Are There Returns to Migration Experience? An Empirical Analysis using Data on Return Migrants and Non-Migrants in West Africa

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ABSTRACT – Does migrants’ experience abroad provide an earnings premium for wage earners and/or a productivity advantage for entrepreneurs? In terms of earnings, we find that experience abroad results in a substantial wage premium for migrants returning from an OECD country but not for other return migrants. Past migration in an OECD country also results in a productive advantage for returnees who became entrepreneurs upon returning. However, the low share of return migrants in the population of WAEMU countries suggests that the effectiveness of return migration as a driver of development is only moderate.

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1 INTRODUCTION

While labour migration has attracted a lot of attention among researchers and resulted in a sizeable literature on the welfare implications of migration and on the uses and impact of remittances, the determinants and impacts of return migration have been comparatively under-researched. This is rather surprising since a large proportion of migrants do return home at some point in their life cycle, thus making many migrations temporary. For instance, labour migration from Southern to Central Europe in the 1950s and 1970s were predominantly temporary, as suggested by BÖHNING [1984] who estimates that “more than two thirds of the foreign workers admitted in Germany and more than four fifths in the case of Switzerland have returned” (quoted by DUSTMANN, [2000]). GLYSOS [1988] reports that of the one million Greeks who migrated to West Germany between 1960 and 1984, 85% returned home. DUSTMANN and WEISS [2007] find that only about 68% of female and 60% of male foreign born admitted in Britain between 1992 and 1994 were still in the country five years later. For the United States, JASSO and ROSENZWEIG [1982] report that over the 15.7 million individuals that immigrated between 1908 and 1957, about 4.8 million chose to re-migrate. Despite a lack of adequate data, migration from West African countries is also known to be essentially temporary (ADEPOJU, [2005a]; BA, [2006]). This is not only true for migration within the sub-region but also for inter-regional migration and for migration from West Africa to Europe, even though tighter immigration policies in Europe have increased migration duration. As a result, significant return migration flows are recorded from Europe to West Africa. According to the surveys on Migration and Urbanization in West Africa (REMUAO, Réseau Migrations et Urbanisation en Afrique de l'Ouest) conducted in seven countries in 1993, 111,000 individuals aged 15 or more migrated from REMUAO countries to Europe over the 1988-1992 period while 33,000 return migrations were recorded at the same time. In other terms, 22,200 individuals aged 15 or more migrated each year from REMUAO countries to Europe and 6,600 from Europe to REMUAO countries between 1988 and 1992 (BOCQUIER,[1998]).

Empirical evidence concerning the relationship between return migration and development is too fragmentary and contradictory to draw clear conclusions and formulate concrete policy measures. The developmental impact of return migration is in particular likely to vary significantly according to several critical factors including the volume of return migration, the characteristics of return migrants, the degree and direction of selectivity, the reasons for return and the situation prevailing in the home countries.

In what follows, we use recent survey data collected in the capital cities of seven West African countries to examine the impact of return migration at the individual level. Our aim

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1 These surveys were coordinated by the CERPOD (Centre d’Etudes et de Recherche sur la Population et pour le développement in collaboration with IRD (Institut de Recherche pour le Développement), CEPED (Centre d’Etudes sur la Population et le Développement) and the University of Montreal, Department of Demography. The list of REMUAO countries includes Burkina Faso, Côte d’Ivoire, Guinea, Mali, Mauritania, Niger and Senegal.

2 The seven countries under concern are all members of the Economic Community of West African States (ECOWAS). At the time of its creation, in 1975, the key objective of the Community was to remove obstacles to the free movement of goods, capital and people in the sub-region. In line with this objective, the Protocol on Free Movement of Persons and the Right of Residence and Establishment was signed in May 1979. More recently, in 2000, members of the ECOWAS agreed to introduce a new passport for citizens of the sub-region that will progressively replace national passports. Even though much remains to be done in order to achieve a complete liberalization of labour migration within the community, all these measures taken to create a borderless West Africa provide a good opportunity to study the impact of temporary migration in the area. For further information on West African mobility, the interested reader might refer to DE VREYER, GÜBERT and ROUBAUD [2010].
is to shed light on the following question: are financial capital and new skills acquired abroad, if any, used productively back home? We examine this issue by investigating whether, upon returning, migrants’ experience abroad provide an earnings premium for wage earners and/or a productivity advantage for entrepreneurs.

This paper is organised as follows. We begin by reviewing the empirical literature on the impact of return migration from sending countries’ perspective (Section 2). In Section 3, we describe the data and provide descriptive statistics on the characteristics of return migrants that we compare to those of migrants and non-migrants. In section 4, we analyze the labour market performance of return migrants either through the estimation of earnings functions or through the estimation of production functions. We then provide concluding remarks and suggest directions for future work.

2 A REVIEW OF THE EMPIRICAL LITERATURE

While the theoretical literature has mainly focused on the motives for return, the empirical literature has mainly examined the impact of return migration from the sending country perspective. Two issues in particular have received research attention: the labour market performance of return migrants on the one hand, and the characteristics of businesses created by returnees on the other hand.

2.1. Labour Market Performance of Return Migrants

Empirical studies focusing on the labour market performance of return migrants investigate whether returnees are able to apply at home what they learned abroad through a comparison of the wages of return migrants to the wages of those who stayed in the home country (see, e.g., KIKER and TRAYNHAM, [1977]; ENCHAUTEGUI, [1993]; CO, GANG and MYESONG-SU, [2000]; de COULON and PIRACHA, [2005]; ROOTH and SAARELA, [2007]). Contrasting results emerge from this literature. Using data collected in 1980 on a sample of male Puerto Rican migrants who returned from the United States in the 1970s, ENCHAUTEGUI [1993] finds that experience abroad is neither penalized nor rewarded. The explanation provided by the author is that Puerto Rican migrants in the United States are confined to low-skilled jobs where little human capital investment takes place. By contrast, CO et al. [2000] find that foreign experience matters and that there is a wage premium for having gone abroad using panel data on a large sample of Hungarian households. However, their results also suggest that there are large differences in the returns to foreign experience across gender and among host countries in which the experience occurred. Foreign experience is found to strongly matter for women but not for men. When host countries are differentiated (OECD vs. non OECD countries), women who have been to OECD countries are found to earn a 67% premium over those who have not been abroad, while the premium is found to be insignificant for women who have been to non-OECD countries. To date, no such quantitative analysis has been conducted on African return migrants. However, a study conducted on Ghanaian female migrants argues that most of them did not learn anything new while working abroad because they only got unskilled jobs (BRYDON, [1992]). In practice, even among those migrants who acquired new skills and experience, few may be able to apply them back home, especially when they originated from rural areas and return to their villages after working abroad (Malian migrants, for example, generally belong to this category). It is indeed difficult for migrants who have acquired technical or industrial skills to apply them in rural settings, where the infrastructure needed to make an effective use of new skills is lacking. In African urban areas, where access
to job is much easier for individuals with dense social and/or family networks (see, e.g., DIAL, [2007]), return migrants might find it difficult to get a job if they failed to maintain strong social ties with their family and friends in the home country while working abroad.

