



Università degli Studi di Bari
Dipartimento di Scienze Economiche e Metodi
Matematici

Southern Europe Research in Economic Studies
S.E.R.I.E.S.

WORKING PAPER No. 0011

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a Cause of Skill Waste

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Intentions to Return of Irregular Migrants: Illegality as a Cause of Skill Waste*

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Abstract

In this paper we show that highly skilled illegal migrants may be more likely to return home than migrants with low or no skills when illegality causes “skill waste”, i.e. reduced ability of making use of individual capabilities both in the labor and the financial markets. This result is in contrast with common wisdom on return migration, according to which low-skill individuals are more likely to go back home rather than high-skill migrants. The simple theoretical life-cycle framework that shows the former result is tested on a sample of illegal migrants crossing Italian borders in 2003. The estimation results confirm that highly skilled illegal migrants are more willing to return home.

Keywords: Illegal migration, labor skills, skill waste.

JEL Classification Codes: F22, C25.

*We wish to thank Maria Concetta Chiuri, Giovanni Ferri, Hillel Rapaport and participants at the SIUTE seminar of the University of Lille 1 for useful discussions on preliminary versions of this paper. Piero Cipollone and Christian Dustmann also offered useful insights at the AIEL 2005 Meeting (Rome 22-23 September 2005) where an earlier version was presented. The usual disclaimer applies.

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1 Introduction

The debate on illegal migration in the developed world is capturing a great deal of public attention. The mounting dimension of the phenomenon is a direct consequence of the tightening of immigration laws in most OECD countries. In fact, instead of decreasing the size of immigration flows, this policy is having the effect of increasingly shifting the balance from legal to illegal migration.¹ In terms of economic and social impact for both receiving and sending countries this pattern is far from being neutral. Given the different set of incentives and constraints faced by legal and illegal migrants we might easily expect significant differences in their migratory behavior. Nevertheless, while there are numerous contributions in the literature on legal migration, the phenomenon of illegal migration has been scarcely analyzed, mainly because of the severe lack of data.

In this paper, we aim to shed some light on return migration, and in particular on return intentions of illegal migrants. Generally, return migration is important for both the country of origin and the host country. Since return migrants mostly carry capital, knowledge and entrepreneurship to developing countries, countries of origin are interested in understanding both the determinants of the return choice and the individual characteristics of those who decide to return. On the other hand, in order to establish well-designed immigration policies, the analysis of the individual behavior of migrants (i.e. getting information on plans and future expectations) is also essential for destination countries. This is valid for both legal and illegal migrants; in particular, the latter ones must consider both the possibility of being apprehended, but also the probability of being granted legal status (e.g. as asylum seeker or via a general amnesty).

Our analysis focuses on illegal migrants for whom illegality is originally designed in economic terms as a *skill waste* effect, i.e. a tax that impinges the positive outcome of skills on both individual income and savings.

Regarding the relationship between skills and return intentions, most literature has focused on legal migrants. 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; Chiswick 2005). Since migration is a particularly costly investment, only the most capable, entrepreneurial and risk-prone individuals usually undertake such an investment.

¹Notwithstanding the statistical difficulties in measuring the phenomenon, estimates of illegal migration (both stocks and flows) are available (see Tapinos (1999) and Jandl (2004) for an overview of the statistical approaches to measure irregular migration). According to recent estimates of the INS the total unauthorized immigrant population residing in the United States in January 2000 was about 7.0 million; from 1990 to 1999 from 350.000 to 500.000 illegal migrants were crossing the US borders annually. Estimates of illegal migration flows to Europe (EU-15) in 2001 are up to 650.000 according to a recent study by Jandl (2003), (100.000 of them in Italy).

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 1993, 2003a, 2003b; Reagan and Olsen, 2000). Orrenius and Zavodny (2005) present the only study on undocumented (i.e. illegal) Mexican immigrants to the US by means of the data from the Mexican Migration Project. However, their analysis focuses on the first migration choice – i.e. the decision to leave the home country for the first time. Our paper can be considered a sort of complementary study to theirs, which explicitly does not deal with return migration (see page 220).

The starting point of this paper is the stark difference between irregular and regular migrants. As generally acknowledged, although one of the most common motives for migration is the necessity to accumulate assets (which will be subsequently employed in productive activities) an illegal entrant is generally less capable to fully exploit his or her skills and human capital. Moreover, the illegal status hinders the migrant’s access to many markets and institutions in the host country (including financial markets), which are instead fully available to legal migrants. Being illegal may make individual skills even less effective than in the home country, as the illegal migrant has to resort uniquely to the shadow economy. As a consequence, the *skill waste* effect, typically related to the illegal status, is particularly strong for those who are the most skilled and educated among the illegal entrants. Given this, it would be natural to expect that the opportunity cost of returning to the country of origin be substantially lower for the skilled individuals than for the unskilled ones.

First, we consider the life-cycle framework to link the skill endowment to the return decision of illegal migrants. Second, thanks to the availability of an unique data set on Italian irregular immigrants we empirically test the main implications of our theoretical specification.

In particular, the data set comprehends a sample of 920 illegal migrants who crossed the Italian borders in 2003. One of the most important features of these data is that they contain information on the migrants’ expectations “at the gate” concerning their intentions to return, together with many other characteristics (e.g. intentions to remit, expectations on future income, employment, legal status, characteristics of the village of origin etc.). Indeed, using this data set we are able to quantify the effects of skills and education and other relevant variables on the return intention.

Empirical results confirm the main findings of our theoretical model and, in particular, they highlight the important role of individual skills in increasing the choice of return for illegal migrants.

To the best of our knowledge, this is the first contribution towards increasing our knowledge on the relationship between skill characteristics and return attitudes

for illegal migrants, whose numbers far outpace those of legal migrants.

The paper is organized as follows. Section 2 describes the main characteristics of the data set on Italian irregular immigrants. Section 3 presents a theoretical (life-cycle) framework to model the return plans of irregular migrants with heterogeneous level of skills. 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 Irregular Migration: Some Background and the Italian Individual Data

The phenomenon of international migration seems to have undertaken relevant changes in the latter decades, especially in Europe. The flows of legal and documented migrants have been accompanied by a surge in irregular migrants. This can be related to the restrictive changes in migration policies occurred in most OECD countries since the mid-1970s (see Zimmermann, 1995, Faini, de Melo and Zimmermann, 1999, Venturini, 2003).

