Skills and Immigration: A Short Run Trade Theoretical Approach

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This Version: September, 2011

Abstract

I examine the political economy of immigration in a specific factor trade model with an arbitrary number of sectors, where labor is considered the short run immobile factor. I show that the liberalization of certain immigration restrictions depends on the host country’s stock and distribution of capital, the diversity of skills’ set that each country has, and the variety of goods produced by each country. In particular, the more diverse in skilled labor is each country, or the wider the variety of goods produced in both countries, the more liberal the host country would be towards immigration.

JEL Classification Codes: D72, F22, J61

Keywords: Immigration, Short Run Specific Factor, Short Run General Equilibrium, Direct Democracy.

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I. Introduction

For the past half century the immigration of culturally and ethnically different groups has been transforming economies, societies, and politics on both sides of the Atlantic. For example, European Union countries have experienced a transition from an ethnically homogenous to a multi-ethnic society, and the cultural diversity of the United States has dramatically increased as well. In the wake of these transformations, questions of immigration and politics of immigration restrictions have come to the forefront in public life.

In this paper, I study the political economy of immigration in a direct democracy regime. By employing a specific factor model where labor is assumed to be immobile in the short run while capital is completely mobile within a country, and blending it with the median voter framework developed by Mayer (1984), I argue that the liberalization of labor depends on the host country’s stock and distribution of capital, the diversity of skills’ set that each country has, and the variety of goods produced in each country. Within a country, only capital moves from one industry to the other, whereas the inability of labor to reallocate instantaneously causes a wage differential in the short run. Since the potential host country of immigrants is operating in a direct democracy regime, meaning that the immigration proposal requires the approval of the majority of voters in order to pass, I focus only on the effects that this proposal would have on the median voter who, in fact determines the outcome of the immigration proposal.

The short run specific factor model used in this paper explains why there is polarization on the immigration legislation between workers and capital owners, as well as between skilled and unskilled workers. Both of these results are not novel in the literature of political economy of immigration and international trade. However, the main contributions of this paper are related to the following two relationships. First, I show a positive relationship between the diverse set of
skills that a country has and the liberalization of labor. Second, I demonstrate a positive relationship between the variety of goods that each country produces in a perfect competitive environment and the liberalization of labor.

The above relationships provide some previously unidentified implications on the political economy of immigration. For example, both relationships provide a theoretical rationalization on the different immigration laws that exist among similar host countries in terms of stock and distribution of capital. The country that produces more types of goods would be more liberal towards immigration. Thus, in the real world, one can analyze the degree of openness that different host countries apply to immigration. For example, if the Belgium’ labor stock, capital stock, and distribution of capital are similar with those of Finland, but assuming that Belgium produces more types of goods as compared to Finland, then according to the theory developed in this paper, Belgium should be more open than Finland to immigrants arriving from the same origin country (See Table A in the Appendix). Since Belgium is producing more types of goods as compared to Finland, the decrease of Belgium’ median voter’s wage due to immigration would be less than that of Finland. This is true if the production of more variety of goods within each country is related to the availability of a more diverse set of skilled workers. Thus, in this case, more liberal policies toward immigrants from the same origin country would be taking place in the Belgium relative to Finland (see Table A in the Appendix).

On the same grounds, both relationships also provide a theoretical justification for the different attitudes that the median voter of a host country has towards immigrants who attempt to move in from different origin countries. For instance, within a same host country, we would expect to see more liberal immigration policies towards immigrants coming from either China or India, where there might a more diverse set of skilled workers per population, as compared to
immigrants coming from Nigeria or Ghana.

Next, I provide a brief literature review of similar research and point out the main differences between those papers and the present one. In a pioneering work, with a similar framework as this paper, Mayer (1974) assumes that capital is immobile between industries, but labor is perfectly mobile between the same industries within a country.\(^1\) Using this assumption, he studies the effect of immigration in the host country of immigrants and shows that capital owners in both industries (capital-intensive and labor-intensive industries) gain from immigration, while workers lose. In the current paper, on the other hand, I assume that labor is immobile and capital is perfectly mobile in the short run within a country. It is this key assumption that makes the model developed in this paper to behave differently as compared to Mayer’s (1974) model.

In the literature of political economy, an influential paper by Benhabib (1996) provides a simple one-sector one-factor model, which under direct democracy regime explains why the individuals who mainly depend on labor income will support raising the capital/labor ratio through immigration.\(^2\) His model, unlike the present paper, does not take into consideration the multi-sector model of the economy and cases of multi-skill level of native and/or immigrants.

Bilal, Grether, and de Melo (2003) use a three-factor, two-household, two-sector trade model and show among other things, that low-skill and high-skill households have contradictory stances toward immigration.\(^3\) This property of their model is shared in my model. However, my model is different from Bilal’s et.al (2003) because I assume that one factor (labor) is immobile in short

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\(^1\) See also Neary (1978a, 1978b, 1995) and Grossman (1983), where models similar to Mayer (1974) are applied and similar results are found in terms of immigration. Moreover, see Mussa (1974) for a generalization of a model with n-goods and n-factors, similar to Mayer (1974).

\(^2\) In the literature of political economy of immigration, see the volume by Krieger (2005) for an excellent overview of the median voter approach, especially in one-sector one-good models.

\(^3\) See also Grethen, de Melo, and Muller (2001) for similar results.
run, while they take a long-run view by assuming that all factors are mobile across sectors within a country. It is this short run feature of my model that adds to the current literature.

This paper is organized into several sections. In section II, the median voter approach is introduced. In section III, a short run general equilibrium of the specific factor model is introduced, and the short run impact of immigration on the returns of labor and capital is analyzed. In section IV, the immigration proposal is evaluated using the median voter approach. In section V, I reconsider the immigration proposal by allowing that in both countries, there exist a number of unskilled workers who can be classified as one group of workers as well as several different groups of skilled workers. In section VI, the relationship between the variety of goods that each country produces and liberalization of labor is examined. The main conclusions are summarized in section VII. The proofs of propositions are shown in Appendix.

