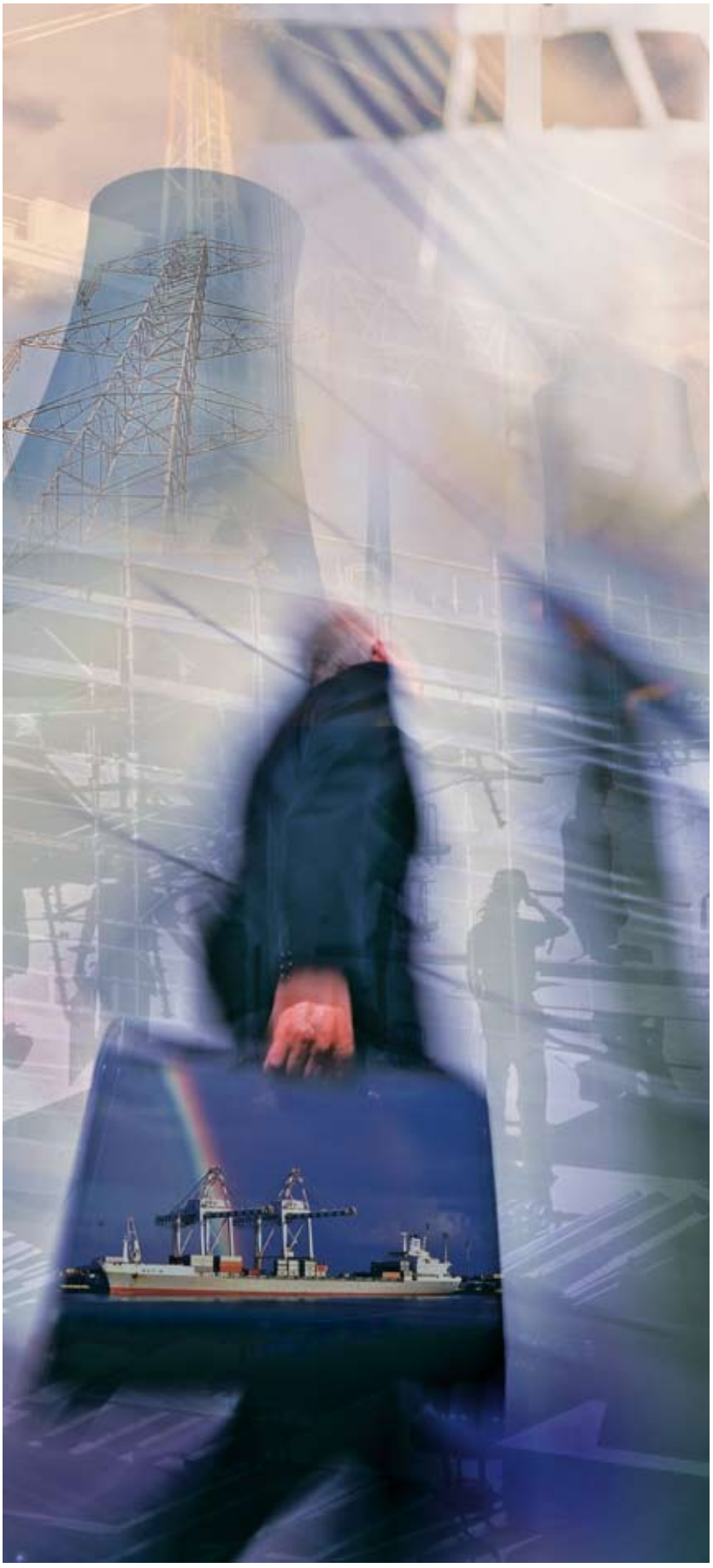

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Labour market success and skill acquisition in the host country: effects on the duration and the labour force status of Moroccans, Algerians, and Tunisians migrants returning home from the European Union

Stephane Mahuteau * and Massimiliano Tani**

Abstract: This paper studies the educational investment decisions of returning migrants while abroad in the context of their decisions about the choice of activity upon returning and the duration of migration. The theoretical model builds on Dustmann (1999), Dustmann and Kirchkamp (2992) and Mesnard (2004). Using data from the MIREM database we explore whether the type of skills acquired by migrants while abroad is related to the activity chosen upon return and the duration of migration. The results suggest that the type of education plays a significant role in the migration decisions of those returning as wage earners or self-employed. In particular, there is a clear positive relationship between being self-employed and having previously invested in vocational education in the host country There is also a strong positive relationship between investing in university education abroad and becoming a wage earner. As international migration facilitates skill transfers between developed and developing countries, the economic development of the latter will increasingly depend on migrants' ability to access educational and vocational training in the developed world aside from university education. Returning migrants with vocational and professional training tend to be self-employed after returning home, and by so doing they contribute to reducing poverty in the host country.

Key Words: return migration, human capital, education, duration of migration.

JEL Classification: F2, J6.

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1 Introduction

Temporary migration, or a work spell abroad for a period of time that may span over several years, is an increasing feature of international labour flows, helped, among others, by globalisation and improved communication and transport technologies. Many temporary migrants remain economically active upon returning to the country of origin. This has prompted a number of authors to interpret migration as part of a 'work life cycle'. Temporarily moving from a low to a high wage country (an observed phenomenon) is a strategy to fast track the accumulation of financial resources to either start up a business activity or to increase future consumption in the home country. Under this 'functional' interpretation of migration, its duration depends not only on the income earned in the country of origin and destination, as traditionally highlighted by the migration literature, but also on the migrants' intended activity upon returning. For example, would-be entrepreneurs are predicted to have a shorter duration of migration than salaried workers and retirees. As they enjoy higher income in their home than their host country, they have no further incentive to stay abroad once they accumulate enough savings to start their activity (e.g. Dustmann and Kirchkamp, 2002).

