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Jellal, Mohamed and wolff, François charles

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International migration and human capital formation

Mohamed Jellal* François-Charles Wolff†

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Abstract

We consider a model of international migration with heterogeneity in the skill level of workers which accounts for country-specific educational investment, unemployment expectations and return to the origin country. We prove that migrants invest less than natives in human capital formation because of return migration, so that migrants are more likely to be unemployed and to have flatter earnings profiles.

Keywords: International migration, return migration, human capital formation

JEL Classification: F22, J24, O15

*Faculté des Sciences Économiques, Rabat, Morocco, and Conseils-Eco, Toulouse, France. E-mail : jellalmohamed@yahoo.fr

†Corresponding author. LEN-CEBS, Faculté des Sciences Économiques et de Gestion, chemin de la Censive du Tertre, BP 52231, 44322 Nantes Cedex 3, France ; CNAV and INED, Paris, France. E-mail : wolff@sc-eco.univ-nantes.fr

1 Introduction

Numerous empirical studies have attempted to identify the effect of immigration on the labor market outcome (see Abowd and Freeman, 1991, Borjas et alii, 1997, Gang and Rivera-Batiz, 1994). In the context of multifactor production functions in which migrants and natives are separately incorporated, the impact of immigration on labor market is shown to depend on the composition of skills between migrants and natives. Immigration is expected to have an adverse effect on low-skilled natives when migrants are less skilled than natives, so that the income distribution changes in favor of high skill labor. From an empirical viewpoint, there are no large negative effects of immigration on both wages and employment of the native population (Borjas, 1994, Friedberg and Hunt, 1995).

Immigrants' economic performance is often better than that of natives with similar characteristics. During a long time, this fact has been explained by a self-selection of migrants, who are presumably more educated and less risk averse than other segments of the population of the origin country. However, the difference in performance between migrants and natives may also be linked to the structure of incentives faced by both populations (Djajić, 1989). In particular, migrants have to be distinguished from natives because there exists a positive probability of return migration in the origin country.

Galor and Stark (1990) examine the link between return decision and optimal decisions of savings, and prove that migrants are expected to save more than natives. Thus, if return migration does not take place, migrants are expected to outperform comparable natives. Models of migration incorporating possible return behavior can be extended in several directions, for example with interesting predictions concerning assimilation or differences of wages between origin countries (Schaeffer, 1995)¹. In Galor and Stark (1991), the possibility of return to the home country leads to an intertemporal substitution in the labor supply. Again, migrants are expected to be more performant than natives since they exert a higher level of work effort (greater effort translates into higher incomes).

Previous models dealing with differentiated incentives between migrants and natives have neglected country-specific educational investment. Unfortunately, several studies have shown that immigrants usually choose to invest in host-country human capital formation, which improves their wage profile (Chiswick and Miller, 1994, Khan, 1997). So, the purpose of our analysis is to account for human capital formation in a simple model of international migration. Drawing on the model of Galor and Stark (1990, 1991) where migrant's performance in terms of income is more likely to outweigh native's performance when a high probability of return to the origin country is considered, we account for heterogeneity in educational investment. This allows us to offer a human capital expla-

¹Schaeffer (1995) notes that immigrants have a higher incentive to maintain strong ties to the origin country when the probability of return is high. Hence, assimilation is more difficult to achieve if immigrants have an uncertain status in the receipt country.

nation of migrants-natives differences in labor market outcomes, which depend on future earnings, expectations with respect to unemployment and country-specific human capital

The remainder of this note is organized as follows. In section 2, we present a two-period model of migration which accounts for cross-country specific educational investment, unemployment expectations, and decision of return migration. The optimal level of investment in human capital is characterized in section 3, and we respectively examine the impact of exogenous and endogenous employment. Section 4 concludes.

2 A migration model with heterogeneous skill

Let us consider an international migration model with two types of agents, migrants and natives. We assume that migrants come from a poor country and natives live in a rich country, so that job opportunities are more attractive in the host country. We extend the framework of Galor and Stark (1990, 1991) by assuming that immigrants may have different levels of human capital.

Agents operate in a two-period setting. Each individual is characterized by a utility function U , defined over the first and second-period private consumptions denoted by C_1 and C_2 . We rely on an additively separable utility function $U(C_1, C_2)$ such that $U(C_1, C_2) = u(C_1) + \delta u(C_2)$, with δ the future discount factor. We assume that U is continuous, twice differentiable and strictly concave ($u' > 0, u'' < 0$)².

