Clandestine Migrants: Do the High-Skilled Return Home First?*

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Abstract

In this paper we show that highly skilled clandestine migrants are more likely to return home than migrants with low or no skills when illegality causes "skill waste", i.e. when illegality reduces the rate of return of individual capabilities (i.e. skills and human capital) in the country of destination. In a simple life-cycle framework, illegality is modeled as a tax on skills that reduces the opportunity cost of returning home, particularly for the highly skilled. This proposition is tested in two different countries: (i) a sample of Mexicans interviewed in the US on their intentions to return in 2005; (ii) a sample of apprehended immigrants that crossed unlawfully the Italian borders in 2003. The estimation confirms that the intention to return to the home country is more likely for highly skilled illegal immigrants for the Italian sample. Evidence is more blurred for the sample with Mexicans. The empirical results of this paper attenuate the common wisdom on the return decisions of *legal* migrants, according to which low-skill individuals are more likely to go back home (mainly because of negative self-selection).

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1 Introduction

The debate on illegal[1] migration in the developed world is capturing a great deal of public attention and has recently triggered the interest of economists (see Hanson, 2006). The mounting dimension of the phenomenon is a direct consequence of the tightening of immigration laws in most OECD countries (see Zimmermann, 1995, De Melo, Faini and Zimmermann, 1999, Venturini, 2003). In fact, instead of decreasing the size of immigration flows, restrictive policies seem to have shifted the balance from legal to undocumented (or illegal) migration. Recently, Passel (2005) estimated an annual net inflow of 500,000 illegal immigrants to the US between 2002 and 2004 and a stock of about 11 million in March 2005. Estimates of the annual illegal migration flows to Europe (EU-15) in 2001 give rise to figures up to 650,000 according to a recent study by Jandl (2004) (100,000 of them in Italy).[2]

On the other hand, in the last two decades international migration has been characterized by a sharp increase in the movement of skilled, rather than unskilled, individuals, as shown by Carrington and Detragiache (1998) and more recently by Docquier and Marfouk (2005).

Illegal migration and the skill content of recent migration flows are related facts. The selective policies of some countries encourage the legal inflow of skilled immigrants (i.e. "brain drain"). However, the adoption of selective policies is confined to a few countries (for instance Canada, Australia, New Zealand). In all the other cases, when skilled migrants enter unlawfully a developed country, illegality conditions significantly affect their future plans, including the possibility of returning back home.

In this paper, we focus on the *return migration of clandestine entrants* by highlighting the role of their skill endowments. The starting point is the stark difference between undocumented and legal migrants. As generally acknowledged, an illegal entrant cannot fully exploit her skills and human capital and the illegal status hinders the migrant's access to many markets and institutions in the host country (including banks for deposits or financial institutions for other types of savings), which are instead fully available to legal migrants. Being illegal likely makes individual skills much less effective than in the home country, as the illegal migrant has to resort uniquely to the shadow economy.[3] Hence, illegality can cause *skill waste*, i.e. illegality impinges the positive outcome of skills on both individual income and savings.[4] *Skill waste* is particularly evident for the most skilled and educated among the illegal entrants. Given this, the opportunity cost of returning to the country of origin should be substantially lower for the skilled individuals than for the unskilled ones. This proposition is in sharp contrast with what is usually known for *legal* skilled migrants who tend to overstay because more capable of assimilating in the high-income destination country. Hence, the main message of our paper is that illegality can in fact overturn the common conclusions on the length of stay of skilled

[1] In this paper we will interchangeably use the terms "undocumented", "illegal" and "irregular".

[2] See Tapinos (1999) and Jandl (2004) for an overview of the statistical approaches to measure irregular migration. See Hanson (2006) and the relative cited literature for methods to estimate illegal migration flows and stocks between Mexico and the US.

[3] Kossoudji and Cobb-Clark (1996) and Cobb-Clark and Kossoudji (2000) document the presence of less opportunity for job advancement and the existence of a wage gap between legal and illegal migrants in the US. Moreover, Bratsberg et al (2002), using longitudinal US data on wage immigrants, show that naturalization, in particular for migrants from less-developed countries, is associated with faster wage growth even after accounting for unobserved individual characteristics. Similar findings are presented in a study by DeVoretz and Pivnenko (2004) on the economic effects of Canadian citizenship.

[4] A similar concept of brain waste has been discussed in recent empirical work, like Mattoo, Neagu and Ozden (2005).

(vs. unskilled) migrants.

More specifically, the contribution of this paper is twofold. First, we consider a life-cycle framework where skill waste acts like a tax on skills. Here, we find a link between the individual skill endowment and the return decision of illegal migrants. Second, thanks to the availability of an unique data set on Italian undocumented immigrants and a sample on Mexican illegal immigrants in the US, we find some empirical evidence on the positive relationship between individual skill endowment and intentions to return for clandestine immigrants.

Many studies have emphasized that migrants are not randomly selected but generally represent the upper tail of the skills distribution of the population in the countries of origin (see Borjas et al., 1992, and Chiswick, 1999). Since migration is a particularly costly investment, only the most capable, entrepreneurial and risk-prone individuals usually undertake such an investment. The existing empirical research almost unanimously concludes that return migration is more likely for individuals with low skills and reinforces the positive self-selection of the migrants (Borjas et al. 1996; Dustmann 1996, 2003a, 2003b; Reagan and Olsen, 2000).

The paper is organized as follows. Section 2 presents a theoretical (life-cycle) framework to model the return plans of irregular migrants with heterogeneous levels of skills. Section 3 describes the main characteristics of the data sets that we employ for estimation both on Mexicans interviewed in the US and Italian undocumented immigrants. Section 4 reports and discusses the results of the empirical analysis. Lastly, Section 5 concludes with some general remarks and suggestions for further research.

2 Skills and Return Decisions of Irregular Migrants: A Life-Cycle Interpretation

The main point of our paper is that illegality, by dampening the return on skills of immigrants, leads to a higher incentive to return home for highly skilled migrants, with respect to low-skilled ones. This intuitive point is supported by a very simple life-cycle interpretation, as follows.

Let us consider a two-period model where the utility function of the illegal migrant takes the usual logarithmic form:

$$U = \ln(C_1) + \delta \ln(C_2) \tag{1}$$

C_1 and C_2 are respectively consumption in period 1 and in period 2; δ is the subjective discount factor.

The illegal migrant has already reached the destination country, say country B,[5] and earns in period 1:

$$w_1 = a\tau w^B$$

where w^B is the "minimum" wage in the destination country B; a is the migrant skill level and we assume that migrants' skills are continuously distributed over the finite interval $[1, \infty)$;

[5]For simplicity we are not modelling the choice to leave the origin country and assume instead that the migrant has already arrived illegally in the country of destination. We recall that Orrenius and Zavodny (2005) instead deal with the issue of whether to leave the origin country or not and reside illegally at destination, but within a different theoretical framework.

$\tau \in (0, 1]$ captures the magnitude of the *skill waste* effect associated with the status of illegal migrant. As $\tau \to 0$ illegal migration tends to be less and less rewarding for all illegal migrants and has a squeezing effect on the level of human capital, i.e. being uneducated and unskilled rather than having a PhD in engineering does not change the returns from migration.[6] On the contrary, when $\tau = 1$ there is no skill waste and migrants' human capital is fully rewarded according to the skill content a.

Income in period 2 depends on what the illegal immigrant decides at the end of period 1, i.e. whether to go back home to country A or to stay in the destination country B where there is a nonzero probability of becoming legal.

In case of return, in period 2 the migrant will be able to be fully rewarded for his/her skills and no illegality skill-waste effect takes place, but in the origin country A the "minimum" wage w^A is lower than in the destination country. Summarizing, the period-2 wage in case of return is given by:

$$w_2^R = aw^A.$$

If the illegal migrant decides to stay in country B, she will face a probability γ of getting legal status and therefore of fully exploiting her skills in the labor market.[7] Hence, the expected wage for period 2 in case of no return is the following:

$$w_2^{NR} = \gamma a w^B + (1 - \gamma) a \tau w^B$$

where aw^B is the wage (without skill waste) that she would get in case she obtains a legal status (with probability γ) and $a\tau w^B$ is the wage in case she does not get legal status (like in period 1).

We can rewrite more compactly the period-2 wage in case of no return as follows:

$$w_2^{NR} = haw^B$$

where $h \equiv \gamma + (1 - \gamma)\tau$.

One final important consideration regards the use of financial markets to carry savings from period 1 to period 2. Let us define $R^j \equiv (1 + r^j)$ as the rate of return on savings for country j (r^j is the interest rate). We assume that the rate of return for the illegal migrant is affected by both skills and the illegal status. Indeed, there is a common wisdom that the funds repatriated are likely to be employed in entrepreneurial activities whose rate of return

[6] Even if $\tau = 0$ is implausible since the brightest and more skilled migrants are more likely to obtain the best opportunities, skills and formal qualification are of little use to an illegal migrant. There is anecdotical evidence that very often migrants employed illegally in highly unskilled and manual jobs – such as agricultural workers in developed countries – are actually highly skilled and educated individuals. Indirect evidence of the skill-waste effect is provided by a series of studies on migrants' performance after their legalization through amnesties in the United States (such as IRCA). See Rivera-Batiz (1999), Cobb-Clark and Kossoudji (2000 and 2002).

[7] For simplicity and without loss of generality we assume that γ does not depend upon skills. While this is probably true for Italy and partly for the US, we acknowledge that in host countries which have selective immigration policies, the probability of obtaining legal status might positively depend upon skills. A version of the present framework taking this aspect into consideration is available from the authors upon request. Intuitively, the effect of such an extension is straightforward (a reduction in the range of the parameters for which return is more likely for highly skilled illegal immigrants relative to the low-skilled ones) and does not affect the main insights presented.

will depend on individual abilities.[8] In our model, at the end of period 1 if the migrant decides to return home, she will invest her savings in the origin country and obtain a rate of return equal to aR^A. In case of no return, the illegal migrant uses the destination country financial markets to invest her savings. Once again, the rate of return will depend on personal skills, that are influenced by illegality through the skill waste effect: $a\tau R^B$. In order to simplify the framework and allow for a simple graphical interpretation, we assume that the "base" rate of return is not different in the two countries, i.e. $R^A = R^B = R$.[9]

To sum up, the expected life-time income at time 1 when the migrant decides to return after one period in country A (i.e. a sort of temporary migration) is:

$$W^R = a\tau w^B + \frac{1}{aR} a w^A$$

whereas if she decides not to return home and to stay both periods, the expected life-time income is:

$$W^{NR} = a\tau w^B + \frac{1}{a\tau R} h a w^B$$

The problem of the illegal migrant is then to maximize her utility U in (1) under two different budget constraints that depend on whether she returns to the home country A or stays in the destination country B. In case of return the intertemporal budget constraint is given by:

$$C_1 + \frac{1}{aR} C_2 = W^R. \tag{2}$$

Whereas, in case of no return:

$$C_1 + \frac{1}{a\tau R} C_2 = W^{NR} \tag{3}$$

2.1 A Graphical Intuition

In Figure 1 we report the continuous budget constraints under the assumption that neither return nor "no return" are revealed-preferred, i.e. that the two budget constraints intersect in the first quadrant.

The intercepts of the two budget constraints depend on the endowments under each migrant's choice, whereas the slopes vary when the skill parameter a changes. Proposition 1 lays out the exact conditions under which the two budget constraints cross in the first quadrant.