II. Median Voter Approach in Two Small Open Economies

In this section, I develop a temporarily immobile factor trade model with two small open economies that have two sectors each: a capital-intensive sector and a labor-intensive sector. I employ all the basic Heckscher-Ohlin assumptions with the exception of perfect labor mobility between the two sectors, where I assume instead that in both countries the good X (capital-intensive good) is produced by the high wage industry and good Y (labor-intensive good) is produced by the low wage industry. The cost functions for each good are determined from

\[ C_i(w_j, r_j) = \min_{L_{ji}, K_{ji}} [(w_j L_{ji} + r_j K_{ji})] \]

\[ s.t. \quad j = A_{ji} K_{ji}^{\delta} L_{ji}^{1-\delta} \]

All the parameters are assumed to be positive and \( \beta, \gamma \in (0,1) \), \( \delta \equiv \gamma \) when \( j \) corresponds to \( X \) and \( \delta \equiv \beta \) when \( j \) corresponds to \( Y \), \( i \equiv (1;2) \) is used to denote the host country and the origin country of immigrants respectively, while \( j \equiv (X;Y) \) is used to denote the capital-intensive good
and the labor-intensive good respectively. \( p \) denotes the exogenously determined price of good \( X \) term of \( Y \) in both countries. The sub-index (i) is missing in the notation of each price for the simple reason that the price of each good is determined in the world market, where both countries (origin and host country) are considered relatively small to influence it. \( A_i \) represents the corresponding technological parameter for each good in each country. The total amount of each good produced from both countries is \( j = j_1 + j_2 \), where the stock of capital that is used to produce both homogeneous goods within each country is \( K_i = K_{X_i} + K_{Y_i} \), while the stock of labor that is used to produce the same goods within each country is \( L_i = L_{X_i} + L_{Y_i} \). Then the income of each individual in each country is

\[
I_{q_i} = w_i + r_i \theta_{q_i} \tag{1}
\]

where \( \theta_{q_i} \geq 0 \) correspond to the capital ownership of each individual, and \( r_i \) represents the return of one unit for capital. Keeping in mind the assumption of full employment in each country, I assume that each individual will work the same amount of time independent of her wage. She owns one unit of labor and can be classified either as skilled or as unskilled but not both, where \( w_i \) represents the return of skilled or unskilled labor that each individual obtains in each country, subject to her exogenously determined skill level. However, different individuals within a country can own different levels of capital. The density of individuals is shown by the continuous density function \( N(\theta_{q_i}) \), defined on \([0, \infty)\). The capital stock \( (K_i) \) of a country \( i \) is

\[
\int_{q_i=0}^{\infty} N(\theta_{q_i}) \theta_{q_i} \, d\theta_{q_i} = K_i \tag{2}
\]

and the stock of labor in each country is \( L_i = \int_{q_i=0}^{\infty} N(\theta_{q_i}) \, d\theta_{q_i} \).

The identical preferences of each individual is represented by the following utility function
The indirect utility of each voter in the host country \(V_{q_1}\) before immigration is put to a vote is

\[ V_{q_1} = \mu^\mu (1 - \mu)^{(1-\mu)} (1/p)^\mu I_{q_1} \]  

(4)

If the immigration proposal were to pass, the indirect utility of each individual in the host country \(V_{q_1}^*\) would look like the following

\[ V_{q_1}^* = \mu^\mu (1 - \mu)^{(1-\mu)} (1/p)^\mu I_{q_1}^* \]  

(5)

where \(I_{q_1}^*\) notates the new income that each individual obtains because of the approval of the immigration proposal and where the labor-intensive good is considered the numeraire good.

Since I am assuming that the host country is operating in a direct democracy environment, where every type of proposal requires a majority of voter approval to pass, I will focus only on the behavior of the median voter, since she is the one who will decide on the outcome of the immigration proposal.\(^4\) The immigration proposal will pass only if \(I_m^* > 1\) or \(\left(\frac{w_j^* + r_l \theta_m}{w_j^* + r_l \theta_m}\right) > 1\), since prices are considered exogenous.

Using the definition of capital and labor stocks shown in equation (2) then \(\theta_m\) is the median capital to labor ratio that solves the following equation

\[ \frac{\int_{q=0}^{m} N(\theta_q) \theta_q d\theta_q}{L} = 0.5 \]

(6)

Thus, the solution of (6) will give us \(\theta_m\), that is the capital over labor ratio \(\left( k \equiv \frac{K}{L} \right)\) owned by the median voter.

\(^4\) Following the work of Mayer (1984), in order to ensure certain that the median voter is the one who decides the outcome of the immigration proposal we assume that under direct-democracy regime, all the individuals in the host country of immigrants have single-peaked preferences. For a detail analysis of this approach, see Muller (1989).
III. Short Run General Equilibrium and Immigration

Let’s assume that in both countries there exist two types of workers: skilled and unskilled. In each country the return on skilled labor is higher than the return on unskilled labor. Since, industry $X$ uses only skilled labor to produce the homogenous capital-intensive good ($X_i$) and industry $Y$ uses only unskilled labor to produce the homogeneous labor-intensive good ($Y_i$), then it is apparent that $w_{X_i} > w_{Y_i}$. I assume that each individual’s skill level is exogenous in the short run. This means that a certain worker in either country already has obtained some specific skills that make her valuable to working only in a specific industry in the short run. Thus, labor is considered immobile between sectors, even though wages may differ between industries within a country. On the other hand, capital is considered perfectly mobile between sectors of a country. The intuition for this classification of capital in terms of its mobility can be justified by the fact that the technology continuously has made the adjustment of capital use from one industry to another faster over time.

Following the work of Mayer (1974) and employing our production functions as outlined in section 2, the wages and the rental rates for each country at a point of short run equilibrium, in the short run, are\(^5\)

\[
\begin{align*}
    p \left( \frac{dX_i}{dL_{X_i}} \right) &= w_{X_i} = \gamma A_{X_i} k_{X_i}^{(1-\gamma)} \\
    \frac{dY_i}{dL_{Y_i}} &= w_{Y_i} = \beta A_{Y_i} k_{Y_i}^{(1-\beta)}
\end{align*}
\]  

\(5\) The short run equilibrium for each country is described by the condition [shown in the first equality of (8)] \( \frac{dX_i}{dK_{X_i}} = p \frac{dY_i}{dK_{Y_i}} \). This condition results from the fact that capital is assumed to be mobile between sectors in the short run, within a country, which implies that capital’s marginal product is the same in both industries (again, in the short run within a country). This is the reason, therefore, why the two last equalities of (8) both are equal to \( r \). On the other hand, labor is assumed to be immobile in the short run within a country, which is a sufficient condition to have different wages in different sectors within a country. Hence, in the short run, in the labor market of each country we have the following: \( \frac{dX_i}{dL_{X_i}} \neq p \frac{dY_i}{dL_{Y_i}} \). Therefore, in (7) \( w_{X_i} \neq w_{Y_i} \). It is reasonable, then, to assume that the return of skilled labor is higher than the return of unskilled labor (\( w_{X_i} > w_{Y_i} \)).
Therefore, if the labor supply in the host country increases due to immigration, then \( dr_1/dL_1 > 0 \) and \( dw_{j_1}/dL_1 \leq 0 \). These inequalities are true under the constant return to scale property (CRS) of the production functions \( d^2j_i/dK_{ji}L_{ji} = -(d^2j_i/dK^2_{ji})(1/k_{ji}) \).

