Return migration and self-employment: Is there a 'jack-of-all-trades' effect?

Clotilde Mahé*

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Abstract

With reference to Lazear's Jack-of-all-Trades Hypothesis, I examine whether migrants are more likely to choose self-employment upon return because of the diverse work experience they gained abroad. The endogeneity between migration, human capital investment and self-employment is addressed by exploiting plausibly exogenous cohort and regional variation in the decision to migrate in the context of Egypt, and retrospective labor market information. Return migrants' higher propensity to be and to survive as self-employed is shown to proceed from participating in significantly more occupations and sectors over their work history than non-migrants. In line with Lazear's framework, estimates confirm that entrepreneurship can be learnt, and that exposure to multiple occupations and industries matters for entering into and persisting in self-employment.

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*clotilde.mahe@maastrichtuniversity.nl, +31 43 3884403, Maastricht University, P.O. Box 616, 6200 MD, Maastricht, the Netherlands.

1 Introduction

The objective of this paper is to contribute to the debate on the consequences of out-migration on source communities by analyzing how working abroad affects the decision to be self-employed upon return. There is evidence suggesting that migrants are more likely to be self-employed on return than non-migrants (Piracha and Vadean, 2010; Marchetta, 2012; Wahba and Zenou, 2012; Wahba, 2015; Batista et al., 2017). In the absence or inefficiency of markets, savings accumulated during migration and remittances could act as substitutes for formal insurance, by facilitating access to financial capital, and widening opportunities to set up or expand a firm (Dustmann and Kirchkamp, 2002; Woodruff and Zenteno, 2007). The wealth gained abroad is also posited to overcompensate a loss of social capital resulting from migrants' absence from their origin communities (Wahba and Zenou, 2012).

Apart from the opportunity provided by migration to accumulate wealth, a possible explanation for these findings might be that moving, living abroad or returning 'home' could impart a variety of skills needed in entrepreneurship. Entering into and persisting in self-employment involve diverse tasks that demand multiple skills, such as tolerance for risk, perseverance, planning, budgeting and communicating across cultures. 'Entrepreneurial human capital' or 'entrepreneurial abilities' have been recognized as an essential, if often elusive, determinant of entrepreneurship (Hessels et al., 2014). Still, there is no consensus on whether one is born with innate entrepreneurial abilities or whether entrepreneurial abilities can be taught (Silva, 2007). And, despite a few works, such as Black and Castaldo (2009), Démurger and Xu (2011) or Chen and Hu (2012), the relative importance of the abilities gained during migration compared to remittances and repatriated savings in returnees' choice of occupation remains unclear.[1]

Does migration experience develop entrepreneurial human capital? I examine whether migrants are more likely to choose self-employment upon return to their origin country because of the diverse work experience gained abroad, with reference to Lazear's (2005) Jack-of-all-Trades Hypothesis. According to Lazear (2004, 2005), entrepreneurial abilities can be learned,

[1] For instance, Gibson and McKenzie (2012) conclude from micro-economic evidence from five islands that, although return migration of the highly skilled is common, their involvement in self-employed activities once back to origin countries is seldom, in contrast with Wahba and Zenou's (2012) findings.

not only through education but also experience. Entrepreneurs need a generalist, well-balanced skill mix profile. They need to be 'jacks-of-all-trades' – being exposed to a range of activities and contexts. Without acquiring a varied set of skills, one would be less likely to opt for self-employment, and less successful in starting up a firm. This prediction of the Jack-of-all-Trades Hypothesis can be tested by looking at human capital investment patterns of self-employed and employed. Entrepreneurs should have a more generalist rather than specialized attitude to human capital, leading to a balanced investment in human capital.

This analysis allows to determine whether overseas labor experience is conducive to the development of entrepreneurial abilities. It contributes to the growing empirical evidence on testing Lazear's (2005) Hypothesis,[2] by examining whether migration is a process that can affect the likelihood of returnees becoming self-employed; and if so, whether this is due to a migration-induced jack-of-all-trades effect on skill set balance. The country of interest, Egypt, is one of the biggest labor exporters of the Middle East and North Africa region. Simultaneously, micro- and small enterprises represent the majority of enterprises, and provide significant employment.[3] This study is relevant as labor migration tends to be a survival strategy to escape poor social and economic development in Egypt, and self-employment, an activity often seen as a vehicle of social and economic development in the face of high unemployment and low real wages.[4] That migrating plays a role in forming entrepreneurial abilities could be informative for better supporting fledgling entrepreneurs by encouraging a wider work experience for business success.