Proposition 1 *The two budget constraints cross in the first quadrant and neither "return" or "no-return" is revealed preferred if and only if:*

1. $\frac{w^B}{w^A} > \frac{\tau}{h}$

[8] See, for instance, a study on the occupational choice of return migrants in Egypt by McCormick and Whaba (2001) who find that both the spells of periods overseas and overseas savings significantly increase the probability of starting an entrepreneurial project for more literate migrants. Moreover, a recent report by the World Bank (2006) includes a thorough study of the effects of remittances on development that highlights the importance of entrepreneurial activities financed by remittances.

[9] See the Appendix A for a generalization of the model with two different rates of return.

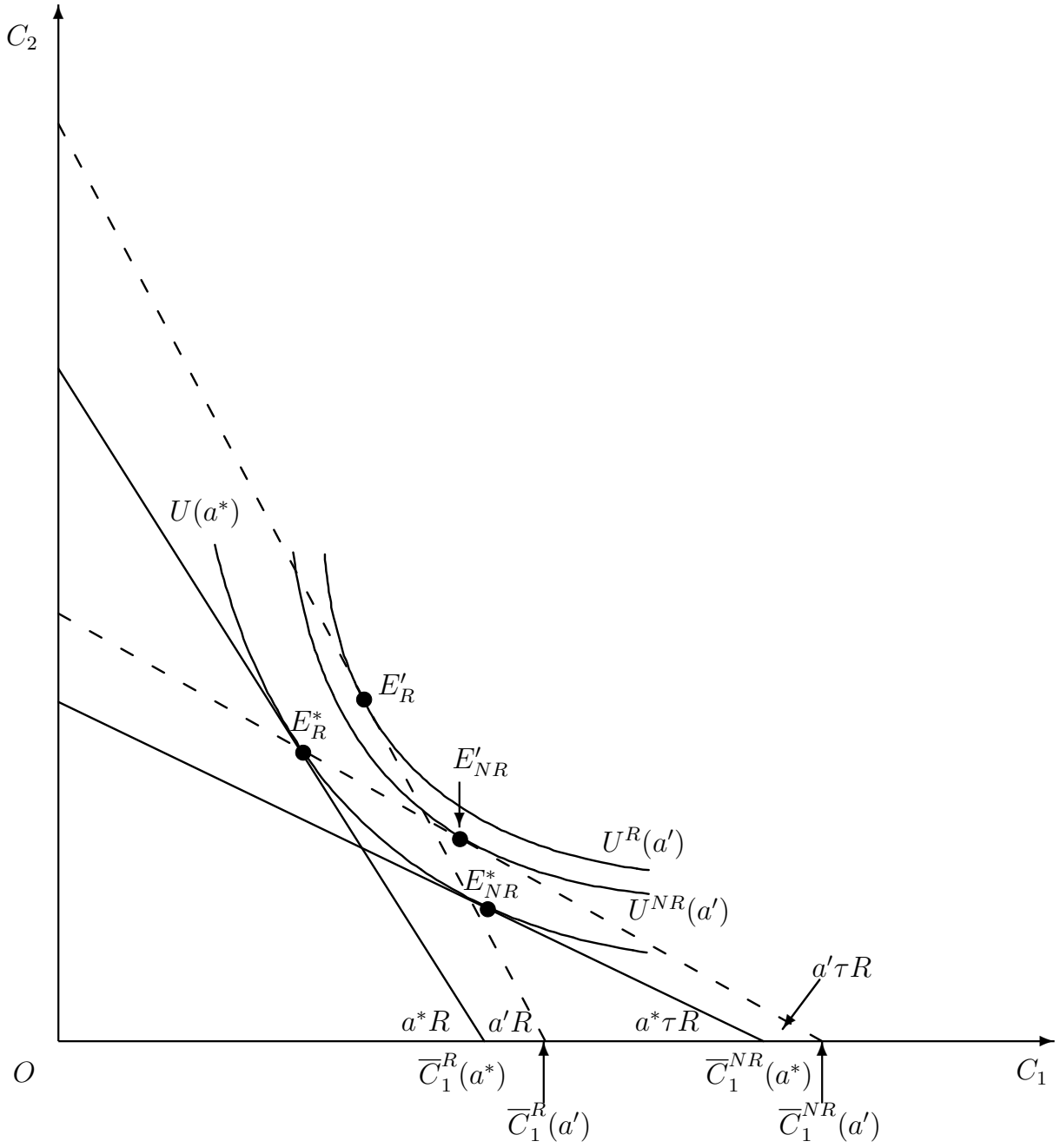

Figure 1: The welfare effect of skill variation in both cases of return and no return.

2. $a > a^0$ *where* $a^0 \equiv \frac{h}{R\tau(1-tau)}$

Proof.

Since the slope of the "no return" (NR) budget constraint is lower than in the case of return (i.e. the R budget constraint), then in order to have crossing of the budget lines the intercept of the NR budget constraint with the horizontal axis, i.e. $\overline{C}_1^{NR} = W^{NR}$, must be higher than the intercept of the R budget constraint, i.e. $\overline{C}_1^{R} = W^{R}$. It is easy to show this happens when $\frac{w^B}{w^A} > \frac{\tau}{h}$.

The second condition is that the crossing actually occurs in the first quadrant. This requires an order in the intercept terms on the vertical axis, i.e. that the intercept term of the R budget constraint, $\overline{C}_2^{R} = aRW^{R}$, be higher than the intercept term of the NR budget constraint, $\overline{C}_2^{NR} = a\tau RW^{NR}$. It is easy to prove this happens when:

$$\frac{w^B}{w^A}\left[h - aR\tau(1-\tau)\right] < 1$$

Then a sufficient condition is that the term in parenthesis is negative, which occurs if:

$$a > \frac{h}{R\tau(1-\tau)} \equiv a^0$$

Note that if $a < a^0$ the crossing condition implies that there should be an upper bound for $\frac{w^B}{w^A}$, given by $\frac{1}{[h-aR\tau(1-\tau)]}$. This upper bound is always bigger than the lower bound $\frac{\tau}{h}$ of the first part of the proposition.

■

Figure 2 presents the values of a^0 for the whole spectrum of values of the skill-waste parameter τ and for some values of the probability of obtaining legal status γ. When τ is close to 1 (no skill waste), there is no minimum value of a that can guarantee the crossing of the two lines since everything depends on the relative minimum wage. The same happens when the skill waste is very binding, but the probability of getting legal status is very high. But the figure shows that this effect is important only when the skill waste is very binding (i.e. low τ). The probability of getting legal status does change that much the minimum skill requirement a^0 for intermediate values of τ.

Under the condition that no choice is revealed preferred, let us now maximize the utility function under each one of the two budget constraints and compute the relative indirect utility functions for each possible choice.

From simple computations the indirect utility from the "return" choice is equal to:[10]

$$V^R = (1+\delta)\ln\left[\frac{1}{1+\delta}\left(R\tau a w^B + w^A\right)\right] - \ln(R) + \delta\ln(a\delta)$$

whereas the indirect utility from the "no-return" choice is equal to:

$$V^{NR} = (1+\delta)\ln\left[\frac{1}{1+\delta}\left(R\tau^2 a w^B + h w^B\right)\right] - \ln(\tau R) + \delta\ln(a\delta)$$

Let us define the *net* indirect utility from "return" as the difference between the two previous ones:

[10] See Appendix A for the computations.

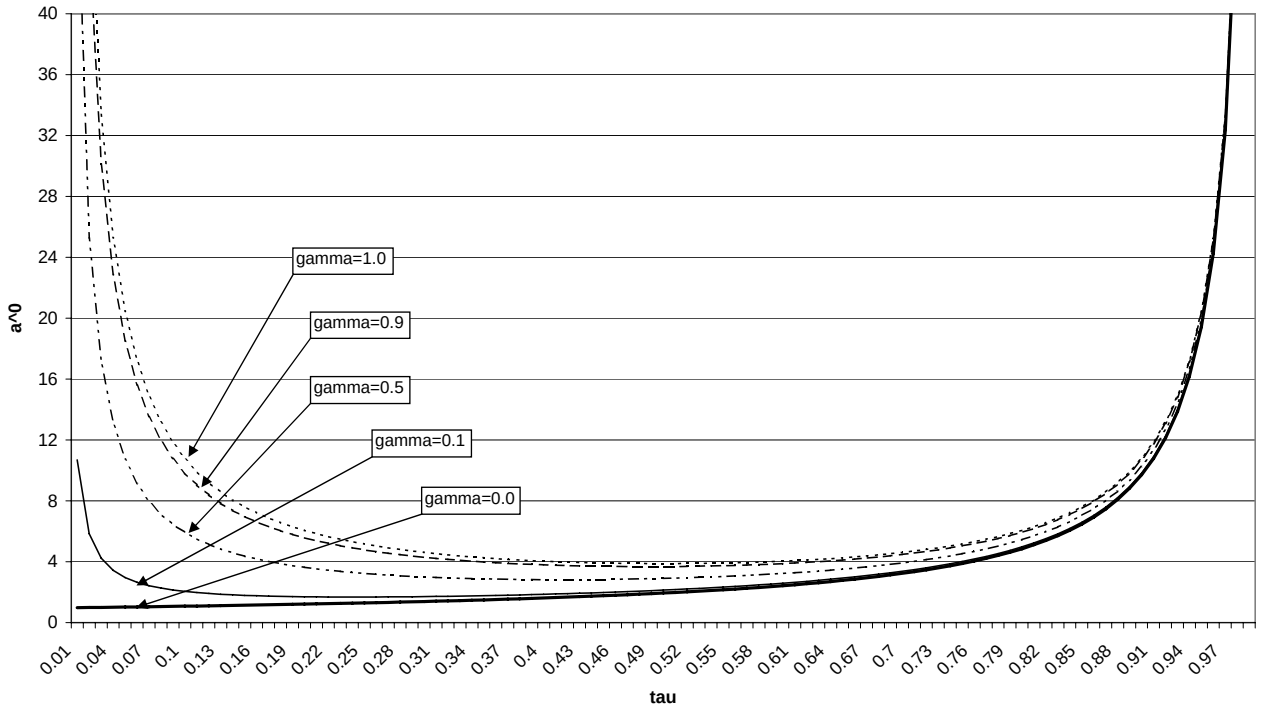

Figure 2: Values of a^0 as a function of τ and γ (assumption: $R = 1.03$).

$$V = (1+\delta)\ln\left[\frac{R\tau a w^B + w^A}{R\tau^2 a w^B + h w^B}\right] - \ln\left(\frac{1}{\tau}\right) \tag{4}$$

Let us then consider a special value of the skill parameter, a^*, for which the indirect utility from "return" and "no return" is equal. We name as "marginal migrant" the individual with such a skill endowment for which it is indifferent returning home in the second period or staying in the host country.

In the Figure 1 the utility level is identified by the indifference curve labeled $U(a^*)$. Proposition 2 shows the condition on the wage gap $\frac{w^B}{w^A}$ such that the indifferent skill level a^* is higher than the required lower value to assure budget-line crossing, a^0.

Proposition 2 *The indifferent skill level a^*, for which the the indirect utility from returning home or staying abroad in the second period are equal, is always larger than the lower bound skill level a^0 when:*

$$\frac{w^B}{w^A} > \frac{1}{\mathcal{K}h\left[1 - \frac{h(1-\mathcal{K}\tau)}{\mathcal{K}(1-\tau)}\right]} \equiv \Xi$$

where $\mathcal{K} \equiv \left(\frac{1}{\tau}\right)^{\frac{1}{1+\delta}}$.