More precisely, the definition of *irregular immigrant* is strictly related to three characteristics of the international movement of people and labor force: the type of entry, the status of residence, the kind of work permit (see Tapinos, 1999). For instance, an alien that has legally entered the host country and has acquired legal residence, but no work permit, is considered an irregular migrant if he or she works.²

In 2003 the Department of Economics at the University of Bari has conducted a field survey – SIMI, Survey of Illegal Migration in Italy – by focusing on some specific types of illegal immigrants. Referring to the definition above, the survey was directed on migrants that failed all three legal requirements (entry, residence and work permit). In particular, the survey took advantage of the Italian law that prescribed apprehended illegal aliens to be hosted in special residence centers (Centers of Temporary Residence or *Centri di Permanenza Temporanea*) to ascertain their identification. According to the law, this stay could be extended up to

²There is a major difference between countries more immigration-prone – like the US and Canada – and more closed countries – like the European Union after 1970s. In the former ones the visa system is very stratified and allows a more clear identification of the three layers (entry, residence and employment). This has a consequence also on the type of illegal immigration. For instance, the common situation of a migrant that overstays his legal visit (and residence) in the US while waiting for a legal work permit has no counterpart in Europe, but in the rare cases of amnesties since the issue of work permits (i.e. the legalization of employment, differently from entry and residence) is not clearly regulated. Then, the different attitudes towards legal migration have consequences also on the type of illegal migration, being less socially compatible in the closed countries rather than in the immigration-prone countries.

thirty days when there were no bilateral agreements with the country of origin to allow quick repatriation.

The field survey was mainly conducted in the host temporary centers, although some migrants were also interviewed at other aggregation places (public canteens, help and reception centers). The data were collected by means of questionnaires filled up by each individual with the help of an interviewer (usually a cultural mediator trusted by the migrants and previously trained on the questionnaire and its scientific aims).³

The survey aimed at collecting individual data on “illegal immigrants”, more specifically their main demographic and socio-economic characteristics, as well as their motivations and future expectations from the (at least temporarily aborted) migration project.

To be more precise, by “illegal immigrant” (i.e. the sampling unit) SIMI defines a (at least 18-year old) clandestine or asylum seeker that has been in Italy for a period no longer than 6 months.⁴ This short period minimizes the measurement error when interviewees were 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 before departure.

The sample included 920 individuals that were interviewed in the period January–September 2003 in four border Italian regions (mainly concerned with the phenomenon of illegal entrance).⁵ 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 January–September 2003.

55 different nationalities have been represented in the sample; the six largest fractions were coming from: Iraq (9.6%), Liberia (9%), Sudan (5.4%), Morocco (5.1%), Senegal (4.8%), Turkey (4.8%).

Table 1 summarizes the characteristics of the sample that are more relevant for the present paper.

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 218 USD (while average individual monthly income was 145\$), with a very high variability due to 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 an average monthly wage of 877 USD.

³For further details on the field survey see Chiuri, et al. (2004); for the statistical and methodological issues related to sampling see Chiuri and D’Uggento (2004).

⁴See Appendix D for a thorough definition.

⁵The four regions are: Apulia, Calabria, Friuli Venezia Giulia and Sicily.

Table 1: Main Characteristics of the 2003 Survey on Illegal Migration in Italy (SIMI).

<i>General</i>	
Number of sample units	920
Median Age	27.2 (6.19)
Family income at home (in US\$)	851.13 (1048.9)
Expected income at destination (in US\$)	3675.86 (4153.2)
Number of children	0.57 (1.09)
children left home	0.45 (0.95)
Cost of the trip (in US\$)	1644.95 (1417.18)
Intention to return home	0.59 (0.49)
Intended length of stay	3.86 (1.27)
<i>Sample composition</i>	
Clandestines (percentage)	29.8
Asylum Seekers (percentage)	58.1
Others (percentage)	12.1
<i>Skill characteristics</i>	
Illiteracy	647.22 (220.46)
School degree	2.87 (1.33)
primary (percentage)	27.08
middle (percentage)	30.85
high-school (percentage)	21.75
university (percentage)	4.99
Good host-country language proficiency ^a	20.22
Basic host-country language proficiency	26.62
Job qualification ^b	
low-skilled (percentage)	76.52
high-skilled (percentage)	18.26

^a Percentage of migrants with declared good proficiency (“basic” level through “very good” level) in the language of the intended destination country.

^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.

Migration is a major investment for the family: on average the cost of the trip is equivalent to approximately 2 years of individual earnings in the country of origin.

About 60% of the interviewees declared to have intentions to return home and our empirical analysis is based on their characteristics in order to determine which variables affect more the decision to return home.

One third of the individuals in the sample are clandestine. There is a high percentage of asylum seekers in. The two typologies differ in many aspects. The more relevant for our analysis is that asylum seekers, given their special status, have a much higher probability of getting legal status with respect to clandestine immigrants.

Illegal immigrants into SIMI have a non-negligible level of skills that we measure in three different ways. First, the degree of illiteracy is not very high since 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 7.9% have respectively a secondary education degree and vocational education. Only 15.3% of the sample declares to have no formal education. Other two indirect measures of skills are represented by the degree of host-country language proficiency and by 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% of the migrants declare to have a good knowledge of it. 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.

In the following section we propose some theoretical considerations to link return decisions of illegal migrants and their skill endowments within a very simple life-cycle framework.

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

The main point of our paper is that the effect of illegality dampens the return on skills of immigrants; hence, it provides a higher incentive to return home to the high-skilled migrants rather than to the low-skilled ones.

It can be given a very simple life-cycle interpretation of this intuition. Let us consider a two-period discrete world 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 consumption in period 1 and period 2 respectively; δ is the

subjective discount factor.