At this point I need to add three more assumptions. 1) The immigrants do not bring any capital with them when they move to the host country, they only supply labor;\(^6\) 2) There are no illegal immigrants in the host country;\(^7\) 3) The skilled workers have the same productivity in both countries, the same is true for the unskilled workers. As a result, by using the CRS property of the production functions, the fact that capital’s marginal product is the same in each industry within the host country of immigrants and the resource constraints (of the labor stock and capital stock of the host country) the following inequalities are true for the short run implications of an increase in the labor supply because of immigration\(^8\)

\[
dr_1/dL_1 = \xi > 0 \tag{9}
\]

\[
dw_{x_1}/dL_{x_1} = -\left(\frac{\xi}{k_{x_1}}\right) \leq 0 \tag{10}
\]

\[
dw_{y_1}/dL_{y_1} = -\left(\frac{\xi}{k_{y_1}}\right) \leq 0 \tag{11}
\]

Thus, any labor mobility from one country to the other will lead to reallocation of capital

\(^6\) For simplicity purposes, this assumption is used to ensure that the wages of immigrants in the host country will be equal to the wages of the natives in the case of the approval of the immigration proposal.

\(^7\) For simplicity purposes, this assumption is used to ensure that the wages of immigrants in the host country will be equal to the wages of the natives in the case of the approval of the immigration proposal.

\(^8\)

\[
\xi = \frac{1}{\beta} \left[ \frac{\gamma(1 - \gamma)A_{x_1}L_{x_1}K_{x_1}^{-\gamma(1+\gamma)} + (1 - \beta)A_{y_1}L_{y_1}^{\beta} K_{y_1}^{-(1+\beta)}}{\gamma(1 - \gamma)A_{x_1}L_{x_1}^{\gamma} K_{x_1}^{-\gamma(1+\gamma)}} \right] \geq 0 \quad \text{and} \quad k_{j_1} = \frac{K_{j_1}}{L_{j_1}}
\]
between sectors within each country. However, labor in each sector within a country is a fixed factor; therefore, further differences emerge between the wages in the two sectors. These further wage differentials depend on the amount of skilled and unskilled workers who move from one country to the other. In other words, inequalities (10) and (11) show that if more skilled than unskilled workers immigrate, then the wages of skilled workers will decrease more than the wages of unskilled workers \((d w_{X1}/d L_{X1} < d w_{Y1}/d L_{Y1} \text{ because } k_{X1} < k_{Y1})\).

IV. The Case of Two Types of Skills.

Voters in the host country may approve the immigration proposal by looking only at its short run effect on their indirect utility functions. Since we are in the short run, it is safe to find ourselves in a situation where \(w_{Y1} > w_{Y2}\). This can be achieved by developing a scenario where both countries have incomplete specialization on producing both homogeneous goods. Then a shock happens in the potential host country of immigrants, which increases the wages in this country. I can describe such a shock as an improvement in technology that is used for production of both goods in the host country. One also can use as a shock either the exogenous change of the prices of both goods, such that this would cause the wage of each worker in the potential host country to be higher than the wage of each worker in the origin country of immigrants. After the occurrence of the positive shock in the potential host country of immigrants, the equations of 7 now are described by the following equations

For \(R_1\): 
\[
\begin{align*}
w_{X1} &= \gamma A_{X1} k_{X1}^{(1-\gamma)} \\
w_{Y1} &= \beta A_{Y1} k_{Y1}^{(1-\beta)}
\end{align*}
\]

and for \(R_2\): 
\[
\begin{align*}
w_{X2} &= \gamma A_{X2} k_{X2}^{(1-\gamma)} \\
w_{Y2} &= \beta A_{Y2} k_{Y2}^{(1-\beta)}
\end{align*}
\]

9 In the long-run, in response to these further wage differentials, labor will flow between sectors, eventually tending to a new long-run equilibrium where all the wages are equal in both sectors for both countries.

10 By allowing labor to move from the origin to the host country of immigrants, we still will not have FPE in the short run. Only in the long run where labor becomes mobile (within a country) will FPE occur again in both countries.
where \( A_{j_1} > A_{j_2} \Rightarrow w_{j_1} > w_{j_2} \), with sub index 1 representing the host country and sub index 2 representing the origin country of immigrants. As a result, immigration looks attractive for an individual in the origin country, no matter what her skill level is.

A government of the host country can achieve information regarding the skills of immigrants by applying a point system to immigration. This is a system in effect in immigration policies of host countries such as Canada, Australia, and Ireland, to name a few. Thus, assuming that the median voter in the host country has accurate information regarding the type of skills that immigrants possess, then proposition one is easily established as follows

**Proposition 1** *The immigration proposal would pass when the median voter in the host country has different types of skills than those of the immigrants.*

I can show the validity of proposition one and its implications in Figure 1, where each point in the vertical axes represents different values of the ratio between the income of the median voter after and before immigration. In the horizontal axes, each point represents the stock of capital owned by the median voter. Lines \( \text{A} \) and \( \text{B} \) show the relationship between the likelihood of the approval of the immigration proposal and the stock of capital owned by the median voter. In particular, line \( \text{A} \) shows the latter relationship where all immigrants have skill levels opposite to those of the median voter. Hence, \( l_m^*/l_m > 1 \) if \( (r_1^* - r_1)\theta_m > 0 \). Thus, as long as \( \theta_m > \bar{\theta}_{m_A} \) where \( \bar{\theta}_{m_A} = 0 \) the immigration proposal will pass. In other words, the immigration proposal will fail only when the entire income of the median voter comes from her wage. \( \bar{\theta}_{m_A} \) denotes the cutoff level of the median voter’s capital stock, which makes her indifferent to the outcome of the immigration proposal in the case illustrated by the line \( \text{A} \). Thus proposition one is also telling us that if the median voter owns some positive amount of capital and immigrants have skill levels opposite to those of the median voter, the immigration proposal will pass.
Line B represents the same relationship as line A, but now all immigrants belong to the same skill level as the median voter in the host country. Thus, line B shows the following inequality $l_m^*/l_m > 1$ if $(r_1^* - r_1)\theta_m - (w_m - w_m^*) > 0$. Thus, as long as $\theta_m > \tilde{\theta}_{m_B}$, where $\tilde{\theta}_{m_B} = (w_m - w_m^*)/(r_1^* - r_1)$ the immigration proposal will pass. $\tilde{\theta}_{m_B}$ denotes the cutoff level of the median voter’s capital stock, which makes her indifferent to the outcome of the immigration proposal. One can easily observe from Figure 1 that $\tilde{\theta}_{m_B}$ is further to the right of $\tilde{\theta}_{m_A}$, which means that the immigration proposal is more likely to pass when all immigrants have skill levels opposite to those of the median voter (illustrated by line A), than when all immigrants have the same skills as the median voter (illustrated by line B). The further we move $\theta_m$ to the right of the horizontal axes, the more likely the immigration proposal will pass. Therefore, the more capital-rich the median voter, the more liberal towards immigration the host country. Thus, Figure 1 shows, among other things, that immigrants generally are more welcome in countries where the median voter is a capital owner. Referring back to line B, the
liberalization of labor is correlated positively with the slope of the line. The higher the slope of B, the lower the cutoff level of capital ownership of the median voter, which makes her indifferent to the outcome of the immigration proposal.