Potential selection biases are one of the big methodological issues in this strand of literature. Selection biases arise when observations are selected from a population by rules other than simple random sampling. In the case of out and return migrations, there is a widely agreed position that individuals are self-selected (see, e.g., NAKOSTEEN and ZIMMER, [1980]; BORJAS, [1987]; BORJAS and BRATSBERG, [1996]). The selective process is said to be positive if those individuals who choose to leave a country (and to return to their home country in the case of return migrants) are, say, more able and/or more motivated than those who choose to stay in their home country. By symmetry, it is said to be negative if migrants are less able and/or less motivated than non-migrants. Ignoring self-selection in the process of return migration may result in biased estimates of the wage premium related to experience abroad. This selection issue is directly addressed by de COULON and PIRACHA [2005] who find evidence that return migrants are negatively self-selected compared to the non-migrants in the case of Albania. In other words, had they chosen not to migrate, the labour market performance of migrants would have been worse than that of the non-migrants. Using Hungarian data, CO et al. [2000] also address the self-selection issue through the estimation of two types of earnings equations. They first estimate an earnings equation using simple OLS in which a dummy variable captures whether an individual has foreign experience or not. They then estimate the same earnings equation using maximum likelihood estimation (MLE) techniques to control for self-selection in the migration decision. For men, the MLE coefficient on foreign experience is smaller than the OLS coefficient. This result means that part of the positive effect of going abroad on earnings in the OLS reflects the effect of self-selection into going abroad. In other words, those men who migrated would have done better (i.e. earned higher earnings) regardless of whether or not they had gone abroad. The reverse holds true for women which are found to be negatively selected in the migration process.

2.2. Return Migration and Small Enterprise Development

A few other empirical studies have examined the impact of return migration on the development of small businesses in the home country (see, e.g., ILahi, [1999]; MCCORMICK and WAHBA, [2001]; AMMASSARI, [2003]; BLACK, KING and TIEMOKO, [2003]; WAHBA, [2003]; MESNARD, [2004]; NICHOLSON, [2004]). There are two ways through which experience abroad might enable migrants to contribute to small business development: first, accumulated savings abroad might contribute to alleviate domestic capital market imperfections; second, overseas work experience might generate new skills and new ideas. In the case of Egypt, MCCORMICK and WAHBA [2001] explore the extent to which returnees to Egypt become entrepreneurs and the influence on this process of overseas savings, overseas work experience, and pre-migration formal education. Using data drawn from the 1988 Labour Force Sample Survey, which included a return migration module, they estimate a simple model of the probability that a return migrant is an entrepreneur. Their findings suggest that total savings accumulated overseas and the length of overseas employment positively and significantly affect the probability of becoming an entrepreneur among literate returnees. By contrast, longer periods overseas have no influence on the likelihood of becoming an entrepreneur among illiterate returnees. ILahi [1999] examines similar issues for Pakistan and gives some evidence that Pakistani return migrants have invested into self-employment thanks to their savings. In the case of West Africa, a research project carried out by the Centre for Migration Research of the University of Sussex has recently explored the
relationship between migration, return and development amongst both “elite” and less-skilled returnees to Ghana and Côte d’Ivoire. Even though the research conducted in this framework is mostly qualitative and the small sample sizes caution about generalizations, the authors give a list of key variables influencing the propensity of returnees to invest in businesses: the skill level of migrants, the length of time they spent abroad, the work experience they gain and working conditions they experience, as well as the contacts they have with friends and relatives back home.

In what follows, we mobilise recent household survey data to shed light on the impact of return international migration in seven countries of the West African Economic and Monetary Union (WAEMU): Benin, Burkina Faso, Côte d’Ivoire, Mali, Niger, Senegal and Togo. Given the data at hand, we focus on the urban labour market performance of return migrants.

3 DATA AND DESCRIPTIVE STATISTICS

3.1. Data, Definitions and Sample Size

The data is taken from an original series of urban household surveys in West Africa, the 1-2-3 Surveys conducted in seven major WAEMU cities (Abidjan, Bamako, Cotonou, Dakar, Lomé, Niamey and Ouagadougou) from 2001 to 2002.

The surveys cover the economic city, i.e. the “administrative city” and all the small towns and villages directly attached to it and with which there are frequent exchanges. As suggested by its name, the 1-2-3 Survey is a three-phase survey. The first phase concerns individuals’ socio-demographic characteristics and labour market integration. The second phase covers the informal sector and its main productive characteristics. The third phase focuses on household consumption and living conditions. The same methodology and virtually identical questionnaires were used in each city, making for totally comparable indicators. In what follows, we mobilize phase 1 and phase 2 data.

Using the sample of all individuals aged 15 years and older interviewed in the first phase of the survey, our first objective is to compare the characteristics of return migrants relative to native non-migrants and immigrants. Non-migrants are defined as individuals who never left the country where they were born and interviewed. Immigrants are non-native residents, defined as individuals who are not citizens of the country they currently reside in. Return migrants are defined as individuals who were born in the country of current residence (or who are citizens of this country), who lived abroad for some time and then came back. Three types of return migrants can actually be identified in our data: those who came back from a WAEMU country, those who came back from an OECD country and those who came back from another country. As we shall see, these different types of return migrants have somewhat different characteristics. Because the surveys were not designed to investigate migration issues, we are unfortunately left with very limited information on the returnees’ migration experience. In particular, the database contains no information on year of departure, place of

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3 This project, which ended in 2003, is entitled “Transnational Migration, Return and Development in West Africa”. Interested readers can refer to the web site of the project: [http://www.sussex.ac.uk/Units/SCMR/research/transrede/](http://www.sussex.ac.uk/Units/SCMR/research/transrede/)

4 The surveys were carried out by the relevant countries’ National Statistics Institutes (NSIs), AFRISTAT and DIAL as part of the PARSTAT Project, a Regional Statistical Assistance Programme for multilateral monitoring sponsored by the WAEMU Commission (see RAZAFINDRAKOTO, ROUBAUD and TORELLI [2009] for a detailed presentation).
residence at the time of migration, migration duration (i.e. whether it was temporary, seasonal, circular or on a longer-term basis), family and labour status during migration, etc. We do not know either whether the returnees’ parents were migrants themselves. Quoting Adepoju, however, "circulation seems to encapsulate the essence and specificity of migration dynamics in West Africa – non-permanent movements in circuits within and across national boundaries which begin and (must) end at ‘home’" (ADEPOJU, [2005b]).

The total sample is made of 58,459 individuals aged 15 years and older (see Table A). The sample of return migrants has 3,594 individuals, with a large majority of them (almost 88%) returning from a non-OECD country. Return migrants represent a relatively small share of the population of individuals aged 15 years and older living in the seven cities. The average value is 4.8% but the share actually varies significantly between cities, with values ranging from 13.3% in Lomé (Togo) to 1.9% in Dakar (Senegal). In five cities out of seven, the share of return migrants in the population is actually higher than the share of immigrants. The two exceptions are Abidjan (Côte d’Ivoire) where the share of immigrants in the population is very high (15.4%) and the share of return migrants is low (2.1%), and Niamey (Niger) where both the share of immigrants and that of return migrants are relatively small (4.3% and 3.2% respectively).

Phase 2 of the 1-2-3 Survey is restricted to small informal enterprises which owners were surveyed during phase 1. The total sample is made of 6,619 microenterprises. The survey collects detailed information on production and/or sales, expenses, employees’ characteristics and physical capital. It also includes some information on the founding of the enterprise, the sources of capital, etc.

3.2. Individual characteristics of return migrants, non-migrants and immigrants

Are return migrants different from non-migrants in terms of their individual characteristics? How do they compare with immigrants? As we have seen in the literature review, migration theory suggests that migrants and return migrants are self-selected individuals who choose where to live on the basis of comparisons between the advantages of living in one place relative to another. The utility of living abroad or in the home country can depend upon observed and unobserved characteristics and, if self-selection actually occurs, one can expect migrants to be different from non-migrants and, among migrants, return migrants to be also different from those who stayed abroad. As we shall see, observable differences between non-migrants, return migrants and immigrants in WAEMU capital cities are significant and informative, but the differences between return migrants from OECD countries and return migrants from non OECD countries (both WAEMU and non WAEMU) are also quite important. We first start by examining the distribution of four individual characteristics: age, gender, marital status, and education.