In period 1, individuals offer one unit of labor inelastically. Let W_1 be the level of income for that period, which is devoted to the first-period consumption C_1 and human capital formation. Let H be the personal amount of educational investment. Human capital formation is costly for migrants, and we denote by $f(H)$ the associated convex cost function ($f'(H) > 0$ and $f''(H) > 0$). Thus, the first-period budget constraint is $C_1 = W_1 - f(H)$. The occupational status for migrants is uncertain in period 2, so that the second-period consumption is a random variable denoted by \tilde{C}_2 . Specifically, it depends on the employment status in the labor market and on the probability of return to the home country, since migrants are concerned by a strictly positive probability of return to the origin country in period 2³. For the notation, let ζ be the exogenous probability of return migration to the origin country.

²We differ from Galor and Stark (1991) and Schaeffer (1995) in that the level of satisfaction is just defined over consumption choices. Leisure decisions do not matter in our framework.

³Our analysis does not focus on the motives for return migration, which may be due to i) country specific preferences, migrants having a preference for living and consuming in the home country, ii) price differentials, since migration return allows to take advantage of low price levels at home, iii) human capital investments, migrants improving their earnings position at home later by being currently in the foreign country, and iv) informational asymmetry, low-skilled migrants returning to the origin country after true skill is revealed in the rich country.

With probability $1 - \zeta$, the migrant stays in the host country in period 2. There are two possibilities. First, the migrant has a paid job. By securing employment, there are two components for the migrant's income. It is defined as the sum of a fixed wage W_2 and returns of human capital. Benefits of educational investment are given by the function $g(H)$, characterized by decreasing returns ($g'(H) > 0$, $g''(H) < 0$). Second, the migrant is in period 2 and he receives an unemployment compensation B . We consider a fixed individual benefit since human capital investment is made only in period 1. Nevertheless, having more education decreases the probability of being unemployed in period 2. We denote by $p(H)$ the probability of being unemployed, with $p'(H) < 0$ and $p''(H) < 0$.

Now, with probability ζ , the migrant returns to his origin country. Under return migration, we suppose that the migrant finds a job with certainty in the origin country (for instance by taking part in family productive activities. But job opportunities are not so attractive, and the migrant receives a lower wage in the origin country denoted by λW_2 , with $0 < \lambda < 1$. The parameter λ is a measure of the wage differential between the origin country and the host country. Given the probabilities of return migration ζ and unemployment $p(H)$, we get the following expression for the migrant's random consumption in period 2 :

$$\tilde{C}_2 = \begin{cases} W_2 + g(H) & \text{with probability } (1 - \zeta)(1 - p(H)) \\ B & \text{with probability } (1 - \zeta)p(H) \\ \lambda W_2 & \text{with probability } \zeta \end{cases} \quad (1)$$

We can now determine the optimal investment decision of the migrant. For simplicity, let us consider that income are fixed over time, i.e. $W = W_1 = W_2$. The migrant seeks to choose the level of human capital that maximizes his expected utility function $U(C_1, \tilde{C}_2)$. The maximization program is given by:

$$\max_{H \geq 0} u(W - f(H)) + \delta [(1 - \zeta)(1 - p(H))u(W + g(H)) + (1 - \zeta)p(H)u(B) + \zeta u(\lambda W)]$$

We easily deduce the optimal choice of educational investment H^* :

$$f'(H^*)u'(W - f(H^*)) = \delta(1 - \zeta) [p'(H^*)(u(B) - u(W + g(H^*))) + (1 - p(H^*))g'(H^*)u'(W + g(H^*))] \quad (2)$$

At the equilibrium, the marginal cost of human capital formation is equal to its marginal benefit given the probabilities of unemployment and return migration. We now derive the impact of return behavior and unemployment expectations on the educational decision.

3 Human capital and exogenous unemployment

Suppose that the probability to be unemployed does not depend on human capital accumulated by the migrant. This case is more likely when one considers a specific segment

of the labor market, for example when both migrants and natives participate in low-skill activities. Then, we have $p(H) = p$. From (4) and since $p'(H) = 0$, we get :

$$f'(H^*)u'(W - f(H^*)) = \delta(1 - \zeta)(1 - p)g'(H^*)u'(W + g(H^*)) \quad (3)$$

meaning that the marginal benefit is given by the positive returns of human capital formation, which occurs when a migrant does not return and exerts a job in the host country.

