.

Our dataset examines the years between 1998 and 2006, for the 126 countries available from the SEF databases.[5]

Table 1 shows the descriptive statistics and the sources of the variables.

[Insert here Table 1]

Now, we are going to discuss our econometric model. As $y_{i,t}$, our dependent variables (our dummies: *asylum, students,* or *other immigrants*) are a function of their own lags (suggested by previous works on Portuguese immigration, such as Marques and Góis, 2007), so our econometric model takes the form of a dynamic probit model suggested by equation 1:

$$y_{i,t} = \sum_{j=1}^{k} \beta_j y_{i,t-j} + \sum_{j=1}^{m} \gamma_j X_{j,i,t} + \mu_i + \varepsilon_{i,t},$$

(equation 1)

According to Wooldridge (2002, pp. 465), our $\hat{\gamma}$ gives us an indication of the partial effects of each determinant of our subgroups of Portuguese immigrants (refugees, students, and other_immigrants) on the response probability. For instance, a significant and positive $\hat{\gamma}$ estimated for a certain determinant in the model with *asylum* as our dependent variable means that higher values in the focused determinant observed for a certain country and for a certain year increase the probability of Portugal having refugees from that country in the same period.

3. Results

Table 2 introduces our main results using Wooldridge's (2005) estimator of the Dynamic Probit Model.[6]

[Insert here Table 2]

Our results evidence that all the subgroups of Portuguese immigration depend on their initial values and on their lag values. This finding corroborates the relevance of prior immigration as a source of continued immigration into Portugal.

Another result highlighted by our estimates is the importance of the (Portuguese) mother tongue to the countries that most contribute to the Portuguese immigration.

Income per capita is only significant in the behavior of foreign students. A higher income per capita (in the home country) reduces the probability of a student traveling to Portugal to continue his or her studies. This result is consistent with our previous analysis of SEF data related to foreign students, where we found that most of these students come from countries characterized by lower values than the Portuguese income per capita (namely, from the PALOP).

At last, higher numbers in the Religious Freedom Index of a country (indicating more care for primary human rights) indicate a lower probability that citizens from that country will migrate to Portugal looking for asylum or work. The other index that tested social instability (the weighted conflict index) was only characterized by a (slightly)

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[6] We have also computed the estimators suggested by Arulampalam and Stewart (2007) with very similar results. If required, the results from the estimations by Pooled Probit, by the Heckman estimator, and by the Orme estimator will be shown.

significant and positive coefficient estimated in the model with *other_immigrants* as the dependent variable, inducing that some foreign workers in Portugal might have left their countries due to the internal instability.

4. Conclusion and Policy Implications

This work has empirically tested which determinants are most relevant in terms of explaining Portuguese immigration since 1998. It concludes that Portuguese immigration is mainly depending on the (Portuguese) mother tongue of the countries that send their citizens to Portugal. It also found evidence that the initial values and the past values of these immigration trends are important when examining the present values.

Conditional on each subgroup considered, some other points can be assumed. For instance, foreign students tend to come because their country's income per capita is smaller than the Portuguese income per capita. But even in these cases, the lusophone mother tongue is the variable with the most significant result.

Related to the number of refugees living in Portugal, our estimations additionally show that deterioration in the standard of living (namely, the disrespect for human rights in the home country) may generate a greater immigration of foreign citizens requiring asylum in Portugal in the studied period.

With these results, two main implications arise.

First, Portugal shall optimize the management of international relations, specially with PLOP (lusophone countries), in order to better accommodate the citizens from these countries into the host European reality.

Second, this work evidences that the academic research shall move into a step further. This step shall lead to investigate the civic, religious and political expectations of immigrants (not only workers, but also refugees and students who bring high value of human capital into the host reality but also new challenges into a globalised world).

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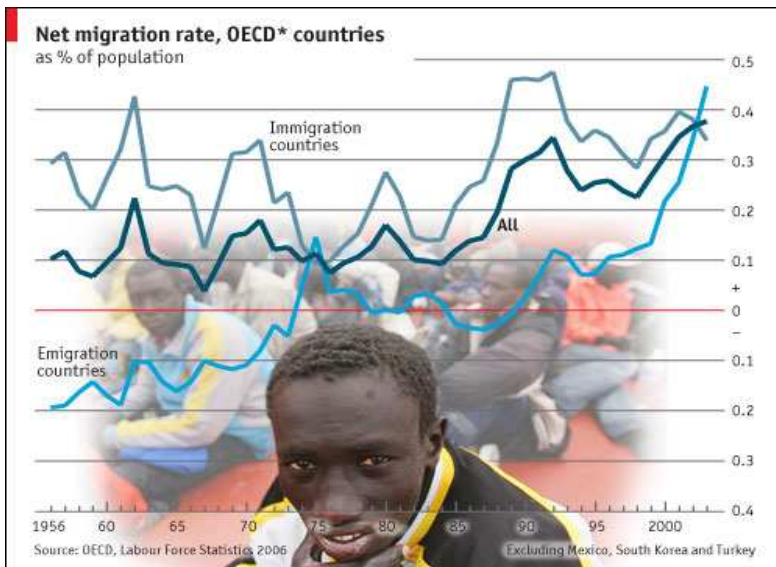
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Figure 1

