"Barcelona or Die": Understanding illegal migration from Senegal[1]

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Abstract

Illegal migration is an important subject and represents a major challenge for both sending and recipient countries. The aim of this paper is to explain the extent of illegal migration from Senegal by using a unique data set on potential illegal migrants collected in Dakar. The purpose is to describe and to analyze the mechanisms of clandestine migration from Senegal. Then, in this paper, we answer the question "Why are some people ready to risk their lives with illegal migration?". In the descriptive analysis, we use a multinomial logit to identify who wants to leave through the socio-demographic characteristics of potential migrants. We are also interested in the market for illegal migration through the available information, the preferred destination countries and the average prices for each destination and each method of migration. Finally, we use a logit model to analyze the role of expectations, relatives and repression on illegal migration decision-making. On the basis of our empirical analysis, it appears, first, that expectations and relatives in the host country exacerbate the likelihood of migrate illegally and a hardening of immigration policies does not deter potential illegal migrants. Second, we find that the choice of the destination country influences the likelihood to migrate illegally rather than legally.

Keywords: Illegal migration; Networks; Migration policy
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[1] "*Barcelona or Die"*, is the motto of thousands Senegalese migrants who try to reach Spain illegally.

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1. Introduction

Projections for 2030-2034 demonstrate that due to migrants stocks, income and education gaps, migration pressure from Sub-Saharan Africa to the U.S would increase whereas it would decrease for Latin America and Caribbean and would be steady for Asia and the Middle East and North Africa (Hatton and Williamson, 2011). Following IOM (2010), of 214 million immigrants in the world, about 20 to 30 million i.e. 10 to 15% of migrants are undocumented, which means that a large part of migrants' flows is regular. However, clandestine migration from the developing world to rich countries causes many issues both for sending and recipient countries at the political, the economic and the humanitarian levels. According to the estimations of the Human Rights Protection Association in Andalusia (APDHA)[3], among the 30 000 illegal migrants that arrived in Canary Islands in 2006, at least half of them were Senegalese. About 7 000 African illegal migrants, among which almost 1 000 Senegalese people, died during the crossings in 2006 and those numbers could be largely under estimated.

Indeed, since the autumn of 2005, public opinion is regularly choked by events related to illegal migration such as the Ceuta and Melilla tragedy or the images of boat-people disembarking on European coasts. Such events show how illegal migrants are determined to leave their country and migrate whatever the risks, hoping to improve their economic and social living conditions. Hass (2006) documents the different forms of illegal migration from Africa such as trucks crossing the desert towards Maghreb countries to reach European coasts namely Lampedusa, Sicily or the Canaries Islands or being boat-people. From 1999, repression and the increase borders control at the Straits of Gibraltar displace undocumented migrants' flows towards boat-people. It is this new form of illegal migration which has developed hardly in Senegal.

Our paper is therefore mainly motivated by this context. Some sociological studies were conducted in Senegal about this illegal migration phenomenon (Fall, 2007; Mbow, 2008) but our main purpose is to analyze these facts and illegal migration under an economic aspect. We attempt to explain the scope of illegal migration from Senegal by interesting in factors which exacerbate this phenomenon. Then, "why some people are ready to risk their lives with illegal migration?". To understand the mechanisms behind illegal migration and to answer this question, we use a unique data set from a field survey that we conducted in Dakar between

[3] www.apdha.org

November 2006 and April 2007. As far as we know, there are no data comparable to those given by our survey, which makes it original.

The paper is organized as follows: the next section presents the literature review on variables we consider as some triggering factors of illegal migration such as expectations, relatives or repressive migration policies. In section 3, we present data and descriptive analysis more specifically, we present socio-demographic characteristics of potential migrants and the market for illegal migration. The estimation strategy and the empirical results are discussed in section 4 while concluding remarks are provided in the last section.

2. **Literature review**

Wage differential and expectations are well identified in the literature as a strong determinant of emigration. Migration decision comes from a rational choice and is a result of costs and benefits analysis taking into account migration earnings net of migration costs (Sjaastad, 1962; Todaro, 1969). However in the case of illegal migration, we consider that the decision process is different between an individual who decides to migrate and someone who is willing to migrate whatever the risks and we assume that in addition to expectations, there are specific factors, including repressive policies and relatives in the host countries, which influence the likelihood to migrate illegally.

The effect of repressive policies is less deterrent than one could expect and their efficiency is often contested. Orrenius (2004), Angelucci (2005) and Gathman (2008) find an ambiguous and small deterring effect of the enforcement of border control between Mexico and the U.S.. Indeed, by raising smugglers' prices and migration costs, border enforcement reduce inflows of migrants, but at the same time, it displaces crossing places, which increase time of crossing, risk of death, develop smuggler industries, which wants to benefit from higher prices, and increase duration of illegal migrants in the destination country. The latter consequence is also demonstrated by Borodak and Miniscloux (2009) in the Moldovan migrants case. More largely, in Eastern European countries, Omar Mahmoud and Trebesh (2010), state that illegal migrants have a higher risk of face trafficking and restrictive policies can accentuate this issue by involving immigrants to stay clandestine.

The second triggering factor of illegal migration is the relatives and migrants networks. A migrant's network is defined as the link between people who emigrated, formers migrants and people who stayed in the native country and who would like to migrate. They share family, friendly relations or just belong to the same community (Massey and al., 1993). Dolfin and Genicot (2010) assess the role of family networks and community migrants in

illegal migration which give assistance to find a job, information about the border crossing, having a positive effect on smugglers use, and credit allowing the journey to be financed. Following Perdersen et al (2008), networks has a large positive effect in migration flows into OECD countries. Indeed, there is a threshold from which the migrants' number in receiving countries involves a decrease of migration costs (Carrington, Detragiache, Vishwanath, 1996). Beine et al (2011) show that, by reducing migration costs through the networks effects and the reduction of visa costs associated with family reunification programs, Diasporas are a crucial determinant of migrants flows and of their variability. Moreover, networks allow a reduction in migration costs associated with cultural differences. For Bauer et al. (2005), for instance, a bad proficiency in the destination country's language pushes migrants to choose a destination with bigger networks, which allow them to be integrated most easily into the local economy and to benefit from networks' support. In other words, having relatives allows assistance to be given to migrants, particularly to the most vulnerable (Munshi, 2003), contributes to reduction in the various costs related to migration and then has an important role in the decision to migrate (Winters et al., 2001) and in the choice of the destination country.