On average, compared to non-migrants, return migrants appear older, with a higher share of males, more often married than not, and more educated (Table A). More specifically, return migrants are five years older than non-migrants and 50.8% of them are males compared to 48.1% in the non-migrant population. When one looks at the different types of return migrants differentiated by country of origin, differences are also important: return migrants from OECD countries are on average 5 years older than return migrants from non OECD countries, and there is a much higher proportion of men in the first category (62.0% versus 49.3%). The fact that return migrants are on average older than non-migrants is not surprising, since future emigrants and future return migrants are included in the population of non-migrants. The

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5 Disaggregated descriptive statistics by city can be found in DE VREYER, GUBERT and ROBILLIARD [2009].
same reason can explain that immigrants in the WAEMU are on average a bit older than non-
migrants, but are themselves younger than return migrants from WAEMU.

Looking now at education, we observe that, on average, return migrants are slightly more
educated than non-migrants, but that large differences exist between the average education of
return migrants from OECD countries (with more than 11 years) and that of return migrants
from the WAEMU (5.6 years) or from other developing countries (5.5 years). This does not
result from the demographic composition of our samples. As shown in Table B indeed,
differences in education levels between the three groups of returnees remain after controlling
for sex, age and religion. The high average level of education of return migrants from OECD
countries can have two explanations, not necessarily exclusive from each other. First,
educated individuals can find more profitable to migrate to a developed country, where the
returns to their human capital could be higher. Second, people can migrate to get education, in
which case it is not surprising to observe that return migrants have a higher level of education
than non-migrants. Naturally, whether the first or the second explanation is the good one will
have widely different implications. If educated individuals move to developed countries to
benefit from high returns, then one can fear that the migration brain drain reduces the chance
of these countries to develop (Bhagwati, [1972]; Bhagwati and Hamada, [1974]; Usher,
[1977]; Blomqvist, [1986]; Haque and Kim, [1995]), unless migrants return in a large
enough proportion and with enough experience from abroad to compensate the original loss,
or if the possibility to migrate increases the number of individuals who decide to get
education, provided that only a smaller number of them succeed in leaving their country
(Stark et al., [1997]; Beine et al., [2001], [2003]).

4 THE LABOUR MARKET PERFORMANCE OF
RETURN MIGRANTS IN THE WAEMU

4.1. Employment situation of return migrants

Given the individual characteristics of return migrants, particularly with respect to their
level of education, one would expect their employment situation to be more favourable than
that of non-migrants. In the context of labour markets in developing economies, a
“favourable” position is that of formal wage workers in the public or private sector as well as
entrepreneurs in both sectors, by opposition to the situation of informal workers. Formal
wage workers usually enjoy higher wages, more job security and more benefits than informal
workers. Descriptive statistics from Table C confirm that return migrants enjoy more
favourable labour market positions compared to non migrants and that this is particularly the
case for return migrants from OECD countries.

On average, labour force participation is higher for return migrants than for non-migrants
even if there are strong disparities between cities. While the labour force participation of

\[^\text{6}\] Unfortunately, the surveys do not provide information on age at the time of migration. It is thus impossible to
favour one explanation or the other.

\[^\text{7}\] Entrepreneurs of the formal or informal sector are those who declare that they hire employees, be they wage-
earners, unpaid family members or apprentices. The self-employed who work for themselves without hiring any
employee are not included in this category.
returnees is much higher in Abidjan, Niamey and Senegal, it is lower in Ouagadougou, and comparable to that of non-migrants in the three last cities, namely Cotonou, Bamako and Lome. However, when one looks more specifically at return migrants from OECD countries, then their higher labour force participation with respect to non-migrants is found systematic and very strong in some cities. The labour force participation of return migrants from countries located outside the WAEMU and the OECD appears also very high. Concerning labour status, the difference does not appear significant on average between active non-migrants and active return migrants but is striking when one looks at those returning from OECD countries: as an illustration, the percentage of individuals working as wage earners in the public sector is 18% among OECD return migrants against 5.4% among non-migrants and 5.3% among returnees coming back from the WAEMU. The same gap can be observed with regards to the percentage of individuals working as wage earners in the formal private sector (16.9% vs. 7.8%) and the percentage of entrepreneurs (11.2% vs. 3.1%). Overall, these figures suggest that individuals returning from OECD countries get access to more protected jobs, while the labour status of return migrants from other countries resembles that of non-migrants.

Given the higher share of return migrants from OECD countries with formal or managing jobs, it does not come as a surprise that their participation rate in the informal sector as self-employed or employees – is low compared to that observed in the other categories. Here again, the situation of returnees from non OECD countries is similar to that of non-migrants.

The high participation rate of return migrants from OECD countries in the formal sector (both public and private) can be explained by their high educational level but could also indicate that their education and/or work experience in OECD countries – if any – allowed them to gain some specific knowledge, that is valued in the formal sector such as an ability to deal with formal regulations or a knowledge of foreign regulations that could be valued in export-oriented sectors. In order to examine more thoroughly this “specific knowledge” argument, we can check whether the higher labour participation of return migrants from OECD in formal private, public or managing jobs holds when one controls for a number of individual characteristics. We do so by running a multinomial logit regression of labour status on a number of individual characteristics on the pooled sample of all active individuals from the seven cities (Table D). Results indicate that when other individual characteristics are controlled for, the probability of working as a wage-earner in the public sector is actually lower for all return migrants. Thus, return migrants from OECD appear to be better able to get a job in the public sector because they have, on average, a higher level of education. When one controls for education, however, the relative advantage of return migrants vanishes and turns out as being negative. This could be the result of a relative loss of social capital that migrants incur while they live abroad. The probability of working as a wage-earner in the private formal sector is also significantly lower for returnees coming back from non WAEMU and non OECD countries, but apart from them, returnees do not appear to be better or less able to get a job in the private sector which is once again inconsistent with what is suggested by the descriptive statistics. Last, the probability of being an entrepreneur either in the formal or the informal sector is found to be significantly higher for return migrants from OECD countries even once a number of their individual characteristics have been controlled for. This could be explained by the “specific knowledge” argument or by the fact that their migration spell allowed them to accumulate capital to start up a business. It might also be the case that return migrants have no choice but to become entrepreneurs because of a lack of access to jobs in the formal sector. Due to their weaker social network, the chances of getting scarce jobs in the formal sector might indeed be smaller for return migrants than for non-migrants.

8 The small sample size of return migrants from OECD in our data unfortunately makes it difficult to convincingly present and analyse descriptive statistics at a more disaggregated level than that of Table C. We cannot therefore investigate the proportion of return migrants from OECD working in export-oriented sectors.
By contrast, experience abroad for those returnees coming back from non OECD countries is not found to have any significant impact.

Since return migrants from OECD countries have more favourable characteristics and positions in the labour market, one can expect their earnings to be higher than those of non-migrants. This is indeed what is found (Table C). Whether this holds true when controlling for individual characteristics and selection biases, will be dealt with together with the “specific knowledge” argument in the remainder of the paper.

Do return migrants access their employment through the same channels as non-migrants? Statistics presented in Table E suggest that this is not the case. Return migrants appear to rely much less on personal relations than non-migrants do (35.0% versus 42.1% for non-migrants). The gap is even higher when the sample of returnees is restricted to those returning from OECD countries. The relative loss of social capital mentioned above could explain part of those observed differences. However, whether they hold when controlling for individuals' characteristics (namely, higher level of education) and the type of positions they obtain (more formal sector jobs) remains to be investigated.