A major empirical issue in studying the link between return migration and labor market outcomes is that endogeneity might affect this relationship. Omitted variables could simultaneously explain the decision to migrate temporarily and self-employment on return to origin countries, as both involve taking risk (Marchetta, 2012). Bringing back resources accumulated abroad could also be driven by the will to set up or expand a business at home (Wahba and Zenou, 2012; Batista et al., 2017). Similarly, those with a taste for professional variety might seek a greater exposure to different occupations, sectors or jobs to acquire varied

[2] For a recent review, see Hessels et al. (2014).

[3] From 2003 to 2011, micro- and small firms constituted almost 99% of Egypt's total enterprises, and around 80% of total employment, providing work for about 75% of new entrants into the job market (Ghanem, 2013).

[4] Youth unemployment represented around 95% of Egypt's unemployed in 2008.

skills, and might be more inclined to opt for self-employment because of their own, innate preferences (Silva, 2007). This suggests that a naïve, Ordinary Least Squares, estimation of the impact of return migration on labor market outcomes through skill set development might be biased.

To recover the causal effect of return migration on the propensity to be self-employed via the human capital channel, I estimate the reduced-form of two structural equations, linking (i) return migration to labor experience variety, and (ii) labor experience variety to self-employment, in which exclusion restrictions play the role of instrumental variables. To identify the relationship between return migration and labor experience, this instrumental variable strategy exploits plausibly exogenous cohort and regional variation in the decision to migrate in the context of Egypt, where, at the time of the survey, most of out-migration was temporary in nature because of destination countries' legal environment. This is along the lines of Bohme et al. (2015), who study the impact of out-migration on the health of elderly parents, and Dustmann et al. (2015), who analyze the effect of out-migration on wages. The relationship between labor experience and self-employment is identified by taking advantage of respondents' retrospective job history information, as in Stuetzer et al. (2013).

Formally, the effect of return migration on self-employment through skill set balance is disaggregated by occupational and sectoral experience. Baseline reduced-form estimates indicate that return migration is associated with an increase of 9.41 and 21.38 percentage points in the probability to be self-employed on return to Egypt in a one unit increase in occupational and sectoral experience, respectively. The identification strategy is shown to be robust; the effect of job experience induced by migration does not hold across specifications, revealing that accumulating jobs might not necessarily lead to the development of a balanced skill profile.

Analyzing effect heterogeneity indicates that this link is driven by men, individuals working in non-agricultural sectors and those living in rural areas. This is consistent with the setting studied, where there is important gender segregation on the labor market; the agricultural sector is rather traditional and fragmented; and self-employment might be more desirable in rural areas. The effect of return migration on entrepreneurial abilities is found to be identified only for individuals who are financially constrained. While the effect on profits is inconclusive,

return migrants appear more likely to persist as self-employed, because of a more varied work experience.

Besides providing evidence to the current debate on the development impacts of migration on origin communities, findings contribute to the literature on migration and human capital accumulation by analyzing, empirically, whether migration experience shapes entrepreneurial skills. While several theoretical and empirical works linking migration to skill upgrading upon return to sending communities exist,[5] this analysis specifically relates to Reinhold and Thom (2013), who find that occupation-specific work experience in the United States accounts for much of the positive relationship between earnings in wage employment and return migration to Mexico. It also complements Démurger and Xu (2011), who show that returnees are more likely to engage in self-employed activities than stayers, because of job turnover; and Chen and Hu (2012), who suggest that, among internal migrants in China, the variety of skills accumulated during migration to more industrialized urban areas increases returnees' likelihood to be self-employed compared to those migrating to rural areas. I expand their findings by suggesting that the exposure to multiple occupations and sectors, rather than job turnover, might explain returnees' greater likelihood to be self-employed in comparison to non-migrants, beyond any effect on earnings, and in the absence of wealth effects.

By unpacking migration as a learning process, estimates are also in line with Lazear's (2005) framework, as they confirm that entrepreneurship can be learned, and that learning-by-doing and experiential learning matter in entering into and persisting in self-employment (Hessels et al., 2014), in a developing economy with significant international migration such as Egypt. This analysis contributes to the scarce literature on empirically testing Lazear's (2005) Jack-of-all-Trades Hypothesis in developing economies where international migration is a prevalent labor market alternative. While recent empirical research has supported and refined his findings in developed settings,[6] self-employed evolve in underdeveloped, ill-functioning market-supporting institutions in less advanced economies. They need to be much more

[5] See for instance Domingues Dos Santos and Postel-Vinay's (2003) and Mayr and Peri's (2009) theoretical models or the empirical evidence in de Coulon and Piracha (2005) for Albania, Co et al. (2000) for Hungary, or Barrett and O'Connell (2001) and Barrett and Goggin (2010) for Ireland.