The illegal migrant has already reached the destination country B and earns in period 1:

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

w^B is the average wage in the destination country B ; a is the migrant skill level and we assume that migrants' skills are continuously distributed over the interval $[\underline{a}, \bar{a}]$. Finally, $\tau \in (0, 1]$ captures the magnitude of the *skill waste* effect associated with the status of illegal migrant. As $\tau \rightarrow 0$ 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, whether to go back home to country A or 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 average 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 the country of destination B , he/she will face a probability γ of getting legal status and therefore to fully exploit his/her skills in the labor market. Hence, the expected wage for period 2 in case of no return is the following:

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

since the wage will be aw^B (without skill waste) with probability γ of obtaining legal status, $a\tau w^B$, like in period 1, if he/she does not get legal status with probability $(1 - \gamma)$.

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

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

⁶Even 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. Very often migrants employed illegally in highly unskilled and manual jobs – such as agricultural workers in developed countries – are highly skilled and educated individuals.

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 for country j .

We assume that the rate of return of the illegal migrant is affected by both his/her skills and the illegal status. In other words, at the end of period 1 if the migrant decides to return home (country A), then it will invest his/her savings in the origin country and obtain a rate of return equal to aR^A . We are implicitly assuming that at the end of period 1 the illegal migrant is repatriating his/her savings and the rate of return he/she will obtain be proportional to her skills. Indeed, empirical studies and surveys on return migration have shown that the repatriation of funds is likely to start entrepreneurial activities whose rate of return are not fixed and will depend on individual abilities.

In case of no return, we assume that the illegal migrant uses the destination country B financial markets to invest his/her savings. Once again, the rate of return will depend on personal skills, but they are dampened by illegality through the skill waste effect: $a\tau R^B$.

Let us assume that the “normal” rate of return are not different in the two countries, i.e. $R^A = R^B = R$.⁷ This assumption will simplify the framework and allow for a simple graphical interpretation.

Summarizing, the problem of the illegal migrant is to maximize his/her utility U of eq. (1) under two different budget constraints depending on whether returning to the home country A or staying in the destination country B . In case of return the intertemporal budget constraint is given by:

$$C_1 + \frac{1}{aR}C_2 = a\tau w^B + \frac{1}{aR}aw^A \quad (2)$$

Instead, in case of no return:

$$C_1 + \frac{1}{a\tau R}C_2 = a\tau w^B + \frac{1}{a\tau R}haw^A \quad (3)$$

In Figure 1 the continuous budget constraints are drawn under the assumption that neither return nor “no return” are revealed-preferred, i.e. that the two budget constraints intersect in the first quadrant.⁸

Moreover, since the budget lines change for different values of skills, we considered the special skill level a^* for which utility in case of return and “no return”

⁷See the Appendix A for a generalization of the model with two different rates of return.

⁸Since the slope of the “no return” (NR) budget constraint is lower than in the case of return, then it suffices to show that the intercept the the NR budget constraint, i.e. \bar{C}_1^{NR} , is higher than the intercept of the budget constraint in case of return, i.e. \bar{C}_1^R . It is easy to show this happens when $\frac{w^B}{w^A} > \frac{\tau}{h}$. Hence, a sufficient condition is $w^B > w^A$, which is very plausible.

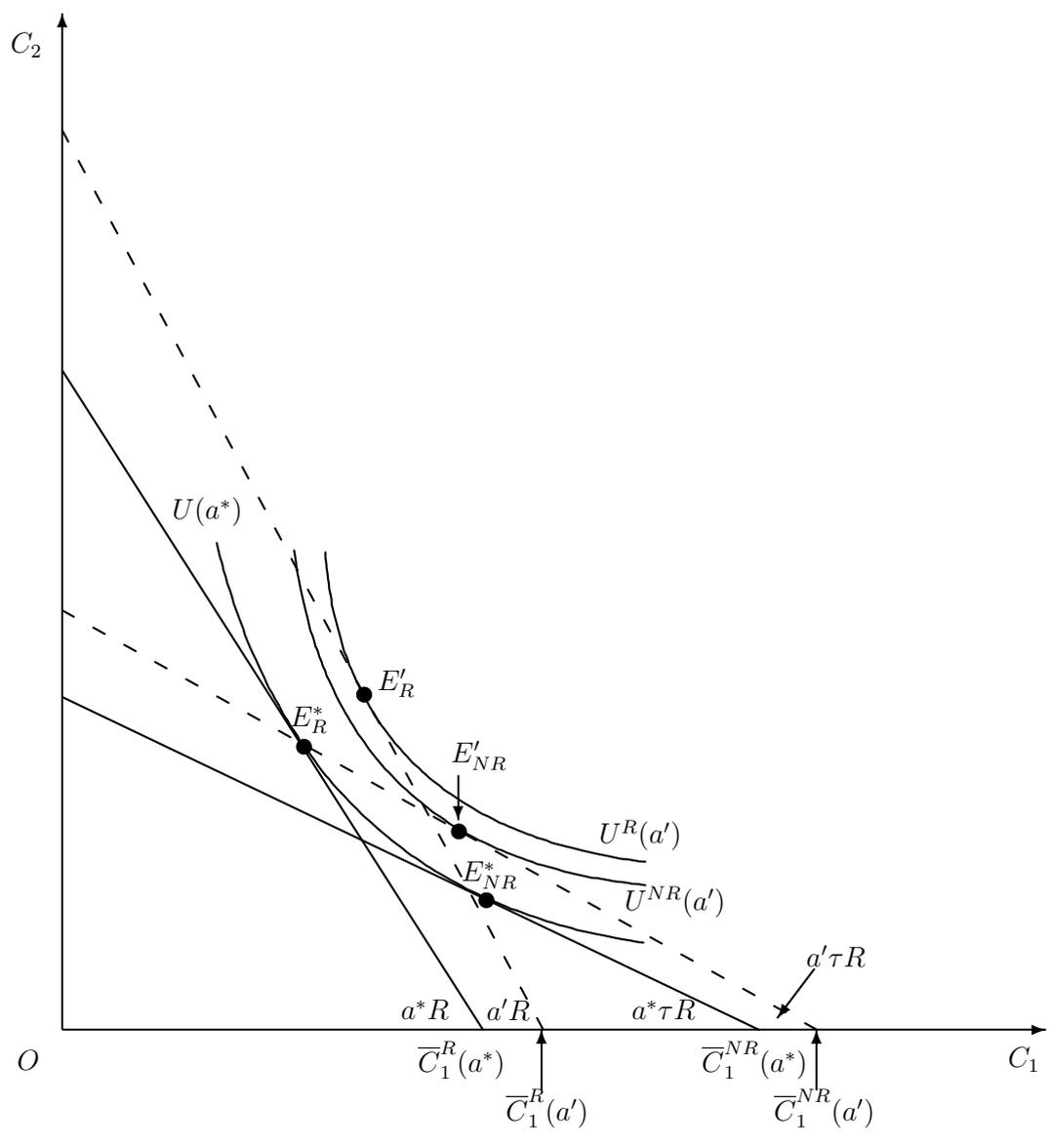


Figure 1: The welfare effect of skill variation in both cases of return and no return.