Proof.

We determine a^* by setting $V = 0$, which means:

$$(1+\delta)\ln\left[\frac{R\tau a w^B + w^A}{R\tau^2 a w^B + h w^B}\right] = \ln\left(\frac{1}{\tau}\right)$$

or:

$$\frac{R\tau a w^B + w^A}{R\tau^2 a w^B + h w^B} = \left(\frac{1}{\tau}\right)^{\frac{1}{1+\delta}}$$

Let us define $\mathcal{K} \equiv \left(\frac{1}{\tau}\right)^{\frac{1}{1+\delta}}$. Then the previous equation can be rewritten as follows:

$$R\tau a w^B + w^A = \mathcal{K} R\tau^2 a w^B + \mathcal{K} h w^B$$

The indifferent skill level a^* is then equal to the following:

$$a^* = \frac{\mathcal{K} h w^B - w^A}{w^B R\tau(1-\mathcal{K}\tau)} = \frac{\mathcal{K} h \frac{w^B}{w^A} - 1}{\frac{w^B}{w^A} R\tau(1-\mathcal{K}\tau)}$$

We need to assure that the indifferent skill level is higher than the minimum skill level, a^0, that guarantees none of the two choices is revealed-preferred:

$$a^* = \frac{\mathcal{K} h \frac{w^B}{w^A} - 1}{\frac{w^B}{w^A} R\tau(1-\mathcal{K}\tau)} > \frac{h}{R\tau(1-\tau)} \equiv a^0 \tag{5}$$

Notice that:

$$\mathcal{K}\tau \equiv \left(\frac{1}{\tau}\right)^{\frac{1}{1+\delta}} \tau < 1$$

is always verified since $\tau < 1$ and $\delta > 0$.

Hence both denominators in (5) are positive and the inequality can be rewritten as follows:

$$\frac{w^B}{w^A}\mathcal{K} h R\tau(1-\tau) - R\tau(1-\tau) > \frac{w^B}{w^A} h R\tau(1-\mathcal{K}\tau)$$

or

$$\frac{w^B}{w^A}\mathcal{K} h\left[1 - \frac{h(1-\mathcal{K}\tau)}{\mathcal{K}(1-\tau)}\right] > 1$$

Notice that the term in squared brackets is always positive since:

$$\frac{h(1-\mathcal{K}\tau)}{\mathcal{K}(1-\tau)} < 1$$

Indeed:

$$h < \frac{\mathcal{K}(1-\tau)}{(1-\mathcal{K}\tau)} \equiv \Psi$$

always holds since Ψ is always greater than 1.[11]

Hence, (5) holds if and only if:

[11] $\Psi > 1$ requires $\mathcal{K} - \mathcal{K}\tau > 1 - \mathcal{K}\tau$ that always holds since $\mathcal{K} > 1$.

$$\frac{w^B}{w^A} > \frac{1}{\mathcal{K}h\left[1-\frac{h(1-\mathcal{K}\tau)}{\mathcal{K}(1-\tau)}\right]} \equiv \Xi$$

■

It is also easy to show that $\Xi > \frac{1}{\mathcal{K}h} > \frac{\tau}{h}$, i.e. this condition on the wage gap is more restrictive than the requirement for the budget-line crossing in the first quadrant.

The last relevant result is that the net indirect utility from "return" increases as the skill level increases. The following proposition proves our statement.

Proposition 3 *If $\frac{w^B}{w^A} > \frac{\tau}{h}$, then net utility from return migration is an increasing function of the individual level of skills.*

Proof.

When taking the first derivative of the net utility from return migration (4), we obtain:

$$\frac{\partial V}{\partial a} = \frac{(1+\delta)\tau R w^B}{H_R H_{NR}}\left(h w^B - \tau w^A\right)$$

where $H_R \equiv R\tau a w^B + w^A$ and $H_{NR} = \tau R \tau a w^B + h a w^B$.

The net utility is then strictly increasing in the skill level a if and only if the term in parenthesis is greater than zero, i.e. if and only if:

$$h w^B - \tau w^A > 0$$

or:

$$\frac{w^B}{w^A} > \frac{\tau}{h}$$

■

Notice that this condition is always verified in order to have no revealed-preferred choice and to assure the existence of the "marginal migrant".

When we consider an individual with skill level $a' > a^*$, the new budget constraints will tilt and move outwards, as shown in the Figure 1 by the dashed lines. The movement outwards is due to the increase in the life-time income, whereas the tilting is caused by the fact that the rates of return depend on the individual skill level. However, the rate of return is reduced by the skill waste effect when the migrant remains in the destination country; hence, the tilting will be lower.

As a consequence of Proposition 3 the new intertemporal bundles E'_R will lay on a higher indifference curve with respect to the bundle E'_{NR}. Hence, the return option will be chosen by more skilled individuals since it assures a higher welfare.

In both cases of return and "no return" the increase in the skill level induces a price effect and an income effect. Whether or not the individual decides to go back home, the latter effect is the same, as also shown by the shift of the intercepts from $\overline{C}^R(a^*)$ to $\overline{C}^R(a')$ and from $\overline{C}^{NR}(a^*)$ to $\overline{C}^{NR}(a')$. Instead, the price effect (associated with the slope change) is stronger in case of return because of the (absence of the) skill waste effect.

Finally, we ought to notice that the net utility is also a decreasing function of the probability of legalization, as the first derivative of V with respect to γ is given by:

$$\frac{\partial V}{\partial \gamma} = -\frac{(1+\delta)(1-\tau)w^B}{R\tau^2 a w^B + h a w^B}$$

As it could intuitively be anticipated, better prospects of legalization for period 2 increase the expected income from staying in the host country and reduce the incentives to return.

These latter two results are the main objectives of the empirical analysis.

3 Undocumented Migration: Two Original Micro Datasets

Data on international migration flows and stocks are not always comparable due to country differences in national definitions.[12] When dealing with irregular migration, there is an additional problem due to methodological difficulties in measuring an illegal phenomenon (see Hanson, 2006, for an overview of methods in the US-Mexico case). Hence, only indirect estimates of the illegal migrant population are available for both Europe (Jandl, 2004, and International Centre for Migration Policy Development, 2006) and the US (recently Passel, 2005).

However, when testing for migrants' decisions (as departing or returning home), researchers use exclusively micro data. Once again, several sources are available on legal migrants — for instance, the German Socio-Economic Panel (Dustmann, 2003a), Census data in France, several surveys from the Pew Hispanic Center for the US — whereas just a few are available for undocumented migrants — namely, the well-known data from the Mexican Migration Project and the recent Survey of Mexican Migrants by the Pew Hispanic Center.[13]

In this paper we use this latter Survey of Mexican Migrants and we also rely on data coming from a field survey that has been conducted in Italy in 2003 on illegal immigrants. A description of the two surveys follows.

3.1 The Survey of Mexican Migrants

In 2005 the PEW Hispanic Center has organized an extended survey (called Survey of Mexican Migrants, SMM) on Mexican individuals that were applying for a *Matricula Consular*, i.e. a Mexican ID, at seven major consulates in the US (Los Angeles, New York, Chicago, Fresno, Atlanta, Dallas and Raleigh). The questionnaires were offered to the Mexican ID applicants while they were waiting in the consulates and they could fill them up on their own or with some assistance, especially in case of illiteracy. The sample contains 4,836 adults.

The Survey of Mexican Migrants (SMM) was designed to collect information about all types of undocumented Mexican immigrants, independently of their previous length of stay. The main advantage of this survey is that it gives a detailed socio-economic picture of all undocumented Mexican migrants in the US. On the other hand, the fact that the migrants

[12] See OECD (2006) for one of the first attempts to harmonize international migration statistics. See also Docquier and Marfouk (2005) for a reconstructed international dataset on migration and educational attainment.

[13] The survey is downloadable at the web site `http://pewhispanic.org/datasets/`.

are interviewed at the consulates implies a sample bias towards migrants who want a Mexican document. These two latter characteristics make SMM different from the survey that has been conducted on illegal Italian immigrants.

In terms of gender, age, year in the US and education, the SMM seems to offer a picture of undocumented migrants that is not that different from other measures of illegal Mexican immigration in the US (as in Passel et al., 2004). In SMM there is an expected over-representation of young migrants (age bracket 18-29) and a more surprising over-representation of elders (over 55). In terms of education, SMM comprehends relatively fewer individuals on the two sides of the spectrum, i.e. with primary education (or less) or with at least a college degree. This may be due to a possible bias created by the way the sample has been naturally detected. Indeed, it is likely that illiterate or undocumented migrants be not interested to any Mexican ID, as well as the well-educated since they may have it already or applied already for a US ID.

In Table 1 we present the main relevant descriptive statistics of the SMM total sample and the subsample that we chose for estimation, i.e. all the individuals in SMM that have not resided in the US for longer than 3 years. As we will see later, this is a requirement to make the estimation on SMM similar to the estimation on SIMI. Basically, the estimation sample does not differ much from the total sample except for the intentions to return that are much higher for the our subsample. Other differences comprehend the number of children per person and the English proficiency. This latter evidence points to the fact that most Mexican migrants learn English while in the US.

3.2 The Survey of Illegal Migration in Italy

The Survey of Illegal Migration in Italy (named SIMI) is a field survey on apprehended undocumented immigrants for the year 2003 (see Chiuri, De Arcangelis, D'Uggento and Ferri, 2004 and 2008).[14] The survey has been conducted with personal interviews that have been taken at meeting points for illegal immigrants (e.g. public canteens, etc.), as common to other studies. Some of the interviews have also been collected at special hosting centers that the Italian law prescribes for apprehended and undocumented aliens. More exactly, since identification after apprehension is required by the law, all apprehended and undocumented immigrants are hosted for at most thirty days in special residence centers (Centers of Temporary Residence or *Centri di Permanenza Temporanea*) to ascertain their origin. Part of the survey was conducted on illegal immigrants during this identification period.

The survey collected individual data by means of a questionnaire regarding the migrant's demographic and socio-economic situation in the country of origin (school degree attained, job qualification, location of the village of origin, family characteristics etc.), the cost and financing of the migration trip, intentions to return and to remit, as well as motivations and future income expectations from the (at least temporarily aborted) migration project.

To be more precise, the "illegal immigrant" in SIMI is defined as an adult clandestine or asylum seeker (at least 18-year old) that has been in Italy for a period no longer than 6 months.[15] This short period minimizes the measurement error when interviewees are asked to recall previous events. One of the aims of the survey was to obtain an accurate recollection of earnings and expenditures before migration, as well as future expectations.

[14]For the statistical and methodological issues related to sampling see Chiuri and D'Uggento (2004).

[15]See Appendix B for a thorough definition.

Table 1: Summary Statistics of SMM 2005, Survey of Mexican Migrants: Entire Sample and Subsample used for the Estimation (standard errors in parentheses).