[6] See for instance Astebro and Thompson (2011), Lechmann and Schnabel (2014), Hessels et al. (2014) or Alden et al. (2017).

generalist to be able to handle almost all dimensions of business management. In this regard, migration could be seen as a process part of a dynamic, life-cycle sequence of learning and experimentation. By entailing a change in occupations or sectors, migration could act as an 'experience good', nudging migrants to discover the best allocation of their capital and labor resources. In such a case, the accelerated, condensed labor market experience caused by migration to self-employment could help shape entrepreneurial abilities.

The rest of this paper is structured as follows. Section 2 describes the data, followed by the empirical strategy in section 3. Section 4 presents estimation results. Section 5 concludes.

2 Data

2.1 Context

Egypt has been a labor exporter since the 1970s economic reforms and opening of the country; it is one of the biggest of the Middle East and North Africa (MENA) region (Wahba, 2014). Two main trends have characterized Egyptian out-migration: (i) temporary migration to MENA countries, involving male household heads, for one to five years, and (ii) more permanent migration to Western countries, involving the entire nuclear family. Egyptians' first destinations were labor-importing MENA countries, in particular the oil-producing Gulf States, Libya and Iraq because of labor shortages.[7]

Egypt's international migration comprises both low- and high-skilled migrants (Wahba, 2014). The early 1980s saw highly educated professionals (physicians, health workers, teachers), and less educated workers, usually working in construction, temporarily leaving for MENA countries. Nowadays, the proportion of less educated Egyptian migrants has decreased relative to the proportion of more educated workers, as demand from labor-importing MENA countries decreased with increasing inflows of Asian workers. Emigration flows have thus become more educated on average. Gulf States and Western countries tend to host the most educated Egyptian workers, whereas Libya, Jordan and Iraq host the least.

[7] Since the 1980s and 1990s, the political instability some experienced and the replacement of Arab with Asian workers have had a significant effect on emigration destinations of Egyptians. However, the majority, around 70%, was still heading to MENA States in 2000 (Wahba, 2009).

2.2 Data source

This paper uses the last wave of a longitudinal and nationally representative household survey, the 2012 Egypt Labor Market Panel Survey (ELMPS) (ERF and CAPMAS, 2013). The ELMPS consists of four cross-sections – 1988, 1998, 2006 and 2012 – the last three constituting a three-round panel. The 2012 round covers 12,060 households and 49,186 individuals, tracking households and individuals surveyed in 2006, plus a refresher sample or people interviewed in 1998.[8]

The ELMPS contains information on a variety of topics. For this analysis, modules on labor market outcomes, residential mobility, current and return (international) migration[9] are of particular interest. This study uses the last wave of this survey as a cross-section since, first, variables of interest were only collected in its last wave. Second, by asking retrospective information on job history up to the four last job spells, the 2012 wave gives more insight into respondents' migration and work history compared to using the panel structure of the 1998, 2006 and 2012 waves.

Empirical research on return migration and labor market outcomes in Egypt has mainly used the ELMPS. Overseas savings and education acquired during a stay abroad were shown to increase the propensity to become self-employed upon return by more than compensating for their potential loss of social capital (Wahba and Zenou, 2012). Marchetta (2012) finds that being a return migrant increases the survival of self-employed activities in Egypt, and Bensassi and Jabbour (2017), that business units managed by returnees display higher revenues. El-Mallakh and Wahba (2018) show that temporary overseas labor experience raises the propensity of upward occupational mobility for highly skilled returnees. The role of migration as a learning experience for self-employment thus remains unclear. Being self-employed upon return to Egypt could occur due to wealth effects – remittances and repatriated savings – or to the development of a balanced skill set, a jack-of-all-trades effect.

[8] More details on data collection are available in Assaad and Kraft (2013).

[9] This paper uses this newly added module to identify return migrants. It surveys individuals between 15 and 59 years old. Individuals are classified as return migrants had they worked abroad for at least six months.