But the reduction of the migration costs is not the only way that relatives can trigger emigration particularly when it is illegal. Remittances, trough various transmission channels, such as investments or better living conditions of the family's migrant compared to the other community's members who do not have migrants, remittances exacerbate the migration will of those who do not migrate by inducing inequalities, frustration and social pressure in the origin countries. In rural Burkina Faso, for instance, migrants associations are large contributors of local development by investing in infrastructures such as schools, health centers or roads (Beauchemin and Shoumaker, 2009). Empirical evidence from Egypt, Morocco and Turkey, Van Dalen et al. (2005), show that migration intentions in the origin countries are determined not only by family ties between migrants and those left behind, but also by remittances, particularly in Morocco. Remittances by giving the signal that life abroad is better and more comfortable, can constitute an indicator of the benefits of migration and thus increase the emigration intentions of the recipients in the origin country which induce more migration flows. In Sub-Saharan Africa, Senegal is one of the main recipient countries of remittances, which represent 9.3% of GDP. At a microeconomic level, they allow to finance education and health services, information and technology use such as mobile phone, television or the Internet access (Ratha et al, 2011). In rural and urban Senegalese areas, many households with good living conditions have one or many family members who have migrated. Migrants have an important economic power which sparks off the envy of those

who remain in the origin country. They invest in buildings, business and social services for the community. Moreover, remittances sent to the family increase the gap between the reference group and those who do not have migrants in their family. Then, for the latter, the social comparison with the reference group increases the frustration feelings. In the cumulative causality theory, (Massey, 1990), each migration act involves the wish of the others community's members to go. Migration becomes then the solution to increase not the absolute but the relative income and the position level of the household in the community. More generally, some studies highlight the link between migration and inequalities. Stark (2006), Stark and al. (2009) highlight a positive correlation between the relative poverty, measured by the Gini coefficient, and the propensity to migrate, holding the population's per capita income. For Mackenzie and Rapoport (2007), there is a U-shaped relationship between migration and inequalities. Initially, a small network increases inequalities because only the households belonging to the middle-class and the upper-class can bear migration costs and become wealthier due to remittances. But when the network is larger, it induces lower migration costs, allowing the decrease of inequalities and the possibility for poorer households to migrate. Remittances allow financing investments in the origin countries.

3. Data and descriptive analysis

3.1 Data

Because of the extent of illegal migration in Senegal these last years and the lack of economic data on the subject, we collected new data by making a field survey. A cross-section survey was gathered between November 2006 and April 2007. We interviewed 400 respondents met randomly in the selected neighborhoods. Among them, some are potential migrants and some are not. In response to the question, "*Do you wish to migrate*?", 92% of the total sample, i.e. 367 individuals, say yes[4]. This value seems high but it is not very surprising. We have some variability in the different areas where we made the survey and the proportion of people who wish to migrate is high in all these areas. As well as reasons given previously, there are historical and sociological factors which can explain this result and the high desire to migrate. Indeed, Dakar is a "europeanized" city compared with other West-African cities which were former French colonies. Dakar was the A.O.F (Afrique Occidentale Française) capital city and the links with the colonists were very close. The other explanation

[4] The definition of the variables and the complete summary statistics are presented in Appendix A.1 and A.2.

is that the Eldorado myth still exists and the development of Information Technology, such as the Internet, increases the attractiveness of the destination countries. Therefore, for many people, migration is considered as the only way to succeed.

For those who are willing to migrate, we ask the question: *"Are you willing to migrate illegally?"*. Among the 367 individuals who wish to migrate, 222 declare that they are willing to migrate only legally and 145 declare that they are ready to migrate illegally (which represents 40% of potential migrants). We interviewed individuals who were still in Senegal and interviews were conducted face to face with closed questions. For more efficiency, we firstly defined Dakar, as the analysis unit for its accessibility and above all for the variety of its population. Subsequently, we made a sub-stratification firstly by picking several neighborhoods, then, within these areas, some individuals.

Concentrating resources on a part of the population allows us a better quality of data and more precise results, even if it is an exploratory study because all the population of Dakar is not represented. Indeed, when we did the survey, it was very complicated to have a perfect representation of all the Senegalese population, because of the nature of this particular form of migration which is a very sensitive subject. But we think that it would not be a bridle to analyze this topic. Moreover our main purpose is above all to wonder about a crucial subject in Africa both for sending and receiving countries, and yet with very few economic studies. The interest of this study is then to begin to fill the academic emptiness on this subject and to develop some ongoing research for a better understanding of this phenomenon in Africa.

3.2 Bravery or carelessness?

Many respondents in our survey declared that they would be willing to risk their life in order to emigrate abroad and gave us their subjective evaluation of the likelihood of death. 30.79 % of people who are willing to migrate are ready to risk their life. Then the distribution of probabilities of death reported by individuals willing to risk their life is presented in Figure 1. The median probability is 25%, which is high and is show the determination of these people to migrate whatever the risks.

3.3 Socio-demographic characteristics

The first step for understanding why people leave is to know who wants to leave. Then, we use a multinomial logit to present the correlations between socio-demographic characteristics and the willingness to not migrate, to migrate legally or to migrate illegally.

Let :

j = 1,…J, the different alternatives (3 in our case)

x = 1,…X, the explanatory variables

The probability for an individual i to choose the alternative j is defined by:

$$P(y_i = j) = \frac{\exp(x_i\beta_j)}{\sum_{j=0}^{3}\exp(x_i\beta_l)} = \frac{\exp(x_i\beta_j)}{1+\sum_{j=1}^{3}\exp(x_i\beta_l)}$$

The multinomial logit is then defined by:

$$y_i = \beta X_i + \varepsilon_i \quad (1)$$

y_i, the dependent variable, has three modalities: "no migration" if the individual does not want to migrate, "legal migration" if the individual is willing to migrate only legally and "illegal migration" if the individual is willing to migrate illegally.

$$\text{Where } y_i = \begin{cases} 0 \text{ if the individual i does not want to migrate} \\ 1 \text{ if the individual i is willing to migrate only legally} \\ 2 \text{ if the i is willing to migrate illegally} \end{cases}$$

X_i is the vector of socio-demographic characteristics namely the logarithm of the wage earned in Senegal per capita, approximated by the average monthly expenditures of the individuals divided by the number of dependants[5] and its square to check if we have a threshold effect of the income; sex; age and its square; matrimonial situation, education level; sex of the children dependants (dummy equal to 1 if the individual male or female children as dependant); home occupation status (dummy equal to 1 if the individual is a home owner, in order to control for the assets); religious and ethnic dummies. We will use these variables as controls in the empirical part.

ε_i is the disturbance term

[5] People answer more easily about their expenditures and there are fewer missing data for this variable, which is considered more reliable and less biased to know the real level of the income.

Table 1 presents results of equation (1). Before commenting on the results and to check if the multinomial logit choice is relevant, we make a Hausman test and a Wald test (Hausman, 1978, Hausman and Mc Fadden, 1984). The objective is mainly to see if the IIA property (Independence from Irrelevant Alternatives), a necessary condition to apply a multinomial logit, is respected. IIA property requires the ratio between two probabilities, associated to two particular events, be independent of the others events. The results of the tests show the independence between the modalities and confirm the multinomial logit choice (*see Appendix A.3*). The Relative Risk Ratio (RRR) presented in Table 3, measure the propensity to be in a category compared with the propensity to be in the reference category. The reference category is "legal migration" and we compare this category first, with the likelihood to do not want to migrate (no migration) and second with the likelihood to be willing to migrate illegally (illegal migration). If the probability is less than one for a variable, it increases the propensity for an individual to be in the reference category i.e. to be willing to migrate only legally compare to the other categories. If the probability is higher than one, it increases the propensity to be in the other categories compare to the reference category.