The data used in this study is a sample of urban residents living in seven capital cities of the WAEMU. As a result only the migrants returning from abroad to live in these cities are observed and our sample is likely not to be representative of the global flow of return migration to the WAEMU countries. In order to identify more precisely the nature of the biases affecting our sample, it would be useful to compare the characteristics of the return migrants we observe in the capital cities to the characteristics of migrants returning to other locations. Unfortunately that information is not available. However, at least two biases are likely. First, one can expect that migrants returning to live in capital cities will be on average more educated and/or skilled than those returning to live in other cities or rural areas. Second, one can expect that the share of migrants returning from OECD countries will be higher in capital cities than in other locations.

To be sure, the return migrants’ choice to live in urban (capital city or other cities) or in rural areas upon returning is likely to be correlated with the residence they left when they chose to migrate. It is therefore informative to compare the destination of migrants originating from different locations. That information is available for Senegal (BA, [2006]). There, migrants originating from Dakar appear to be much more likely to migrate to an OECD country than other migrants: almost 75% of the migrants originating from Dakar migrated to Europe, the United States or Canada versus 55% of the migrants originating from other cities, and only 40% of the migrants originating from rural areas.

In what follows, we mobilize phases 1 and 2 of the 1-2-3 Surveys to examine the labour market performance of return migrants. Using data from phase 1, we first estimate individual earnings functions to measure the impact of return migration on earnings. We then push the analysis further by investigating whether return migrants are more productive microentrepreneurs using data on the sample of self-employed workers and small firm owners surveyed in phase 1. To our knowledge, no paper has ever estimated informal microenterprises’ production functions in a Sub-Saharan African context.

4.2. Experience Abroad and Earnings

Empirical Strategy

Note that phase 2 of the 1-2-3 survey only covers microenterprises of the informal sector and their main productive characteristics. “Formal” microenterprises (i.e. microenterprises with a registration number and/or bookkeeping) are thus excluded from the sample.
The labour market performance of return migrants is first analyzed through the estimation of an individual earnings model. More specifically we consider a semi-log specification for the earnings equation:

\[ \ln Y_i = X_i \beta + RM_i \alpha + e_i, \]

where \( \ln Y \) is the natural-log of hourly earnings, \( \beta \) and \( \alpha \) are coefficient vectors and \( e \) is the stochastic term; matrix \( X \) includes variables on personal characteristics, and \( RM \) is a dummy variable indicating whether the individual is a return migrant or not.

In developing countries, a significant share of workers is either self-employed or works in family microenterprises. Computing hourly earnings for these people is not easy, as their hours of work are not correctly observed and part of their remuneration generally comes as non monetary compensations. For this reason we restrict the estimation of equation (1) to the sample of workers who are wage-earners.

In order to properly estimate the impact of return migration on earnings (\( \alpha \)), one needs to control for the selection of return migrants. This can be done using a treatment effect model in which return migrants constitute the “treated” population and non-migrants the “untreated” or “control” one. However, the “quality” of the “treatment” depends upon the migrants’ destination. As suggested by the descriptive part of the paper indeed, return migrants are not a homogenous population and migrants returning from OECD countries in particular significantly differ from other return migrants. As individuals self-select into the “treatment” they receive, we chose to run separate regressions, one for each of the three groups of return migrants: returnees coming back from a WAEMU member country; returnees coming back from an OECD country; and returnees coming back from elsewhere. In each separate regression, the “treated” sample is that of return migrants and the “untreated” one that of non-migrants. Immigrants are excluded from the regressions.

The self-selection of return migrants is only one (potential) endogenous selection among others. Co and al. [2000] control for a double process of self-selection: labour force participation and return migration. Their model is estimated by maximum likelihood and allows for correlation between the earnings equation error term and the migration and participation equations. In the present case, we would like to control for participation and, among participants, for the self-selection of wage workers. However such a model would be very difficult to estimate given the data at hand. Though not satisfactory, we tried to control for migration and self selection in the pool of wage earners, including in the sample wage earners and those individuals who do not participate in the labour market, while excluding those who do participate in the labour market but as non-wage earners. All attempts to estimate such a model on sub-samples disaggregated by returnees’ group of destinations (WAEMU, OECD, Other) failed. However we succeeded in estimating the model on the pooled sample. Controlling for the self-selection of individuals into wage employment did not change significantly the results.

The treatment-effect model we estimate is thus given by equation (1) to which we add a second equation describing the probability of being a return migrant:

\[ RM_i = Q_i \]

where \( RM^* \) is a latent unobservable variable measuring the propensity to be a return migrant. Assuming the stochastic vector \((e_i, u_i)^t\) is normally distributed, the model can be
estimated by maximum likelihood (MLE) or in two steps (TWOS) using Stata “treatreg” command. Both methods should give asymptotically identical results.

The proper identification of the full structural model requires valid instruments for the migration model. We use the proportion of return migrants in the neighbourhood, excluding the worker’s household in the computation, together with father’s occupation dummies when the worker was 15. In order to assess the magnitude and size of the biases resulting from the two selection processes, we also report estimates of the earnings equation using OLS.

It is difficult to find a theoretical justification for this set of instruments. Father’s occupation dummies can impact the probability to migrate if they capture the local job opportunities that are offered to the migrants. But at the same time, these variables might be correlated with unobservables in the earnings equation, such as worker’s genetic endowment. As for the proportion of return migrants in the neighbourhood, it could have a positive effect on the probability to be a return migrant if for instance the proportion of return migrants is linked to the proportion of out-migrants and if that proportion increases the incentives to migrate. However, it is also possible that return migrants choose to concentrate in order to benefit from network externalities and that would invalidate this choice of instrument. In order to control for these potential biases, we take profit of the existence of two alternative estimators (TWOS and MLE) to estimate our treatment model. Provided the model is correctly specified, these two estimators should indeed give asymptotically equivalent results. We thus consider as valid and reliable those estimates that are found statistically identical using one estimator or the other. By contrast, when the results obtained with the two-step estimator diverge or differ from those obtained with the maximum likelihood estimator, the model is mis-specified. Whether this is due to bad instruments or not is hard to tell, however. As an additional robustness check, we also estimate the model with our set of instruments included among the regressors in the earnings equation. In this case, identification bears upon non linearity as the list of covariates in the selection equation is the same as in the earnings equation. However it is not absolutely necessary that the list of covariates in the migration equation includes variables that do not appear in the earnings equation (WOOLDRIDGE, [2000]). With the two-step estimator, the difficulty comes from the fact that the control functions in the selectivity-corrected earnings function could be approximated by linear functions of the explanatory variables, thus creating potential multicollinearity. In our case, neither the estimated coefficients, nor their standard errors were significantly modified when we added the father’s characteristics and the proportion of return migrants in the neighbourhood in the earnings equation.

**Estimation Results**

The estimated coefficient of the return migrant variable in a treatment effect model alternatively estimated on the sub-sample of returnees coming back from the WAEMU (columns 1a for OLS estimates, 1b for MLE estimates and 1c for TWOS estimates), the OECD (columns 2a, 2b and 2c) and other countries (columns 3a, 3b and 3c) is given in Table F. Regressions have been run for men and women separately, and then for the whole sample11.

Our findings show that controlling for the self-selection into going abroad dramatically changes the results. Whatever the last country of residence and sex of the returnees, the OLS coefficient estimate is systematically lower than the MLE and TWOS estimates, though the difference is not always significant. This suggests that migrants are negatively selected in their population of origin. In other words, they share unobserved characteristics that, holding

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10 We thank an anonymous referee for suggesting this to us.