2.3 Descriptive statistics

The estimation sample includes individuals born before 1990, as no return migrants are reported for individuals born on or after 1990. Individuals who changed jobs after the January 2011 Uprising are excluded to ensure estimates are not affected by critical events in the aftermath of the Uprising (El-Mallakh and Wahba, 2018). The sample is also limited to those whose first destination country was a MENA country, as listed in Bertoli and Marchetta (2015) – Algeria, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates and Yemen. This helps focus better on the effects induced by return migration since (i) Egyptians out-migrating to Western countries tend to stay permanently, but migration to MENA countries is temporary in nature because of the legal environment in these countries (Kandil and Metwally, 1992; Bauer and Gang, 2002), and (ii) at the time of the survey, the majority of Egyptians out-migrated to MENA countries.

Table 1 presents estimation sample descriptive statistics. The outcome of interest is a binary variable taking value 1 if a working-age (16-64 year-old) individual is self-employed, and value 0, if employed.[10] As Table 1 indicates, out of 11,224 observations, 22.84% are self-employed.

Two measures of skill profile are alternatively used:

(i) Occupational experience, a continuous variable capturing the *number of occupation* an individual has accumulated over the four last spells of his job history, either as a low-skilled blue-collar, high-skilled blue-collar, low-skilled white-collar or high-skilled white-collar worker, in the lines of Chen and Hu (2012) and El-Mallakh and Wahba (2018);[11] and

(ii) Sectoral experience, a continuous variable representing the *number of 1-digit industry* (or sector) an individual has worked in over the four last spells of his job history, as classified by the International Standard Industrial Classification of all economic activities (ISIC4).

[10] While it could be argued that deciding to be self-employed is a means to escape unemployment, there are relatively few unemployed for this age range in Egypt, at the time of the survey. Including them in the estimation sample does not alter results. Moreover, Figure A1 indicates that the relationship between self-employment and unemployment was stable from 1990 to 2012.

[11] Following the International Standard Classification of Occupations (ISCO-88), occupations are classified in terms of skill level and skill specialization, forming four skill levels. Low-skilled blue-collar occupations correspond to skill level 1 occupations; high-skilled blue-collar to skill level 2; low-skilled white-collar to skill level 3; and high-skilled white-collar occupations to skill level 4 occupations.

These two measures of skill set profile are not aggregated as the human capital acquired through these channels might differ. Let's take two examples, Hussein and Fahad. Before leaving Egypt, Hussein worked as a driver for a truck company. Abroad, he drove diplomats and high level officials. Upon return to Egypt, and now armed with driving experience in different sectors, he decided to become a self-employed taxi-man. On the other hand, Fahad, initially trained as a civil engineer, worked as a civil servant at the Ministry of Transportation, contributing to developing the domestic road networks. He then decided to out-migrate to work in a private firm, in which he administratively managed varied infrastructure projects. He eventually returned to Egypt to become a successful consultant, offering his services to governmental, international and private organizations, now that he acquired diverse occupational and sectoral experience, ensuring a broad range of clients. In these two cases, out-migrating helped develop entrepreneurial abilities,[12] by accumulating sectoral (Hussein) and occupational experience (Fahad).

While occupational and sectoral experience is likely to increase skill variety and how generalist an individual is, job turnover may affect the degree of risk aversion that plays a part in opting for self-employment. One's number of job might not necessarily induce a change in occupation or sector – it might not lead to the same type of skill acquired by exposure to varied occupations or sectors. Estimating the effect of return migration on self-employment through the accumulation of job thus constitutes a robustness check.

That retrospective labor market information is only recorded for the last four job spells might limit the identification of unique skill profile. It is possible that two individuals display a similar number of occupation and sector in the last four jobs, but one might have had more than four jobs with different occupations or sectors before. Although this might not affect the measure of occupational experience, bounded to four, the number of sectors might be mismeasured. This will result in the impossibility to identify unique skill profiles based on sectoral experience. By identifying an exogenous source of variation in explaining the relationship between skill mix profile and self-employment, the empirical strategy of this paper will allow controlling for endogeneity due to measurement errors.

[12] Entrepreneurial abilities are defined as 'entrepreneurs' competencies, knowledge, and associated technical skills', e.g. general business skills and basic skills to set up a firm (Valerio et al., 2014, p. 38).

Table 1 reveals that, on average, respondents have a relatively low degree of skill mix balance. They have accumulated 1.30 occupations, and worked in 1.20 sectors over their last four job spells. There are notable differences between self-employed and employees. In particular, those self-employed have accumulated significantly more occupational (1.38) and sectoral (1.22) experience, compared to employees (respectively 1.28 and 1.99).