However, while in the destination country, migrants do not enjoy a predetermined probability of economic success. This in turn depends on their individual characteristics, including the amount of human capital that they possess at the time of migration and, most importantly, the one which they subsequently acquire in the host country. Investing in human capital abroad enhances one's ability to integrate economically and socially there (Chiswick, 1976). It also helps to maintain a degree of connectivity with the host country that may be strategic in promoting growth at home by facilitating international exchanges of goods and transfers of knowledge and technology (e.g. Dosi et al., 1988; Cohen and Levinthal, 1989; Park, 2004). The choice of activity upon return and the duration of migration may therefore affect migrants' incentives to invest in education while abroad: do they, and, if so, do they matter for the type of education in which returning migrants invest?

This paper investigates these questions by analysing the educational choices, the activity chosen, and the duration of migration of Moroccan, Algerian, and Tunisian

migrants returning home from a spell in the European Union. Among the studies focusing on migration, little is known about the type of human capital that returning migrants acquire in the host country. Yet, this knowledge is relevant to understand the potential benefits and costs of temporary migration for both sending and receiving countries, and the potential need for policy action.

This paper contributes to the existing literature by developing a theoretical model and by analysing data on returning migrants using the MIREM database. It organised as follows. Section 2 reviews the recent literature on returning migrants. Section 3 presents a theoretical model of return migration in which migrants choose simultaneously the type of education investment in the host country, the activity upon returning, and the duration of migration. The model builds on (combining them) Dustmann (1999), Dustmann and Kirchkamp (2002), and Mesnard (2004). Section 4 summarises the characteristics of the data. Section 5 presents the estimation strategy. Section 6 discusses the empirical results. Section 7 concludes.

2 Literature

The existence of return migration to countries where the average wage is lower than the host country is at odds with the traditional approach of viewing migrants as income-maximising individuals. In such circumstances, migrants should intuitively remain abroad until retirement age. To explain the fact that retirees are not the main group of returning migrants, existing studies typically introduce location-specific preferences for the country of origin (e.g. Hill, 1987; Djajic and Milbourne, 1988; Galor and Start, 1991; Dustmann and Kirchkamp, 2002; Mesnard, 2004). This approach reflects both positive externalities of living at home (e.g. weather, friends, language, food, culture) and negative externalities of living abroad (e.g. discrimination, racism). However, this is only the starting point for the explanations offered to interpret the observed variety of choice of activity and durations of migration.

By far, financial considerations are the most commonly explored determinants of return migration and occupational choice. Migrants save while working abroad, and their savings can be used to acquire durable consumption goods and to invest in new business activities in the home country. Migrants often become entrepreneurs upon

returning, and invest in new business ventures across several sectors of the economy, employing personnel, and positively contributing to poverty reduction and economic development. The preference for self-employment of many returning migrants is hence viewed as a consequence of the lack of adequately developed credit and financial markets in the home country. Under such interpretation, would-be entrepreneurs facing local credit rationing meet the fixed setup costs of setting a new business with the savings made while temporarily working abroad (e.g. Mesnard, 2004). In such circumstances, their staying abroad depends on the degree of inefficiency of the local credit market: the more difficult it is to obtain credit locally, the longer is the duration of migration and the need to build up the savings needed for the desired investment (including a 'precautionary' motive to face unforeseen conditions). As access to a perfect credit market implies that the decision to start a project is independent of the migrants' personal financial position, research has generally studied the relationship between self-employment and the savings brought back. For example, Mesnard (2004) finds that the probability of choosing self-employment upon returning among Tunisian migrants is positively affected by the amount of savings accumulated abroad (albeit at a decreasing rate): quadrupling the average amount of savings raises the probability of self-employment by almost 20%. Other empirical work based on survey data finds that savings accumulated abroad commonly finance investments in production in the country of origin and raise the probability of self-employment. Examples include migrants returning to Pakistan (Ilahi, 1999), Egypt (McCormick and Wahba, 2001), and Ghana (Black, King, and Tiemoko, 2003).

Aside from the amount of investment required, financial considerations also affect the duration of migration through income and substitution effects whenever income differential between the home and the host country change. The sign of these effects are generally opposite. For example, an increase in the income earned abroad raises the incentive to stay in the host country for a wage earner, but lowers the marginal utility of wealth, reducing the utility of remaining abroad, and the duration of migration. The sign of the effects also depend on the choice of activity upon return. An increase in the income earned abroad generally increases the duration of migration for a wage earner, but not for a would-be entrepreneur, who can accumulate the target savings in a shorter period of time when foreign income rises. Extensive summaries of

the predicted effects of changes in income abroad and at home, and other (mostly financial) variables are in Mesnard (2004, Table 3) and Dustmann and Kirchkamp (2002, Table 6). One valuable contribution of this literature is that the theoretical models developed are a useful framework to analyse the duration of migration when there exist alternative occupations upon returning. Unfortunately, these studies do not take into account the possible human capital investments of migrants while abroad, which motivates this paper.