11 Full results are available upon request from the authors.
everything else equal, lead them to get lower earnings than non migrants. This is confirmed by the negative value of the correlation coefficient between the error terms of the earnings and migration equation (-0.38, significant at the 1% level in the pooled sample). This result is quite unexpected as it is generally assumed that migrants are positively selected. However a similar result is found by Co et al. [2000] and de COULON and PIRACHA [2005] on Hungarian and Albanian data respectively. It suggests that individuals who have been abroad may lack some unobserved locally desirable earnings capabilities. However, by going abroad they acquire other characteristics which the labour market rewards in the form of a wage premium.

Results obtained when male and female workers are pooled together suggest that migrants returning from OECD and WAEMU countries get higher earnings. But when men and women are split in separate samples, we see that the results for WAEMU countries are driven exclusively by females. However, since the MLE and TWOS estimates differ substantially, we suspect that our model is mis-specified for this sample and choose not to retain this result. By contrast, results for migrants returning from an OECD country appear much more robust, as no significant difference can be found between the MLE and TWOS estimates. Since MLE is a more efficient estimator, we only comment the results obtained with this method. When males and females are pooled together, the average wage premium for return migrants is estimated to be as high as 98% (which corresponds to log-earnings difference of 0.681). When the sample is split between men and women, however, the premium for women is found to be much higher than that for men (+148% as opposed to “only” +47%).

Using the Hungarian Household Panel Survey, Co et al. [2000] get a similar result: they find that women returning from OECD countries get a premium of 67% on the Hungarian labour market. According to the authors, such a large premium could be explained by “skills” acquired abroad. During their migration stay, women have learnt how Western economies operate and this knowledge is particularly valuable in a country undergoing transition toward a market economy as was Hungary at the time the data were collected. In our case, a similar explanation can be found. As differences in the level of development of WAEMU and OECD countries are very large, one can expect workers with a Western work experience to have acquired skills that are very valuable on African labour markets and this could explain the large wage premium received by return migrants. Why women receive much larger premiums than men is more difficult to explain. Though we do not have a definitive answer, our feeling is that measurement errors in the experience variable could be a possible explanation. Measures of women's professional experience are indeed particularly prone to errors given discontinuity in labour market participation. If non-migrant women have given birth to a larger number of children (and so have had more career interruptions due to child births) than those women who spent some time abroad, then potential experience as a proxy for actual experience is likely to be upwardly-biased for non-migrant women. The large size of the return migrant coefficient could thus partly capture this bias. Unfortunately, we do not have the appropriate data to properly test this assumption since we do not know the number of children per woman. We included the number of children within the household in the set of regressors (a poor proxy given the high proportion of polygamous households in the West African context) but adding it did not significantly change the results.

All these results are conditioned on the validity of the instruments. When the first stage is a linear regression, the joint significance of the instruments in the instrumental equation can be tested with a Fisher test. A value of 10 is considered as being critical, in the sense that if the F statistic is found lower than 10, then instruments are weak. In our case, we cannot use a Fisher test, as our first stage regression is non linear. We instead use a Wald test which statistic follows a Chi-square under the null. In Table G, we present the values of the Chi-square test statistic for the father's activity dummies and for the proportion of return migrants in the neighbourhood in the migration equation, and in Table H the values of these statistics when these variables are added in the earnings equation. The p-value corresponding to a Fisher statistics with one degree of liberty on the numerator and many observations is about 0.0015.
If we take this p-value as a critical threshold for our Wald test, we shall conclude that our instruments are weak when the corresponding p-value is larger than this threshold. Looking in Table G we see that the proportion of return migrants in the neighbourhood is a strong enough instrument in 9 out of 18 equations and that father’s activity dummies are strong instruments in 12 equations out of 18. There is always one set of instruments that is strong enough in all equations, with the exceptions of those for migrants returning from non-OECD, non-WAEMU countries, when the sample is split by sex. Looking now at the overidentification tests (Table H), we find that the father’s activity variables and the proportion of migrants in the neighbourhood are never significant when included among the list of regressors in the earnings equation and when males and females are split into separate samples. Using the pooled sample, the father’s activity variables are jointly significant in the earnings equation, but the proportion of return migrants in the neighbourhood remains insignificant so that the model is still identified. Moreover, the coefficient of the return migrant dummy does not change when the father’s variables are added to the earnings regression. We are thus confident that our results do not suffer from omitted variable bias.

Regarding the other coefficient estimates, both OLS and MLE coefficients of human capital variables in the earnings equations are in line with expectations: language skills, education and experience are all found to positively contribute to earnings. Men are found to earn more than women in the pooled sample, and so are individuals working in the public sector or in the private formal sector as compared to those individuals working in the informal sector. Unsurprisingly we also find that top executives are much better paid than any other categories of workers. When regressions are run on samples disaggregated by gender, the returns to language skills and education are found to be much higher for female than for male workers. This difference could be driven by workers’ unobserved heterogeneity: if workers self-select into education and if selection occurs on unobserved characteristics, then returns to education estimates could be upwardly-biased if unobserved heterogeneity is positively correlated with hourly earnings. As women are less likely than men to obtain a high level of education, then ceteris paribus, female workers are more selected than male workers and larger biases in the returns to education can be expected.

4.3. Experience Abroad and Profits

Empirical Strategy

Microenterprise production functions are estimated using data from phase 2. The production technology of a microenterprise is written as:

\[
Y = F(K, L)
\]

where \(Y\) is the value added of the firm, \(K\) is the capital stock and \(L\) is labour.

There are several difficulties with estimating consistent microenterprise production functions, one of them being the correct measurement of profits. Since the majority of microenterprises in developing countries do not keep financial records, one has to rely on recall data on business expenses and revenues that generally lack precision given the fungibility of money and goods between the business and the household, the seasonality of most microenterprises’ activity, etc. (for a detailed discussion, see DE MEL, MCKENZIE and WOODRUFF, [2009]). In addition to directly asking firms owners for their profits in the last month, phase 2 of the 1-2-3 survey collects very detailed information on production level, sales and purchases of inputs in the last 12 months, as well as on expenses in each of the following categories: rent for buildings; wages and salaries for employees; water, gas,
electricity and fuel; telephone charges; travelling expenses and insurance fees; maintenance and general repairs; rent for machinery and equipment; taxes; interest paid; etc. The survey also records detailed information on the seasonal patterns of the activity over a one-year period and on the timing of transactions to account for potential lags between the time inputs are purchased and the time the products are sold. Thanks to all these data, we are able to get an accurate measure of profits that we then regress on capital and labor inputs as well as on a vector of firm owner’s characteristics.

To get a reliable estimate of $K$ we use information provided by firm owners on the replacement cost of the capital equipment used in their business (tools, equipment, vehicles, real estate, and so on). As for labour, we use the total number of hours of work performed by the business owner and his employees in the last 12 months.

Assuming a Cobb-Douglas production function, the technology of a microenterprise may thus be written as:

\[
\log Y = \log A + \alpha \log L + \beta \log K + u
\]

where $A$ is total factor productivity, $\alpha$ and $\beta$ are output elasticities with respect to labour and capital, respectively and $u$ is an error term. This equation can be estimated with standard linear regression using microenterprise data on value-added, defined as the annual value of production minus the cost of all intermediate inputs including water, electricity, rents, etc., capital and the number of hours of work. In the regressions that follow, additional variables are included to control for the business owner’s characteristics (level of education, age, potential experience, etc.), sectors of activity and macroeconomic environment (through country dummies). Last, a dummy variable indicating whether the firm owner is a return migrant or not is included among the regressors to test whether experience abroad makes firms more productive.