When we compare those who do not want to migrate with those who are willing to migrate only legally, we find that a wage growth induces a decrease of the probability to stay in Senegal relative to the probability to migrate illegally. But it appears that there is a threshold from which the wage growth involves a higher probability to stay in Senegal compare to the probability to migrate legally. In other words, the higher the income, the higher will be the relative probability to migrate legally until a threshold where this probability decreases. Then we observe a U-shaped relationship between the wage per capita and the relative probability to migrate legally. This return point corresponds to an amount of 53 603 Fcfa (82 Euro) which is a little higher than the minimum salary in Senegal (fixed at 47 700 Fcfa i.e 72 Euro) and 45.95% of people who are willing to migrate illegally earn less than this amount. It means that from the moment where individuals get the minimum for leaving and can satisfy their basic needs, even if this amount can appear insufficient for many Senegalese people, the willingness to migrate, even legally, decreases. The U-shaped relationship is verified when we compare people who are willing to migrate illegally and those who are willing to migrate only legally, but contrary to the previous result, the relation is not significant. There is a threshold effect of the variable age: from 23 years old, the individual is less motivated by illegal migration relatively to legal migration. Older people are often married and have some dependants. Indeed, a married individual has a relative

probability of 36.7% to migrate illegally. In other words, being married decreases the probability to be willing to migrate illegally by 63.3% compared with being single. The main reason is that married people having more familial responsibilities and then are less willing to take risks compare to the single category. If the dependant is a male child, it reduces the relative probability to migrate illegally. We assume that parents by investing in their children maximize their utility (Becker and Tomes, 1979) and could let male children migrate later. First, because they have a longer life horizon, which allows parents to profit much longer from migration benefits and second because in Senegal or in Africa in general, because of the cultural context, if someone has to migrate in a family and if the migration is a household decision, male will be preferred to female, who has to stay to look after children and take care of the family. The variable male has the expected positive sign though but it is not significant. Therefore there is no difference about the intentions according to the gender on willingness to migrate illegally relatively to the legal migration. But it does not mean that there is no difference in the effective behavior at the hands of illegal migration: male illegal migration would probably be higher than women illegal migration.

Another interesting result is about the educational level. There are essentially two visions about the selection of migrants according to their education level. Borjas (1987) defends the idea that there is a negative selection in poor countries where the less skilled have a higher propensity to migrate whereas Chiquiar and Hanson (2005) and Orrenius and Zavodny (2005) find an intermediate selection, on observable characteristics, of education level of Mexican migrants. However, Mackenzie and Rapoport (2010) reconcile the two visions by showing that in communities with small networks, there is a positive self selection of migrants on the probability to migrate due to high migration costs. Then, in these communities, education raises the positive self selection of migrants and increases the probability of migration while in large networks, education decreases the probability to migrate and raises the negative self selection because migration costs are less in these communities. Our results concerning the education level show that the higher the education level of the individual, the less is his willingness to migrate illegally rather than legally. In other words, highly educated people have a reduced probability to migrate illegally than less educated people, which supposes a negative selection of potential illegal migrants in the case of Senegal. People, who have a secondary or a higher level of education, respectively decrease by 47.6% and 94.2% their probability to attempt illegal migration compared with those who just have a low education level. Educated people have more opportunities to find a decent job, to get out of poverty and above all to get legitimate documents and to migrate

legally. According to Chiswick (2000), visa rationing, due to migration restriction can be based on selection criteria such as education or the qualifications of migrants and influences a positive self selection of migrants which enhances labor market success. But this favorable self selection of migrants for success in the labor market does not concern illegal migrants who often a have a low education level.

The dummy "Mouride" is positive and significant which means that belonging to this brotherhood increases the propensity to migrate illegally relative to the other religious category. There are two mains explanations of this effect: first, historically and culturally "Mouride" people are great travelers. Moreover the work ethic is very important in their vision and they are known to be hard workers. In their ideology, it is important to find a job where it is possible. Second, and it is probably the main reason, relatives are essential in the Senegalese migrants' socialization (Fall, 1998) and "Mouride" people constitute an important religious group with a big network abroad. It seems that networks facilitate them in illegal migration, which is an illustration of the network effect on the illegal issue that we are going to develop and specify in the empirical analysis.

3.4 A well-organized market

3.4.1 Networks and Information

Networks represent a source of information, real or not, for potential migrants. Many respondents already have relatives in their preferred destination country, and have an idea concerning the wages that they earn. Figure 2 and Figure 3 allow comparing the distribution of expected wages and the wages of relatives which are similar. Moreover summary statistics (*see Appendix A.2*) show that the average relatives' wage is estimated at 1 305 055 Fcfa i.e about 1991 Euro whereas the expected wage of potential migrants is estimated at 1 567 466 Fcfa i.e. about 2390 Euro. On average, potential migrants even hope to earn more than their relatives who migrated. These amounts appear high and can constitute a supplementary motivation.

3.4.2 Preferred destinations

Fall (2002), through a classification of migrants' destinations, shows that the main international destination countries of Senegalese migrants are in order France, Italy, U.S. and Spain. Our summary statistics show that the preferred destinations of potential illegal migrants are Spain in first position, in second position, we have Italy, in third position U.S. and France is the last country but one. It is quite surprising to have this result for France

which was the former colonial power and has historical and cultural links with Senegal through the French language for example. There are many reasons to explain this classification. The hardening of French migration policies these last years has increased the interest for other destinations such as Spain, U.S. or Italy (Fall, 2003)[6] developing Senegalese networks in these countries.

3.4.3 Prices

During the survey, we observed that there are three ways to migrate to the Northern destination countries. The first method consists of going legally by applying directly for a legal visa and paying the airfare, we name it the "visa method". The second method named "canoe method" involves paying a fee to a smuggler using boats or routes towards Maghreb countries to attempt to get potential migrants to various destination countries, often Spain, Italy or France. Finally the third method named the "embassy method", consists in corrupting someone linked to consular sections in Dakar and paying for legitimate documents. We consider the “canoe” and the “embassy” methods as illegal. For a given destination country, we have the responses of our sample of potential migrants concerning the prices of the different migration methods. Table 2 presents the average prices for each destination country and each method of migration. These prices are indicated by potential migrants who generally have good information on the illegal migration costs. We check the prices given from press reports, discussions with some migrants, people who have made some attempts and generally they correspond about to the real prices on the market except for the “visa method”[7]. The “visa method 1” corresponds to the response of potential migrants and the “visa method 2” corresponds to the prices calculated from the average price of the airfare according to the destination country added to the visa fees. Indeed, for most individuals, the likelihood of migrating legally is low, which implies that they are less interested in the legal market and they do not know the real “visa method” prices. Due to the nature of the type of journey offered by the “canoe method”, its probability of success is much lower than with the

[6] According to this author, international migration from Senegal to Northern countries has been growing since the 80s. This trend has accelerated with new destinations, such as Italy or Spain which raise a great interest since the coming of the “Modou-Modou”. This term at first referred to the seasonal workers looking for supplementary incomes in big cities such as Dakar. Since the beginning of the 90s, it has applied to all Senegalese international migrants. It was at this moment that Senegalese migratory flows increased considerably, in particular due to the economic context.

[7]For Canada, it was more complicated to check “the canoe method” price because we had fewer respondents and the use of boats our routes toward for this destination is not impossible but unlikely.

embassy method. Therefore, its price is much lower than "embassy price" which is very expensive.