is the same and equal to $U(a^*)$, as indicated by the indifference curve reported in the graph.

When we consider an individual with a 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 life-cycle income, whereas the tilting is caused by the fact that the rates of return depend on the individual skill level. However, since in case of “no return” the rate of return is reduced by the skill waste effect, the tilting will be lower.

It can be formally shown that the new intertemporal bundles E'_R and E'_{NR} will not lay on the same indifference curves and the return option will be chosen since it assures a higher welfare.⁹

In both cases of return and “no return” the increase in the skill level induces both a substitution and an income effect. The latter one is the same, as also shown by the horizontal increase in the intercepts. Instead, the substitution effect is higher in case of return because of the (absence of the) skill waste effect.

One last effect is due to the change in the probability of obtaining legal status, γ . When this probability increases, the budget constraint of “no return” only moves up and, as obvious, the illegal migrant is better off in staying in the destination country.

In the following section we test these two implications of the life-cycle approach by means of the data from SIMI.

4 Empirical Analysis

In order to test the main implications of our theoretical model, we implement a probit model on the *intentions to return* (i.e. the dependent variable is equal to 1 if the individual expects to return home, zero otherwise). Definitions and basic statistics of the explanatory variables are presented in Appendix E.

Following the theoretical framework presented in Section 3, the main objective of this empirical analysis is to test whether the choice of returning home of an individual that has illegally migrated is influenced by his or her skills (parameter a^j).

Here, we measure individual skills by means of three different variables: *years of schooling*, *individual skills and qualifications* and *proficiency of the language* of the intended country of destination. In accordance with Section 3, for the more skilled migrants the skill waste effect associated with the status of illegal migrant increases the opportunity cost of continuing to reside illegally in the destination country. Thus, we expect variables measuring high skills to have a positive effect on the probability of returning in the country of origin.

⁹See the Appendix A for a formal proof.

Moreover, we proxy for the different probability of being granted legal status using a dummy for *clandestine*. Generally speaking, illegal immigrants may be divided into two broad categories: asylum seekers and clandestine immigrants. Asylum seekers are motivated to notify their presence to the authorities of the receiving country, whereas clandestine immigrants shy away from official contacts and tend to live working quietly, waiting for the next amnesty which will make them legal migrants. The probability of being granted legal status, while positive for both categories of migrants, is generally higher for asylum seekers. Since being legal increases the ability of migrants to fully employ in the country of destination her human and financial capital, we expect the effect of *clandestine* to be positive on the propensity to return.

The willingness to return home also depends on expected economic opportunities in the country of origin (i.e. the “normal” wage w^A in model, or negatively the wage gap \hat{w} as shown thoroughly in the Appendix A). 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. For this reason, we introduce two variables for infrastructure in the country of origin, which are both expected to have a positive effect on return: *infrastructure (macro)* that measures the relative endowment of infrastructure at the country level and *infrastructure (micro)* that is a proxy for individual access to basic infrastructures at the level of the village/city of origin. Expectations on future opportunities in the country of origin are also influenced by previous job experiences in the country of origin. Thus, we include a dummy variable for *unemployed in the home country* before migrating, which is expected to have a negative influence on the probability of returning.

Moreover, illegal migrants might also find better employment opportunities via migrants already established in the country of destination. In fact, those individuals might provide the newcomers with information about labor market opportunities and increase their probability of acceding to better-paid and stable jobs. In order to capture this effect, we include a dummy for migration network (*migronetwork*). In terms of our theoretical model, the existence of a network improves the ability of illegals to find a job. Therefore, we expect *migronetwork* to have a negative effect on the probability of return.

In order to have a complete empirical specification, we also introduce few variables that control for the other factors that might affect the choice of returning. In fact, together with business and entrepreneurial motivations, one might decide to return to the country of origin because of family and cultural ties [see Dustmann (2003a)].¹⁰ We therefore include a number of proxies that give a measure

¹⁰More broadly these factors might also proxy for the psychic cost of migration and may enter our model as a fixed disutility flow for each period the migrant is far away from the family. An

of the intensity of family ties, such as *number of children*, *children in the destination countries and relatives left at home*. These are expected to have a positive, negative and positive effect on the return choice, respectively.¹¹

As far as cultural ties with the country of origin are concerned, it is widely accepted that the costs of residing in a foreign country increase with the degree of cultural and social diversity between the origin and destination countries. A different religion is one 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, and this is supposed to have a positive effect on the return choice. Along the same line, we include the (log of) geographical *distance* as a proxy for the monetary and psychological cost of migration (when distance is short migrants can afford frequent journeys back home) and *previous migration experience*, given that previous moves generally lower the non-monetary and psychological costs of subsequent migrations. These variables are expected to have a positive and negative effect on the return choice, respectively.

Aside from our theoretical model, the peculiarity of our dataset also allows us to analyze the effect of *social conflict* and financial or *economic crisis* in the village/city of origin on the choice of return.¹² These events might have profound and different implications on the intentions to return. In fact, while social conflicts or civil wars might have a permanent effect on migration, economic or financial crisis might lead to a temporary out-migration which might be subsequently re-absorbed when economic conditions improve again.