In order to account for the self-selection of return migrants, we simultaneously estimate equation (4) with the return migrant equation (2) by maximum likelihood on the sample of micro enterprises. As for the earnings equation, migration is instrumented by the percentage of households with return migrants in the area of residence. We run regressions for each of the three groups of return migrants: returnees coming back from a country of the WAEMU; returnees coming back from an OECD country; and returnees coming back from elsewhere. In each separate regression, the “treated” sample is that of return migrants and the “untreated” one that of non-migrants, with immigrants being excluded from the regressions. Given sample sizes, the number of business owners among returnees coming back from OECD and other countries is very low. We were thus unable to run separate regressions for men and women. For comparison purposes, we also report coefficient estimates using OLS.

**Estimation Results**

Table I displays main estimation results using a Cobb-Douglas production function specification as defined in equation (6) on pooled microenterprise data.\(^\text{12}\) Coefficient of the dummy variable indicating whether the entrepreneur is a return migrant or not is positive and significantly different from 0 when the sample of returnees is restricted to migrants returning from an OECD country. This result is robust to the choice of the estimators and, although the size of the estimated coefficient appears much higher in the MLE than in the TWOS estimation, the difference is not statistically significant. This result suggests that having a Western work experience gives a strong productive advantage to microentrepreneurs. This advantage could stem either from enhanced entrepreneurial skills or from specific knowledge.

\(^\text{12}\) Full results are available from the authors upon request.
acquired during migration stay. It could also be the case that the large gap in income per capita levels between WAEMU and OECD countries allows OECD migrants from WAEMU countries to accumulate savings that can be invested upon their return to their home country. As for the earnings equations, the OLS coefficient estimates are strongly downwardly biased in all regressions because of a negative (though not significant) correlation between unobserved characteristics in the production function and migration equations.

Turning to the other coefficient estimates, the elasticities of value-added with respect to capital and labour are around 0.16 and 0.40 respectively, and are extremely similar across regressions. As for the entrepreneur’s main characteristics, the higher her average level of education, the higher the output. In addition, an inverted-U shaped relationship is found between potential labour market experience and production, and male entrepreneurs are found to be on average more productive than female ones even once inputs, sectors of activity, and individual main characteristics are controlled for.

5 CONCLUSION

What are the consequences of international migration on home countries? This question has attracted much interest in the seventies, when economists, such as Jadish Bhagwati, viewed the out-migration of educated migrants as a loss of human capital for the countries of origin. However the quantitative importance of return migration raises the possibility that even the migration of educated individuals could benefit the origin country if return migrants are sufficiently numerous and if they bring back enough capital, either physical or human, to irrigate the economy. In this context, the characteristics, motivations and economic impacts of return migrants on their native countries are crucial questions to address.

In this paper, we used a set of urban labour force and microenterprise surveys conducted in the capital cities of seven WAEMU countries to examine the urban labour market performance of return migrants in Western African French speaking countries. From our review of the literature, three effects are expected: first, return migrants may benefit from higher levels of human and/or financial capital; second, their education and/or work experience in destination countries could have allowed them to gain some specific knowledge that is valued in the labour market of their home country; third, on the contrary, return migrants could suffer from a relative loss of social capital incurred while they lived abroad.

Results from our statistical and econometric analyses show that apart from age and gender, return migrants from WAEMU countries have individual and labour participation characteristics that are very similar to those of non-migrants. On the other hand, return migrants from OECD countries are significantly better educated, more active and wealthier than non-migrants. We also find that the participation of return migrants from OECD countries in the formal wage sector, both public and private, is much higher than that of non-migrants; however, when one controls for education, the relative advantage of return migrants vanishes and turns out as being negative. This suggests that return migrants incurred some losses in terms of their capacity to access formal wage jobs. This could be related to a loss in social capital and is supported by the fact that return migrants appear to rely much less on personal relations to find jobs than non migrants.

In terms of earnings, our findings suggest that experience abroad results in a substantial wage premium for migrants returning from an OECD country but not for other return migrants. The level of the premium varies between sexes with women enjoying a much higher premium than men. Past migration in an OECD country is not only found to result in a wage
premium but also in a productive advantage for returnees who became entrepreneurs upon returning. Using pooled data on a sample of small entrepreneurs indeed, experience abroad is found to increase the productive efficiency of entrepreneurs returning from this region.

Overall, the evidence presented in this paper indicates that international migration experience for WAEMU natives can have important consequences in terms of labour market performance upon return in the origin country. However, these consequences are significant only for return migrants from OECD countries. Given the large differences in the level of development of WAEMU and OECD countries, it does not come as a surprise that workers with a Western work experience have acquired skills that are valuable on African labour markets. This could explain the large wage premium received by return migrants. It could also be the case that the large gap in income per capita levels between WAEMU and OECD countries allows OECD migrants from WAEMU countries to accumulate savings that can be invested upon their return to their home country. On the other hand, our results also suggest that return migrants incur some costs, probably in terms of lost local social capital compared to non migrants. This disadvantage appears however to be outweighed by the gains brought about by international migration experience.

Despite the potential benefits of return migration, the low share of return migrants in the population of WAEMU countries suggests that the effectiveness of return migration as a driver of development is only moderate. This is especially true as local economic conditions and investment opportunities remain weak.
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### TABLE A

**Descriptive statistics by migration status**

|                     | Non-migrants | Return migrants | Immigrants | Total |
|---------------------|--------------|-----------------|------------|-------|
|                     | WAEMU        | OECD            | Other      | All   |
| Sample size         | 52,267       | 2,162           | 1,042      | 3,594 | 2,598 | 58,459 |
| Population structure (%) | 88.5 | 2.8 | 0.6 | 1.4 | 4.8 | 6.7 | 100.0 |
| Age                 | 31.0         | 34.8            | 40.3       | 36.1  | 35.9  | 34.1  | 31.4  |
| (13.7)              | (15.1)       | (14.6)          | (15.8)     | (15.3)| (12.2)| (13.7)|
| % of men            | 48.1         | 50.3            | 62.0       | 47.3  | 50.8  | 58.6  | 49.0  |
| (4.9)               | (5.2)        | (6.7)           | (5.0)      | (5.7)| (4.6)| (5.0)|
| Years of education  | 5.6          | 5.6             | 11.1       | 5.5   | 6.3   | 3.0   | 5.5   |

Source: 1-2-3 surveys, Phase 1, individuals aged 15 years and older.
Note: Standard deviations in parentheses.