The most important implication of Figure 1 is the relationship between the decrease of the median voter’s wage due to immigration and the approval of the immigration proposal. This is represented by the intercept of either line with the vertical axes, within the interval between zero and one. Thus, line A touches the vertical axes at the point where \( I_m^* / I_m = 1 \) because the wage of the median voter is not affected by immigration. Hence, when \( w_m^* = w_m \), then \( I_m^* / I_m = 1 \) at the corresponding point where \( \theta_m = 0 \). This scenario would happen only if all immigrants have skill levels opposite to those of the median voter in the host country. On the other hand, if at least one immigrant has the same skill level as the median voter, then \( I_m^* / I_m < 1 \) at the point where \( \theta_m = 0 \) because \( w_m^* \neq w_m \). The higher the decrease of the median voter’s wage due to immigration, the more stock of capital the median voter needs to own for the immigration proposal to pass. This is why line A is on the left of line B. Thus, the lower the wage decline due to immigration, the higher the cutoff level of capital owned by the median voter would be. More specifically, in Figure 1, the higher the wage decline due to immigration, the lower the point, within the segment \([0,1]\), where line B intercepts the vertical axes. As a result, the approval of the immigration proposal does not depend only on the capital ownership of the median voter but also on the magnitude of the wage decline of the median voter due to immigration.

V. The Case of Numerous Groups of Skilled Workers within Each Country

Following the same approach as in section 4, I take a further step and reconsider the immigration proposal in countries with many different groups of skills. In other words, it seems
realistic to consider skills as mutually exclusive for each individual in each country.\footnote{11} Within a country, however, there exist a number of industries where labor is considered immobile among industries and capital is considered perfectly mobile among industries. Thus, here I develop a temporarily immobile factor trade model with two small open economies, each with more than two sectors. The immigration proposal is introduced in the host country, where the median voter is the one who decides on the outcome of the proposal. As demonstrated in Figure 1, the median voter compares the positive return on her capital ownership to the negative return on her wage. The latter is related positively to the number of immigrants who belong to the same skill group as the median voter. Hence, a crucial factor on the liberalization of immigration restrictions in the host country is the number of immigrants who possess the same skills as the median voter.

In this section, I assume that the productivity of the workers who belong to same skill group is the same for the populations of both countries;\footnote{12} in each skill group there is the same number of workers in both countries; in both countries the majority of the population belongs to the skilled workers;\footnote{13} and immigrants move proportionally according to the group of skill to which they belong. Independent of her skills, each individual of the origin country is a candidate to

\footnote{11} For example, if a certain individual has an undergraduate degree in economics, then she is considered a skilled worker only in the field of economics. Therefore, if immigrants are only those individuals who have an undergraduate degree in economics, then in the short run, we will observe a decline only in the wages of individuals who have the same degree in the host country. In this case, the wages of biologists, or other groups of skilled workers in the host country, will not be affected by immigration. In the real world, we can find examples of individuals who possess more than one skill. For instance a physician can have an MBA degree and she can work either as a physician or as a high level administrator in a hospital. In analysis of this section, I exclude such cases to make the implications of assuming the short run immobility of labor clearer to the reader.

\footnote{12} For simplicity purposes only, I exclude from the analysis all skilled workers who are specific to the origin (or the host) country. For example, an individual who has a degree in Greek law is considered a skilled worker in Greece but in the short term, she cannot be considered a skilled worker in USA because she must study American Law in order to be classified as a lawyer. On the other hand, a computer-programmer in Greece, with the same productivity as an American computer-programmer, is considered a skilled worker both, in Greece and in the USA.

\footnote{13} At the first, this assumption might seem unrealistic, especially for the origin country. However, a number of host countries of immigrants apply a point system to the immigration process, in which they tend to award more points to skilled immigrants. In other words, most host countries accept only skilled immigrants.
becoming an immigrant in the host country.

I use random binomial probability to handle, due to immigration, the negative impact of the wage of the median voter in the host country. The reason I employ random binomial probability is that I want to find the probability of selecting the same group of skilled workers from the origin country as from the host country’s group of skilled workers to which the median voter belongs. The higher such a probability is, the higher the number of immigrants who belong to the same group of skilled workers as the median voter, and therefore, the higher the negative impact on the wage of the median voter. Consequently, the possibility of the immigration proposal passing would be lower. Thus, the median voter in the host country, in order to measure the magnitude of the negative impact of her wage due to immigration, considers an experiment that has two possible outcomes, “immigrants belong to the same skill group as the median voter”, or “immigrants do not belong to the same skill group as the median voter”. Then the random binomial probability of selecting immigrants who belong in the same group of skill with the median voter in the host country is

\[ P(x) = \frac{\lambda!}{\left(\frac{L_2}{\lambda n_2}\right)!} \left[\frac{L_2}{\lambda} \right]^x \left(\frac{n_1 n_2}{L_1 L_2}\right)^{\frac{L_1}{L_1 L_2}} \left(1 - \frac{n_1 n_2}{L_1 L_2}\right)^{\frac{L_1}{L_1 L_2}} \]  

(12)

where, \( L_i \) represents the whole population in each country; \( \lambda \) stands for the portion of immigrants who move from \( L_2 \) to \( L_1 \); \( x \) symbolizes the binomial random variable; \( n_i \) represents the ratio of the population to the number of workers in each country; \( u_i \) indicates the ratio of population to the number of unskilled workers in each country. Thus, if I denote the number of skill groups in each country as \( \tau_i \), then the following equality stands for each country: \( 1 \cdot u_i + \tau_i \cdot n_i = L_i \). Put differently, \( 1/(n_i \tau_i) \) denotes a particular group of skilled workers, while \( 1/u_i \) represents the only group of unskilled workers within each country.
In equation (12), $P(x) = 1$ indicates that all immigrants belong to the same group of skilled workers as the median voter; this implies the larger possible negative impact that immigration could cause to the median voter’s wage in the host country. However, $P(x) = 0$ indicates that none of the immigrants belong to the same group of skilled workers as the median voter in the host country; this implies a null effect on the median voter’s wage in the host country due to immigration. As result, if the median voter of a certain host country is considering choosing among immigrants coming from different origin countries, she is more likely to accept immigrants who originate from a country with a greater number of groups of skilled workers. This country might not necessarily be the origin country with the larger volume of skilled workers. Therefore, Proposition two can be formulated as follows

**Proposition 2** The more diverse set of skills has the origin country of immigrants, the more likely the approval of the immigration proposal in the host country.