Along a similar line of thinking, we control for the effects on return intentions of belonging to a minority religious and ethnic group in the home country. Minority groups in many countries of origin, which are represented in our sample, suffer from discrimination and sometimes violent persecutions. Hence, in our analysis we include an interaction effect between a dummy variable *minority* and an *index of ethnic polarization*, which aims to capture potential conflicts and concentration of power “outside” the minority. This index ranges from 0 to 1 and polarization reaches a maximum when there are two religious/ethnic groups of equal size.¹³ As a matter of construction, this variable is expected to have a negative effect on the

extension of the model of Section ?? is straightforward and is available from the authors upon request.

¹¹See Dustmann (2003a) who highlights the importance of children in shaping parents’ return decision.

¹²In terms of our model, they may be related once more to the “normal” wage in the country of origin w^A or negatively to the wage gap \hat{w} , although the two variables will prove to have a different effect among each other.

¹³For recent analysis concerned with the effects of religious and ethnic polarization on economic development see Montalvo and Reynal-Querol (2003, 2004).

probability of return.

Finally, we include a macro area dummy in order to capture the characteristics of the geographical areas of origin that are not observable.¹⁴

Table 2 and 3 show the estimates and the relative marginal effects, respectively. Although we present the results of different specifications in what follows we only comment on the most completed one (Model 4).¹⁵

Table 2: Estimates of the Probit Model: Different Specifications

Regressors	Model 1	Model 2	Model 3	Model 4
<i>Years of sch.</i>	0.110** (0.036)	0.126** (0.042)	0.119** (0.045)	0.100** (0.046)
<i>Host-c. lang. prof.</i>	0.514** (0.089)	0.399** (0.104)	0.312** (0.112)	0.294** (0.112)
<i>Highly skilled worker</i>				0.268* (0.141)
<i>Clandestine</i>			0.636** (0.139)	0.657** (0.140)
<i>Migronegwork</i>			0.435** (0.159)	0.421** (0.159)
<i>Infrastr. (micro)</i>		0.216* (0.122)	0.249* (0.128)	0.248* (0.128)
<i>Infrastr. (micro)</i>		0.287* (0.153)	0.46** (0.164)	0.438** (0.165)
<i>Unemployed at home</i>		-0.199** (0.102)	-0.219** (0.107)	-0.227** (0.108)
<i>Social conflict</i>		-0.399** (0.127)	-0.285** (0.140)	-0.292** (0.140)
<i>Economic crisis</i>		0.566** (0.148)	0.55** (0.158)	0.588** (0.159)
<i>Minority*eth. pol.</i>		-0.376** (0.149)	-0.323** (0.158)	-0.298* (0.159)
<i>N. of children</i>		0.136** (0.050)	0.145** (0.051)	0.143** (0.051)
<i>Children in host c.</i>		-0.498** (0.223)	-0.446* (0.242)	-0.45* (0.243)

continued on next page

¹⁴The limited number of observations together with the large number of countries in our dataset does not allow us to use country dummies.

¹⁵Other specifications are also available from the authors upon request.

Table 2: continued

Regressors	Model 1	Model 2	Model 3	Model 4
<i>Relatives at home</i>		0.043** (0.013)	0.042** (0.014)	0.042** (0.014)
<i>Past migration</i>		-0.307** (0.109)	-0.23** (0.114)	-0.251** (0.115)
<i>Distance(in log)</i>		0.427** (0.128)	0.535** (0.137)	0.531** (0.137)
<i>Muslim</i>		0.304** (0.107)	0.36** (0.115)	0.368** (0.115)
<i>Asia</i>		-0.830** (0.218)	-0.794** (0.231)	-0.807** (0.231)
<i>Africa (excl North)</i>		-0.522** (0.217)	-0.406* (0.235)	-0.41* (0.235)
<i>America</i>		-0.628 (0.683)	-0.737 (0.781)	-0.684 (0.781)
<i>Constant</i>	-0.340** (0.128)	-3.852** (0.955)	-5.138** (1.038)	-5.101** (1.040)
<i>Observations</i>	866	798	752	752
<i>Pseudo R²</i>	0.043	0.144	0.190	0.1932
<i>Log likelihood</i>	-556.83	-457.72	-410.56	-408.73

Standard errors in parentheses / Probability of return (baseline) = 0.633

* significant at 10%; ** significant at 5%

Table 3: Marginal Effects of Model (4)

Regressors	Marg. Eff.	Prob. (1)
<i>Years of schooling</i>	0.038** (0.017)	0.046
<i>Host-country lang. proficiency</i>	0.110** (0.041)	
<i>Highly skilled worker</i>	0.097** (0.049)	
<i>Clandestine</i>	0.231** (0.045)	
<i>Migronetwork</i>	0.149** (0.052)	
<i>Infrastructure (micro)</i>	0.095* (0.05)	

continued on next page

Table 3: continued

Regressors	Marg. Eff.	Prob. (1)
<i>Infrastructure (macro)</i>	0.154** (0.053)	
<i>Unemployed in the home country</i>	-0.085** (0.04)	
<i>Social conflict</i>	-0.107** (0.05)	
<i>Economic crisis</i>	0.230** (0.062)	
<i>Minority*ethnic polarization index</i>	-0.112* (0.06)	-0.037
<i>N. of children</i>	0.054** (0.019)	0.06
<i>Children in the destination country</i>	-0.176** (0.096)	
<i>N. of relatives in the home country</i>	0.016** (0.052)	0.063
<i>Past migration</i>	-0.096** (0.045)	
<i>Distance(in log)</i>	0.199** (0.052)	0.141
<i>Muslim</i>	0.14** (0.043)	
<i>Asia</i>	-0.31** (0.086)	
<i>Africa (excl North Africa)</i>	-0.156* (0.089)	
<i>America</i>	-0.268 (0.294)	

Probability of return (baseline) = 0.633

(1) change in predicted probability as X changes of one standard deviation centered around the mean value

Standard errors in parentheses

* significant at 10%; ** significant at 5%

Results are generally in line with our expectations. Skills and education significantly increase the probability of return to the home country. The probability of return of a relatively skilled person is 9.7% higher than the probability of return of an individual with no or low skills. Individuals with the lowest level of education

in the sample are 15% less likely to return than individuals with a higher level. Also, the knowledge of the language of the intended destination countries increases the likelihood to return by 11%.