Being a return migrant is defined as a binary variable, taking value 1 if an individual has out-migrated at 15 years old or older for work for at least six months, and returned to Egypt at the time of the survey; 0, otherwise. About 10% of the estimation sample are return migrants who, on average, spent 4.55 years abroad. Returnees show a significantly higher rate of self-employment: 33.12 compared to 21.74% of stayers, the rest being wage-employed. Return migrants also display a significantly greater number of occupations and sectors, accumulated over their work experience.

Limiting the sample to working-age self-employed, in Table 2, self-employed who temporarily migrated have acquired substantially more occupational experience (1.56), and worked in more sectors (1.55) than self-employed who have not migrated (respectively 1.35 and 1.17). These statistics support the idea that working abroad leads to the accumulation of a labor market experience different from the one obtained by staying home.

Last, pairwise correlations, presented in Table 3, suggest a positive, statistically significant relationship between self-employment, return migration and occupations. The linear correlation between self-employment and sectors, positive and significant, is much weaker. That correlations are not similar for each one of the two dimensions of labor market experience supports the idea that they might not capture similar aspects of one's skill mix profile.

3 Estimation strategy

A major analytical issue in studying the relationship between return migration and self-employment is that endogeneity might influence this relationship. Deciding to migrate temporarily is subject to self-selection due to unobservable features that are likely to affect, at the same time, self-employment upon return (Marchetta, 2012). Return migrants may be

more endowed – they might have a more balanced skill set, for instance – before departure than non-migrants. They might be innately more risk-taking, and more likely to set up a firm. Estimates would also be biased if returnees' decision to be self-employed was determined by a lack of social capital on return to origin countries, and as an escape from unemployment (Wahba and Zenou, 2012).[13] Out-migrating itself could be driven by the desire to set up an enterprise at home. They could be simultaneous decisions, and temporary migration part of would-be entrepreneurs' business strategies (Batista et al., 2017).

The relationship between human capital investment and self-employment might similarly be biased. Individuals with a taste for professional variety might seek a greater exposure to different occupations, sectors or jobs to acquire varied skills, and might simultaneously be more inclined to opt for self-employment because of their own, innate preferences (Silva, 2007). This would be a case of self-selection. Alternatively, how (un)balanced one's skill set is might be a conscious effort to reach a well-defined wage- or self-employed position – an instance of reverse causality.

As a result, naïvely estimating the effect of return migration on the propensity to be self-employed through skill set development via Ordinary Least Squares might be biased. To tackle endogeneity in assessing, and recovering, the causal effect of migration experience on self-employment, the reduced-form of two structural equations is estimated, linking (i) return migration to labor experience variety, and (ii) labor experience to self-employment, in which exclusion restrictions play the role of instrumental variables.

A linear probability model is estimated via a generalized simultaneous equations model (GSEM) estimator, since the three decisions – temporarily migrating, having a balanced skill set, and being self-employed – form a non-recursive model with direct causal paths and correlated disturbances.[14] Ignoring the interdependence in migration, skill profile and self-employment upon return could lead to biased estimates, if interdependence is actually present.[15]

The reduced-form model is specified as follows:

[13] However, with regard to the depreciation of social capital because of migrants' stay abroad, it could be argued that, in Egypt, a rather traditional society, connections might be easily resurrected upon return because of extended family networks.

[14] Correlated disturbances assume that corresponding endogenous variables share at least one common omitted explanatory variable.

[15] I.e. estimating this system of equations as single equations, in their structural rather than reduced form.

$$Returnee_i = \delta_0 + \delta_1 X_{Ri} + \delta_2 Z_{Ri} + \epsilon_{1i} \tag{1}$$

$$Experience_{ij} = \alpha_0 + \alpha_1 X_{Ei} + \alpha_2 Z_{Ei} + \alpha_3 Z_{Ri} + \epsilon_{2i} \tag{2}$$

$$SelfEmployed_i = \gamma_0 + \gamma_1 X_{SEi} + \gamma_2 Z_{Ei} + \epsilon_{3i} \tag{3}$$

where $Returnee$ is a binary variable, taking unity if a working-age individual i has worked at least six months abroad; 0 otherwise. $Experience$ is a continuous variable, with $j = 1, 2$, alternatively measuring the number of different occupations or industries, accumulated over the last four job spells. $SelfEmployed$ is a binary variable taking unity if an individual is currently self-employed; 0 otherwise.