Source: The Economist (25/07/2007)

Figure 2 – Portugal as an emigration country (1900-2005)

Source: Machado (2009)

Figure 3 – Portugal as an immigration country (1980-2000) Source: Fonseca et al (2002)
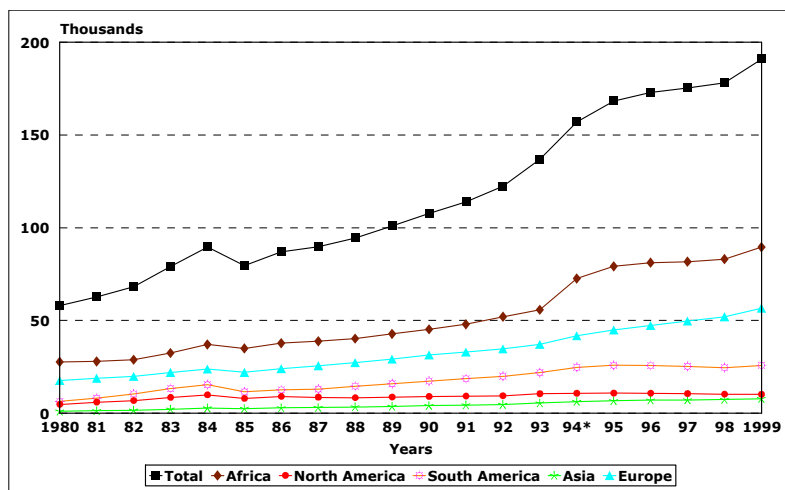
Table 1 – Descriptive statistics and sources, 1998-2006

Variable	Mean	Standard deviation	Maximum	Minimum	Observations	Sources
population (log)	8.431	2.220	14.087	2.303	1352	CNTSDA
population density (log)	7.368	1.476	12.707	3.638	1352	CNTSDA
Weighted conflict index (log)	7.995	1.051	11.252	5.704	524	CNTSDA
Religious Freedom Index (log)	-0.953	0.994	0	-6.908	1483	Mourao (2008)
Gross Domestic Produc per capita (log)	8.375	1.080	10.821	5.613	1352	CNTSDA
TV sets per capita (log)	10.889	2.808	17.487	2.485	1097	CNTSDA
Lusophone (binary)	0.041	0.199	1	0	1352	official data
asylum (binary)	0.067	0.250	1	0	1508	SEF
students (binary)	0.457	0.498	1	0	1508	SEF
other immigrants (binary)	0.353	0.478	1	0	1508	SEF

Legend: CNTSDA: Cross National Time Series Data Archive. SEF: Serviço de Estrangeiros e Fronteiras.

Table 2 – Dynamic Probit results

	1998-2006		
dependent variable	asylum	students	other immigrants
dependent variable (initial obs.)	1.346 a	2.674 a	1.035 a
	(0.235)	(0.456)	(0.258)
dependent variable (1st lag)	1.289 a	3.027 a	1.147 a
	(0.186)	(0.620)	(0.158)
population (log)	0.051	-0.304	-0.100
	(0.095)	(0.234)	(0.095)
population density (log)	-0.068	0.317	-0.012
	(0.067)	(0.208)	(0.064)
Weighted conflict index (log)	-0.031	-0.117	0.122 c
	(0.078)	(0.232)	(0.072)
Religious Freedom Index (log)	-0.151 b	0.057	-0.164 b
	(0.077)	(0.118)	(0.078)
Gross Domestic Produc per capita (log)	-0.305	-3.231 b	0.262
	(0.225)	(1.642)	(0.188)
TV sets per capita (log)	0.065	0.437 b	0.201 a
	(0.062)	(0.197)	(0.081)
Lusophone (binary)	0.741 c	4.533 a	0.853 c
	(0.402)	(1.462)	(0.496)
rho	0.234	0.348	0.262
	(0.067)	(0.078)	(0.054)
Log pseudolikelihood	-156.314	-22.29	-173.608
N (countries)	126	126	126
N (observations)	849	852	859

Significance level: 1% (a); 5% (b); 10% (c). Standard errors between parentheses.