These findings contrast with most existing studies on return migration and return intentions of legal migrants. Dustmann (1996, 2003b) using data from the German Socio-Economic Panel finds a negative effect of year of schooling on the intention to return in the home country. However, the author finds that for those who intend to return, schooling has a negative impact on the duration of the migration spell. In relation to this last result, Dustmann's explanation is that higher schooling, by guaranteeing higher salary, reduces the time needed to achieve a pre-determined saving target. In a related study on the factors which 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. On the other hand, our results are in line with Zhao (2002)'s. In his analysis on rural to urban migration in China, the author 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 labor segmentation in the urban labor market and the tight migration regulatory system in China prevent the full participation of skilled workers from rural area. This imposes heavy costs on skilled migrants in terms of rewards to education and work experience.

As expected, the coefficient on the dummy for *clandestine* is positive and highly significant. The coefficient on *migration network* is significant and positive; this might be due to the fact that the existence of established networks relatively reduces the risks associated with the migratory experience.

Illegal migrants are also found to be more willing to return in countries that are relatively more developed.¹⁶ Countries that have an above average level of infrastructures (as measured by the dummy *infrastructure (macro)* are 15% more likely to attract migrants back home. As well, migrants who have declared to have access to electricity and/or drinkable water in their home are 9.5% more likely to return [*infrastructure (micro)*].¹⁷ As was to be expected, we find that individuals who were unemployed back home are significantly less likely to return.

Most control variables have the expected sign. For instance, we find evidence of the importance of family and cultural ties. In our estimations, an individual with two children left in the home country is 16.8 percentage points more likely to return than in the case where the children were already in the country of destination. Also the size of the family left in the country of origin significantly affect return intentions. Our evidence is in conformity with Dustmann (2003a) where

¹⁶Let us recall that Proposition 2 in the Appendix underlines that all illegal migrants will go back home when the wage gap is lower than the rate-of-return gap.

¹⁷This variable might also be interpret as the level of relative deprivation of individuals in the home country.

the presence of children in the host country negatively affects the return intention of parents.

As expected, *past migration experience* reduces the probability of return plans. Also, the coefficients on the proxies for monetary and psychic cost of migration, namely *distance* and *muslim*, are significant and positive, respectively. Finally, we find that illegal migrants from European and North African countries are more likely to return than those coming from other countries.

Interestingly we also acknowledge that *social conflicts* and *economic crisis* have opposite effects on the return choice. The effect of having experienced an economic or financial crisis in the village of origin seems to be temporary whereas social conflicts have a more permanent effect on migration.¹⁸

5 Conclusions and Future Work

In this paper we assumed 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 migrants rather than individuals with few or no skills.

This result has been proved both theoretically and empirically. A simple two-period model with skill waste effect has shown that the return choice is more likely for individuals with more abilities. A higher probability of being granted legal status (as it is for asylum seekers rather than clandestine immigrants) decreases the probability of returning home.

Empirical estimates of a probit model on the intentions to return home have been obtained on a sample of 920 illegal immigrants hosted in Italian centers. The employed measure of individual skills (years of schooling, host-country language proficiency, level of skill of job at home) affect the intentions to return home in the predicted direction. Other control variables prove the validity of the empirical model.

Since migration flows have proved to be unavoidable, the main message of this paper pinpoints the need to carefully design new immigration policies. In particular, it ought to be considered that a generic ban is not neutral and gives greater incentives to the more skilled workers to return home rather than to the low-skill migrants. An analysis of welfare considerations for both the host and the home country would of course require a much richer theoretical model, that would include the effects of new entrants on the host labor markets, a multi-

¹⁸We note this finding confirms the importance of a coordinated, timely and efficient international conflict prevention activity. Also migrants belonging to a religious or ethnic *minority* in the country of origin are less likely to return: the probability of remaining in the destination country is increasing in the degree of religious polarization (i.e. the higher is potential hostility faced by a religious minority in the country of origin). See Chiuri et al. (2003).

period framework and the possible interactions among natives, legal and illegal immigrants. Another important extension of the model would regard the length of stay in the host country and whether this may also depend on the individual's skills and the degree of illegality. All these extensions may be the task of future work.

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APPENDIX

A The model

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 $[\underline{a}, \bar{a}]$ 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.¹⁹

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 $\tau \rightarrow 0$ 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

¹⁹We 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.

migration.²⁰ 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 .²¹ In other words, when $\tau = 1$ we assume that migration is legalized.

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

²⁰Even 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.

²¹Since 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 $a^j \in [a, \bar{a}]$ the following inequality is satisfied:

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

where $w^A (< w^B)$ is the exogenously given "normal" wage for a unit of labor in the home country. In other words wage differentials more than 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 $\hat{w} \equiv \frac{w^B}{w^A}$ (i.e. $\hat{w} > \frac{1}{\tau}$) or, given w^A and w^B , a lower bound to τ (i.e. $\tau > \frac{w^A}{w^B}$).

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:

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

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 immediately 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:

$$c_{2,R}^j = w_{2,R}^j + e_R^j = a^j w^A + a^j R^A s^j = a^j (w^A + R^A s^j)$$

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):

$$c_{2, NR}^j = w_{2, NR}^j + e_{NR}^j = \widetilde{w}^{j, B} + e_{NR}^j \quad (4)$$

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:

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

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 (4) for consumption, it yields:

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

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

$$U_R^j(c_1, c_2) = \ln [\tau a^j w^B - s^j] + \delta \ln [a^j (w^A + R^A s^j)] \quad (5)$$

Whereas in the case of *no return*:

$$U_{NR}^j(c_1, c_2) = \ln [\tau a^j w^B - s^j] + \delta \ln [a^j (\widetilde{w}^B + \tau R^B s^j)] \quad (6)$$

In the following sections we compute the optimal level of savings in both cases and focus on the relationship between the illegal migrant's skills level and her rational decision whether or not to return to the home country.