The role of human capital in determining the choice of activity and the duration of migration is seldom the main focus of the existing literature. However, the educational level of returning migrants is commonly included as a control variable in the empirical analyses carried out. In those studies, the sign of the educational level of migrants in empirical applications is mixed. This possibly reflects some peculiarity of the local labour market, and not only individual choices. For example, Ilahi (1999) finds that Pakistan's returning migrants with a higher level of education are more likely to be wage earners, and suggests that the type of skills used by self-employed, who often operate in retail and wholesale trade, do not require a high degree of formal education. A similar conclusion arises in Mesnard (2004), who finds that having no education raises the probability of becoming self employed. In contrast, Dustmann and Kirchkamp (2002) find that education has a positive effect on being self-employed. McCormick and Wahba (2001) present a mixed case whereby the probability of becoming self-employed upon returning rises with education for literate Egyptians, but not for those who are illiterate. This result may reflect different types of entrepreneurial activity set up by returning migrants of higher and lower educational background (e.g. high value added services for the former and more basic activities for the latter).

The little research on the human capital investment choices of returning migrants while abroad contrasts with the relatively developed literature highlighting that education and training completed in the host country improve migrants' economic and social integration there, and the literature emphasising the role of human capital accumulation in promoting growth (e.g. Dosi, 1988; Cohen and Levinthal, 1989). If education raises productivity and success in the labour market, migrants would have an incentive in investing in human capital while abroad, as that would either raise

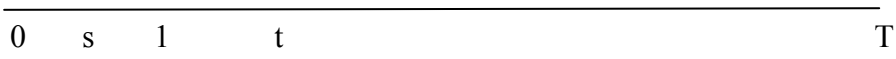
their returns and shorten their duration of migration. This possibility is explored by Dustmann (1999), though with a focus on foreign-specific capital. He studies the relationship between acquiring language capital in the host country and the duration of migration for Turkish, Italian, Greek, Spanish, and Yugoslavian migrants working in Germany between the 1950s and the 1970s. The theoretical model that he develops suggests that the intended duration in the host country's labour market affects the acquisition of its language, and that both choices are made simultaneously. As a result, those intending to stay a longer period in the host country invest more in the foreign-specific human capital, and vice-versa. An additional incentive in learning well the language of the host country is the value placed by the home country on the human capital gained abroad. If this is higher than the value placed by the host country, then there is a strong incentive to undertake the educational investment and return home (as it may be the case for international students). The empirical analysis supports this hypothesis: a longer intended duration has a significant positive effect on the probability of being fluent in the host country's language. Furthermore, this effect is larger if the temporary migrant has a higher level of schooling, supporting the hypothesis that human capital is self-producing (Ben-Porath, 1967). One limitation of this theoretical approach however is the lack of distinction between different types of educational investment that are available to migrants. For example, migrants can either enrol in vocational and professional training or university education (or do not invest in education). The model also does not allow migrants to have a choice of activity upon returning.

This paper nests the theoretical framework of educational investment into the broader theoretical model of duration of migration with multiple choices of activity upon returning. In particular, it contributes a theoretical model where the decision of investing in human capital in the host country can be studied vis-à-vis the choice of activity upon returning and the duration of migration. This theoretical approach enables one to study a more complex decision landscape faced by migrants, covering educational and labour market choices, as well as to analyse policy implications related to migration and education for both the home and the host country.

3 A theoretical model of education and activity choice for returning migrants

The theoretical model discussed in this section combines the work of Dustmann (1999), Dustmann and Kirchkamp (2002), and Mesnard (2004). The model describes the choices of a migrant arriving in the host country at time zero. The migrant has a human capital *H*, and his working life ends at time *T*. The migrant makes two decisions during his working life, which are illustrated in Figure 1.

FIGURE 1 THE MIGRANT'S WORKING LIFE



The first decision is related to education, and occurs in the first period of his stay, which is normalised at length 1. The migrant chooses between working using his existing human capital, for which he receives the host country wage w_f. Alternatively, he can forgo the wage w_f to invest a portion *s* of his unit of time to invest in human capital ($0 \leq s \leq 1$). Although *s* is represented as a continuous variable, throughout the paper a 'small' *s* (close to 0) is interpreted as representing short courses, such as professional training and short vocational courses, and a 'large' *s* (close to 1) is viewed as a proxy for university education. The benefits of investing in education arise only after the initial unit of time in the host country, and take the form of a productivity improvement. By assumption, this does not depreciate for the rest of the migrant's working life. The wage premium accruing to the additional human capital gained abroad is $f(s)$, with $f(s) = 1$ if $s = 0$, $f' > 0$, and $f'' < 0$.

The migrant makes his second decision at a time *t*, which is to return to the home country. There, he will enjoy a productivity premium $\frac{f(s)}{\rho_i}$, with *i* = activity chosen by the migrant upon returning and $\rho_i \geq 1$ to suggest that education gained abroad may have less home-specific applications, and hence be valued less. In the home country the returned migrant becomes either self-employed, in which case he earns $\overline{w}$ (or $\overline{w}\frac{f(s)}{\rho_{SE}}$ if he has invested in education while abroad) and faces set up costs of BH (this cost is assumed to relate to the migrant's initial human capital to capture variation in the type of business activity undertaken, but it can also be a fixed cost B),

or a wage earner, in which case he earns w_h (or $w_h \frac{f(s)}{\rho_W}$). It is assumed that $\overline{w} > w_f > w_h$ to highlight that a self employed enjoys a higher real return at home than abroad, and that $\rho_{SE} > \rho_W$, to suggest that knowledge gained abroad can be applied only to a firm if self-employed (and hence be possibly less transferable) rather than to a number of potential employers as is the case for salaried employment.

The migrant's utility function reflects stronger consumption preferences for the home country, so:

$$U = tu_u(c_f) + (T-t)u_h(c_h) \qquad (1)$$

where c indicates consumption, and the subscripts f and h indicate host and home country, respectively, and $u_u(c_f) < u_h(c_h)$. It is assumed that the utility function u is concave so that $u' > 0$ and $u'' < 0$.