Variables	All	Estim. Sample
General		
Number of sample units	4,836	822
Median Age (in years)	29	30
	(10.63)	(10.55)
Weekly individual earnings declared (median, in 2005 current US$)	250	296
	(192)	(157)
Number of children per head (mean)	2.85	1.39
	(1.65)	(1.35)
children in the US per head (mean)	2.96	1.16
	(1.50)	(1.35)
Intention to return home[a]	37.4 %	66 %
Intended length of stay (in years)	4.34	4.6
	(4.28)	(2.14)
Skill characteristics		
Illiteracy	2.0 %	1.7 %
School degree		
primary	32.3 %	23.4 %
middle	37.1 %	41.6 %
high-school	22.3 %	25.8%
university	6.3 %	7.5 %
Good proficiency in English[b]	13.6 %	3 %
Job qualification[c]		
high-skilled	11.2 %	13.3 %
Migration network		
Number of relatives (people cohabiting)		
already in the final destination per head	12.7	7.1
	(14.8)	(10.4)

[a] Percentage of migrants that at the question "How long do you think you will remain in the US?" did not answer "All your life".

[b] Percentage of migrants with declared to "speak English a lot".

[c] High-skilled qualification is considered for the following (declared) jobs: owner/proprietor of a business; administrator/manager of a business; professional.

This is also one major difference with the Survey of Mexican Migrants that included also long stayers.

The sample included 920 individuals that were interviewed in the period January–September 2003 in the four border regions mostly concerned with the phenomenon of illegal entrance.[16] The total number of individuals interviewed represented 10.82% of all the 8,502 illegal migrants that were hosted in the selected centers in the same period between January and September 2003.[17]

Fifty-five different nationalities are represented in the sample, the six largest fractions coming from: Iraq (9.6%), Liberia (9%), Sudan (5.4%), Morocco (5.1%), Senegal (4.8%), Turkey (4.8%).

Table 2 summarizes the main social and economic characteristics of the total sample and of the subsample used in the estimation of Section 4. Indeed, there are four sub-groups of undocumented immigrants: clandestine immigrants, asylum seekers, individuals waiting for a rejection decree and individuals waiting for an expulsion decree (see Appendix B). Given the blurred definition of the latter two categories, in the econometric analysis of Section 4 we only focus on clandestine migrants and their characteristics are reported in the second column of Table 2.

According to our data, the average illegal migrant entering Italy is young (about 27 years old). The declared family monthly income in the country of origin was on average around (2003-current) US$ 218. The high variance of the data can be explained by the extreme heterogeneity of the socio-economic conditions of the interviewees. It is noteworthy that interviewees, once settled down in the country of final destination, expected to earn about four times the income at home, i.e. an average monthly wage of (2003-current) US$ 877.

Migration is a major investment for the family: on average the cost of the trip is equivalent to about eight months of individual earnings in the country of origin.

Illegal immigrants into SIMI have a non-negligible level of skills that we measure in three different ways. First, we use the declared attained school degree and we notice that the degree of illiteracy is not very high – only 13.2% declared they cannot read and write. In terms of schooling, 5% of the migrants in the sample have a university degree, while 13.9% and 7.8% have respectively a secondary education degree and vocational education (i.e. 21.7% with attained high-school degree in the table). Other two indirect measures of skills are (i) the degree of host-country language proficiency[18] and (ii) the type of declared job qualification. Over a quarter of the migrants has a basic knowledge of the destination country's language and another 20% declare to have a good knowledge of it. A very high percentage of interviewed immigrants declared to have knowledge of one or two foreign languages; in particular, over 70% in the whole sample and about 68% in the estimation sample of the clandestine immigrants only. A significative share of the migrants (18.2%) can be classified as high-skilled on the basis of the job qualifications in the country of origin, although the majority of the migrants are low-skilled.

[16]These are: Apulia, Calabria, Friuli Venezia Giulia and Sicily.

[17]The size of illegal migration is relevant in Italy as a consequence of a particularly restrictive immigration policy accompanied by a large informal economy and extensive and porous borders. In the regularization programme of 2002, there were approximately 700 thousands applicants most of them already residing illegally in the country in the four years since the previous regularization (see Chiuri, Coniglio and Ferri, 2008, for a discussion of the characteristics, causes and economic consequences of irregular migration in Italy).

[18]Bleakley and Chin (2004) show the positive relationship between knowledge of the host-country language and the level of wages.

Table 2: Summary Statistics of SIMI 2003, Survey on Illegal Migration in Italy: Entire Sample and Subsample of Clandestines used for the Estimation (standard errors in parentheses).

Variables	All	Estim. Sample
General		
Number of sample units	920	482
Median Age (in years)	27.2	26.6
	(6.20)	(5.78)
Family monthly income at home (median, in 2003 current US$)	218	196
	(232)	(170)
Expected monthly income at destination (median, in 2003 current US$)	877	906
	(550)	(409)
Number of children per head (mean)	0.57	0.59
	(1.09)	(1.12)
children left home per head (mean)	0.45	0.48
	(0.95)	(0.99)
Cost of the trip (median, in 2003 current US$)	1,645	1,527
	(1,417)	(1,316)
Intention to return home	58.9 %	71.6 %
Intended length of stay (in years)	6.0	6.3
	(3.7)	(3.4)
Sample composition		
Clandestines	53.5 %	100 %
Asylum Seekers	34.4 %	–
Others	12.1 %	–
Skill characteristics		
Illiteracy	13.2 %	12.0 %
School degree		
primary	27.1 %	25.0 %
middle	30.8 %	34.0 %
high-school	21.7 %	21.2 %
university	5.0 %	4.2 %
Good host-country language proficiency[a]	20.2 %	16.0 %
Basic host-country language proficiency	26.6 %	34.0 %
Knowledge of 1 or 2 foreign languages	70.75 %	68.24 %
Job qualification[b]		
high-skilled	18.4 %	13.1 %
low-skilled	71.7 %	76.2 %
no qualification	9.9 %	10.6 %
Migration network		
Number of relatives (people cohabiting)		
already in the final destination per head	0.19	0.25
	(0.39)	(0.43)

[a] Percentage of migrants with declared good proficiency in the language of the intended destination country ("good" and "very good" level in the original questionnaire).

[b] High-skilled qualification is considered for the following (declared) jobs before migration: translator, secretary, financial advisor, doctor or chemist, lawyer, teacher, manager, consultant, entrepreneur.

The level of skills and formal education attainments of the legal migrants seems to be substantially higher if compared with our sample. Although not directly comparable, the 2001 census data reveals that only 2.5% of the foreigners residing in Italy were illiterate, while 12.1% were literate but without formal education. It is interesting to note that 12.1% of the legal migrant population in 2001 had a university degree and 27.8% attained an high-school degree. Finally 32.9 and 12.6% had a middle and primary school diploma.

Only 19% of the individuals within our sample migrate within a network of already established migrants ("relatives and friends") from the same community of origin. This is a distinctive and important feature of our data if compared to other surveys on illegal migrants (such as for example the Mexican Migration Project) which are by construction highly skewed toward individuals who migrate within a network.

About 60% of the interviewees declared to have the intention to return home.

3.3 A Brief Comparison

The two samples picture somewhat different realities, but also important similarities. The homogeneity of nationality in SMM and the way the survey was conducted seems to bias the sample towards immigrants with a stronger migration network and with substantial declared earnings – which is actually close to the earning expectations of the sample in the Italian SIMI sample.

The interviewed Mexicans have a higher number of children than the interviewees in SIMI and especially most of them are already in the destination country, i.e. the US. This does not occur in SIMI.

As a result of these relevant differences, when considering the overall sample the intentions to return to the origin countries are much lower among the Mexican immigrants than among the immigrants in SIMI and also their expected length of stay is incomparably higher for the Mexicans. However, these differences are less remarkable when considering the subsample for estimation.

Besides these important diversities, there are important similarities in the two samples. The median age is very similar. In particular, the distribution of skills is not very different apart from the higher percentage of illiterate immigrants in SIMI.

In conclusion, the Mexican migrants in SMM are not perfectly comparable with the undocumented migrants in SIMI mainly because they are more similar to long stayers that have mostly decided to settle in the US also thanks to the migration network that greatly can reduce their initial migration costs and probably lessen the effect of the brain waste.

4 Empirical Investigation

4.1 Model specification

Our simple model suggests that the level of skills (parameter a) affects positively the return plans of illegal migrants. As we have seen in Proposition 3, the net utility from returning home is an increasing function in the measure of skills a. In formal terms:

$$V = V(a, \text{other variables})$$

where $\frac{\partial V}{\partial a} > 0$.

In order to test this implication we specify a probit model for the individual *intentions to return* since we cannot observe the actual return of the migrants. In formal terms the probit model takes the following shape:

$$\text{prob(intention to return}|a, \boldsymbol{X}) = \Phi(\beta_a a + \boldsymbol{\beta_X X})$$

where $\Phi(\cdot)$ is the standard normal cdf, $\boldsymbol{X}$ is a vector of other control variables (to be described thoroughly later), β_a is the parameter that measures the influence of skills on the normal cdf and $\boldsymbol{\beta_X}$ is a vector of parameters relative to the control variables.

The intentions to return are obtained for the irregular *clandestine* migrants interviewed in SIMI and for the Mexicans in SMM that have been in the US for less than 3 years. In other words, regarding the data in SIMI we consider only a subsample of the data set described in Section 3 by excluding the asylum seekers, whose intentions to return are biased by political factors. The subsample in SMM is instead selected in order to have better comparability with SIMI and to avoid the possible bias that long stayers may induce in the estimation.

The dependent variable is equal to 1 if the individual clandestine migrant has stated that he/she would return home, zero otherwise. Exact definitions and basic statistics of the explanatory variables, as well as the relative data sources, are presented in Appendix C.

Our main task is to test whether individual skills are positively related with the intentions to return. In order to capture the multiple dimension of individual skills and abilities (i.e. schooling, job experiences and qualifications, knowledge of foreign languages etc.) we employ three different measures: (i) *years of schooling* in SIMI and a dummy for Mexican with a school degree higher that the secondary level in SMM (*School (>2ndary)*), which captures the level of formal education undertaken by the migrant; (ii) a dummy for *skilled workers*, i.e. for individuals who declared to hold some job qualifications; (iii) a measure of knowledge of the destination-country language.

More precisely, in SIMI we use two different measures for language knowledge: (a) the level of individual proficiency in the language of the country of destination (*host-country language proficiency*), which proxies the abilities to fully access the job market in the specific country of intended destination (not necessarily Italy); (b) the number of foreign languages known with at least a basic level of proficiency (*language proficiency*), which is a more general measure of foreign-language abilities. In the case of Mexicans in SMM we consider the good knowledge of English.

We expect all these variables measuring high skills to have a positive effect on the probability of returning to the country of origin. However, we ought to notice that, given the fact that Mexicans in SMM have been staying in the US much longer than the immigrants in SIMI, the language variable may also take another interpretation. A good knowledge of English for a Mexican residing in the US for some time may actually be the consequence of overstaying and may not be interpreted solely as a measure of skills as in SIMI. In addition, the fact that an illegal overstayer Mexican knows English well may be revealing that he or she is in a network that may decrease his or her costs of migrating and lessen the effect of the skill waste. So, some caution should be applied in the interpretation of the sign of this coefficient.

Besides the migrant's skill level, individual intentions to return depend on many other variables. We sort them out into three different sets, one common to SIMI and SMM and two survey-specific. More exactly, pure *individual covariates*, which refer to the personal situation of the clandestine migrant, are used in the estimation for both samples. Then, we use *country-level variables* to refer to the characteristics of the various countries of origin in SIMI, whereas

for SMM this would not be that different from the Mexican migrants. For SMM instead we have measures of *social integration* since the interviewed migrants have been in the US for relatively long time.