4. Legal or Illegal?

4.1 Empirical strategy

In this part, we study the effect of the expectations, repression and the relatives on illegal migration. The approach is based on a binary model because we are interested only on potential migrants who account for 92% of the total sample and who constitute our reference population, and then we compare two groups: those who are willing to migrate only legally and those who are willing to migrate illegally. The purpose is to see how our interest variables influence the illegal migration decision-making process. A logit model is used and the specification is given by:

$$P_i = \alpha_i + \beta_{j1i} I_{ji} + \beta_{k2i} X_{ki} + \varepsilon_i \quad (2)$$

Where:

$P_i = 0$ if the individual i wants to migrate only legally and $P_i = 1$ if the individual i is willing to migrate illegally.

I_{ji} is a vector of variables composed of the variables of interest which are:

- logarithm of the expected foreign wage of potential migrants divided by 1+the number of dependants, which gives the value per capita and the wage per capita in Senegal.
- the variable "stay if hardening of immigration policies" is a dummy equal to 1 if the potential migrant renounces migration and stays in Senegal if the immigration policies in the host countries were hardened. It allows us to measure the effect of a hardening of immigration policies in host countries on illegal migration decision-making.
- the variable "relatives" a dummy equal to 1 if the individual has some members of his family, close friends or just relatives, who migrated. It allows taking into account the networks effects

$X_{k,i}$ is a vector of variables composed of the control variables which are:

-logarithm of the prices given by potential migrants of the destination countries representing the migration costs
-socio-demographic characteristics described in the descriptive statistics.

ε_i is the disturbance term

4.2 Results

Table 3 shows the effects of the expectations, the relatives and of a hardening of immigration policies on illegal migration decision. It appears that expectations namely the expected foreign wage per capita and the wage differential between Senegal and the host country have a significant and positive effect on the likelihood to migrate illegally, all things being equal. The variable "stay if hardening of migration policies" has a significant and negative sign, which means that a hardening of immigration policies for entering host countries has a counter intuitive effect on the propensity to migrate illegally. It deters more those who are willing to migrate legally than potential illegal migrants. In terms of policy implications and when we compare immigration policies by considering as carrots an increasing in the income growth or the reduction of the differential wage and as sticks the repression, harden migration policies may be less efficient and can incite potential migrants to turn to illegal methods such as paying a smuggler or corrupting officials to get legal documents (Arcand and Mbaye, 2011). The relatives and more largely the potential migrants' network increase the willingness to migrate illegally. As seen in descriptive analysis, the information about expected foreign wage often comes from the idea potential migrants have about their relatives' earnings. Relatives and their family by getting a certain standard living, by giving an information which may be true or not, and by letting them believe that success is guaranteed with migration, has a positive influence on the illegal migration decision.

There is a negative relationship between the migration costs and the probability to be willing to migrate illegally. The main reason is that migration and illegal migration in particular is expensive for people from the working class or even for a Senegalese from the middle class. The outcomes of the others control variables confirm the results of the multinomial logit in Table 1 except for the variable "Age²", the dummies "child is male" and "secondary level", which become non significant. This is probably due to colinearity between these variables and interest variables *(see Appendix A.4)*.

4.3 Robustness checks

Destinations dummies are used to check previous results. We replace the three interest variables by countries dummies because the choice of the destination countries mainly depends on the opportunities, the possibility to find easily a job and then on the expected wage in the host country; the presence of the relatives who have migrated to this country and the perception of the flexibility of the migration policies in the host country. We take off the migration costs which are estimated according to the destinations to avoid a multicolinearity issue. Results in Table 4[8] shows that people choosing Spain or Italy as the preferred destination country have a higher likelihood to migrate illegally rather than legally. Whereas for France or U.S., it is the contrary: the significant and negative sign associated with these dummies means that for those who choose these countries, the probability to migrate illegally is less than the probability to migrate legally (*Estimations with the three other categories of countries are provided in Appendix A.6*). There are many explanations for these results. First, Spain and Italy are geographically more accessible than France or USA, by using illegal methods such as being boat-people and therefore "canoe method" costs are less expensive for these destinations. The second explanation is the size of the network, which is very large in those two countries. According to the OECD statistics (2009), the inflows of Senegalese people in Spain and Italy has doubled between 2005 and 2007 whereas it remains stable in France. According to Banerjee (1992) and Epstein (2002) we can assimilate this type of behavior by herd behavior. Decision makers, in our case potential migrants, based their decisions on information given by the acts of previous decision makers, relatives in the host countries, even if, they had private information, they would act differently. Destination choices are both explained by networks externalities and herd behavior even if illegal and unskilled migrants are more dependant of networks externalities than legal and skilled migrants (Epstein, 2002; Bauer et al, 2007). Finally, the third likely reason is the perception of different immigration policies by potential migrants, above all in European countries. Despite historical and cultural links between France and Senegal, which is a French-speaking country, many individuals tell us during the survey, the political line on migration since the election of the new president seems to them more difficult. For potential illegal migrants, historical links, cultural proximity and language matter less in the choice of the destination country. If we compare and replace in the context of 2006-2007, Spain, for instance, sorted out illegal migrants five times during the period 1985 – 2004 to cope with the challenge of its economic

[8] Marginal effects are presented in Appendix A.5.

boom. It has needed some additional workers in agricultural, building and services industries. Illegal Migrants' legalization could then generate additional flows and be a supplementary motivation for people remained in the origin countries and desiring migrate. Of course, since the beginning of the economic crisis of 2008 and even before, the situation is different in Spain and Italy. However, this result is not contradictory with the previous one. Indeed, if a hardening of immigration policies does not discourage potential migrants and have a pernicious effect by reducing the probability to migrate legally, people wish to maximize their utility. Therefore, if they have the choice between different countries, they will choose the one with the less hard immigration policies and where it is easier to enter. But it doesn't mean that people will renounce illegal migration in the case of a hardening of immigration policies. Comparing to Orrenius (2004) and Gathman (2008), a hardening of migration policies to enter host countries, can change the place of crossing and in our case, it can modify the choice of the destination countries without eliminating illegal migrants flows.

5. Concluding remarks

One of the main contributions of this paper is the description of the mechanisms of the illegal migration phenomenon in Senegal. From a descriptive analysis, we, first, analyze the relation between the socio-demographic characteristics of potential migrants and the propensity to migrate illegally. Secondly, we present the illegal migration market which is a well-organized market with information coming from potential migrants' networks and different type of prices according to the destination and the method of migration namely the "visa method" which consists of migrating legally by applying directly for a legal visa and paying the airfare; using the "canoe method" which involves paying a fee to a smuggler or the "embassy method", whereby one pays someone to obtain legitimate documents. Empirically, we study how the expected foreign wage, the potential migrant's network abroad and repression, affect illegal migration decision-making. First, it appears that expectations are not the only main determinant of illegal migration. Relatives through the right or wrong information they give, also have a positive effect on the illegal migration decision. Second, we find that contrary to the initial objectives, a hardening of immigration policies for entering host countries deter more legal than illegal potential migrants. Third, it appears that people who want to go to Spain or to Italy have a higher likelihood to migrate illegally compared with destinations such as France or U.S., due to the geographical proximity and then to less expensive migration costs for illegal migrants as boat-people or using routes for instance, the

increasing of the network size in these countries and the perception of potential migrants of migration policies of these countries compared to the others. Indeed, the repressive immigration policies of one country can displace the undocumented migrants' flows towards the other countries, but they do not allow a reduction into illegal migration flows.