The migrant's budget constraint is:

$$tc_f + (T-t)c_h - Hw_f(1-s) - H(t-1)w_f f(s) - h_1 H(T-t)\overline{w}\frac{f(s)}{\rho_{SE}} + hBH - h_2 H(T-t)w_h \frac{f(s)}{\rho_W} = 0 \qquad (2)$$

where $h_1 = 1$ if the migrant chooses to be a self-employed ($h_1 = 0$ otherwise), and $h_2 = 1$ if the migrant chooses to be a salary earner ($h_2 = 0$ otherwise).

The migrant maximises utility U subject to the budget constraint BC with respect to the optimal consumption at home and abroad (c_h, c_f), the amount of time to invest in human capital in the host country s, and the duration of migration t. The maximisation generates a system where the education investment is determined simultaneously with the choice of activity and the duration of migration. As in the existing literature, the optimal choice of activity upon returning is obtained by comparing the indirect utility functions for each activity.

The properties of the model when duration is exogenous are investigated first, as a number of countries impose a fixed term for temporary migration.

Exogenous duration of migration

When *t* is exogenous, the first order condition of the maximisation with respect to the educational investment *s* determines the optimal amount of investment in human capital while abroad. The condition is:

$$\partial / \partial s = 0 = y_f - f'[(t-1)w_f + h_1(T-t)\overline{w}\frac{1}{\rho_{SE}} + h_2(T-t)w_h\frac{1}{\rho_W} \quad (3)$$

From which one obtains:

$$ds = \frac{f' A_x dx}{f''[(t-1)w_f + h_1(T-t)\overline{w}\frac{1}{\rho_{SE}} + h_2(T-t)w_h\frac{1}{\rho_w}} \quad (4)$$

where A is the total differential of the first order condition with respect to *x* and $x = \overline{w}, w_f, w_h, T, t, \rho_{SE}, \rho_W$. The relationship between the investment in human capital abroad and the other variables is summarised in Table 1.

TABLE 1 THE MARGINAL EFFECTS ON EDUCATIONAL CHOICE WHEN DURATION IS EXOGENOUS

Variable	Marginal effect (*ds/dx*)	Effect on s
w_f	$\frac{1-f'(t-1)}{D}$	Uncertain: it is > 0 if $s > (\frac{1}{t-1})^{-\frac{1}{f'}}$ and vice-versa
$\overline{w}$	$\frac{-f'h_1\rho_{SE}(T-t)}{D}$	> 0
w_h	$\frac{-f'h_2(T-t)\rho_W}{D}$	> 0
t	$\frac{-f'(w_f - h_1\overline{w}\rho_{SE} - h_2 w_h \rho_W)}{D}$	< 0 if self-employed (h_1=1) > 0 if wage earner (h_2=1)
ρ_{SE}	$\frac{f'(T-t)h_1\overline{w}}{D\rho_{SE}^2}$	< 0
ρ_W	$\frac{f'(T-t)h_2 w_h}{D\rho_W^2}$	< 0
T	$\frac{-f'(h_1\overline{w}\frac{1}{\rho_{SE}} + h_2 w_h \frac{1}{\rho_W})}{D}$	> 0

$$D = f''(s)[(t-1)w_f + h_1(T-t)\overline{w}\frac{1}{\rho_{SE}} + h_2(T-t)w_h\frac{1}{\rho_W} < 0.$$

From Table 1 it emerges that, for a given duration of migration, higher income from self-employment and wage in the home country increase the incentive to invest in

education abroad. The returning migrant in fact enjoys a productivity premium from the extra education obtained. However, an increase in the exogenous duration (e.g. a longer visa permit) reduces incentives to invest in human capital for would-be self-employed. Since they now have less time available to recoup the cost of setting up a new activity, they respond by lowering their investment in education abroad. This outcome does not occur to wage earners, as higher wages in the host vis-à-vis the home country coupled with the inability of choosing an earlier return, leads them to make a higher investment in education and enjoy the wage premium over a longer spell abroad. As expected, the lower transferability of skills reduces the incentives to invest in education abroad ($ds/d\rho_{SE} < 0$ and $ds/d\rho_W < 0$), and so does a shorter working life ($ds/dT > 0$).

Endogenous duration of migration

When t is endogenously determined, the solution to the maximisation problem is obtained by totally differentiating the derivatives with respect to t and s, and the budget constraint (2). This leads to:

$$ds = -\frac{b_t}{b_s}dt - \frac{b_x}{b_s}dx \tag{5}$$

where b_t, b_s, and b_t are the derivatives of

$y_f - f'[(t-1)w_f + h_1(T-t)\overline{w}\frac{1}{\rho_{SE}} + h_2(T-t)w_h\frac{1}{\rho_W}$ with respect to t, s, and x, respectively, and $x = w_f, \overline{w}, w_h, \gamma, T, \rho_{SE}, \rho_W$.

It also yields

$$dt = \frac{A_s}{A_\lambda(C_t/C_\lambda)}ds + \frac{A_y - (C_y/C_\lambda)}{A_\lambda(C_t/C_\lambda)}dy \tag{6}$$

where $y = x, H, B$.

This system highlights that the decision of investing in human capital in the host country depends on the choice of activity (through comparison of the corresponding indirect utility functions) and the duration of migration.