### TABLE B

**OLS regressions of years of education on individual characteristics**

|                     | Coef. | P>|t| |
|---------------------|-------|-----|
| **Gender and age**  |       |     |
| Male                | 2.242 | 0.000*** |
| Age                 | 0.085 | 0.000*** |
| Age squared         | -0.002| 0.000*** |
| **Religion [ref. is Muslim]** |       |     |
| Catholic            | 2.758 | 0.000*** |
| Protestant          | 2.977 | 0.000*** |
| Other religion      | 1.151 | 0.000*** |
| **Migration status [ref. is « Non migrant »]** |       |     |
| WAEMU return migrant| 0.555 | 0.000*** |
| OECD return migrant | 5.969 | 0.000*** |
| Other return migrant| 0.020 | 0.890 |
| Immigrant           | -1.995| 0.000*** |
| **City dummies**    | included but not shown | |
| Constant            | 2.621 | 0.000*** |
| Observations        | 58,058|     |
| R-squared           | 0.1478|     |

Source: 1-2-3 surveys, Phase 1, individuals aged 15 years and older.
Notes: p values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.
### TABLE C

**Employment situation - Labour force participation (%)**

|                          | Non-migrants | Return migrants | Immigrants | Total |
|--------------------------|--------------|-----------------|------------|-------|
|                          | WAEMU        | OECD            | Other      | All   |
| Labour force participation (%) | 57.2         | 59.3            | 63.8       | 62.4  | 74.5 | 58.6 |
| % public wage worker      | 5.4          | 5.3             | 18.1       | 6.3   | 0.9  | 5.1  |
| % private formal wage worker | 7.8          | 6.6             | 16.9       | 5.1   | 7.4  | 8.5  | 7.8  |
| % business owner          | 3.1          | 4.0             | 11.2       | 5.7   | 5.4  | 8.3  | 3.6  |
| % informal worker         | 83.7         | 84.1            | 53.8       | 85.8  | 80.9 | 82.3 | 83.5 |
| Individual earning of active individuals (in 1000 FCFA PPP) | 55.9         | 54.7            | 227.1      | 46.0  | 73.4 | 57.6 | 56.9 |

Source: 1-2-3 surveys, Phase 1, individuals aged 15 years and older.
### TABLE D

*Multinomial logit regressions of alternative labour statuses (marginal effects)*

|                        | Males |  | Females |  |
|------------------------|-------|---|---------|---|
|                        | Coef. | P>|t| | Coef. | P>|t| |
| **1 = Public wage worker** |       |   |         |   |
| Years of education     | 0.021 | 0.000*** | 0.006 | 0.000*** |
| Potential experience   | 0.011 | 0.000*** | 0.002 | 0.000*** |
| Potential experience squared | 0.000 | 0.000*** | 0.000 | 0.000*** |
| **Migration status [ref. is « Non migrant »]** |       |   |         |   |
| WAEMU return migrant   | -0.041 | 0.000*** | -0.003 | 0.032** |
| OECD return migrant    | -0.029 | 0.004*** | -0.004 | 0.147 |
| Other return migrant   | -0.044 | 0.000*** | -0.007 | 0.000*** |
| Immigrant              | -0.075 | 0.000*** | -0.011 | 0.000*** |
| **2 = Private formal wage worker** |       |   |         |   |
| Years of education     | 0.025 | 0.000*** | 0.011 | 0.000*** |
| Potential experience   | 0.014 | 0.000*** | 0.002 | 0.000*** |
| Potential experience squared | 0.000 | 0.000*** | 0.000 | 0.000*** |
| **Migration status [ref. is « Non migrant »]** |       |   |         |   |
| WAEMU return migrant   | 0.005 | 0.784 | 0.004 | 0.507 |
| OECD return migrant    | -0.007 | 0.821 | 0.021 | 0.236 |
| Other return migrant   | -0.045 | 0.017** | -0.018 | 0.002*** |
| Immigrant              | -0.055 | 0.000*** | -0.005 | 0.359 |
| **3 = Entrepreneur**   |       |   |         |   |
| Years of education     | 0.005 | 0.000*** | 0.004 | 0.000*** |
| Potential experience   | 0.006 | 0.000*** | 0.002 | 0.000*** |
| Potential experience squared | 0.000 | 0.000*** | 0.000 | 0.011** |
| **Migration status [ref. is « Non migrant »]** |       |   |         |   |
| WAEMU return migrant   | 0.002 | 0.862 | -0.006 | 0.272 |
| OECD return migrant    | 0.078 | 0.010** | 0.115 | 0.007*** |
| Other return migrant   | 0.009 | 0.487 | 0.000 | 0.977 |
| Immigrant              | 0.002 | 0.769 | 0.016 | 0.019 |
| **City dummies**       |       |   |         |   |
| included but not shown |       |   |         |   |

**Observations** 18,436 14,806  
**Pseudo R2** 0.1823 0.2998  

Source: 1-2-3 surveys, Phase 1, occupied individuals aged 15 years and older.  
Notes: Reference status is “Informal worker”. P values in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.


|                           | Non-migrants | Return migrants | Immigrants | Total |
|---------------------------|--------------|-----------------|------------|-------|
|                           | WAEMU | OECD | Other | All | WAEMU | OECD | Other | All | WAEMU | OECD | Other | All |
| Personal relations        | 42.1  | 36.2 | 22.8  | 37.9 | 35.0  | 38.7 | 41.4  |
| Directly through employer  | 9.9   | 9.9  | 19.0  | 7.3  | 10.3  | 7.2  | 9.7   |
| NEA or Announcements      | 1.3   | 1.6  | 6.2   | 1.4  | 2.1   | 0.5  | 1.3   |
| «Concours»                 | 13.5  | 7.9  | 16.8  | 7.5  | 8.9   | 2.9  | 12.3  |
| Personal initiative       | 31.4  | 42.3 | 27.9  | 44.5 | 41.2  | 49.7 | 33.5  |
| Other                     | 1.9   | 2.1  | 7.4   | 1.5  | 2.6   | 1.0  | 1.8   |
| Total                     | 100   | 100  | 100   | 100  | 100   | 100  | 100   |

Source: 1-2-3 surveys, Phase 1, occupied individuals aged 15 years and older.
### Table F

**Return migrants coefficient estimates**

|                         | Migrants returning from WAEMU | Migrants returning from OECD | Migrants returning from other countries |
|-------------------------|-----------------------------|-----------------------------|----------------------------------------|
|                         | OLS  | MLE  | TWOS | OLS  | MLE  | TWOS | OLS  | MLE  | TWOS |
| Males                   |      |      |      |      |      |      |      |      |      |
| Return migrant dummy coefficient |      |      |      |      |      |      |      |      |      |
| (standard error)        |      |      |      |      |      |      |      |      |      |
|                         | -0.0118 | 0.0625 | 0.185 | 0.166** | 0.384** | 0.396* | -0.0631 | -0.0088 | 0.185 |
|                         | (0.0409) | (0.140) | (0.220) | (0.0729) | (0.193) | (0.205) | (0.0587) | (0.152) | (0.220) |
| Correlation coefficient |      |      |      |      |      |      |      |      |      |
|                         | -0.059 | 0.185 | -0.190 | -0.190 | (0.185) | (0.185) | (0.185) | (0.185) | (0.185) |
|                         | (0.107) | (0.155) | (0.155) | (0.155) | (0.155) | (0.155) | (0.155) | (0.155) | (0.155) |
| Females                 |      |      |      |      |      |      |      |      |      |
| Return migrant dummy coefficient |      |      |      |      |      |      |      |      |      |
| (standard error)        |      |      |      |      |      |      |      |      |      |
|                         | 0.0750 | 0.703*** | 0.244 | 0.309*** | 0.907*** | 0.744*** | 0.107 | 0.0206 | 0.0783 |
|                         | (0.0550) | (0.119) | (0.218) | (0.106) | (0.175) | (0.238) | (0.0961) | (0.414) | (0.396) |
| Correlation coefficient |      |      |      |      |      |      |      |      |      |
|                         | -0.536*** | -0.574*** | (0.086) | (0.130) | (0.0684) | (0.318) | (0.0206) | (0.0206) | (0.0783) |
|                         | (0.086) | (0.130) | (0.130) | (0.130) | (0.130) | (0.130) | (0.130) | (0.130) | (0.130) |
| All                     |      |      |      |      |      |      |      |      |      |
| Return migrant dummy coefficient |      |      |      |      |      |      |      |      |      |
| (standard error)        |      |      |      |      |      |      |      |      |      |
|                         | 0.0359 | 0.292** | 0.367** | 0.241*** | 0.681*** | 0.751*** | -0.00904 | 0.0389 | 0.128 |
|                         | (0.0332) | (0.143) | (0.163) | (0.0608) | (0.122) | (0.161) | (0.0508) | (0.150) | (0.239) |
| Correlation coefficient |      |      |      |      |      |      |      |      |      |
|                         | -0.205* | -0.380*** | (0.111) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) |
|                         | (0.111) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) | (0.091) |

Source: 1-2-3 surveys, Phase 1, occupied individuals aged 15 years and older.