- *Individual covariates.* The intensity of the skill waste might be affected by the presence of social networks, i.e. *migration networks*, in the destination country. On the one hand, networks of established migrants may provide both personal support and more accurate information on the destination country; hence, they can affect positively the expectation of obtaining a good job (see for instance Munshi, 2003). On the other hand, a migration network might increase temporary migration. Indeed, the existence of networks may reduce the perception of risks associated with the migration experience. As a consequence, this safety net might induce some individuals (in particular the 'target-savers migrants', who are highly risk-adverse or highly attached to the home country) to migrate temporarily. Hence, a higher turnover and therefore higher rates of return home could be observed for individuals migrating within a network. In our specification the migration network is represented by a dummy variable (*Migronetwork*) equals to 1 when the migrants declare that relatives (or friends) already live in the final destination and its expected sign on the probability of return depends on whether the former effect (cost-reducing) or the latter one (turnover-increasing) prevails.

  The decision of whether to return to the home country or stay in the destination country depends also on the individual opportunities in the country of origin in case of return. These are closely related to the previous job experiences at home. Thus, in SIMI we include a dummy variable for being *unemployed in the home country* before migrating, which is expected to have a negative influence on the probability of returning.

  Moreover, together with business and entrepreneurial motivations, the migrant might decide to return because of family and cultural ties with the home country (see Dustmann, 2003a).[19] We therefore include a proxy for close family ties: a dummy for the presence *children left at home* in SIMI and in general *family in Mexico* (meaning spouse and children) in SMM. They are expected to have a positive effect on the return choice.

  Furthermore, since a previous migration experience generally lowers the non-monetary and psychological costs of subsequent migrations, we include the dummy variable *past migration* in SIMI for individuals that had such an experience in our sample. The expected sign is negative on the return choice.

- *Characteristics of the country of origin in SIMI.* In this category we include both economic and social variables. It is widely acknowledged that return intentions are affected by the expected economic opportunities in the country of origin (i.e. the "minimum" wage w^A in Section 2). Return migration will be generally higher in countries that are at an intermediate level of development and would offer opportunities to migrants who have accumulated human and financial capital. Hence, we introduce as a general proxy for the level of development the *(log of) per capita GNI* (2001) for the country of origin, which is expected to have a positive effect on return intentions.

  The SIMI data set contains information about various push factors at the individual level and allows to distinguish between the occurrence of *social conflicts* and that of

[19] More broadly these factors might also proxy for the psychic cost of migration and may be modeled as a fixed disutility flow for each period the migrant is far away from the family.

financial or *economic crises* in the village/city of origin.[20] They are included as dummy variables and separately in order to capture a possible different effect.

Moreover, we include the (log of) geographical *distance* as a proxy for the monetary and psychological cost of migration. A shorter geographical distance means lower cost of migration and this may have two different implications, similarly to the effect of migration networks. On the one hand, a lower cost means higher probability of integration and lower probability of return. On the other hand, a lower roundtrip cost to go home might imply less incentive to permanent migration, hence higher turnover and a revealed higher probability to return.

- *Measures of social integration in SMM.* Since Mexicans interviewed in SMM have been in the US for a long time, some services may be available for them and this can measure the degree of social integration. In particular, we consider a dummy variable equal to one when the migrant has a US photo ID and when he or she holds a US bank account. We expect that a higher degree of social integration decreases the migration costs and the skill-waste effect, hence discouraging the return.

Other controls are also included in the estimation for SIMI. Regarding cultural ties with the country of origin, it is widely accepted that the cost of residing in a foreign country increases with the degree of cultural and social diversity between the origin and destination country. A different religion is an important dimension on which such diversities are expressed. Hence, we include a dummy variable, *Muslim*, that aims to capture the – generally greater – psychological cost of migration faced by individuals of Islamic religion. This variable is supposed to have a positive effect on the return intention.

Finally, still in SIMI we include macro-area dummies in order to capture the unobservable characteristics of the geographical areas of origin (due to the limited number of observations and the high number of represented countries of origin, we could not use single country dummies).

4.2 Estimation Results with the Italian dataset SIMI

Let us recall that the model estimates the probability of returning home through the intentions of the clandestine migrants. Table 3 shows the estimates of different specifications of the probit model in order to check for the robustness of the results.[21] In particular, in Models (1)–(4) we use the four different measures of skills one at a time. Although each measure captures a different dimension of individual abilities, some of them are expected to be highly correlated among each other. Notwithstanding this correlation, in Model (5) *years of schooling* and *skilled worker* are contemporaneously included, while in Model (6) we consider *skilled worker* together with *language proficiency*. Lastly, Model (7) includes the dummy *skilled worker* together with the more specific *host-country language proficiency*.

Table 4 reports only the marginal effects of the last specification – Model (7) – but all the others are available upon request.

[20] In terms of the model, they may be related once more to the "minimum" wage in the country of origin w^A, although the two variables will prove to have a different effect.

[21] As mentioned at the end of Section 3, the estimation has been conducted only on the major categories of undocumented immigrants. See Appendix D for estimation results that refer to the total sample. The qualitative results discussed below are confirmed.

Table 3: Estimates of the Probit Model for the Intention to Return: Some Specifications

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Skills							
Years of schooling	0.106^{+}				0.099^{+}		
	(0.059)				(0.059)		
High-Skilled worker		0.553^{*}			0.42^{+}	0.467^{*}	0.507^{*}
		(0.23)			(0.242)	(0.236)	(0.234)
Knowledge of foreign languages			0.198^{**}			0.173^{*}	
			(0.075)			(0.077)	
Host-country language proficiency				0.295^{**}			0.275^{**}
				(0.107)			(0.108)
Individual covariates							
Migronetwork	0.312^{+}	0.352^{*}	0.288	0.332^{+}	0.310^{+}	0.293	0.337^{+}
	(0.177)	(0.176)	(0.178)	(0.183)	(0.178)	(0.179)	(0.184)
Unemployed in the home country	-0.175	-0.125	-0.203	-0.207	-0.118	-0.128	-0.127
	(0.15)	(0.153)	(0.15)	(0.152)	(0.154)	(0.154)	(0.157)
Children in the home country	0.418^{*}	0.396^{*}	0.434^{*}	0.405^{*}	0.384^{*}	0.395^{*}	0.359^{*}
	(0.177)	(0.177)	(0.177)	(0.178)	(0.178)	(0.179)	(0.180)
Past migration	-0.385^{*}	-0.43^{**}	-0.412^{*}	-0.422^{**}	-0.412^{*}	-0.436^{**}	-0.451^{**}
	(0.164)	(0.163)	(0.164)	(0.165)	(0.165)	(0.165)	(0.166)
Country of Origin							
GNI per capita (log, 2001)	0.497^{**}	0.530^{**}	0.471^{**}	0.489^{**}	0.513^{**}	0.493^{**}	0.511^{**}
	(0.139)	(0.138)	(0.140)	(0.140)	(0.139)	(0.140)	(0.141)
Social conflict	-0.775^{**}	-0.758^{**}	-0.717^{**}	-0.695^{**}	-0.791^{**}	-0.740^{**}	-0.721^{**}
	(0.181)	(0.178)	(0.179)	(0.181)	(0.182)	(0.180)	(0.182)
Economic crisis	0.524^{*}	0.561^{*}	0.441^{*}	0.463^{*}	0.552^{*}	0.476^{*}	0.496^{*}
	(0.227)	(0.227)	(0.230)	(0.234)	(0.228)	(0.231)	(0.235)
Distance(in log)	0.233^{**}	0.257^{**}	0.268^{**}	0.249^{**}	0.239^{**}	0.273^{**}	0.261^{**}
	(0.077)	(0.077)	(0.078)	(0.080)	(0.077)	(0.078)	(0.081)
Muslim	0.379^{**}	0.318^{*}	0.354^{*}	0.303^{+}	0.372^{*}	0.349^{*}	0.301^{+}
	(0.159)	(0.157)	(0.159)	(0.160)	(0.160)	(0.159)	(0.160)
Asia	-0.746^{**}	-0.769^{**}	-0.691^{**}	-0.730^{**}	-0.758^{**}	-0.725^{**}	-0.763^{**}
	(0.254)	(0.250)	(0.256)	(0.256)	(0.255)	(0.258)	(0.259)
South America	-2.65^{**}	-2.837^{**}	-2.707^{**}	-3.049^{**}	-2.74^{**}	-2.818^{**}	-3.171^{**}

continued on next page

Table 3: continued

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
	(0.950)	(0.947)	(0.942)	(0.967)	(0.951)	(0.945)	(0.959)
Europe	−0.012	0.048	0.310	−0.038	−0.042	0.243	−0.0005
	(0.329)	(0.326)	(0.336)	(0.336)	(0.330)	(0.338)	(0.338)
North Africa	−0.128	0.009	−0.034	−0.070	−0.116	−0.034	−0.067
	(0.379)	(0.374)	(0.378)	(0.383)	(0.380)	(0.378)	(0.384)
Constant	−3.70**	−4.195**	−3.70**	−3.47**	−4.188**	−4.238**	−4.104**
	(1.000)	(1.026)	(0.996)	(1.009)	(1.044)	(1.039)	(1.058)
Observations	*430*	*438*	*436*	*427*	*430*	*436*	*427*
Pseudo R^2	0.168	0.173	0.176	0.181	0.174	0.183	0.190
Log likelihood	−214.9	−219.6	−217.5	−211.4	−213.5	−215.5	−209.1

Standard errors in parentheses / Probability of return (baseline) = 0.754
+ significant at 10%; * significant at 5% ; ** significant at 1%

Table 4: Marginal Effects of Model (7) for SIMI

Regressors	**Marg. Eff.**
High-Skilled worker	0.178*
	(0.088)
Host-country language proficiency	0.087**
	(0.03)
Migronetwork	0.100+
	(0.051)
Unemployed in the home country	−0.040
	(0.049)
Children in the home country	0.106*
	(0.050)
Past migration	−0.152**
	(0.058)
GNI per capita (log, 2001)	0.161**
	(0.044)
Social conflict	−0.214**
	(0.048)
Economic crisis	0.173*
	(0.088)
Distance(in log)	0.082**
	(0.025)
Muslim	0.096+
	(0.053)
Asia	−0.268**
	(0.096)
South America	−0.754**
	(0.041)
Europe	−0.001
	(0.106)
North Africa	−0.021
	(0.124)
Observations	427

Probability of return (baseline) = 0.757

Note: for the dummy variables the marginal effect is referred to the change from 0 to 1.

Standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

Results are generally in line with our expectations. Skills, education and, interestingly, also host-country specific abilities – such as the knowledge of the language – affects positively the intention to return to the home country, as shown in the top part of Table 3 where all the measures of skills are significant at the 5% probability level[22] for all seven models.

We find that the knowledge of the language of the intended destination countries has a positive and significant effect on the intentions to return either when considered singularly (Model 4) and when considered together with a measure of job qualification (Model 7). Moreover, the probability of return of skilled individuals, contrary to most other findings in the literature (for instance, Borjas et al. 1996) is higher than the probability of return of an individual with no job qualification or experience: according to Table 4, having some skills increases the probability of return by more than 17%.

[22]Henceforth, "significant" means "significant at the 5% probability level" unless differently specified.