The above proposition provides a theoretical political-economic justification for the different immigration restrictions that a host country applies towards different origin countries. For example, in a host country, we would expect to see more liberal immigration policies towards immigrants coming from India where there might be numerous groups of skill workers per population, than there from Ghana where there might few groups of skill workers per population.

Using the random binomial probability of equation (12), if we keep fixed the number of groups of skilled workers of the origin country, then the host country that obtains the greater number of groups of skilled workers would be more liberal towards immigrants arriving from the same origin country than some other potential host countries of immigrants. This particular host country might not necessarily be the host country that has the richer median voter among other potential host countries. As a result, Proposition three can be easily established.
**Proposition 3** The more diverse set of skills has the host country, the more likely the approval of the immigration proposal in the same host country.

Proposition three could be used to explain theoretically a political economic reason as to why the median voter in different host countries where she owns the exact amount of capital, does not have the same behavior towards immigrants who move in from the same origin country. Thus, according to the above proposition, different host countries that have similar stock and distribution of capital, apply different immigration laws to immigrants coming from the same origin country. For example, Ireland’s capital stock and its distribution are similar to those of Austria, but assuming that Ireland obtains a greater number of groups of skilled workers as compared to Austria, then Ireland would be more open to immigrants arriving from the same origin country than Austria (See Table A in the appendix). I combine propositions two and three and set up a more general proposition as follows

**Proposition 4** The more diverse set of skills have both countries (origin and host), the more likely the approval of the immigration proposal.

Looking at the random binomial probability in equation (12), if I keep fixed the number of groups of skilled workers of the host country and the origin country, then the larger the population of the host country compared to the origin country, the lower the binomial probability that the median voter in the host county will belong to the same group of skilled workers as the immigrants. Consequently, proposition five follows

**Proposition 5** The higher (lower) the population of the host country (origin country) relative to the origin country (host country) of immigrants, the more liberal the host country would be towards immigrants arriving from the origin country.

Focusing on the random binomial probability of equation (12), if we keep fixed the
population of the host country and the origin country, then the higher the size of each group of skilled workers in the host country relative to the size of each skilled group in the origin country, the lower the binomial probability that the median voter will belong to the same group of skilled workers as the immigrants. This situation can be described in proposition six.

**Proposition 6** The higher (lower) the number of workers who belong to each skill group in the origin country (host country) compared to the number of workers who belong to each skill group in the host country (origin country) of immigrants, the lower the probability that the immigration proposal will pass.

Propositions 5 and 6 can be expressed as a single proposition if we assume that the size of the group of unskilled workers is the same as the size of each group of skilled workers within a country. However, if the size of the group of unskilled workers is different from the size of each group of skilled workers within each country, but the size of the group of unskilled workers is smaller than the product of the number of the groups of skilled workers and the size of each group of skilled workers, then propositions 5 and 6 are different from each other.

By focusing strictly in their relative size of population, and/or the relative size of each group of skilled and unskilled workers, both proposition 5 and 6 can be used to explain theoretically the existence of different immigration laws in a host country towards individuals who attempt to legally emigrate from different origin countries, For example, during the early to mid 90-s, a significant number of Russian physicians immigrated to Israel after the collapse of the Soviet Union. The Israeli government, not only increased its immigration restrictions against Russian physicians, but also changed the requirements for Russian physicians to work in that profession in Israel. After the change of the law, the degree obtained during Soviet times by the Russian (physicians) immigrants was thereafter insufficient to work as a physician in Israel. In other
words, now they have to pass stricter native language tests as well as other additional tests in order to obtain a certificate enabling them to work in their profession in Israel. For more details, see Kugler and Sauer (2005).

VI. The Liberalization of Labor and the Types of Goods Produced by Each Country

Before I analyze the median voter approach in the case of multi-sector (i.e., more than two sectors), I will reexamine the general short run equilibrium in the same two small open economies by emphasizing the reaction of wages and rental rates of capital. The, equations (7) and (8) can be written as follows:

\[
\begin{align*}
    p_j \left( \frac{d j_i}{d L_{j_i}} \right) &= w_{j_i} = Y_j A_{j_i} k_{j_i}^{(1-\gamma_j)} \\
    dY_i / dL_{Y_i} &= w_{Y_i} = \beta Y_i k_{Y_i}^{(1-\beta)}
\end{align*}
\]

\[
\begin{align*}
    dY_i / dK_{X_i} &= p_j \left( \frac{d j_i}{d K_{j_i}} \right) \\
    p_j \left( \frac{d j_i}{d K_{j_i}} \right) &= r_{j_i} = \left( 1 - \gamma_j \right) A_{j_i} \left( 1/k_{j_i} \right)^{\gamma_j} = r_i \\
    dY_i / dK_{Y_i} &= r_{Y_i} = \left( 1 - \beta \right) Y_i \left( 1/k_{Y_i} \right)^{\beta} = r_i
\end{align*}
\]

where now, \( j = (1X, 2X, \ldots, \mu X) \) and \( \mu \to \infty \) and \( Y \) again is the labor-intensive numeraire good. In this case, CRS properties are the same with those of section 4, but with some notation adjustments. Thus, CRS can be described by:

\[
\begin{align*}
    d^2 j_i / dK_{j_i} L_{j_i} &= - \left( d^2 j_i / d^2 j_i \right) \left( 1/k_{j_i} \right) \quad \text{and} \quad d^2 Y_i / dK_{Y_i} L_{Y_i} = - \left( d^2 Y_i / d^2 Y_i \right) \left( 1/k_{Y_i} \right)
\end{align*}
\]

Analogous to the case of two-industries, in the multi-industries case, if the labor supply in the host country increases due to immigration, then \( dr_1 / dL_1 > 0, dw_{j_1} / dL_{j_1} \leq 0, dw_{Y_1} / dL_{Y_1} \leq 0 \). In other words, using the CRS property, the fact that capital’s marginal product is the same in each industry within the host country of immigrants and the resource constraints (in terms of the labor stock and capital stock of the host country), the following inequalities are true for the short
run implications of an increase in the labor supply due to immigration

\[
d r_1 / d L_1 = \xi^* > 0
\]

\[
\begin{align*}
& dw_{1x_1} / d L_{1x_1} = - (\xi^* / k_{1x_1}) \leq 0 \\
& dw_{2x_1} / d L_{2x_1} = - (\xi^* / k_{2x_1}) \leq 0 \\
& \vdots \\
& dw_{\mu x_1} / d L_{\mu x_1} = - (\xi^* / k_{\mu x_1}) \leq 0 
\end{align*}
\]

\[
d w_{y_1} / d L_{y_1} = - (\xi^* / k_{y_1}) \leq 0
\]

We know from proposition 4 that the greater the numbers of groups of skilled workers each country has, the more liberal the host country would be toward immigration. Since in the short run each industry uses specific labor in order to produce each type of good, it is reasonable then to establish proposition 7 as follows

**Proposition 7** The more variety of goods each country produces (origin and/or host country), the more likely the approval of the immigration proposal in the host country.