Notes: Reference status is “Non migrant”. * significant at 10%; ** significant at 5%; *** significant at 1%.
### TABLE G

*Test of instrumental variables in migration equation*

|                  | Migrants returning from UEMOA | Migrants returning from OECD | Migrants returning from other countries |
|------------------|-------------------------------|------------------------------|----------------------------------------|
|                  | MLE   | TWOS  | MLE   | TWOS  | MLE   | TWOS  |
| **Males**        |       |       |       |       |       |       |
| Father's activity (Chi2) | 25.0  | 24.8  | 26.6  | 28.0  | 16.7  | 16.7  |
| (p value)        | (0.0003) | (0.0004) | (0.0002) | (0.0001) | (0.0103) | (0.0106) |
| % RM in Neighborhood (Chi2) | 3.15  | 3.02  | 10.3  | 9.72  | 5.49  | 5.62  |
| (p value)        | (0.076) | (0.0823) | (0.0013) | (0.0018) | (0.0191) | (0.0178) |
| **Females**      |       |       |       |       |       |       |
| Father's activity (Chi2) | 23.4  | 26.2  | 6.16  | 6.96  | 14.6  | 14.6  |
| (p value)        | (0.0007) | (0.0002) | (0.4057) | (0.3246) | (0.0235) | (0.0235) |
| % RM in Neighborhood (Chi2) | 14.2  | 14.1  | 17.3  | 11.3  | 0.31  | 0.42  |
| (p value)        | (0.0002) | (0.0002) | (0.0000) | (0.0008) | (0.5780) | (0.5185) |
| **Total**        |       |       |       |       |       |       |
| Father's activity (Chi2) | 54.5  | 51.6  | 23.8  | 24.8  | 24.3  | 24.3  |
| (p value)        | (0.0000) | (0.0000) | (0.0006) | (0.0004) | (0.0005) | (0.0005) |
| % RM in Neighborhood (Chi2) | 14.23 | 13.1  | 23.2  | 19.3  | 2.68  | 2.76  |
| (p value)        | (0.0002) | (0.0003) | (0.0000) | (0.0000) | (0.1017) | (0.0964) |

Source: 1-2-3 surveys, Phase 1, occupied individuals aged 15 years and older.
| Migrants returning from | UEMOA MLE | OECD MLE | Other countries MLE |
|------------------------|-----------|----------|---------------------|
| **Males**              |           |          |                     |
| Father's activity (Chi2) | 7.43      | 8.38     | 8.37                |
| (p value)              | (0.2826)  | (0.2115) | (0.2125)            |
| % RM in Neighborhood (Chi2) | 1.32      | 0.53     | 0.52                |
| (p value)              | (0.2502)  | (0.4674) | (0.5692)            |
| **Females**            |           |          |                     |
| Father's activity (Chi2) | 6.82      | 4.56     | 6.35                |
| (p value)              | (0.3376)  | (0.6010) | (0.3854)            |
| % RM in Neighborhood (Chi2) | 1.23      | 0.03     | 0.28                |
| (p value)              | (0.2666)  | (0.8521) | (0.5953)            |
| **Full sample**        |           |          |                     |
| Father's activity (Chi2) | 14.6      | 15.6     | 16.8                |
| (p value)              | (0.0234)  | (0.0158) | (0.0102)            |
| % RM in Neighborhood (Chi2) | 1.68      | 0.97     | 0.51                |
| (p value)              | (0.1953)  | (0.3247) | (0.4747)            |

Source: 1-2-3 surveys, Phase 1, occupied individuals aged 15 years and older.
**Table I**

*Production function estimates*

|                               | Migrants returning from WAEMU | Migrants returning from other countries | Migrants returning from OECD |
|-------------------------------|------------------------------|----------------------------------------|-----------------------------|
|                               | OLS  | MLE | TWOS | OLS  | MLE | TWOS | OLS  | MLE | TWOS | OLS  | MLE | TWOS |
| Log(Capital)                  | 0.171| 0.172| 0.171| 0.160| 0.161| 0.161| 0.162| 0.162| 0.162| 0.162| 0.162| 0.162|
|                               | (12.82)***| (12.92)***| (12.91)***| (12.04)***| (12.04)***| (12.04)***| (12.10)***| (12.00)***| (11.98)***|
| Dummy = 1 if no capital       | 0.276| 0.279| 0.278| 0.250| 0.259| 0.259| 0.257| 0.258| 0.257| 0.257| 0.257| 0.257|
|                               | (3.85)***| (3.91)***| (3.90)***| (3.51)***| (3.59)***| (3.59)***| (3.57)***| (3.55)***| (3.54)***|
| Log(Labour)                   | 0.407| 0.407| 0.407| 0.409| 0.400| 0.400| 0.418| 0.414| 0.413| 0.414| 0.414| 0.413|
|                               | (20.21)***| (20.26)***| (20.27)***| (20.40)***| (19.88)***| (19.88)***| (20.49)***| (20.20)***| (20.20)***|
| **Return migrant**            | **-0.007**| **0.136**| **0.643**| **0.283**| **0.293**| **0.277**| **0.605**| **1.094**| **2.034**|
|                               | (0.94) | (0.52) | (1.10) | (2.36)** | (0.81) | (0.60) | (2.58)** | (2.32)** | (2.22)**|
| % RM in neighborhood          | 0.292| 0.411| 0.411| 1.469| 1.622| 1.622| 1.486| 1.497|
|                               | (0.88) | (0.93) | (0.93) | (9.37)*** | (9.05)*** | (8.88)*** | (9.16)*** | (9.20)***|
| Constant                      | 2.488| 1.496| 1.469| 3.634| 1.622| 1.622| 3.599| 1.486|
|                               | (13.21)*** | (9.37)*** | (9.05)*** | (10.15)*** | (8.88)*** | (8.88)*** | (10.36)*** | (9.16)*** |
| % RM in neighborhood          | 2.743| 2.727| 3.034| 3.034| 2.656| 2.573|
|                               | (6.18)*** | (6.16)*** | (6.13)*** | (6.13)*** | (2.68)*** | (2.61)***|
| rho                           | -0.047| 0.008| 0.006| 0.329| 0.327|
|                               | (0.55) | (0.06) | (0.06) | (0.06) | (1.23) | (1.23) |
| sigma                         | 0.333| 0.329| 0.329| 0.327| 0.327|
|                               | (34.60)*** | (33.97)*** | (33.97)*** | (33.97)*** | (33.22)*** | (33.22)***|
| Mill’s ratio                  | -0.309| 0.018| -0.608|
|                               | (1.11) | (0.08) | (1.64) |
| Observations                  | 5,438| 5,438| 5,438| 5,323| 5,323| 5,214| 5,214| 5,214|

Absolute value of z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Additional controls in the production function include 8 sectoral dummies, 6 country dummies, and some entrepreneur’s characteristics (sex, language skills, diploma, experience and its squared). In the migration selection equation, the set of regressors is exactly the same as in the production function with one additional variable (the proportion of returnees in the neighborhood) that stands as the instrument.