X_R is a vector of individual and household characteristics capturing gender, age, marital status, education, whether an individual's mother is literate,[16] and child dependency ratio. X_E controls for the same variables as X_R. X_{SE} controls for gender, age, household characteristics, variables thought to influence the decision to be self-employed such as vocational training, whether an individual's father was self-employed, whether his/her first job was self-employed, years of unemployment, tenure, tenure squared in years at current job, potential years of work experience and potential years of work experience squared.[17] Equation (3) also includes governorate fixed effects.[18]

Equations (1) and (2) form the reduced-form equations of the first structural equation; equations (2) and (3), the reduced-form equations of the second structural equation. Z_R, Z_E and X_{SE} act as exclusion restrictions of, respectively, equations (1), (2) and (3). As they are unique to each structural equation, the above model can be solved, and its structural parameters

[16] Mother's education proxies potential inequalities of opportunities that individuals might face based on their family background (Paxson and Schady, 2004, 2007).

[17] Labor force-related information is measured over the last four job spells available in Module 6 of the ELMPS.

[18] Results hold for including governorate fixed effects in equation (1) and (2). For the sake of parsimony, I have not included them in the estimates presented in this paper. They are available on request.

uniquely identified.[19]

These three equations can be rewritten in the variables $Returnee$, $Experience$ and $SelfEmployed$, so that each of these variables will depend on the exogenous variables of the entire system as well as the error terms. Standard errors are clustered at the household level to account for potential correlation in migration and labor market behaviors within families.

$$Returnee_i = f(.; Z_{Ri}, \delta_2) \tag{4}$$

$$Experience_{ij} = f(.; Z_{Ei}, \alpha_2; Z_{Ri}, \alpha_3) \tag{5}$$

$$SelfEmployed_i = f(.; Z_{Ei}, \gamma_2) \tag{6}$$

By estimating the relationship between labor experience and return migration, controlling for the endogeneity of return migration, i.e. the change in (varied) occupational or sectoral experience in an exogenous change in being a return migrant, the average marginal effect of return migration on skill set profile is obtained:

$$\frac{\partial Experience_{ij}}{\partial Returnee_i} = \frac{\frac{\partial Experience_{ij}}{\partial Z_{Ri}}}{\frac{\partial Returnee_i}{\partial Z_{Ri}}} = \frac{\alpha_3}{\delta_2} \tag{7}$$

The average marginal effect of labor experience variety on self-employment, controlling for the endogeneity of human capital investment, i.e. the change in the probability of being self-employed in an exogenous change in accumulating occupational or sectoral experience, is obtained by estimating the relationship between being self-employed and experience:

$$\frac{\partial SelfEmployed_i}{\partial Experience_{ij}} = \frac{\frac{\partial SelfEmployed_i}{\partial Z_{Ei}}}{\frac{\partial Experience_{ij}}{\partial Z_{Ei}}} = \frac{\gamma_2}{\alpha_2} \tag{8}$$

Migration-induced jack-of-all-trades effects on self-employment, that is the change in the probability of being self-employed in an exogenous change in return migration through skill

[19] Although it could be argued that some variables of the vector X_{SE} could influence the decision to migrate temporarily, such as years of unemployment, tenure or potential years of work experience, or skill set balance, such as father's employment status, estimates hold to the inclusion of these variables in equation (1) or equation (2), respectively.

development, are given by multiplying these two marginal effects:

$$\frac{\partial SelfEmployed_i}{\partial Returnee_i} = \frac{\partial SelfEmployed_i}{\partial Experience_{ij}} \cdot \frac{\partial Experience_{ij}}{\partial Returnee_i} = \frac{\gamma_2}{\alpha_2} \cdot \frac{\alpha_3}{\delta_2} \tag{9}$$

Z_R, exclusion restriction for equation (1), is the interaction between (i) the real price of oil at 19 years old in USD, and (ii) the average distance to estimation sample destination countries in 1,000 kilometers.

As in Wahba and Zenou (2012), Bertoli and Marchetta (2015) or El-Mallakh and Wahba (2018), changes in the real price of oil are used to obtain an exogenous source of variation in the probability of return migration. Inflation-adjusted prices of oil are assumed to drive the demand for non-native labor in response to changes in local economic conditions either directly in oil-producing countries – through employer-based immigration policies – or indirectly in non oil-producing countries, such as Jordan or Lebanon, as replacement workers. As argued by these authors, fluctuations in the historical real price of oil at a potential age of out-migration should influence the decision to migrate, but should not be directly related to current labor market outcomes upon return.[20]

In addition, because migration to MENA countries tends to be temporary as it is related to visa schemes sponsored by employers, predicting out-migration should suffice to instrument for return migration. This, together with limiting the sample to individuals born before 1990, should control for potentially failed migration project, as applying for such schemes help migrants obtain more information on what type of job and life to expect abroad.