Thinking that only repression and restrictive immigration policies can reduce migrants' flows is not a sustainable solution. Recipient countries, above all in Europe, need more coordination to avoid displacing the undocumented migrants' flows issue, but in reality, it seems complicated to enforce it because economic situations and needs are different according to the nations. To reduce illegal migration flows and to make more efficient migration policies in Europe, solutions have to be entered in a long-term perspective by integrating both recipient countries and sending countries' issues and by interesting more in illegal migration causes. (Bade, 2006). In the Senegalese case, it would be very relevant to put in place feasible projects which correspond to people's expectations and to reduce income inequalities existing both in Senegal and between this latter and the recipient countries. Indeed, improving the absolute income is a good thing, but it is not sufficient if it does not reduce frustration and feelings of injustice. Illegal migration is also the result of the belief that success is only possible abroad. A radical change in the way of thinking and viewing immigration, as the only way to succeed, is necessary. In order to accomplish these goals, it is useful to promote better governance and more trust in the origin country and its leader.

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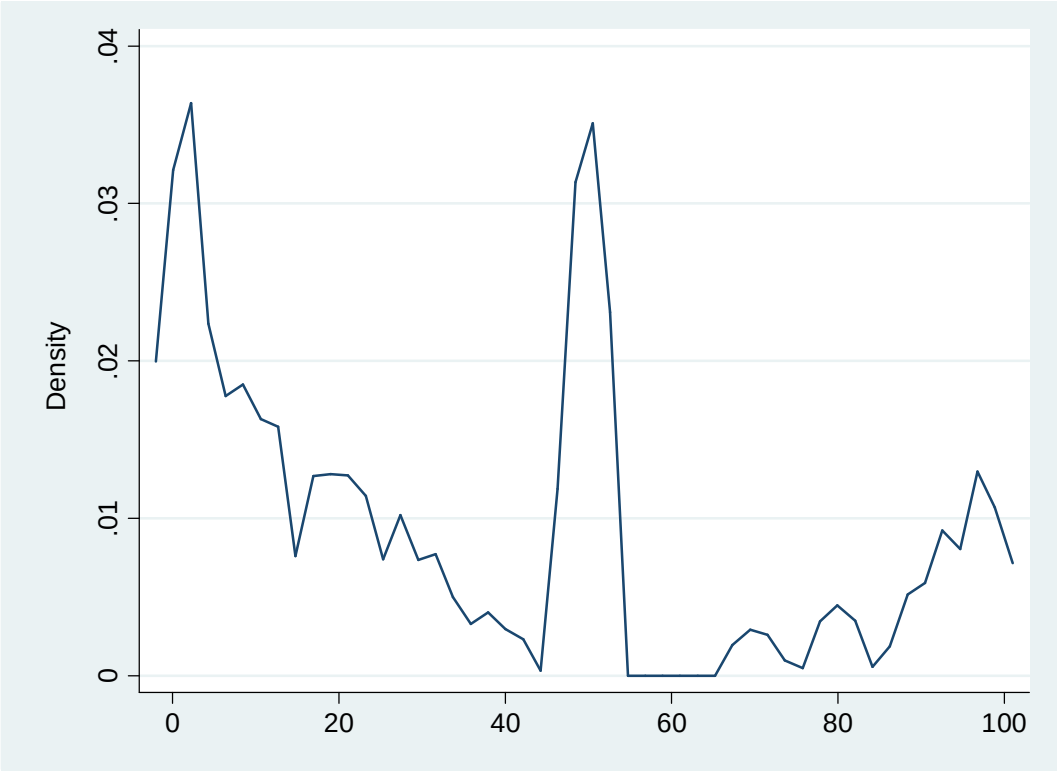

Figure 1: Probabilities of death reported by individuals willing to risk their life (%)

Table 1: Socio-demographic characteristics of potential migrants

	No migration		Illegal migration	
	RRR	**z-stat**	**RRR**	**z-stat**
Log wage per capita	0.001**	(-2.16)	0.053	(-1.08)
Log wage per capita²	1.430**	(2.26)	1.171	(1.13)
Male	0.331	(-1.63)	1.711	(1.28)
Age	1.243	(1.39)	1.271	(1.45)
Age²	0.998	(-1.03)	0.995*	(-1.65)
Married	2.096	(1.39)	0.367**	(-2.83)
Child is male	3.365	(1.43)	0.499*	(-1.82)
Child is female	0.209**	(-2.72)	0.755	(-0.66)
Education Level				
Secondary level	0.485	(-1.12)	0.524**	(-2.11)
Higher level	2.294	(1.49)	0.058***	(-5.26)
Koranic school	0.518	(-0.86)	0.578	(-1.45)
Home owner	1.754	(1.33)	0.753	(-1.08)
Mouride	1.585	(0.99)	1.873**	(2.24)
Ethnic Group				
Lebou	0.612	(-0.78)	2.701**	(2.41)
Fulani	2.255	(1.25)	0.569	(-1.25)
Serere	0.555	(-0.80)	1.231	(0.60)
Diola	1.435	(0.41)	2.678	(1.56)
Others, sub-region	1.146	(0.19)	2.337	(1.50)
Observations	374			
Pseudo R²	0.202			
Log likelihood	-269.452			
Hausman Test (IIA test)	The individual is not willing to migrate: Prob>chi2 willing to migrate illegally: Prob> chi2=1.000			

Notes: The reference category of the dependent variable is "legal migration". The reference category of the variable education level is low education level. The reference category of the variable Ethnic group is Wolof. RRR is for Relative Risk Ratio. Robust z-statistics in parenthesis:* significant at 10%; ** significant at 5%; *** significant at 1%.