The conditions for the existence of an internal solution consist of comparing the indirect utilities of the activity chosen upon return (self-employed, wage earner, unemployed, not in the labour force – only the first two activities are discussed in the paper), and ensuring that individuals emigrate and return. As in Dustmann and Kirchkamp (2002) this is done by calculating the value of the total differential of the indirect utility function for each activity and checking that the value obtained is positive as $t \rightarrow 0$ (so that emigration takes place) and that it is negative as $t \rightarrow T$ (so that return occurs).

4 The sample

The data on which the empirical analysis is performed are extracted from the sample of returning migrants interviewed through the MIREM project. The sample covers about 1,000 returning migrants from Algeria, Morocco and Tunisia, who had a spell in the European Union. The survey was carried out in 2005-6, and the results can be accessed through the MIREM's website www.mirem.eu. A description of the data is also in Tani and Mahuteau (2008). Table 2 summarises the main variables used in the empirical analysis.

TABLE 2 SUMMARY STATISTICS

Code	Mean	Std Dev	Description
Current status			
AR_WFT	0.240	0.427	Currently full time wage earner
AR_SE	0.339	0.473	Currently self-employed
AGE_R	41.10	13.92	Age at return in home country
R_PLACE	0.341	0.474	Returned to other place than before emigrating
B_STAY2	0.538	0.499	Intend to stay permanently after returning
R_K	0.288	0.453	Has kids after returning
Host country experience			
ANS_PPI	15.21	13.08	Nr years spent in main immigration country
A_MARRY	0.319	0.466	Got married in host country
VISA_WK	0.126	0.332	Working visa
VISATOUR	0.283	0.451	Tourist visa
B_REM1	0.349	0.477	Sent money at least quarterly in last year abroad
A_JOBT3	0.230	0.421	Got job within 3 months of emigrating
Pre-emigration status			
B_WFT	0.466	0.499	Full-time wage earner before returning
B_WPT	0.137	0.344	Part-time wage earner before returning
B_SE	0.154	0.361	Self-employed before returning
BD_SEC	0.369	0.483	Completed secondary education before departure
BD_TER	0.260	0439	Completed tertiary education before departure
BD_MP	0.273	0.446	Wanted to migrate permanently before leaving
BD_LAND	0.362	0.481	Possess land before departure
N	**982**		

The respondents are from the three countries of origin in broadly equal proportions, and are mostly males (87.4%). As shown in Table 2, 34% of the respondents are self-employed upon returning while 24% are full time wage earners. Migrants appear both well educated and relatively well off: 26% of those surveyed have a university degree (37% have completed secondary school), and 36% owned land before departing. This relatively high composition of skilled labour may contribute to explain why 23% of respondents obtained a job within three months of emigrating. About 27% of migrants wanted to migrate permanently before leaving and 34% returned to a different town in the home country than where they were residing before migrating. Less than 13% emigrated with a working visa, while over 28% moves abroad with a tourist visa, suggesting that a number of respondents may have illegally worked in the host country.

The statistics give some indications about the work life cycle experienced by the respondents: on average they remained 15 years in the host country, though there is significant variation, as the duration of migration ranges from less than five to over thirty one years. About 40% of the individuals have left less than 10 years before the interview and we have no indication about how common this is among Moroccans, Algerians, and Tunisians who emigrated to Europe and subsequently returned to their respective countries of origin. It is possible that recent migrants are a self-selected group relative to earlier migrant cohorts. Those who left after 1996 mostly stayed abroad for less than 5 years while those who were given the opportunity to stay longer (those who departed earlier) experienced longer durations in the host country. The overwhelming majority of those who departed before 1975 have stayed abroad more than 26 years, while those who departed between 1976 and 1985 stay also predominantly more than 26 years (out of a maximum of 29 years).

Migrants were relatively young when they arrived in the host country, as the average age at the point of return is 41 years. It is therefore not surprising that a large portion of respondents got married while abroad, though 29% had children upon returning home. The labour market experience of migrants indicates that they were relatively successful in the host country. Most respondents were wage earners (47% full time and 14% part time) while 15% were self-employed (this contrasts with the 34% of

respondents in self-employment after returning). During the stay in the host country, there is relatively little movement between labour force status categories. Persistence is highest among wage earners and self-employed emigrants (86% and 82%, respectively – This is not reported in Table 2). Respondents also sent regularly remittances to family members in the home country, especially in the twelve months prior to returning. The majority of respondents do not appear to seek additional opportunities to re-emigrate, and intend to remain in the home country. Only 20% of those surveyed report to be prepared to re-emigrate.

In addition to the data extracted from the MIREM database, we created two new dependent variables. The first is the educational investment variable. It is equal to zero if the migrant has no further education in the host country; 1 if the migrant undertakes vocational training or professional courses in the host country; and 2 if the migrant undertakes university or university and vocational training (we collapsed these observations in the same category, as those migrants have undertaken university education). The second dependent variable is an activity choice upon returning. It takes the value of zero if the migrant retires or exists the labour force upon returning; 1 if the migrant is unemployed; 2 if the migrant is a salary earner; and 3 if the migrant is self-employed.

5 Estimation strategy and empirical analysis

Since the investment in human capital in the host country is simultaneously determined with the activity chosen upon returning and the migration of duration, our strategy involves estimating three equations:

- $ds = -\frac{b_t}{b_s} dt - \frac{b_x}{b_s} dx$
- The choice of activity upon returning, which consists of comparing the indirect utility functions associated with each regime; and
- $dt = \frac{A_s}{A_\lambda (C_t / C_\lambda)} ds + \frac{A_y - (C_y / C_\lambda)}{A_\lambda (C_t / C_\lambda)} dy$

In the estimations we also need to take into account the fact that migrants may self select into different patterns of migration based on their expected activity upon return. In particular, we expect determinants of the duration of migration for individuals who return as self employed or wage earners to carry different weights, especially with

respect to those of retirees and unemployed. Unobservables such as individual's ability or motivation are likely to affect both choice of human capital investment and occupation upon return. The latter, in turns, determines the duration of migration if we accept Dustmann and Kirhckamp (2002) hypothesis.