Following Bertoli and Marchetta (2015), selecting the age at which individuals have to be matched to the real oil price relies on an optimality criterion, chosen out of 11 alternatives, from age 18 to 28. Equation (1) is estimated, and the strength of this instrument examined at different matching ages, ranging from age 18 to 28. This is achieved by testing the null hypothesis that the estimated coefficient on the real price of oil equals zero through a Wald test for each alternative. The age of potential out-migration giving the highest F-statistic is then selected.

[20] This is supported by Figure A1, depicting no association between trends in rates of gross domestic product (GDP) growth, self-employment, wage employment, unemployment and inflation-adjusted oil prices in USD, from 1990 to 2012.

Figure 1 depicts the values of the F-statistics for equation (1), at each age, as well as Stock and Yogo's (2005) rule of thumb. The F-statistic is the highest for age 19 for being a return migrant, close to Bertoli and Marchetta's (2015) choice of age 20, but below 10 for 26, the age selected by Wahba and Zenou (2012) and El-Mallakh and Wahba (2018). The real price of oil is thus selected when individuals were 19 as an instrument for return migration to MENA countries. Table 1 supports the selection of 19 as matching age. Real oil prices were, on average, statistically significantly higher for return migrants (USD49.87) at age 19 than for stayers (USD43.45), confirming the rationale behind this instrument.

Along the lines of Bertoli and Marchetta (2015), Figure 2 shows the relationship between the share of returnees of the estimation sample at their year of birth and the real price of oil when they were 19 years old, from 1950 to 1990. The proportion of return migrants is the highest, approximately 25% for those born in the mid-1950s and early 1960s, who might have out-migrated following the sharp increases in oil prices in the 1970s and 1980s. The proportion of returnees then falls, until the end of the series, 1989.[21] The steady decrease in the share of returnees does not match the rise in real oil prices starting in the late 1980s. Egyptians, born in the late 1970s or onward, who out-migrated to MENA countries in the early 2000s may not have returned to Egypt yet. Those who have already returned may have failed their migratory project. They may not represent well the pool of Egyptians who left in the 2000s, which could induce bias. This is later assessed in checking the robustness of the identification strategy.

This cohort-based instrument is interacted with a variable varying across space, along the lines of Bohme et al. (2015) and Dustmann et al. (2015), who analyze the effect of out-migration on parents' health and wages, respectively. The effect of this 'shock' on the likelihood to migrate temporarily is allowed to differ across Egypt through cross-governorate heterogeneity in migration costs to the average potential destination country.[22] Such differences in migration costs could be explained by differences in historical ties with receiving countries (Kraetke, 1999), variation in the current share of out-migrants in each receiving countries (network effects) (McKenzie and Rapoport, 2007), or differences in geographical proximity;

[21] As mentioned earlier, no return migrants born in 1990 or later were surveyed. The estimation sample thus only includes individuals with no missing information, who were born in 1989 or before.
[22] A governorate is the first level of Egypt's administrative subdivision.

all are likely to induce cross-country heterogeneity in the effect of oil price on migration.

Cross-country variation in migration is captured by the average distance from the capital of a respondent's governorate of birth to estimation sample destination country capitals in 1,000 kilometers.[23,24,25] Migrants are more likely to migrate, the lower their costs to migrate, as measured by geographical proximity. The effect of oil prices on the probability to temporarily migrate is thus allowed to differ across governorates through regional heterogeneity in migration costs to each potential destination. This interaction generates variation across time, via the cohort-based oil price, and across space, via the average distance from governorate of birth to destinations.

Figure 3 presents the average distance to potential destination country capitals by governorate of birth in kilometers. Table 1 indicates that this variable is significantly lower for return migrants compared to non-migrants. This is in line with distance as a proxy for migration costs – the closer the average distance to destination countries, the greater the likelihood to migrate. It is plausible to think that average distance to potential destination country capitals is exogenous with regard to labor market outcomes recorded before January 2011 since it is based on governorate of birth, and governorate fixed effects were included in the $SelfEmployed$ equation. Moreover, as Figure A1 suggests, trends in rates of GDP growth, self-employment, wage employment or unemployment have remained relatively steady from 1990 to 2012.