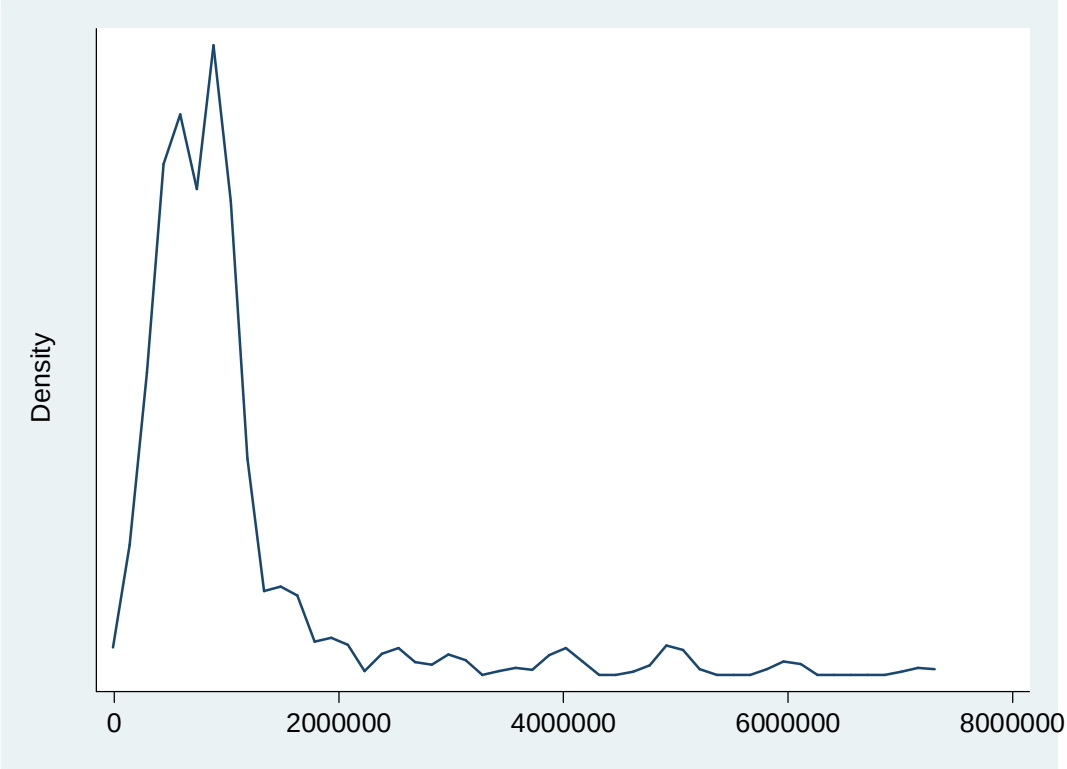

Figure 2: Relatives' wages

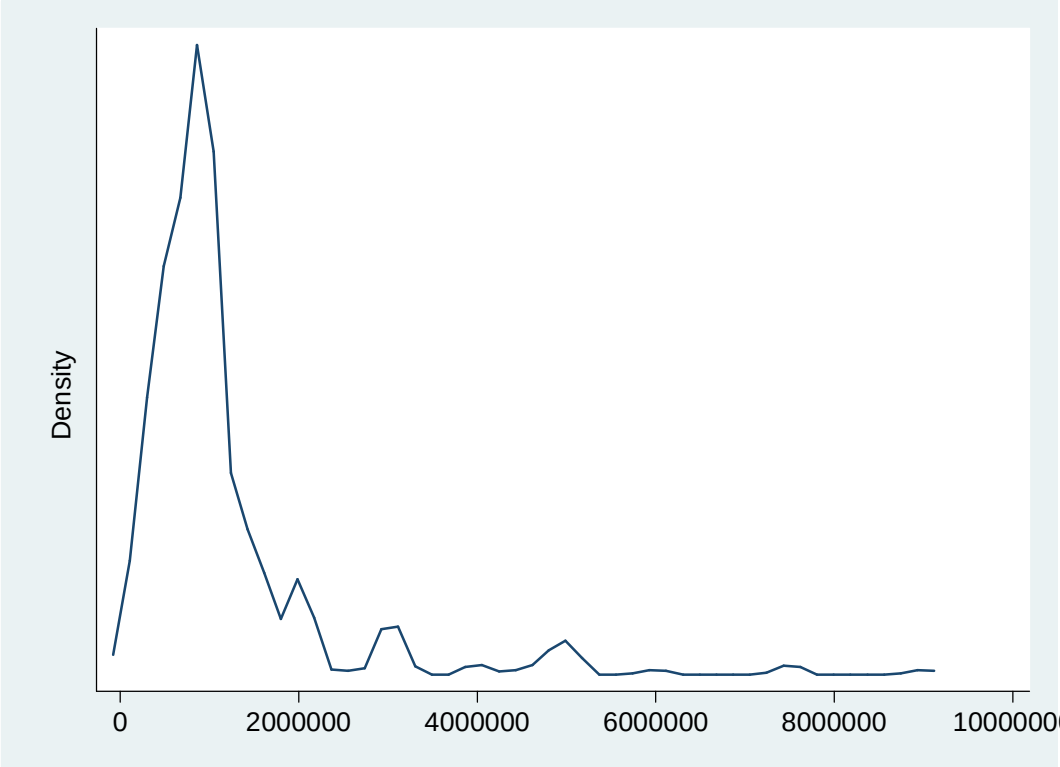

Figure 3: Expected wage of potential migrants

Table 2: Average migration prices according to the destination countries

	Visa method 1	Visa method 2	Canoe method	Embassy method
Spain	1 100 000	450 552	391 981	2 153 846
Italy	250 000	537 875	390 476	2 346 154
France	237 500	495 855	unknown	2 952 381
US	910 000	828 567	430 000	4 041 667
United Kingdom	unknown	543 390	unknown	3 700 000
Canada	200 000	873 377	600 000	1 850 000
Anywhere	1 750 000		462 500	4 585 715

Notes: Prices are presented in Fcfa. 1 Euro=655.957 Fcfa.

Table 3: The effect of expectations, immigration policies and relatives on illegal migration decision

Dependent variable: Migrate illegally						
	Coef	Marginal effects	z-stat	Coef	Marginal effects	z-stat
Log expected wage per capita	0.357*	0.075*	(1.94)			
Log wage per capita	-0.239	-0.050	(-0.88)			
Log differential wage per capita				0.277*	0.058*	(1.96)
Stay if hardening of immigration policies	-1.111***	-0.211***	(-2.95)	-1.095***	-0.209***	(-2.90)
Relatives	1.076**	0.200**	(2.43)	0.997**	0.188**	(2.23)
Log costs	-1.549***	-0.326***	(-7.88)	-1.541***	-0.325***	(-7.97)
Male	-0.002	-0.000	(-0.00)	0.049	0.010	(0.08)
Age	0.191	0.040	(1.08)	0.176	0.037	(0.99)
Age^2	-0.004	-0.000	(-1.41)	-0.004	-0.001	(-1.34)
Married	-0.722*	-0.141*	(-1.78)	-0.722*	-0.141*	(-1.76)
Child is male	-0.625	-0.141	(-1.42)	-0.619	-0.139	(-1.38)
Child is female	-0.132	-0.028	(-0.26)	-0.141	-0.030	(-0.27)
Education level						
Secondary level	-0.122	-0.025	(-0.31)	-0.136	-0.028	(-0.34)
Higher level	-3.249***	-0.386***	(-3.88)	-3.253***	-0.388***	(-3.90)
Koranic school	-0.048	-0.010	(-0.10)	-0.011	-0.002	(-0.02)
Home owner	-0.353	-0.075	(-1.04)	-0.332	-0.070	(-0.99)
Mouride	0.595*	0.126*	(1.70)	0.573*	0.122*	(1.66)
Ethnic dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	17.682***		(3.70)	16.552***		(3.93)
Observations		339			339	
Pseudo R^2		0.44			0.44	
Log pseudolikelihood		-127.09			-127.32	

Notes: The reference category of the variable education level is low education level. Robust z-statistics in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Destinations and Illegal migration decision