The first equation estimating the determinants of individuals' education choice is estimated by multinomial logit whose results are kept to correct for selection in the choice of activity decision equation. This second equation then serves as a selection equation for the estimation of migration duration. We use a technique analogous to Lee (1983) in order to estimate this second stage of the model. More precisely, the selection mechanism is based on a multinomial logit, where the probability that individual *i* chooses activity *j* after returning (the selection variable) is given by:

$$P\left(LSF_i = j\right) = \frac{e^{\alpha_j' v_i}}{1 + \sum_{j=1}^{J} e^{\alpha_j' v_i}}$$

where *i* stands for the individual observation and *j* for the choice category (0 = out of the labour force; 1 = unemployed; 2 = salaried work; 3 = self-employed). The implied regression on the duration of stay in the main country of immigration is given by (see Lee, 1983 and Greene, 2003):

$$y_j = \beta' x_i + \left(\rho_j \sigma_j\right) \frac{\phi\left(H_j\left(\alpha_j' v_i\right)\right)}{\Phi\left(H_j\left(\alpha_j' v_i\right)\right)} + \eta_j$$

$$y_i = \beta' x_i + \left(\rho_j \sigma_j\right) \lambda_j + \eta_j$$

where *H(.)* is the inverse of the standard normal cdf evaluated at $P\left(LFS = j\right)$, $\phi(.)$ and $\Phi(.)$ are respectively the standard normal pdf and cdf. This is a two-steps procedure analogous to the Heckman selection model except that the selection mechanism is such that we first estimate the multinomial logit on the choice of activity after return. Then we estimate the durations given each choice of activity. This approach yields four sets of estimated parameters for the durations corresponding to each alternative choice (self-employment, salaried work, unemployed, not in the labour force), from which it is possible to identify the relevant determinants. We only present the results obtained for self-employment and salaried work.

6 Results

Table 3 presents the coefficients attached to each variable in determining the type of educational investment in the host country. The reference group for the regression is migrants who did not pursue additional education in the host country, and who migrated in the period 1996-2005. The first column reports the coefficient obtained from the regression, while the second and third columns show the corresponding standard deviation and statistical significance (t-statistic). The fourth column indicates whether the estimate obtained is statistically significantly different from zero.

TABLE 3 REGRESSION RESULTS: EDUCATIONAL CHOICE

Variable	Marg eff	St. err.	b/st.err.	P[|Z|>z
Probability to invest in vocational/ professional training:				
Constant	-3.679	.445	-8.480	.000
M1975	1.080	.437	2.484	.013
M1985	.757	.471	1.607	.108
M1995	.468	.372	1.257	.208
AR_WFT	.447	.429	1.040	.298
AR_SE	.629	.283	2.221	.026
BD_SEC	1.161	.349	3.326	.001
BD_TER	1.774	.443	4.003	.000
A_MARRY	1.001	.267	3.750	.000
Probability to invest in university or university and voc/prof training				
Constant	-5.944	.672	-8.846	.000
M1975	.345	.480	.720	.471
M1985	1.76	.369	2.917	.003
M1995	.418	.255	1.638	.101
AR_WFT	1.733	.297	5.837	.000
AR_SE	.556	.273	2.030	.042
BD_SEC	4.460	.636	7.012	.000
BD_TER	5.519	.664	8.308	.000
A_MARRY	1.003	.271	3.702	.000
Number of observations:	796	**Pseudo R2:**		.316
Information criterion:	1.399	**Chi sq.:**		459.40
logL:	-496.92	**dF:**		16
restricted LogL:	-726.63	**P(Chisq.>val):**		0.00000
Percentage correct predictions:	73.86			

The results displayed in Table 3 suggest that the choice of activity upon returning influences the type of educational investment undertaken while abroad. In particular, the probability of undertaking vocational/professional training in the host country is higher if one becomes self employed after return (AR_SE - coefficient: +.629, t = 2.221), but it is not if one becomes a full-time wage earner (AR_WFT – coefficient:

+.447, t = 1.040). In contrast, the probability of undertaking university and university and vocational education is significantly higher if one becomes a wage earner upon returning (coefficient: 1.733, t = 5.837) than is one becomes self-employed (coefficient: +.556, t = 2.030).

Prior education significantly affects the probability of undertaking both types of education in the host country, as the coefficients of the variables BD_SEC and BD_TER are positive and statistically significantly different from zero, especially in the case of university and university and vocational education. Having migrated prior to 1975 raises the probability of undertaking vocational studies but not of undertaking university education. This is instead influenced by having migrated in the later decade (1976-1985). These outcomes may reflect changes in self-selection among migrants or changes in migration policy in Europe after the first oil shock, in 1974, when tighter policies were introduced. Getting married in the host country, a sign of financial commitment and increased responsibility, substantially raises the probability of undertaking further education abroad.

The marginal effects associated with these results are reported in Table 4. The first column shows the marginal effect calculated at the sample mean of the relevant variables, while the remaining columns show the corresponding standard deviation and statistical significance (t-statistic). The last column represents the marginal effects averaged over individuals in the sample.