Most existing studies on return migration and return intentions of *legal* migrants highlight a generally lower propensity to return for highly skilled individuals. Besides dealing exclusively with legal migrants, these studies do not disentangle the effects of migrants networks on the likelihood of returning in the host country. Using data from the German Socio-Economic Panel, Dustmann (1996, 2003b) finds a negative effect of years of schooling on the intention to return to the home country. He also finds that for those who intend to return, schooling has a negative impact on the duration of the migration spell. This is explained by the fact that higher schooling, guaranteeing higher salary, reduces the time needed to achieve a predetermined saving target. In a related study on the factors that affect the return migration of a cohort of foreign-born in the US, Reagan and Olsen (2000) find no evidence of skill bias in return migration. Instead, our results seems to be consistent with Zhao (2002). In his analysis on rural to urban migration in China, Zhao finds that better educated and skilled rural migrants are more likely to return to their village of origin. The explanation offered by the author fits our interpretation: both the strong segmentation in the urban labor market and the tight migration regulatory system in China prevent the full participation of skilled workers to the local labor market when coming from rural areas. This imposes heavy costs on skilled migrants in terms of rewards to education and work experience.

Also the other covariates included in our estimation (mainly for control) show the expected signs.

We find evidence of relevance of family and cultural ties. In our estimations, an individual with children left in the home country is more likely to return than in the case where she has no children left home. Our evidence is in accordance with Dustmann (2003a) where the presence of children in the host country negatively affects the return intention of parents.

Next, *when migrating within a network*, the positive externalities provided by the social net increases the intention to return and so it is likely to increase the turnover of illegal migrants.

Moreover, it is widely acknowledged that previous migrating experiences reduce the psychological cost of further moves. This is confirmed by our analysis as the dummy variable *past migration* is negative and highly significant. The status of being unemployed in the country of origin before departure, i.e. a proxy for lack of opportunities at home, shows a negative sign on the intentions to return although it is not statistically significant in our estimates.

Furthermore, illegal migrants are also found to be more willing to return when their countries of origin are relatively more developed. Countries that have an above average level of *per capita GNI* are more likely to attract illegal migrants back home.

Interestingly, our estimates also acknowledge that *social conflicts* and *economic crisis* have different effects on the return choice. Having experienced an economic or financial crisis in the village of origin seems to have a temporary effect on the choice of leaving the country of origin, whereas social conflicts have a more permanent effect on migration. In fact, while social conflicts or civil wars may be perceived as long-term shocks and induce permanent emigration, economic or financial crises may lead to temporary emigration that is subsequently reversed when economic conditions improve again.

Finally, the coefficients on the proxies for monetary and psychic cost of migration, namely *distance* and *Muslim*, are both significant and positive.

4.3 Estimation Results with the US-Mexico dataset SMM

The intentions to return for Mexicans in SMM are measured by considering the interviewed individuals that declared to go back to Mexico and no to remain in the US indefinitely.[23] Similarly to the estimation for SIMI, we fit a probit model whose results are reported in Table 5.

[23]This refers to question 23 of the PEW questionnaire and we considered as choosing to return all the interviewees that did not declare to remain in the US "All your life" and "As long as you ar/can".

Table 5: Estimates of the Probit Model for the Intention to Return in SMM: Some Specifications

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Skills					
School (>2ndary)	−0.147			−0.179	−0.038
	(0.139)			(0.141)	(0.133)
Highly skilled		0.375^{+}		0.433*	0.267
		(0.196)		(0.205)	(0.180)
Good English			−0.570^{+}	−0.658*	−0.619*
			(0.325)	(0.324)	(0.308)
Social integration					
US Photo ID	−0.356*	−0.327*	−0.321*	−0.347*	
	(0.150)	(0.149)	(0.150)	(0.151)	
US bank account	−0.11	−0.142	−0.0917	−0.127	
	(0.191)	(0.192)	(0.194)	(0.197)	
Individual covariates					
Less than 6 months in US	0.253^{+}	0.250^{+}	0.243^{+}	0.216^{+}	0.234*
	(0.129)	(0.130)	(0.130)	(0.130)	(0.119)
Remittances ($)	0.000845*	0.000852*	0.000857*	0.000843*	
	(0.000339)	(0.000337)	(0.000343)	(0.000344)	
Family in Mx	0.311*	0.288*	0.321*	0.334*	0.358**
	(0.128)	(0.129)	(0.130)	(0.131)	(0.122)
# Relatives in US	−0.0122*	−0.0125*	−0.0113*	−0.0115*	−0.0142**
	(0.00542)	(0.00542)	(0.00554)	(0.00549)	(0.00515)
Firm owner in Mx	0.218	0.0777	0.19	0.0993	0.122
	(0.144)	(0.154)	(0.143)	(0.154)	(0.144)
Age (years)	−0.00253	−0.00325	−0.0013	−0.00319	−0.00439
	(0.00630)	(0.00625)	(0.00624)	(0.00644)	(0.00569)
Male	0.430**	0.426**	0.415**	0.413**	0.506**
	(0.131)	(0.131)	(0.132)	(0.132)	(0.116)
Constant	0.0587	−0.0418	−0.0764	0.103	0.0403
	(0.260)	(0.221)	(0.220)	(0.265)	(0.246)

continued on next page

Table 5: continued

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Observations	*567*	*568*	*566*	*565*	*637*
Pseudo R^2	0.09	0.09	0.09	0.10	0.08
Log likelihood	−325.3	−325.58	−324.2867	−319.44	−376.42

Standard errors in parentheses / Probability of return (baseline) = 0.693
+ significant at 10%; * significant at 5% ; ** significant at 1%

Table 6: Marginal Effects of Model (4) for SMM

Regressors	**Marg. Eff.**
School (>2ndary)	−0.061
	(0.047)
Highly skilled	0.138**
	(0.058)
Good English	−0.253**
	(0.128)
US Photo ID	−0.127**
	(0.058)
US bank account	−0.046
	(0.072)
Less than 6 months in US	0.074*
	(0.043)
Remittances ($)	0.000**
	(0.000)
Family in Mx	0.120**
	(0.047)
# Relatives in US	−0.004**
	(0.002)
Firm owner in Mx	0.034
	(0.052)
Age (years)	−0.001
	(0.002)
Male	0.149**
	(0.048)
Observations	565

Probability of return (baseline) = 0.693

Note: for the dummy variables the marginal effect is referred to the change from 0 to 1.

Standard errors in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

The conclusion is less clear-cut than in the case of SIMI. The theoretical model is not rejected by the data when considering job qualification as a measure of skills (models 2 and 4). In this case we have a positive effect of skills on the return intentions at usual significance levels. A high-school degree does not seem to have any significant effect, whereas the good knowledge of English lowers the probability of returning home. As mentioned in the presentation of the model (Section 4.1), a good knowledge of English may capture a higher degree of integration and a higher available social network to rely on. As a consequence, this will lower the skill-waste effect and the migration costs.

The other two measures of social integration actually confirm this idea, although only for one variable. Indeed, possessing a US photo ID seem to be associated with a negative effect on the intentions to return, whereas holding a US bank account does not have any significant effect.

Among the individual characteristics, no contradictory signs appears in the estimates. A positive tendency to remit is associated with intentions to return. The presence of family in Mexico, as also the presence of children back home in SIMI, affects positively the intentions to return, whereas the presence of other relatives in the US has an expected negative effect indicating that the presence of a safety social network in the destination country induces permanent settling. Being a male increases the probability of going back, but age and being

a firm owner in Mexico do not have any significant effect.

There may be concerns of endogeneity in three covariates, like possessing a US photo ID, holding a US bank account and remitting. Hence, model (5) presents estimates without these latter variables. The qualitative results of model (4) are confirmed, although being highly skilled is significantly positive at 13.6 per cent probability level. Finally, Table 6 presents the marginal effects of the variables for model(4): being highly skilled increases the probability of returning home by almost 14 per cent.

5 Conclusions

In this paper we assume that the status of illegal migrant hinders the full utilization of individual skills. As a consequence, the opportunity cost of returning home is lower for highly skilled illegal migrants rather than individuals with few or no skills. This evidence contrasts the common findings that legal skilled migrants tend to stay longer in the destination countries, especially due to their higher ability to assimilate in the host country.

This result has been shown theoretically and supported empirically. In a simple two-period model illegality is modeled as a tax on skills (but without generating any tax revenue and therefore causing *skill waste*) and the return-home choice is more likely for the most skilled migrants. A probit model on the intentions to return has been estimated for a sample of clandestine immigrants in Italy and on a sample of undocumented Mexican immigrants. The endowment of personal abilities affect the intentions to return home in the predicted direction. This result is robust to four different measures of skills (years of schooling, foreign language ability, host-country language proficiency, level of skills on the job at home) after controlling for several individual and country-specific covariates in the case of the Italian sample. For the Mexico-US sample only when measuring skills with job qualification is the model not rejected by the data.

Our findings point out one theoretical consideration and one policy conclusion if the intentions to return that we considered here reveal actual behavior of the individuals.

First, since skilled illegal migrants are more likely to return home, this study does not imply that illegal – vs. legal – migration is more beneficial for the origin countries (since, for instance, it may alleviate the brain drain). On the contrary, by reversing the argument of the recent literature on beneficial brain drain (Mountford, 1997), the skill waste associated with the status of illegal migrant would strongly reduce the incentive for migrants to invest in their human capital both before and during the migration spell. This would significantly decrease human-capital formation in current emigration countries, as well as the overall flows of human capital and knowledge brought back by migrants.

Secondly, our paper provide indirect support to skill-selective immigration policies. Since the Italian legal system does not show any kind of skill selection for immigrants and the US system has recently turned more tough on all kinds of immigration, the conclusions may present a strong argument in favor of skill-selective policies rather than a generic ban to migration. Indeed, we have proved that a generic ban is not neutral and is strongly biased against skilled migrants.

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APPENDIX

A An extension of the model with different rates of return

Consider a population of illegal migrants with a heterogeneous level of skills from the same source country A who have migrated to the host country B. Migrants' skills are continuously distributed over an interval $[\underline{a}, \overline{a}]$ where $\underline{a}$ and $\bar{a}$ represent respectively the individuals with the lowest and the highest skill level.

Individuals operate in a two-period world and are endowed with a unit of labor which is inelastically supplied in each of the two periods.[24]

The migrants' intertemporal utility function is defined over first- and second-period consumption and takes the following simple form:

$$U(c_1, c_2) = u(c_1) + \delta u(c_2) = \ln(c_1) + \delta \ln(c_2)$$

where δ is the discount factor.

In the first period individuals live and work in the host country B. Consumption of migrant j is:

$$c_1^j = w_1^j - s^j$$

where w_1^j is the first-period wage when working illegally in country B and s^j are savings.

Given their status of illegal migrants in the host country B the rewards to human capital cannot be fully exploited: income earned in country B is increasing in the skill level but we assume that the skill premium is compressed because of illegality. More precisely, first period wages are given by the following equation:

$$w_1^j = a^j \tau w^B$$

where w^B is the exogenously given "normal" wage for a unit of labor in the host country.

Individual wages positively depend on individual skills but the status of illegal migrant makes those skills less effective. The parameter $\tau \in (0, 1]$ captures the magnitude of the *skill waste* effect associated with the status of illegal migrant. As $\tau \to 0$ illegal migration tends to be less and less rewarding for all illegal migrants and has a squeezing effect on the level of human capital, i.e. being uneducated and unskilled rather than having a PhD in engineering does not change the returns from migration.[25] On the contrary, when $\tau = 1$ there is no skill waste and migrants' human capital is fully rewarded according to the skill content a^j.[26]In other words, when $\tau = 1$ we assume that migration is legalized.