	Dependent variable: Migrate illegally			
	(1)	(2)	(3)	(4)
Spain	0.906***			
	(3.20)			
Italy		0.740**		
		(2.32)		
France			-1.494***	
			(-2.69)	
US				-0.850***
				(-2.75)
Male	0.431	0.458	0.319	0.542
	(0.99)	(1.09)	(0.74)	(1.26)
Age	0.252	0.241	0.181	0.279*
	(1.64)	(1.60)	(1.25)	(1.75)
Age²	-0.005*	-0.005*	-0.004	-0.006*
	(-1.83)	(-1.82)	(-1.54)	(-1.92)
Married	-1.030***	-1.096***	-1.053***	-1.033***
	(-2.99)	(-3.09)	(-3.06)	(-3.04)
Child is male	-0.571	-0.488	-0.551	-0.493
	(-1.60)	(-1.31)	(-1.49)	(-1.34)
Child is female	-0.256	-0.370	-0.250	-0.335
	(-0.64)	(-0.88)	(-0.62)	(-0.81)
Education level				
Secondary level	-0.518*	-0.610**	-0.622**	-0.546*
	(-1.78)	(-2.05)	(-2.07)	(-1.85)
Higher level	-2.278***	-2.464***	-2.326***	-2.436***
	(-4.62)	(-5.06)	(-4.70)	(-4.89)
Koranic school	-0.584	-0.627	-0.604	-0.561
	(-1.51)	(-1.64)	(-1.62)	(-1.49)
Home owner	-0.386	-0.280	-0.362	-0.292
	(-1.49)	(-1.08)	(-1.42)	(-1.14)
Mouride	0.561**	0.584**	0.553**	0.617**
	(2.12)	(2.21)	(2.08)	(2.31)
Ethnic dummies	Yes	Yes	Yes	Yes
Constant	-2.779	-2.539	-1.274	-2.869
	(-1.37)	(-1.25)	(-0.64)	(-1.35)
Observations	367	367	367	367
Pseudo R²	0.20	0.19	0.20	0.20
Log pseudolikelihood	-196.01	-198.61	-197.24	-197.36

Notes: The reference category of the variable education level is low education level. Robust z-statistics in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix A.1: Definition of Variables

Variables	Definition
Migrate illegally	Migrate illegally=0 if the individual i is willing to migrate only legally and migrate illegally=1 if the individual i is ready to migrate illegally
Expected wage per capita	Expected foreign wage announced by potential migrant divided by 1+ the number of dependants
Wage per capita	Measured by the total of monthly expenditures per capita (total of monthly expenditures divided by 1+ the number of dependants) considered as the proxy of the potential migrant's wage
Differential wage per capita	The differential between the expected wage per capita and the wage per capita
Stay if hardening of immigration policies	a dummy equal to 1 if the potential migrant renounces to migration and stays in Senegal if the immigration policies in the host countries were hardened
Relatives	Dummy variable taking the value 1 if the individual has members of his family, closed friends or just relatives, who migrated
Destinations	(Dummies variables) The destination country where potential migrant wants to go
Spain	Dummy equal to 1 if the individual wants to go Spain
Italy	Dummy equal to 1 if the individual wants to go Italy
France	Dummy equal to 1 if the individual wants to go France
US	Dummy equal to 1 if the individual wants to go United States
United Kingdom	Dummy equal to 1 if the individual wants to go United Kingdom
Canada	Dummy equal to 1 if the individual wants to go Canada
Anywhere	Dummy equal to 1 if the individual wants to go anywhere: The potential migrant wants to go to Portugal or Switzerland or in the majority of cases, anywhere i.e the destination has no importance, he just wants to migrate
Costs	Prices for the different destinations
Male	Dummy variable taking the value 1 if the individual is male
Age	Age declared by the individual
Married	A dummy equal to 1 if the individual is married
Child is male	Dummy equal to 1 if the dependent is a male child
Child is female	Dummy equal to 1 if the dependent is a female child
Education level	Dummies variables
1.Low education level	The reference group : in addition of those who have a primary level, it also includes people who received literacy lectures and those who received no education
2.Secondary Level	The individual get a secondary level
3.Higher level	The individual get a higher level
4. Koranic school	The individual went to Koranic school
Home owner	Dummy equal to 1 if the individual live in his own house or in a house belonging to his family
Mouride	Dummy equal to 1 if the individual belongs to the mouride's brotherhood. The others brotherhoods are Tidiane, Layenne, Niassène, (which are all Muslims), Catholic, Protestant, Muslim who does not belong to any particular group, animist or without religion.
Ethnic dummies	For each ethnos represented: Wolof reference group), Lebou, Hal Pular, Serere, Diola, Manjack, Other (Bambara, Mandingue or Come from the sub-region (Guinea, Mauritania, Ivory Coast)

Table A.2: Summary statistics

Variables	No migration		Legal migration		Illegal migration		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	0.08	0.28	0.56	0.50	0.36	0.48		
Expected wage (Fcfa)			1 850 505	7 008 376	1 141 931	1 158 843	1 567 466	5 486 186
Expected wage per capita (Fcfa)			1 089 245	6 829 681	600 252.9	1 021 903	893 918	5 332 343
Wage								
	112 304.8	89 325.34	77 684.68	66 006.94	73 604.35	62 840.7	79059.6	67675.4
Wage per capita								
	30 011.81	56 297.85	20 678.4	15 647.79	22 690.14	18 800.45	22 188.94	22 908.49
Differential wage			1 845 974	7 281 501	1 087 564	1 186 491	1 539 478	5 677 601
Differential wage per capita			1 108 233	7 093 961	579 524	1 043 683	894 566.1	5 516 554
Stay if hardening of immigration policies			0.38	0.49	0.21	0.41	0.32	0.47
Relatives			0.66	0.48	0.86	0.33	0.74	0.44
Spain			0.18	0.39	0.41	0.49	0.25	0.43
Italy			0.15	0.36	0.26	0.44	0.18	0.38
France			0.15	0.36	0.03	0.16	0.10	0.29
United Kingdom			0.06	0.24	0.03	0.18	0.05	0.21
Canada			0.04	0.20	0.01	0.12	0.03	0.16
Anywhere			0.11	0.31	0.10	0.31	0.10	0.30
Costs							1 992 065	1 885 382
Male	0.85	0.36	0.88	0.33	0.88	0.32	0.88	0.33
Age	31.12	9.06	26.95	8.01	24.44	5.36	26.39	7.48
Married	0.52	0.51	0.32	0.46	0.17	0.37	0.28	0.45
Child is male	0.94	0.24	0.87	0.33	0.78	0.42	0.85	0.36
Child is female	0.79	0.42	0.89	0.31	0.78	0.42	0.84	0.36
Education level								
Low education level	0.39	0.50	0.33	0.47	0.55	0.50	0.42	0.49
Secondary level	0.15	0.36	0.27	0.45	0.26	0.44	0.26	0.44
Higher level	0.36	0.49	0.24	0.43	0.05	0.22	0.18	0.38
Koranic school	0.09	0.29	0.16	0.37	0.14	0.35	0.15	0.35
Home owner	0.64	0.49	0.57	0.50	0.54	0.50	0.57	0.50
Mouride	0.39	0.50	0.39	0.49	0.54	0.50	0.45	0.50
Wolof								
	0.33	0.48	0.36	0.48	0.30	0.46	0.34	0.47
Lebou	0.18	0.39	0.16	0.37	0.23	0.42	0.19	0.39
Hal Pular	0.18	0.39	0.14	0.34	0.08	0.27	0.12	0.32
Serere	0.15	0.36	0.22	0.41	0.24	0.43	0.22	0.41
Diola	0.06	0.24	0.05	0.23	0.06	0.23	0.06	0.23
Manjack,Bambara, Mandingue, Sub-region	0.09	0.29	0.07	0.26	0.10	0.30	0.08	0.28

Notes: 1 Euro=655.957 Fcfa

Appendix A.3: Multinomial Logit Tests

Appendix A.3.1: Hausman specification test (IIA test)

H0: The modalities are independent

Legal migration (Reference category)	ch2	P>ch2	Evidence
No migration	-4.823		
Illegal migration	4.282	1	For H0

Notes: A negative chi2 means that the estimated model does not meet assumptions of the test. According to Hausman and Mcfadden (1984) a negative statistic test proofs that the IIA hypothesis is not rejected.