Proposition 1 *The migrant's optimal investment in human capital decreases with the unemployment probability and the probability of return migration.*

Proof. From (5) such that $EU_{H^*} = 0$ and using the implicit function theorem, we have $\partial H^*/\partial p = -EU_{H^*p}/EU_{H^*H^*}$ and $\partial H^*/\partial \zeta = -EU_{H^*\zeta}/EU_{H^*H^*}$. Given the concavity of u , we get $\text{sgn } dH^*/dp = \text{sgn } EU_{H^*p}$ and $\text{sgn } dH^*/d\zeta = \text{sgn } EU_{H^*\zeta}$, so that we finally obtain :

$$\begin{aligned} \text{sgn } \frac{\partial H^*}{\partial p} &= \text{sgn } -\delta(1 - \zeta)g'(H^*)u'(W + g(H^*)) \\ \text{sgn } \frac{\partial H^*}{\partial \zeta} &= \text{sgn } -\delta(1 - p)g'(H^*)u'(W + g(H^*)) \end{aligned}$$

Since we have $g' > 0$, $u' > 0$, $0 < \delta < 1$ and $0 < p < 1$, we deduce that $\partial H^*/\partial p < 0$ and $\partial H^*/\partial \zeta < 0$. QED

Differences between migrants and natives are not related to traits distinguishing the two populations, but to specific migrant's incentives given the uncertainty to remain in the host country in period 2.

Corollary 1 *Migrants are less qualified than natives.*

Corollary 2 *If migrants do not return to their origin country, their wages will be lower than that of natives.*

This model points out the role of migrant's incentives in explaining the relative migrant's outcome. A migrant from a low-income country is less likely to invest in human capital formation given the possibility of return decision, which implies a lower expected wage. So, if migrants do not return, their wages will be lower than that of natives. That less-permanent migrants are expected to achieve lower outcomes stands in contrast with the conclusion obtained in Galor and Stark (1991, corollary 1), where labor supply effects result in greater migrant's wage in the event that return migration does not materialize. The difference is not due to labor supply effects, but because of incentives to invest in skills specific to the host country. Since migrants undertake less educational investment, their labor market outcomes are lower than that of natives when return migration does not materialize.

4 Human capital and endogenous unemployment

We now consider that unemployment is endogenously determined, since decisions of human capital investment are expected to influence the probability to find a job in the labor market. The probability of unemployment is supposed to be a decreasing, weakly convex function of the level of human capital.

Proposition 2 *With endogenous unemployment, the migrant's optimal investment in human capital decreases with the return probability to the origin country.*

Proof. Using the implicit function theorem, we get $\text{sgn } \partial H^* / \partial \zeta = \text{sgn } EU_{H^* \zeta}$, so that :

$$\text{sgn } \frac{\partial H^*}{\partial \zeta} = \text{sgn } -\delta [p'(H^*)(u(B) - u(W + g(H^*))) + (1 - p(H^*))g'(H^*)u'(W + g(H^*))]$$

Since $0 < \delta < 1$, $0 < \zeta < 1$, $u(W + g(H^*)) > u(B)$, $p'(\cdot) < 0$ and $g'(\cdot) > 0$, we arrive at the result that $\partial H^* / \partial \zeta < 0$. QED

Again, we find that migrants are expected to achieve lower outcomes than natives when return migration does not occur, since the former face less incentives to invest in human capital formation. So, given the possibility of country-specific education, migrants are more likely to have flatter earnings profiles.

Corollary 3 *Migrants display a higher rate of unemployment than natives.*

This migration model which accounts for skill heterogeneity explains why migrants are more likely to be unemployed in the host country. Since they do not invest enough in human capital formation during the first period given the possibility of return, it is more difficult for them to secure employment in the second period when they do not return to the origin country.

5 Concluding comments

In this paper, we have analyzed predictions of a two-period model of migration with return behavior and skill heterogeneity. We show that less-permanent migrants have less incentives to invest in host-country specific human capital. The theoretical predictions are different from those obtained in a migration model with skill homogeneity (see Galor and Stark, 1990, 1991). A migrant who expects to return to the origin country devotes less resources to human capital formation, thereby leading to a lower second-period wage when

the return migration does not materialize. With endogenous unemployment, migrants have flatter earnings profiles and display higher rates of unemployment.

This impact of skill heterogeneity has to be linked with decisions towards post-migration educational investment (Chiswick and Miller, 1994, Khan, 1997, Friedberg, 2000). On the one hand, the prevalence of post-migration human capital formation in host countries is the sign that the assumption of skill homogeneity is not correct in migration models with return behavior. On the other hand, human capital investments are more likely among immigrants groups that cannot easily or are unlikely to return home. For instance, Hansen et alii (2001) show that refugee immigrants, characterized by a lower probability to return to the home country, invest more in specific-country human capital. In our framework, we prove that migrants facing higher expectations of return migration should invest less in home-country education.

Knowing how immigrants invest in host-country specific skills is an important issue from a public policy perspective, especially in the design of immigrants selection criteria. Labor market outcomes for migrants in the host country depend on their origin-country specific educational level. A country could be induced to select highly educated migrants, who are more likely to perform well in the host country's labor market. But if migrants are able to catch up through post-migration human capital formation, the divergence in labor market outcomes for migrants and natives should be lessened. Hence, successful assimilation of migrants in the host country strongly depends on post-migration investment in human capital.

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