TABLE 4 REGRESSION RESULTS: EDUCATIONAL CHOICE – MARGINAL EFFECTS

Variable	Marg. Eff	St. Error	b/st.err	P[|Z|]>z	Marg eff averaged over individuals
Probability to get no further education in host country					
Constant	0.903	0.070	12.950	0.000	0.759
M1975	-0.142	0.070	-2.044	0.041	-0.0976
M1985	-0.173	0.069	-2.508	0.012	-0.143
M1995	-0.085	0.051	-1.674	0.094	-0.0663
AR_WFT	-0.198	0.064	-3.118	0.002	-0.1828
AR_SE	-0.114	0.042	-2.708	0.007	-0.0886
BD_SEC	-0.511	0.061	-8.391	0.000	-0.4709
BD_TER	-0.668	0.080	-8.384	0.000	-0.6034
A_MARRY	-0.192	0.043	-4.501	0.000	-0.1515

Probability to invest in vocational training					
Constant	-0.344	0.051	-6.780	0.000	-0.1613
M1975	0.124	0.051	2.452	0.014	0.0879
M1985	0.073	0.055	1.328	0.184	0.0375
M1995	0.049	0.044	1.133	0.257	0.0303
AR_WFT	0.025	0.051	0.491	0.623	-0.0098
AR_SE	0.066	0.033	1.999	0.046	0.0409
BD_SEC	0.066	0.042	1.588	0.112	-0.024
BD_TER	0.122	0.054	2.270	0.023	0.0009
A_MARRY	0.104	0.031	3.323	0.001	0.0617
Probability to invest in university education (or both)					
Constant	-0.558	0.064	-8.677	0.000	-0.5977
M1975	0.018	0.049	0.372	0.710	0.0097
M1985	0.100	0.041	2.441	0.015	0.1056
M1995	0.036	0.026	1.365	0.172	0.036
AR_WFT	0.173	0.044	3.941	0.000	0.1925
AR_SE	0.048	0.029	1.647	0.100	0.0477
BD_SEC	0.445	0.051	8.801	0.000	0.4949
BD_TER	0.545	0.069	7.917	0.000	0.6025
A_MARRY	0.088	0.031	2.846	0.004	0.0898

Being self-employed after returning home raises the probability of having undertaken vocational or professional courses in the host country by about 6.6% (t = 1.999). As noted in the results displayed in Table 3, being a wage earner after returning home does not appear to influence the probability of undertaking vocational/professional training (t = .491).

Having undertaken secondary or tertiary education in the home country prior to migration raises substantially the probability of undertaking further investments in human capital in the host country. This is not surprising as the self-producing characteristic of education is well known. Having migrated prior to 1975 raises the probability of undertaking that type of education by 12.4% vis-à-vis not undertaking any further investment in human capital abroad.

With reference to university education, being a wage earner upon returning raises the probability of undertaking university studies in the host country by a considerable amount (17%, t = 3.941) relative to not undertaking any education. Interestingly, becoming a self-employed does not have a significant effect on such probability (t = 1.647) Being married raises the probability of undertaking further education (either vocational training or university) by about 10%. These results suggest a clear division in the type of educational investment undertaken by migrants who then become self-

employed and wage earners relative to those not undertaking any additional education abroad. Future self-employed privilege educational investments in vocational and professional training while future wage earners prefer to invest in university education.

Table 5 presents the estimation results on individuals' choice of occupation after return in their origin country. These results are corrected for the selection induced by the choice of education investment in the host country. Only the marginal effects are displayed with respect to either becoming a wage earner or self-employed in the host country. The two variables PHKBPR01 and PHKBPR02 are the predicted probabilities of respectively investing in vocational training and undertaking a university degree.

TABLE 5 REGRESSION RESULTS: CHOICE OF ACTIVITY – MARGINAL EFFECTS

Variable	Marg eff	St. err.	b/st.err.	P[|Z|>z	Elasticity
Probability of being wage earner					
Constant	.449	.131	3.406	.000	
PHKBPR01	-8.835	.895	-9.863	.000	-3.879
PHKBPR02	.885	.145	6.080	.000	1.461
AGE_R	-.001	.003	-.287	.773	-.141
ANS_PPI	.011	.004	2.235	.025	.477
VISAWK	.119	.087	1.368	.171	.095
VISATOUR	.007	.065	.114	.909	.009
R_PLACE	.131	.068	1.903	.057	.131
B_STAY2	-.083	.061	-1.353	.176	-.191
R_K	.043	.062	.681	.496	.061
B_WFT	-.006	.076	-.084	.932	-.012
B_WPT	-.042	.088	-.481	.631	-.026
B_SE	-.222	.099	-2.240	.025	-.160
Probability of being self-employed					
Constant	-.779	.165	-4.721	.000	
PHKBPR01	9.961	.941	10.582	.000	1.868
PHKBPR02	-.457	.156	-2.926	.003	-.322
AGE_R	.004	.004	.991	.321	.241
ANS_PPI	-.014	.005	-2.785	.005	-.281
VISAWK	-.032	.098	-.325	.745	-.010
VISATOUR	.013	.075	.178	.859	.007
R_PLACE	-.065	.081	-.808	.419	-.027
B_STAY2	.172	.070	2.450	.014	.169
R_K	.067	.071	.945	.344	.041
B_WFT	.083	.092	.903	.366	.068
B_WPT	.114	.107	1.061	.288	.304
B_SE	.432	.111	3.877	.000	133

With reference to the wage earners, gaining a university degree or a university degree and a vocational/professional training in the host country substantially raises the probability of being a salary earner in the home country upon returning.. Interestingly, having completed a vocational or professional qualification abroad decreases the probability of becoming a wage earner on return. It appears that those who undertake such education in the host country come back as self employed.. This result gives an indication that individuals engaging in vocational training in the host country learn a trade that will be valued upon their return and will enable them to set up a business or pursue the activity they has before departing the host country. As regards the marginal effects associated to university degrees, the results suggest that university degrees obtained in the host country are valued to some extent in the origin country since it leads to higher probabilities to become a wage earner upon return.
Altogether The marginal effects associated to individuals undertaking any form of further education in the host country suggest that individuals do not invest in the host country just for the sake of staying until retirement.