[24]We assume that the individual possesses no capital at the beginning of the first period. In reality, it is often the case that migrants from less developed countries have a negative amount of wealth since they have borrowed from friends and relatives in order to pay for migration costs.

[25]Even if $\tau = 0$ is implausible since the brightest and more skilled migrants are more likely to obtain the best opportunities, skills and formal qualification are of little use if you are an illegal migrant. Very often migrants employed illegally in highly unskilled and manual jobs – such as agricultural workers in developed countries – are highly skilled and educated individuals.

[26]Since all individuals found it profitable to migrate at the beginning of the first period and given that we abstract from differences in preferences for the location of consumption (associated for instance with relatively high preferences for home consumption) for any $a^j \in [\underline{a}, \overline{a}]$ the following inequality is satisfied:

The parameter τ might be interpreted as the effect of the institutional framework within which illegal migration takes place on the individual's ability to use the stock of human capital accumulated at home. The degree to which it is possible for the migrant to exploit his or her skills might depend, for instance, on the attitude of the immigration authorities in the host country. When some particular skills are required due to an excess demand in the host country labor market, immigration authorities tend to be more tolerant toward illegal migrants possessing those skills (in this case τ may be close to 1).

In the second period migrants face two options. They can return to the home country A, where the exogenously given "normal" wage is w^A ($< w^B$). In this case they fully use their skills and earn $a^j w^A$. Alternatively, they continue to reside in the host country B where they face a positive probability of becoming legal migrants and therefore fully exploit their human capital.

The skill waste affects also the ability of illegal migrants to fully exploit financial markets in the host country and therefore the return on savings, which differs depending on the migrant's choice for the second period.

Often the sole motive for migration is the necessity to accumulate assets that will be subsequently employed in productive activities at home. Here we assume that if the migrant decides to go back to homeland A in period 2, then period-1 savings will be directly used, together with individual skills, in an entrepreneurial project with gross return $a^j R^A$ in the home country A — where R^A is the exogenously given "normal" gross return on savings in the home country. We allow for returns from the entrepreneurial project to differ between migrants. The higher the level of skills of the migrant, the higher the likelihood that she will locate the best investment opportunities and, in turn, the more rewarding will be the allocation of her capital.

Similarly, savings are located in the host country B in case the migrant decides to stay in B during period 2. The exogenously given "normal" return on savings in B is R^B. Then, in case of a period-2 stay in country B, savings generate a return $\tau a^j R^B$, which is higher for individuals with higher skills, but is affected by the skill waste.

Hence, the return from savings will vary according to the migrant's location choice for the second period:

$$e^j = \begin{cases} e^j_R = a^j R^A s^j & \text{if he or she returns to country } A \\ e^j_{NR} = \tau a^j R^B s^j & \text{if he or she stays in country } B \end{cases}$$

In other words, illegal migrants face constraints which negatively affect not only their ability to fully exploit their labor potential but also their ability to locate and exploit investment opportunities. For instance, although fully aware of the different financial opportunities offered in the host country, the illegal migrant does not have access to them since she does not have a legal permit and must recur to alternative, less rewarding and sometimes illegal, forms of financial investment. Instead, when planning to go back to the homeland, migrants im-

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$$\tau a^j w^B \geq a^j w^A \Longrightarrow \tau w^B - w^A \geq 0$$

where w^A $\left(< w^B\right)$ is the exogenously given "normal" wage for a unit of labor in the home country. In other words wage differentials more that compensate for the "skill waste" effect. Moreover, since we assume that illegal migrants have already chosen to live and work in the host country B in period 1, the condition above imposes either a lower bound to the percentage wage gap $\widehat{w} \equiv \frac{w^B}{w^A}$ (i.e. $\widehat{w} > \frac{1}{\tau}$) or, given w^A and w^B, a lower bound to τ (i.e. $\tau > \frac{w^A}{w^B}$).

mediately send home their savings, where they start their entrepreneurial project even before returning.

Therefore, consumption in second period also differs depending on the migrant's second-period choice. In case of *return migration,* consumption is given by:

$$c_{2,R}^{j} = w_{2,R}^{j} + e_{R}^{j} = a^{j}w^{A} + a^{j}R^{A}s^{j} = a^{j}\left(w^{A} + R^{A}s^{j}\right)$$

where in the home country return migrants are fully able to exploit their human capital as related to both their endowment of labor and the capital saved in the host country.

If migrants decide to *stay in the host country* they face a positive probability of getting legal residence. For instance, this might happen in the case of an amnesty granted to all illegal migrants who have being residing and working for a certain period in the host country or in the case of acceptance of an asylum application. The main consequence of being granted legal status in terms of our model is the ability to fully make use of individual skills, i.e. the skill waste effect disappears in the second period when the migrant obtains the legal status.

Consumption in this case can be expressed as the expected income in period 2 ($w_{2,NR}^{j} \equiv \widetilde{w^{j,B}}$) plus the accumulated savings, invested in the host country B (e_{NR}^{j}):

$$c_{2,NR}^{j} = w_{2,NR}^{j} + e_{NR}^{j} = \widetilde{w^{j,B}} + e_{NR}^{j} \tag{6}$$

Given γ as the probability of getting legal residence in period 2, then the expected wage for migrant j in country B in period 2 ($\widetilde{w^{j,B}}$) will be: (i) $\tau a^{j}w^{B}$, i.e. the illegal immigrant's wage (the same as in period 1) in case of not getting legal status, with probability $(1-\gamma)$; (ii) $a^{j}w^{B}$, i.e. the legal immigrant's wage in case of getting legal residence, with probability γ.

Hence, the expected wage for period 2 in case of no-return is:

$$\widetilde{w^{j,B}} = (1-\gamma)\tau a^{j}w^{B} + \gamma a^{j}w^{B} = a^{j}hw^{B} = a^{j}\widetilde{w^{B}}$$

where $h \equiv [(1-\gamma)\tau + \gamma]$ and $\widetilde{w^{B}}$ is the expected "normal" period-2 wage in the host country B.

When substituting both expected income for period 2 and the return on saving into the expression (6) for consumption, it yields:

$$c_{2,NR}^{j} = a^{j}hw^{B} + \tau a^{j}R^{B}s^{j} = a^{j}\widetilde{w^{B}} + \tau a^{j}R^{B}s^{j}$$

Finally, the lifetime utilities functions of migrants depend on their decision whether or not to return. In the case of *return*:

$$U_{R}^{j}(c_1, c_2) = \ln\left[\tau a^{j}w^{B} - s^{j}\right] + \delta \ln\left[a^{j}\left(w^{A} + R^{A}s^{j}\right)\right] \tag{7}$$

Whereas in the case of *no return*:

$$U_{NR}^{j}(c_1, c_2) = \ln\left[\tau a^{j}w^{B} - s^{j}\right] + \delta \ln\left[a^{j}(\widetilde{w^{B}} + \tau R^{B}s^{j})\right] \tag{8}$$

A.1 Optimal Savings, Return Decisions and Skills

The optimal level of savings s^{*j} for an individual with skills j is conditional on her location decision for the second period.

In the case of return migration the level of savings which maximizes the individual's intertemporal utility function (7), is given by:

$$s_R^{j,*} = \frac{1}{R^A(1+\delta)}\left[\delta R^A w_1^j - w^A\right] = \frac{1}{R^A(1+\delta)}\left[\delta\tau a^j R^A w^B - w^A\right] \tag{9}$$

If the illegal migrant decides to stay in the host country, then the optimal first-period savings will be determined by the maximization of the utility function (8). Hence, the optimal savings in case of no return is the following:

$$s_{NR}^{j,*} = \frac{1}{\tau R^B(1+\delta)}\left[\delta\tau R^B w_1^j - \widetilde{w^B}\right] = \frac{w^B}{\tau R^B(1+\delta)}\left[\delta\tau^2 a^j R^B - h\right] \tag{10}$$

since $\widetilde{w^B} \equiv hw^B$ and $h \equiv [(1-\gamma)\tau + \gamma]$.

It is easy to show that savings in case of return are higher than saving in case of no-return when the percentage wage gap between the host country B and the origin country A — that is $\widehat{w} \equiv \frac{w^B}{w^A}$ — is higher than the percentage rate-of-return gap — that is $\widehat{R} \equiv \frac{R^B}{R^A}$ — i.e. when $\widehat{w} > \widehat{R}$.[27]

Several authors have emphasized that a positive probability of return induces migrants to save and remit more (see Galor and Stark, 1990; Stark, 1992; Mesnard, 2004). This result is in accordance with the life-cycle theory of consumption since individuals who plan to re-emigrate in a relatively poor country will save more in order to smooth their consumption path over the life-cycle.[28]

By substituting the optimal level of savings (9) and (10) in the respective utility functions (7) and (8), we obtain the indirect utility in case of return ($U_R^{j,*}$):

$$U_R^{j,*}(\delta,\tau,a^j,w^A,w^B,R^A) = (1+\delta)\ln\left[\frac{1}{1+\delta}\left(R^A\tau a^j w^B + w^A\right)\right] - \\ - \ln(R^A) + \delta\ln(\delta a^j) \tag{11}$$

and in case of no-return ($U_{NR}^{j,*}$):

$$U_{NR}^{j,*}(\delta,\tau,a^j,w^B,R^B) = (1+\delta)\ln\left[\frac{w^B}{1+\delta}\left(R^B\tau^2 a^j + h\right)\right] - \\ - \ln(\tau R^B) + \delta\ln(\delta a^j) \tag{12}$$

Let us define the net indirect utility derived from returning $U^{j,*}$ for an illegal migrant with j level of skills as the difference between the two optimal levels of utility. Hence:

$$U^{j,*}(\delta,\tau,a^j,w^A,w^B,R^A,R^B) \equiv U_R^{j,*} - U_{NR}^{j,*} \equiv$$

[27] More precisely, $s_R^{j,*} > s_{NR}^{j,*}$ when:

$$\frac{\widehat{w}}{\widehat{R}} > \frac{\tau}{[(1-\gamma)\tau+\gamma]}$$

Note that the fraction $\frac{\tau}{[(1-\gamma)\tau+\gamma]}$ is always lower than 1 since $\tau \in (0,1]$.

[28] Higher incentives to save could also be motivated by a higher marginal utility of consumption in the home country, for instance due to higher purchasing power in the home country or strong preferences for home varieties or by the necessity to overcome higher uncertainty (see Dustmann 1997).

$$\equiv (1+\delta)\ln\left[\frac{R^A\tau a^j w^B + w^A}{\tau R^B \tau a^j w^B + h w^B}\right] - \ln\frac{R^A}{\tau R^B} \tag{13}$$

which can be rewritten as:

$$U^{j,*} \equiv (1+\delta)\ln\left[\frac{R^A w_1^j + w^A}{\tau R^B w_1^j + \widetilde{w^B}}\right] - \ln\frac{R^A}{\tau R^B} \tag{14}$$

The derivative of the net indirect utility $U^{j,*}$ with respect to a^j is the following:

$$\frac{\partial U^{j,*}}{\partial a^j} = \frac{(1+\delta)\tau w^B}{W_R W_{NR}}\left(hR^A w^B - \tau R^B w^A\right)$$

where $W_R \equiv R^A w_1^j + w^A$ and $W_{NR} = \tau R^B w_1^j + \widetilde{w^B}$.