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 (5), is given by:

$$s_R^{j,*} = \frac{1}{R^A(1 + \delta)} [\delta R^A w_1^j - w^A] = \frac{1}{R^A(1 + \delta)} [\delta \tau a^j R^A w^B - w^A] \quad (7)$$

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 (6). Hence, the optimal savings in case of no return is the following:

$$s_{NR}^{j,*} = \frac{1}{\tau R^B(1 + \delta)} \left[\delta \tau R^B w_1^j - \widetilde{w}^B \right] = \frac{w^B}{\tau R^B(1 + \delta)} \left[\delta \tau^2 a^j R^B - h \right] \quad (8)$$

since $\widetilde{w}^B \equiv h w^B$ 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 $\widehat{w} > \widehat{R}$.²²

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.²³

By substituting the optimal level of savings (7) and (8) in the respective utility functions (5) and (6), we obtain the indirect utility in case of return ($U_R^{j,*}$):

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

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

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

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:

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

²²More 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 $\tau \in (0, 1]$.

²³Higher 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).

$$\equiv (1 + \delta) \ln \left[\frac{R^A \tau a^j w^B + w^A}{\tau R^B \tau a^j w^B + h w^B} \right] - \ln \frac{R^A}{\tau R^B} \quad (11)$$

which can be rewritten as:

$$U^{j,*} \equiv (1 + \delta) \ln \left[\frac{R^A w_1^j + w^A}{\tau R^B w_1^j + \widetilde{w}^B} \right] - \ln \frac{R^A}{\tau R^B} \quad (12)$$

The discrete choice whether or not to return depends on the sign of the unobservable net utility $U^{j,*}$.

Propositions 2 and 3 in the Appendix B show the sufficient conditions on wages and rate of returns such that the sign of $U^{j,*}$ is always negative or always positive, i.e. such that migrants respectively decide never to return or always to return.

However, such sufficient conditions are not easy to satisfy. For instance, in the special case of equal “normal” rates of returns — $R^A = R^B$ — the Propositions 2 and 3 never hold when the “normal” wage in the host country is greater than the “normal” wage in the home country, i.e. $w^B > w^A$, which is the most common case also in reality.

Instead, when migrants are able to circumvent the effect of the skill waste only in the financial markets and rates of return are equalized net of the skill waste — i.e. $R^A = \tau R^B$ — then the decision where to work depends exclusively on the total flow of income in the two locations. Since the migrant starts in the host country under both cases, the decision regards only income from period 2. The migrant decides (not) to return if and only if: $w^A > \widetilde{w}^B$ ($w^A < \widetilde{w}^B$), with no role played by the individual skills.

Notwithstanding these special instances, in the most general case the two propositions show that commonly the sign of $U^{j,*}$ is not uniquely defined. Among all the parameters that denote the sign of the net utility, we pay particular attention to the skill content, represented by a^j .

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

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

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

Proposition 1 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 1 *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.

See Appendix C ■

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 Sufficient Conditions on the Sign of the Net Utility

Proposition 2 (Sufficient conditions for all migrants to stay in the host country B)

No migrant decides to return, i.e. $U^{j,*} < 0$, if:

- (i) the “normal” (percentage) wage gap $\widehat{w} \equiv \frac{w^B}{w^A}$ is strictly higher than the “normal” (percentage) rate-of-return gap $\widehat{R} \equiv \frac{R^B}{R^A}$:

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

(ii) both the “normal” wage and the “normal” rate of return are strictly higher in the host country rather than in the home country, i.e.

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

Proof. Let us rewrite the net utility in eq. (11) as follows:

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

or

$$U^{j,*} \equiv \underbrace{\ln \left[\frac{\tau R^B R^A w_1 + \tau R^B w^A}{\tau R^B R^A w_1 + R^A \widetilde{w}^B} \right]}_{[1]} + \underbrace{\delta \ln \left[\frac{R^A w_1 + w^A}{\tau R^B w_1 + \widetilde{w}^B} \right]}_{[2]} \quad (13)$$

The first term [1] is negative if (and only if):

$$\tau R^B R^A w_1 + \tau R^B w^A < \tau R^B R^A w_1 + R^A \widetilde{w}^B$$

or

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

which can be written in terms of wage gap and rate-of-return gap:

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

Let us recall that $h \equiv [(1 - \gamma)\tau + \gamma]$; hence, the fraction $\frac{\tau}{h}$ is certainly lower than 1 and the term [1] is always negative if

$$\frac{\widehat{w}}{\widehat{R}} > 1 \quad (14)$$

The second term [2] is negative when:

$$R^A w_1 + w^A < \tau R^B w_1 + \widetilde{w}^B$$

or

$$R^A \tau a^j w^B + w^A < \tau R^B \tau a^j w^B + h w^B$$

Let us rewrite the previous condition by employing the wage gap \widehat{w} and the rate-of-return gap \widehat{R} :

$$R^A \widehat{w} \tau a^j \underbrace{(\tau \widehat{R} - 1)}_{[\mathcal{A}]} > \underbrace{(1 - h\widehat{w})}_{[\mathcal{B}]} \quad (15)$$

A sufficient condition for (15) is that the term $[\mathcal{A}]$ is positive and the term $[\mathcal{B}]$ is negative.

This occurs when:

$$\tau \widehat{R} > 0 \quad \Rightarrow \quad \widehat{R} > \frac{1}{\tau} \quad \Rightarrow \quad \tau R^B > R^A$$

for term $[\mathcal{A}]$; and:

$$h\widehat{w} > 1 \quad \Rightarrow \quad \widehat{w} > \frac{1}{h}$$

for term $[\mathcal{B}]$.