Appendix A.3.2: Wald Test (Test of combination of the modalities)

H0: The modalities are similar

Tested categories	ch2	df	P>ch2
No migration- Illegal migration	67.525	18	0.000
No migration – Legal migration	39.278	18	0.003
Illegal migration- Legal migration	64.454	18	0.000

Appendix A.4: Correlation coefficients

	Log expected wage per capita	Log wage per capita	Log differential wage per capita	Stay if hardening of immigration policies	Relatives	Log costs	Spain	Italy	France	US
Log expected wage per capita	1.0000									
Log wage per capita	0.4545*	1.0000								
Log differential wage per capita	0.9923*	0.4074*	1.0000							
Stay if hardening of immigration policies	-0.0606	-0.0402	-0.0644	1.0000						
Relatives	-0.0524	0.0629	-0.0667	-0.1113*	1.0000					
Log costs	0.1436*	0.0122	0.1408*	0.0467	-0.1551*	1.0000				
Spain	-0.1817*	-0.1015*	-0.1742*	-0.0303	0.1457*	-0.4591*	1.0000			
Italy	-0.001	0.0495	-0.0139	-0.0317	-0.0011	-0.1274*	-0.2641*	1.0000		
France	0.0830	-0.0024	0.0882	0.0190	-0.1284*	0.1256*	-0.1858*	-0.1492*	1.0000	
US	0.0716	0.0365	0.0718	0.0125	0.0081	0.2946*	-0.3134*	-0.2517*	-0.1771*	1.0000
Male	0.1211*	0.0090	0.1274*	-0.0017	0.1486*	-0.0127	-0.0154	0.0316	-0.1130*	0.0592
Age	-0.2556*	-0.0449	-0.2562*	0.1137*	0.0084	-0.025	-0.023	0.0068	-0.1242*	-0.0516
Married	-0.3230*	-0.0838	-0.3038*	0.1154*	-0.0200	0.0721	-0.0382	0.0179	-0.0518	-0.0395
Child is male	0.0603	0.0021	0.0417	-0.0056	-0.1209*	0.0971*	-0.0145	-0.0609	0.0426	0.0335
Child is female	0.0795	0.0229	0.0721	-0.0049	-0.1101*	0.1145*	-0.0383	0.0366	0.0933*	0.0243
Secondary level	0.0279	0.0500	0.0248	0.0358	0.0894*	0.0998*	-0.0494	-0.0780	0.0023	0.0959*
Higher level	0.2383*	0.1046*	0.2370*	0.0006	-0.1457*	0.1707*	-0.2235*	-0.0959*	0.1589*	0.0841*
Koranic school	-0.1409*	-0.0786	-0.1407*	-0.0063	0.0365	0.0036	0.0435	0.1280*	-0.0608	-0.0226
Home owner	0.0365	-0.0319	0.0064	0.0614	0.1195*	0.0198	0.0475	0.0869*	-0.0597	0.0362
Mouride	-0.0588	-0.0211	-0.0531	-0.0725	0.1539*	-0.0416	0.0926*	0.0245	-0.0499	0.0127

Notes: The reference category of the variable education level is low education level. Robust z-statistics in parenthesis: * significant at 10%.

Appendix A.5: Illegal migration decision and destinations: Marginal effects

	Dependent variable: Migrate illegally			
	(1)	(2)	(3)	(4)
Spain	0.213***			
Italy		0.176**		
France			-0.257***	
US				-0.176***
Male	0.092	0.097	0.069	0.113
Age	0.057	0.055	0.041	0.063*
Age²	-0.001*	-0.001*	-0.001	-0.001*
Married	-0.211***	-0.223***	-0.213***	-0.210***
Child is male	-0.135	-0.115	-0.130	-0.116
Child is female	-0.059	-0.086	-0.058	-0.078
Education level				
Secondary level	-0.112*	-0.131**	-0.132**	-0.117*
Higher level	-0.607***	-0.379***	-0.362***	-0.372***
Koranic school	-0.122	-0.131	-0.125	-0.117
Home owner	-0.088	-0.064	-0.082	-0.066
Mouride	0.127**	0.133**	0.125**	0.139**
Ethnic dummies	Yes	Yes	Yes	Yes
Observations	367	367	367	367

Notes: The reference category of the variable education level is low education level. Robust z-statistics in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.

Appendix A.6: Illegal migration decision and destinations (Other countries)

	Dependent variable: Migrate illegally		
	(1)	(2)	(3)
United Kingdom	-0.964		
	(-1.23)		
Canada		-0.816	
		(-1.01)	
Anywhere			0.011
			(0.03)
Male	0.506	0.486	0.466
	(1.24)	(1.19)	(1.15)
Age	0.252	0.239	0.245
	(1.63)	(1.60)	(1.63)
Age²	-0.005*	-0.005*	-0.005*
	(-1.83)	(-1.81)	(-1.82)
Married	-1.093***	-1.066***	-1.072***
	(-3.15)	(-3.07)	(-3.11)
Child is male	-0.562	-0.547	-0.528
	(-1.56)	(-1.48)	(-1.44)
Child is female	-0.260	-0.306	-0.291
	(-0.65)	(-0.74)	(-0.71)
Education level			
Secondary level	-0.625**	-0.645**	-0.666**
	(-2.12)	(-2.18)	(-2.26)
Higher level	-2.590***	-2.495***	-2.555***
	(-5.15)	(-5.13)	(-5.23)
Koranic school	-0.582	-0.590	-0.580
	(-1.53)	(-1.57)	(-1.54)
Home owner	-0.333	-0.334	-0.327
	(-1.31)	(-1.32)	(-1.29)
Mouride	0.571**	0.573**	0.581**
	(2.19)	(2.19)	(2.22)
Ethnic dummies	Yes	Yes	Yes
Constant	-2.509	-2.345	-2.426
	(-1.22)	(-1.16)	(-1.20)
Observations	367	367	367
Pseudo R²	0.19	0.18	0.18
Log pseudolikelihood	-200.15	-200.86	-201.33

Notes: The reference category of the variable education level is low education level. Robust z-statistics in parenthesis: * significant at 10%; ** significant at 5%; *** significant at 1%.