Proposition 4 shows that under general conditions on the relative wages $\widehat{w}$ and the relative rates of return $\widehat{R}$, a greater number of highly skilled illegal migrants are more likely to return.

Proposition 4 *If the "normal" (percentage) wage gap $\widehat{w} \equiv \frac{w^B}{w^A}$ is strictly higher than the "normal" (percentage) rate-of-return gap $\widehat{R} \equiv \frac{R^B}{R^A}$, i.e.*

$$\frac{\widehat{w}}{\widehat{R}} \equiv \frac{\frac{w^B}{w^A}}{\frac{R^B}{R^A}} > 1$$

then, net utility from return migration — therefore the probability of returning in the home country — is an increasing function of the individual level of skills.

Proof.

When taking the first derivative of the net utility from return migration, we obtain:

$$\frac{\partial U^{j,*}}{\partial a^j} = \frac{(1+\delta)\tau w^B}{W_R W_{NR}}\left(hR^A w^B - \tau R^B w^A\right)$$

where $W_R \equiv R^A w_1^j + w^A$ and $W_{NR} = \tau R^B w_1^j + \widetilde{w^B}$.

The net utility is then strictly increasing in the skill level a^j if and only if:

$$hR^A w^B > \tau R^B w^A$$

or:

$$\frac{\widehat{w}}{\widehat{R}} \equiv \frac{\frac{w^B}{w^A}}{\frac{R^B}{R^A}} > \frac{\tau}{[(1-\gamma)\tau + \gamma]}$$

Notice that, since γ is a probability, then h is a linear combination between τ (which is lower than 1) and 1. Hence, the fraction on the right-hand-side is certainly lower than 1.

As a consequence, the condition:

$$\frac{\widehat{w}}{\widehat{R}} \equiv \frac{\frac{w^B}{w^A}}{\frac{R^B}{R^A}} > 1$$

is sufficient to assure that $U^{j,*}$ is increasing in a^j. ■

This result is particularly important since it highlights how the effect of illegality as a skill waste, in both the labor market and the accession of financial markets, induces highly skilled migrants to leave the host country. While our current simple framework does not allow us to make general inferences regarding overall welfare, it seems reasonable to assume that illegality costs the host country, as it induces the more productive individuals to leave first.

The net utility is also a decreasing function of the probability of legalization, as the first derivative of $U^{j,*}$ with respect to γ proves:

$$\frac{\partial U^{j,*}}{\partial \gamma} = -\frac{(1+\delta)(1-\tau)w^B}{\tau R^B w_1^j + \widetilde{w^B}}$$

As intuitively expected, better prospects for period 2 increase the expected income from staying in the host country and reduce the incentives to return.

These latter two results are the main objectives of the empirical analysis, preceded by a presentation of the data set, in the following sections.

B Categories of irregular aliens defining an "illegal migrant" in the survey

The observational unit of the survey — generally defined "illegal immigrant" — is identified according to the legal status of the immigrants as follows:

1. *clandestine migrants*, i.e. a foreigner with an expired (or no) visa that has been in Italian territory for no longer than 6 months and that is present in typical migrant meeting points, like "soup kitchens", orientation activities provided by voluntaries and NGOs, etc.

2. *individuals applying for asylum or refugee status*, i.e.:

   - individuals under temporary protection for humanitarian aid;
   - individuals that should be repatriated to a country where they would be persecuted for reasons concerning race, gender, language, religion, opinions, citizenship, personal or social condition or that would be repatriated to a country where they would not be protected from prosecution (the Italian reference in the law is: ex art.19, 1° comma, D.lgs. no.286/98);

3. *individuals waiting for a rejection decree with accompaniment to the closest border*; the rejection decree is usually issued by the local police authority (*Questore*) to an individual that arrived in Italy avoiding border controls and that was stopped immediately after her/his arrival;

4. *individuals waiting for an expulsion decree*: the decree is issued by the local administrative authority (*Prefetto*) when the migrant avoided border controls and was not yet rejected;

In our econometric study we used only the first category.

C Variables Description on the SIMI Estimation

	Description	**Exp. sign**	**Mean**	**St. Dev**	**Type**	**Source**
Years of schooling	number of years the individual attended school (categorical variable: 0 none, 1 from 1 to 5 years, 2 from 6 to 8 years, 3 from 9 to 11 years, 4 more than 12 years)	+	3.37	1.21	categorical	Questionnaire
Host-country language proficiency	equals 2 if the migrant has good or advanced knowledge of the language of the intended destination country, 1 if she has a basic knowledge and 0 otherwise	+	0.58	0.74	categorical	Questionnaire
Knowledge of foreign language	equals the number of foreign languages known with at least a basic level of proficiency	+	1.87	1.04	categorical	Questionnaire
Highly skilled worker	equals 1 if the individual possesses highly qualified job skills (translator, secretary, financial advisor, doctor or chemist, lawyer, teacher, manager, consultant, entrepreneur) and 0 otherwise	+	0.19	0.39	dummy	Questionnaire
Migro-network	equals 1 if the individual has relatives and friends in the intended country of destination, 0 otherwise	+/-	0.18	0.39	dummy	Questionnaire
Unemployed in the home country	equals 1 if the migrant is not employed before departure, 0 otherwise	-	0.56	0.5	dummy	Questionnaire
Social conflict	equals 1 if the migrant declares that there was a social conflict in the village or city of origin (residence) in the last 5 years, 0 otherwise	-	0.68	0.46	dummy	Questionnaire

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	Description	**Exp. sign**	**Mean**	**St. Dev**	**Type**	**Source**
Economic crisis	equals 1 if the migrant declares that there was an economic or financial crisis in the village or city of origin (residence) in the last 5 years, 0 otherwise	+/-	0.86	0.34	dummy	Questionnaire
Children in the home country	equals 1 if one or more children are in the home country, 0 otherwise	-	0.06	0.24	dummy	Questionnaire
Relatives in the home country	number of relatives that are left in the country of origin	-	5.17	3.98	continuous	Questionnaire
Past migration	equals 1 if the individual has already done a migration experience (internal or international), 0 otherwise	-	0.27	0.44	dummy	Questionnaire
Distance	distance in 1000 Km (Geographical co-ordinates where used to calculate distance; rounded latitude and longitude figures were used for the purpose of finding the approximate geographic center of the origin and destination countries)	+/-	3.62	2.04	continuous	Gazetteer of Conventional Names, Third Edition, August 1988, US Board on Geographic Names and on other sources.
Muslim	equals 1 if the individual declares to be a Muslim; 0 otherwise	-	0.59	0.49	dummy	Questionnaire
Europe	equals 1 if the individual country of origin is in Europe, 0 otherwise	+	0.25	0.43	dummy	Questionnaire
North Africa	equals 1 if the individual country of origin is in North Africa (Afro-Mediterranean countries), 0 otherwise	+	0.13	0.34	dummy	Questionnaire
Asia	equals 1 if the individual country of origin is in Asia, 0 otherwise	-	0.27	0.44	dummy	Questionnaire

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	Description	**Exp. sign**	**Mean**	**St. Dev**	**Type**	**Source**
South America	equals 1 if the individual country of origin is in Central and Latin America, 0 otherwise	-	0.014	0.12	dummy	Questionnaire

D SIMI: Estimation results when including all categories of illegal immigrants

Table 7: Estimates of the Probit Model for the Intention to Return: Whole Sample

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Skills and network							
Years of schooling	0.131**				0.131**		
	(0.040)				(0.041)		
High-Skilled worker		0.349*			0.274	0.273	0.298+
		(0.167)			(0.172)	(0.170)	(0.170)
Knowledge of foreign languages			0.184**			0.174**	
			(0.053)			(0.053)	
Host-country language proficiency				0.158*			0.144**
				(0.067)			(0.068)
Individual covariates							
Migronetwork	0.494**	0.578**	0.477**	0.570**	0.496**	0.485**	0.579**
	(0.136)	(0.133)	(0.136)	(0.139)	(0.136)	(0.136)	(0.139)
Unemployed in the home country	−0.239*	−0.202*	−0.234*	−0.255*	−0.201*	−0.195+	−0.212*
	(0.101)	(0.102)	(0.100)	(0.101)	(0.104)	(0.103)	(0.104)
Children in the home country	0.519**	0.484**	0.502**	0.492**	0.494**	0.477**	0.464**
	(0.120)	(0.120)	(0.119)	(0.120)	(0.121)	(0.120)	(0.121)
Past migration	−0.232*	−0.279*	−0.286*	−0.280*	−0.241*	−0.292**	−0.288**
	(0.112)	(0.111)	(0.111)	(0.111)	(0.112)	(0.111)	(0.111)
Country of Origin							
GNI per capita (log, 2001)	0.289**	0.339**	0.279**	0.314**	0.299**	0.290**	0.326**
	(0.088)	(0.087)	(0.089)	(0.088)	(0.088)	(0.089)	(0.089)
Social conflict	−0.588**	−0.569**	−0.540**	−0.553**	−0.587**	−0.542**	−0.556**
	(0.125)	(0.123)	(0.124)	(0.125)	(0.125)	(0.124)	(0.125)
Economic crisis	0.417**	0.403**	0.378*	0.431**	0.425**	0.387**	0.439**
	(0.148)	(0.148)	(0.149)	(0.150)	(0.148)	(0.149)	(0.150)
Distance(in log)	0.207**	0.217**	0.211**	0.200**	0.212**	0.216**	0.206**
	(0.043)	(0.043)	(0.043)	(0.044)	(0.044)	(0.043)	(0.044)
Muslim	0.399**	0.366**	0.377*	0.366**	0.403**	0.381**	0.371**
	(0.115)	(0.112)	(0.113)	(0.113)	(0.115)	(0.113)	(0.114)

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Table 7: continued

Regressors	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Asia	-0.748^{**}	-0.746^{**}	-0.633^{**}	-0.694^{**}	-0.755^{**}	-0.648^{**}	-0.707^{**}
	(0.158)	(0.156)	(0.160)	(0.158)	(0.159)	(0.161)	(0.159)
South America	-1.40^{+}	-1.548^{**}	-1.368^{+}	-1.596^{*}	-1.453^{+}	-1.424^{+}	-1.646^{*}
	(0.766)	(0.763)	(0.759)	(0.763)	(0.766)	(0.759)	(0.763)
Europe	0.201	0.189	0.383^{+}	0.122	0.195	0.365	0.119
	(0.216)	(0.214)	(0.222)	(0.219)	(0.216)	(0.223)	(0.219)
North Africa	0.097	0.086	0.088	0.023	0.091	0.077	0.013
	(0.256)	(0.253)	(0.255)	(0.256)	(0.255)	(0.255)	(0.256)
Constant	-2.795^{**}	-3.030^{**}	-2.676^{**}	-2.580^{**}	-3.146^{**}	-3.011^{**}	-2.959^{**}
	(0.616)	(0.633)	(0.600)	(0.603)	(0.656)	(0.636)	(0.642)
Observations	*792*	*812*	*804*	*794*	*792*	*804*	*794*
Pseudo R^2	0.151	0.148	0.154	0.152	0.153	0.156	0.156
Log likelihood	−454.5	−468.1	−460.1	−455.7	−453.2	−458.8	−454.1

Standard errors in parentheses / Probability of return (baseline) = 0.754
+ significant at 10%; * significant at 5% ; ** significant at 1%