I can demonstrate the validity of Proposition 7 and its implication by the use of Figure 2. With \( \tilde{\theta}_m \) I denote the cutoff level of the median voter’s capital stock that makes her indifferent to the outcome of the immigration proposal. In this scenario, line CC’ represents the following inequality: \((r^* - r) \theta_m - (w_{mc} - w^*_m) > 0\), where for \( \forall \theta_m > \tilde{\theta}_m \Rightarrow \frac{I_m^*}{I_m} > 1 \).

Line DD’ represents the following inequality: \((r^* - r) \theta_m - (w_{md} - w^*_m) > 0\), for \( \forall \theta_m > \tilde{\theta}_m \Rightarrow \frac{I_m^*}{I_m} > 1 \). \( \tilde{\theta}_m > \tilde{\theta}_m \) because \((w_{md} - w^*_m) > (w_{mc} - w^*_m)\). Line DD’

---

\[\xi^* \equiv \frac{[\beta(1-\beta)A_{y_1}^{\beta}L_{y_1}^{\beta}K_{y_1}^{-(1+\beta)}] \cdot \prod_{j=x}^{\mu} \left((1/p_j)\gamma_j(1-\gamma_j)A_{j_1}L_{j_1}^{\gamma_j}K_{j_1}^{-(1+\gamma_j)}\right)}{[\beta(1-\beta)A_{y_1}^{\beta}L_{y_1}^{\beta}K_{y_1}^{-(1+\beta)}] + \prod_{j=x}^{\mu} \left((1/p_j)\gamma_j(1-\gamma_j)A_{j_1}L_{j_1}^{\gamma_j}K_{j_1}^{-(1+\gamma_j)}\right)}\]
intentionally lies to the right of line CC’ in order to show that fewer types of goods each country is producing, the less likely the possibility that the immigration proposal would be accepted in the host country. This can be observed from the fact that $\tilde{\theta}_{m_D}$ is to the right of $\tilde{\theta}_{m_C}$.

![Figure 2](image)

Figure 2 also can be used to demonstrate the approval of an immigration proposal in two different host countries. For simplicity, let all immigrants be from the same country of origin. Line CC’ now demonstrates the approval (or failure) of an immigration proposal in the host country that produces numerous types of goods in a perfectly competitive environment. Line DD’ represents the approval (or failure) of the immigration proposal in the host country that produces only a few types of goods. The higher the difference between the types of goods that each country is producing ($\mu_C - \mu_D$), the higher the difference in the wage differentials of the median voters due to immigration between the host countries $\left( (w_{m_D} - w_{m_D}^*) - (w_{m_C} - w_{m_C}^*) \right)$ would be. This is represented by the distance between C and D in the vertical axes. The latter implies a higher difference between the cutoff levels of capital ownership of median voters in the
host countries, which is shown by the distance between $\tilde{\theta}_m$ and $\tilde{\theta}_c$.

One can use Figure 2 to illustrate that the host country that produces numerous types of goods could be more open to immigration than another host country that produces only a few types of goods, even though the median voter in the latter host country owns more capital. Let’s call the first host country the Netherlands and the second host country Finland. Line $CC’$ now represents the approval (failure) of an immigration proposal in the Netherlands, while line $DD’$ now demonstrates the approval (failure) of an immigration proposal in Finland. Let’s assume that the level of capital of the median voter in the Netherlands is equal to $\theta_{m_1}$ and in Finland it is equal to $\theta_{m_2}$. Clearly, $\theta_{m_2} > \theta_{m_1}$ but $\theta_{m_1} > \tilde{\theta}_c$ while $\theta_{m_2} > \tilde{\theta}_p$. Consequently, it is possible that the Netherlands would approve the immigration proposal, while the more capital rich Finland would not approve that same proposal. In Table A in the Appendix, the proxy for the Netherlands’ level of capital of the median voter is 8801 euro, while the proxy for Finland’s level of capital of the median voter is 23249 euro. However, the percentage of immigrants per population in the Netherlands is higher than the percentage of immigrants per population in Finland (10.1% > 4.0%). This indicates that the Netherlands is more open to immigration than Finland, even though the latter has a more capital rich median voter. In a similar way one can use Figure 2 to demonstrate the validities and implications of propositions 2, 3, and 4.

VII. Conclusions

In this paper, by employing a short run specific factor model, where labor is assumed to be immobile while capital is perfectly mobile in the short run within a country, and blending it with the median voter framework developed by Mayer (1984), it is shown that the liberalization of labor in the host country depends on the host country’s stock and distribution of capital, the diverse set of skills that both countries have (origin and foreign), and the variety of goods
produced in both countries. In particular, I have shown that there is a polarization of the voting attitude on an immigration proposal not only between workers and capital owners, but also between skilled and unskilled workers.

However, by expanding the short run specific factor trade model with two small open economies that each have two sectors to a temporarily immobile factor trade model with two small open economies that each have more than two sectors, I was able to demonstrate theoretically the most intriguing results of this paper. The more diverse set of skills each country has, the higher the probability that the immigration proposal will pass in the host country. The wider the variety of goods each country produces in a perfectly competitive environment, the higher the probability that the immigration proposal will pass.

Using the above results, I have provided some theoretical reasoning on why some host countries apply more liberal immigration policies compared to other host countries, even though their stock and distribution of capital are similar. Also, I was able to explain theoretically why the median voter of the same host country behaves differently about immigrants who attempt to move in from different origin countries.
References


Appendix

Proof of Proposition 1

In order to prove proposition one, I examine the immigration proposal in two separate cases and then compare them. In the first case all the immigrants are unskilled workers and the median voter is a skilled worker, while in the second case the median voter is an unskilled worker and all the immigrants are unskilled workers.

Case a) Median voter is a skilled worker \((w_m = w_{X_1})\) and immigrants are unskilled \((dL_{X_1} = 0)\).