Since $\frac{1}{h} < \frac{1}{\tau}$, but condition (14) must be satisfied for term [1] to be negative, then a sufficient condition on \widehat{w} would be:

$$\widehat{w} > \frac{1}{\tau} \quad \Rightarrow \quad \tau w^B > w^A$$

■

Proposition 3 (Sufficient conditions for all migrants to return the home country A)

All migrants decide to return, i.e. $U^{j,*} > 0$, if:

- (i) the “normal” (percentage) wage gap $\widehat{w} \equiv \frac{w^B}{w^A}$ is strictly lower than the “normal” (percentage) rate-of-return gap $\widehat{R} \equiv \frac{R^B}{R^A}$:

$$\frac{\widehat{w}}{\widehat{R}} \equiv \frac{\frac{w^B}{w^A}}{\frac{R^B}{R^A}} < \frac{\tau}{h}$$

- (ii) both the “normal” wage and the “normal” rate of return are strictly lower in the host country rather than in the home country, i.e.

$$hw^B < w^A \quad \tau R^B < R^A (< hR^B)$$

Proof. Let us recall Eq. (13) from the proof of Proposition 2:

$$U^{j,*} \equiv \underbrace{\ln \left[\frac{\tau R^B R^A w_1 + \tau R^B w^A}{\tau R^B R^A w_1 + R^A \widetilde{w}^B} \right]}_{[1]} + \delta \underbrace{\ln \left[\frac{R^A w_1 + w^A}{\tau R^B w_1 + \widetilde{w}^B} \right]}_{[2]}$$

By following the same steps as for Proposition 2, the term [1] is now positive if (and only if):

$$\frac{\widehat{w}}{\widehat{R}} \equiv \frac{\frac{w^B}{w^A}}{\frac{R^B}{R^A}} < \frac{\tau}{h}$$

Hence, a necessary condition for the previous inequality to hold is:

$$\widehat{w} < \widehat{R}$$

since $\tau < h$.

By using inequality (15) and the same steps as in Proposition 2, it is easy to show that the term [2] is certainly negative if (and only if):

$$R^A \widehat{w} \tau a^j \underbrace{(\tau \widehat{R} - 1)}_{[\mathcal{A}]} < \underbrace{(1 - h \widehat{w})}_{[\mathcal{B}]}$$

A sufficient condition such that the previous inequality holds is that term [A] is negative and term [B] is positive, which occurs respectively if:

$$\tau \widehat{R} < 1 \quad \Rightarrow \quad \widehat{R} < \frac{1}{\tau}$$

and

$$h \widehat{w} < 1 \quad \Rightarrow \quad \widehat{w} < \frac{1}{h}$$

Since \widehat{w} must be lower than \widehat{R} for term [1] to be positive, then both conditions are satisfied if:

$$\frac{1}{h} < \widehat{R} < \frac{1}{\tau} \quad \text{and} \quad \widehat{w} < \frac{1}{h}$$

■

C Proof of Proposition 1

Proof.

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

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

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 . ■

D 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 and in our study we consider the following four categories:

1. *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);
2. *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;
 3. *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;
 4. *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.

E Variables Description

	Description	Exp. sign	Mean	St. Dev	Type	Source
<i>Years of schooling</i>	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
<i>Host-country language proficiency</i>	equals 1 if the migrant is proficient in the language of the intended destination country (basic or advanced level), 0 otherwise	+	0.46	0.49	dummy	Questionnaire
<i>Highly skilled worker</i>	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
<i>Clandestine</i>	equals 1 if the individual declares to be a clandestine, 0 otherwise	-	0.3	0.46	dummy	Questionnaire
<i>continued on next page</i>						

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	Description	Exp. sign	Mean	St. Dev	Type	Source
<i>Migro-network</i>	equals 1 if the individual has relatives and friends in the intended country of destination, 0 otherwise	+/-	0.18	0.39	dummy	Questionnaire
<i>Infra-structure (micro)</i>	equals 1 if the individual has electricity and/or drinkable water in the house of residence in the home country, 0 otherwise	+	0.76	0.43	dummy	Questionnaire
<i>Infra-structure (macro)</i>	equals 1 if the individual comes from a country where the number of telephone mainlines, daily newspapers, radio and television sets for 1.000 people is higher than the average of the 56 countries in our sample, 0 otherwise	+	0.16	0.37	dummy	Country Tables ITC at glance Development Data Group, World Bank
<i>Unemployed in the home country</i>	equals 1 if the migrant is not employed before departure, 0 otherwise	-	0.56	0.5	dummy	Questionnaire
<i>Social conflict</i>	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
<i>Economic crisis</i>	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
<i>Minority × ethnic polarization index</i>	interaction effect between the dummy variable “minority” (equal to 1 in the individuals belongs to a religious minority in the country of origin) and the Index of Ethnic Polarization (see Montalvo J. G. and Reynal-Querol M., 2004) which captures the degree of ethnic polarization within a country (index → 0 means very high polarization; index → 1 means very low polarization)	-	0.23	0.34	dummy	CIA - The World Factbook and Questionnaire
<i>N. of children</i>	number of children	-	0.6	1.1	continuous	Questionnaire
<i>Children in the destination country</i>	equals 1 if one or more children are in the intended destination country (not necessarily traveling with the respondent), 0 otherwise	-	0.06	0.24	dummy	Questionnaire

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	Description	Exp. sign	Mean	St. Dev	Type	Source
<i>Relatives in the home country</i>	number of relatives that are left in the country of origin	-	5.17	3.98	continuous	Questionnaire
<i>Past migration</i>	equals 1 if the individual has already done a migration experience (internal or international), 0 otherwise	-	0.27	0.44	dummy	Questionnaire
<i>Distance (in log)</i>	(log of the) distance in 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)	+/-	7.95	0.7	continuous	Gazetteer of Conventional Names, Third Edition, August 1988, US Board on Geographic Names and other sources.
<i>Muslim</i>	equals 1 if the individual declares to be a Muslim; 0 otherwise	-	0.59	0.49	dummy	Questionnaire
<i>Europe</i>	equals 1 if the individual country of origin is in Europe, 0 otherwise	+	0.25	0.43	dummy	Questionnaire
<i>North Africa</i>	equals 1 if the individual country of origin is in North Africa (Afro-Mediterranean countries), 0 otherwise	+	0.11	0.31	dummy	Questionnaire

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	Description	Exp. sign	Mean	St. Dev	Type	Source
<i>Asia</i>	equals 1 if the individual country of origin is in Asia, 0 otherwise	-	0.27	0.44	dummy	Questionnaire
<i>Africa (excl North Africa)</i>	equals 1 if the individual country of origin is in Africa (excluded North African countries), 0 otherwise	-	0.37	0.48	dummy	Questionnaire
<i>America</i>	equals 1 if the individual country of origin is in Central and Latin America, 0 otherwise	-	0.005	0.07	dummy	Questionnaire