Other statistically significant determinants that raise the probability of being a salary earner upon returning include going back to the same place from which the migrant left (13%), while having kinds or having emigrated with a working visa do not appear to influence the choice of activity upon returning. It is worth noting that while obtaining a university degree in the host country contributes to largely increase the probability that the individual will return as a wage earner, it reduces the probability of becoming self-employed. According to the results, those who were wage earners last before return are not significantly different from individuals who were out of the labour force as regards the probability to become a wage earner upon return. If anything, former wage earners are less likely to be out of the labour force upon return than those who already were not participating before settling back to the origin country.

Being self-employed before leaving dramatically improves the probability that the individual will keep being self-employed upon return (by as much as 43%). Besides, as noticed before, individuals completing vocational training in the host country are more likely to become self-employed upon return. Taken together, These results suggest that access to vocational and professional training in the host country can help

returning migrants to become self-employed and entrepreneurs, which in turn is likely to contribute positively to the economic development of the home country.

Another factor that positively influences the probability of becoming self-employed is the intention to settle back in the origin country for good (17%). Those who, on the contrary, state that they wish to migrate again are more likely to be unemployed upon return. This result is not surprising since self employment is associated with some sunk costs of establishing a business or building up a customer base. Tables 6a-b report the selection corrected regression results explaining duration (in years) for the two main labour force statuses: wage earners and self-employed, respectively. The regressions are obtained taking into account the truncation implied by the fact that we do not observe individuals who stayed in the host country. This effect is captured by the lambda in the regression results.

TABLE 6A. REGRESSION RESULTS – WAGE EARNERS

Variable	Coef	St. err.	b/st.err.	P[|Z|>z
Constant	5.592	3.488	1.603	
AGE_M	-.370	.126	-2.931	23.85
A_K	3.003	2.612	1.150	.167
BD_LAND	6.686	1.944	3.438	.303
A_JOBT3	1.622	1.993	.814	.318
MC_FR	3.002	1.789	1.678	.515
B_WFT	6.341	2.212	2.866	.393
B_WPT	1.847	2.671	.692	.181
B_SE	-.674	3.022	-.22	.121
B_REM1	-.977	2.181	-.448	.227
BD_MP	-1.232	2.035	.606	.333
Lambda	5.257	2.180	2.412	1.193
Number of observations:	187	**R squared**		.415
Mean of dep. Var.	9.74	**Adj. R squared**		.295
St dev of dep. Var.	8.80	**F(11,54)**		3.48

Age is the most important factor explaining the duration of migration for wage earners. For each year of age (second row), the duration of emigration drops by 0.37 years (t: 2.93). Owning land in the home country before leaving raises the length of stay in the host country as does having worked as a wage earner before leaving. There appears to be positive selection in the sample, as shown by the positive coefficient of the selection regressor (lambda). This suggests that among those who return, wage earners tend to have stayed a longer period of time in the host country.

TABLE 6B. REGRESSION RESULTS – SELF-EMPLOYED

Variable	Coef	St. err.	b/st.err.	P[|Z|>z
Constant	1.887	.659	.510	
AGE_M	.050	-.261	.793	28.14
A_K	.914	3.855	.000	.311
BD_LAND	.979	1.824	.068	.211
A_JOBT3	1.236	-.162	.871	.131
MC_FR	.815	2.067	.038	.494
B_WFT	.981	3.874	.000	.544
B_WPT	1.416	1.041	.298	.127
B_SE	1.846	.595	.551	.061
B_REM1	.947	3.609	.000	.255
BD_MP	1.034	-1.610	.107	.200
Lambda	.549	5.715	.000	.439
Number of observations:	222	**R squared**		.399
Mean of dep. Var.	7.40	**Adj. R squared**		.361
St dev of dep. Var.	6.81	**F(11,1168)**		10.18

The results reported in Table 6b suggest that the duration of migration for those who are self-employed upon returning decreases with age but raises with having kids in the host country, having been a wage earner before migrating, and having sent remittances regularly home in the last 12 months prior to retuning. Curiously, owning land in the home country before leaving does not affect the duration of migration (t = .068).

7 Conclusions

This paper analyses the determinants of the educational investment, choice of activity upon returning, and duration of emigration for a group of emigrants from Algeria, Morocco and Tunisia who moved to Europe but returned to their home countries. The results suggest that the type of education plays a significant role in the migration decisions of those returning as wage earners or self-employed. In particular, there is a clear positive relationship between being self-employed and having previously invested in vocational education in the host country (and a negative relationship if one invested in university education while abroad). There is also a strong positive relationship between investing in university education abroad and becoming a wage earner upon returning. This result suggests that economics development in sending countries may occur through additional access to vocational and professional

education in the host countries. As international migration facilitates skill transfers between developed and developing countries, the economic development of the latter will increasingly depend on migrants' ability to access educational and vocational training in the developed world in addition to university education. Successful development policies in receiving countries may therefore try to encourage migrants' access to vocational and professional training. Returning migrants with vocational and professional training tend to be self-employed after returning home, and by so doing they contribute to reducing poverty in the host country.

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