The immigration proposal passes if \(I_m/I_m = (w_{X_1}^* + r_1^* \theta_m)/(w_{X_1} + r_1 \theta_m) > 1\) (See page ?). I can write inequality (10) as \(dw_{X_1} = -\left(\xi/k_{X_1}\right) dL_1 \leq 0\) or \(dw_{X_1} = -\left(\xi/k_{X_1}\right) \cdot 0 = 0\). Since, \(dw_{X_1} = 0\), then \(w_{X_1}^* = w_{X_1}\). Therefore, \(\frac{(w_{X_1}^* + r_1^* \theta_m)}{(w_{X_1} + r_1 \theta_m)} > 1 \Rightarrow (r_1^* - r_1) \theta_m > 0\). Thus, in the case of opposite skills between median voter and immigrants, the immigration proposal passes when

\[
(r_1^* - r_1) \theta_m > 0 \quad (a)
\]

Case b) Median voter is an unskilled worker \((w_m = w_{Y_1})\) and all immigrants are unskilled workers \((dL_{Y_1} < 0)\). From inequality (11) we know that \(dw_{Y_1}/dL_1 = -\left(\xi/k_{Y_1}\right) \leq 0\). But, \(dL_{Y_1} < 0 \Rightarrow dw_{Y_1}/dL_1 = -\left(\xi/k_{Y_1}\right) < 0 \Rightarrow w_{Y_1}^* < w_{Y_1}\). Thus, \((r_1^* - r_1) \theta_m - (w_{Y_1} - w_{Y_1}^*) > 0\).

Consequently, in the case of opposite skills between median voter and immigrants, the immigration proposal will pass as long as

\[
(r_1^* - r_1) \theta_m - (w_{Y_1} - w_{Y_1}^*) > 0 \quad (b)
\]

Comparing (a) to (b) it is evident that the immigration proposal is more likely to pass in case (a) than in case (b). Putting it algebraically, \((r_1^* - r_1) \theta_m > (r_1^* - r_1) \theta_m - (w_{Y_1} - w_{Y_1}^*)\) because \(w_{Y_1}^* < w_{Y_1}\) as explained in case b) and \(r_1^* > r_1\) because \(\frac{d r_1}{dL_1} > 0\) (See inequality 10). In an analogous way, I can describe a situation where all the immigrants are skilled workers, and the
median voter is an unskilled worker in the first case and a skilled worker in the second case.

**Proof of proposition 2**

If \( \tau_2 \to +\infty \implies n_2 \to 0 \) in order to keep \( L_2 \) fixed, because \( L_2 = u_2 + \tau_2 n_2 \) and \( u_2 \) is constant.

Hence, the following limit is true

\[
\lim_{\tau_2 \to +\infty} \left\{ \frac{\lambda!}{\left( \frac{L_2}{x n_2} \right)! \left[ \lambda - \left( \frac{L_2}{x n_2} \right) \right]} \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} = 0. \right. 
\]

**Proof of Proposition 3**

If \( \tau_1 \to +\infty \implies n_1 \to 0 \) in order to keep \( L_1 \) fixed, because \( L_1 = u_1 + \tau_1 n_1 \) and \( u_1 \) is constant.

Then, the following limit is true

\[
\lim_{\tau_1 \to +\infty} \left\{ \frac{\lambda!}{\left( \frac{L_2}{x n_2} \right)! \left[ \lambda - \left( \frac{L_2}{x n_2} \right) \right]} \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} = 0. \right. 
\]

**Proof of Proposition 4**

Since, we showed in the proof of proposition 2 that the \( \lim_{\tau_2 \to +\infty} P(x) = 0 \), and in the proof of proposition 3 that the \( \lim_{\tau_1 \to +\infty} P(x) = 0 \), then the following limit also is true

\[
\lim_{\tau_1, \tau_2 \to +\infty} \left\{ \frac{\lambda!}{\left( \frac{L_2}{x n_2} \right)! \left[ \lambda - \left( \frac{L_2}{x n_2} \right) \right]} \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} = 0. \right. 
\]

**Proof of proposition 5**

\{\text{If } L_1 \to +\infty \implies \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \to 0 \text{ and } \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} \to 1; \} \}. \text{ Thus, the following limit is true}

\[
\lim_{L_1 \to +\infty} \left\{ \frac{\lambda!}{\left( \frac{L_2}{x n_2} \right)! \left[ \lambda - \left( \frac{L_2}{x n_2} \right) \right]} \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} = 0. \right. 
\]

\{\text{If } L_2 \to 0 \implies \left( \frac{L_2}{x n_2} \right)! \left[ \lambda - \left( \frac{L_2}{x n_2} \right) \right] \to 1 \text{ and } \left( \frac{n_1 n_2}{L_1 L_2} \right)^{\frac{L_2}{x n_2}} \left( 1 - \frac{n_1 n_2}{L_1 L_2} \right)^{\left( \lambda - \frac{L_2}{x n_2} \right)} \to 1; \} \}. \text{ Hence,}
Proof of proposition 6

Using the same arguments as in the proof of proposition 2, then:

\[
\lim_{n_2 \to \infty} \left\{ \frac{\lambda!}{(L_2/xn_2)!} \left[ \frac{L_2}{L_1L_2} \right] \frac{L_2}{x^2n_2} \left(1 - \frac{n_1n_2}{L_1L_2} \right) \left(\frac{L_2}{x^2n_2} \right)^{L_2} \right\} = 1.
\]

\[
\lim_{n_1 \to 0} \left\{ \frac{\lambda!}{(L_2/xn_2)!} \left[ \frac{L_2}{L_1L_2} \right] \frac{L_2}{x^2n_2} \left(1 - \frac{n_1n_2}{L_1L_2} \right) \left(\frac{L_2}{x^2n_2} \right)^{L_2} \right\} = 0.
\]

Proof of Proposition 7

In each country, \(L_i = L_{y_i} + L_{z_i}x_i + \cdots + L_{\mu_i}x_i\). We know from inequalities (16) and (17), that \(\frac{dw}{dL} \leq 0\) and \(\frac{dwy_1}{dL_{y_1}} \leq 0\). Hence, when \(\mu, \mu^* \to +\infty\), \(\frac{dwm}{dL_{x_1}} \to 0\), from proposition 4, and the assumption that for production of each good are required a specific skill, where \(\mu, \mu^*\) denote the number of goods produced in host and origin country respectively.

We know that the immigration proposal will pass if: \(\frac{r_m^*}{l_m} > 1\), or \((r_1^* - r_1)\theta_m > (w_m - w_m^*)\)

From inequality (16) \(\frac{dr_1}{dL_{x_1}} = \xi^* > 0 \Rightarrow (r_1^* - r_1) > 0\). Then, if \(\theta_m > 0 \Rightarrow (r_1^* - r_1)\theta_m > 0\)

when \(\mu, \mu^* \to +\infty\), \(\frac{dwm}{dL_{x_1}} \to 0 \Rightarrow (w_m - w_m^*) \to 0 \Rightarrow \frac{l_m}{l_m} > 1\).
### Table A

<table>
<thead>
<tr>
<th>Country</th>
<th>AP(20+) 96-02</th>
<th>Imm 96-02</th>
<th>AP/Imm (%)</th>
<th>AMIK 95-01</th>
</tr>
</thead>
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<td>785150</td>
<td>12.8</td>
<td>8654</td>
</tr>
<tr>
<td>Belgium</td>
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<td>666060</td>
<td>8.5</td>
<td>23169</td>
</tr>
<tr>
<td>Germany</td>
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<td>8712040</td>
<td>13.5</td>
<td>12712</td>
</tr>
<tr>
<td>Spain</td>
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<td>2224090</td>
<td>7.1</td>
<td>6459</td>
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<tr>
<td>Finland</td>
<td>3886563</td>
<td>156800</td>
<td>4.0</td>
<td>23249</td>
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<td>1.8</td>
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<td>4.1</td>
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<td>37567</td>
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<td>7.5</td>
<td>15221</td>
</tr>
</tbody>
</table>

All the data used in this table are taken from the “Statistical Office of the European Communities (Eurostat)”\(^1\). I have selected the particular European countries shown in the first column because of the availability of their data. The second column represents the average population of each country, where I count only the individuals of age 20 and higher, during the years 1996-2001. The reason for counting this portion of the population is that in most of the above democracies, only individuals older than 18 years old are eligible to vote. The third column shows the average number of legal immigrants in each country for the years 1996-2002. The fourth column represents the percentage of immigrants per population in each country. This variable is calculated by dividing column three by column two and then multiplying by one hundred. The fifth column represents the average “median income from private sources for each country” during the years 1995-2001. The term “income from private sources” represents that portion of an individual’s income that does not come from her wage and/or government assistance or a pension. This is an excellent proxy for the return of the median voter capital.

---

\(^1\)http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL
the values in this column are in euro. Unfortunately, as one can observe from Table A, I was able to find data on only a few European countries.

I compare the percentage of immigrants per population with the median income from private sources for the pairs of countries with the same color. Most of the pairs of countries are selected in this way intentionally in an attempt to reduce any other factors that could affect the degree of openness towards immigrants in these countries, with the exception of the proxy for the return on capital ownership of the median voter in each country and of the assumption of the number of types of goods that each country produces. Some of these “other factors” that I am trying to avoid when pairing the countries are institutional differences, culture differences, weather conditions, differences on the origin(s) country of immigrants, and welfare policies, to name a few. In the following paragraphs, I provide the reasons for the selection of each pair of countries and, most importantly, give a justification for the existence of different values for the percentage of immigrants per population of each country within a certain pair of countries by focusing on the assumption about the number of types of goods that each country produces.

1) **Germany and the U.K.** Both are large countries in terms of their population, no significant differences in institutions and culture factors. However, there might be substantial differences on the origin of immigrants. For example, a large number of Indian immigrants are in U.K., while there are a large number of Turkish immigrants in Germany (See Eurostat for further details on the origin of immigrants and their numbers for each country). There also is a substantial difference on the welfare policies between these two countries (See Krieger (2005) for further details in public pensions and immigration). However, for the sake of argument, I am disregarding the above differences. Therefore, the percentage of immigrants per population in the U.K. and Germany is 7.5% and 13.5% respectively, while their proxies for the return on the
median voter’s capital are 15221 euro and 12712 euro respectively. Therefore, despite the fact that the median voter’s return on capital is higher in the U.K. as compared to Germany (15221>12712), the latter country has more immigrants per population (13.5%>7.5%). This fact might be justified by assuming that Germany produces more types of goods than the U.K. does, which is one of the main contributions of this paper, based on the theory that the median voter in each country is concerned only with the short run effect on her income during the evaluation of an immigration proposal. In other words, the U.K. is less open to immigration than Germany, not because of the difference on the capital ownership of the median voter, but because of the existence of a greater number of groups of skilled workers.

2) **Ireland and Austria.** Both are relatively small countries in terms of population. This pair of countries has the advantage of having the same similarities and differences on “other factors” than the previous pair (the U.K. and Germany). This is related to the fact that Ireland borders on the U.K. and uses the same language, and Austria boards on Germany and uses the same language. However, Ireland is more open to immigration than Austria (17.3%>12.8%), even though they have roughly the same return on median voter’s capital (8253≈ 8624). Here I can argue that Ireland has a very similar pension/welfare system to the U.K., while Austria has a very similar pension/welfare system to Germany. However, Germany and Ireland are more open to immigration than the U.K. and Austria despite the fact that the latter two countries have richer median voters in terms of their capital compared to the former countries. Therefore the reason that Germany and Ireland are more open to immigration than the U.K and Austria, respectively, could be justified by assuming that the former countries produce more types of goods (or have more groups of skilled workers).

3) **The Netherlands and Belgium.** In these neighbor countries there are not substantial
differences in institutional factors, culture factors, welfare/pension policies, and on the origin of immigrants. The percentage of immigrants per population in Belgium and the Netherlands is 10.1% and 8.5% respectively, while their proxies for the return on the median voter’s capital are 23169 euro and 8801 euro, respectively. Therefore, even though the median voter’s return on capital is higher in Belgium compared to the Netherlands (23169>8801), the latter country has more immigrants per population (10.1%>8.5%). This fact might be related to the assumption that the Netherlands produces more types of goods compared to Belgium. In conclusion, the relatively less capital rich country, The Netherlands, is more open to immigration than the more relatively capital rich Belgium because of the existence of a greater number of groups of skilled workers in the latter country.

4) Belgium and Finland. There are small differences in institutional factors, culture factors, and welfare/pension policies. However, there are some significant differences on the origin of immigrants (see Eurostat for further details on the origin of immigrants for these countries). Moreover, there are substantial differences in population; Belgium is twice as large as Finland. However, both countries have the same capital rich median voters, in terms of their return on capital (23169=23249). Belgium is more open to immigration than Finland (8.5%>4.0%), which could be related to the “non factors” described above or it might be justified by the assumption that Belgium produces more types of goods (and therefore has more groups of skilled workers) than Finland.

5) The Netherlands and Finland. There are roughly the same differences between these countries the previous pair. But, the Netherlands has a very poor median voter (consistently in terms of her return to capital) as compared to Finland (8801<23249). However, the Netherlands is more open to immigration than Finland (10.1%>4.0%). This fact might be more related to our
assumption that the Netherlands produces a greater number of types of goods (and therefore has more groups of skilled workers) than Finland, than in the case of the Netherlands and Belgium.

6) **Italy and France.** Both countries are neighbors and are roughly the same size in terms of population. They also have similar welfare/pension policies. (See Krieger 2005.) Moreover, there are not many substantial differences on the “other factors”, with the exception of the origin of immigrants. (See Eurostat, for further details on the origin of immigrants for these countries.) Despite the fact that the median voter’s return on capital is higher in France as compared to Italy (9049>7326), the latter country has more immigrants per population (4.1%>1.8%).

7) **Greece and Portugal.** Both countries have the same size population, roughly the same degree of openness towards immigrants (1.5%≈1.8%), and roughly the same return to capital of their median voters (5611≈6032).

8) **Luxembourg.** This country has the highest degree of openness towards immigrants (35.5%) and also has the highest return to median voter’s capital (37567).