Last, Z_E, exclusion restriction for equation (2), is a binary variable taking unity if an individual worked in a micro-firm – with strictly less than 10 workers – in the last three job spells, that is excluding current position. This variable is assumed to influence the decision to be self-employed only through the accumulation of entrepreneurial human capital by switching occupations, sectors or jobs. Micro- and small firms tend to lack complex hierarchical structures. They are less likely to be highly specialized work places, so that their working conditions give employees the opportunity to perform a variety of tasks. Performing various tasks could contribute to the development of a balanced skill set via learning-by-doing (Wagner,

[23] Respondents who were not born in Egypt were assigned an average distance based on their first governorate of residence in Egypt.

[24] Table A8 in the Appendix provides information on the construction of distances.

[25] The average distance is also weighted by the share, and its inverse, of migrants by destination countries. This yields similar results. Estimates are available on request.

2004; Parker, 2009; Bublitz and Noseleit, 2013; Elfenbein et al., 2010; Stuetzer et al., 2013). As Table 1 shows, self-employed are much more likely to have worked in a micro-enterprise than employees (61.4 against 33.2%).

4 Results

4.1 Benchmark specifications

Table 4 and Table A3 in more details present reduced-form coefficient estimates of a linear probability model of return migration, occupational or sectoral experience, and self-employment, robust to the endogeneity of migration and human capital investment.

Inflation-adjusted price of oil at age 19 interacted with the average distance to destination countries is a positive, strong and statistically significant instrument for return migration across all specifications. Despite the rather small magnitude of its coefficient estimates, it is close to what Wahba and Zenou (2012), Wahba (2015) and Bertoli and Marchetta (2015) obtain.[26]

Micro-firm experience is positively correlated with exposure to occupations and sectors. This is consistent with the idea that working in a micro-firm is related to varied work experience, which is likely to give employees the opportunity to perform a variety of tasks, thus contributing to a balanced skill mix via learning-by-doing.

The average marginal effects of return migration on self-employment through the variety of labor experience are displayed at the bottom of Table 4. On average, having migrated temporarily significantly increases the probability of self-employment upon return, in a unit increase in occupational and sectoral experience by 9.41 and 21.38 percentage points, respectively.

[26] Estimates from equation (1) run with only one of these variables, presented in Table A1, confirm that oil price increases, and average distance to destination countries decreases the probability to migrate, in line with the assumptions made in the previous section. Table A2 presents the average marginal effects of oil price on the probability of return migration, holding migration distance constant at different values by increment of 25 kilometers. These simple slopes for oil price are significant for all values of migration distance, and increase in migration distance. They indicate that the importance of oil price as a pull factor for out-migrating increases the further the average migration distance between respondents' governorates of birth and destination countries. In other words, the oil price and the average migration distance seem to compensate each other: the further a respondent is from the average destination country, i.e. the more discouraging migrating might be, the stronger the pulling effect of the oil price to migrate.[27]

In contrast, the average marginal effect of migration on self-employment through the accumulation of job, in Table 5, has a negative but insignificant effect. This suggests that holding several positions might not necessarily lead to the development of a balanced skill profile conducive to self-employment. Job experience might thus not be a relevant measure of, or might not contribute to the formation of, a skill mix conducive to entrepreneurship as such, contrasting with Démurger and Xu's (2011) findings.

Using a continuous variable measuring return migration, years abroad, as in Table 5, yields estimates similar in sign and significance, albeit of a much smaller magnitude. An additional year abroad increases the likelihood of being self-employed on return by 1.58 percentage points in a one-unit increase in occupational experience; by 3.60, when exposed to an additional sector.[28]

These results suggest that migration could contribute to the formation of entrepreneurial abilities by building skills through varied occupations and industrial sectors, thus expanding Chen and Hu's (2012) findings for migrants and non-migrants. They also complement Reinhold and Thom's (2013) by suggesting that occupation- and sectoral-specific experience resulting from working abroad affects the decision to be self-employed, beyond earnings themselves, by developing skill set balance.

4.2 Robustness checks

The robustness of the identification strategy is checked as in Bertoli and Marchetta (2015). First, Figure 2 showed that the steady decrease in the share of returnees from 1979 till the end of the series, in 1989, does not match the peak in real oil price starting in the late 1980s. It is possible that Egyptians born in 1979 or later, and who out-migrated to MENA countries in the early 2000s have not yet returned to Egypt. Alternatively, if they have, they may not be representative of the pool of Egyptians who left in the 2000s. In this sense, such a change in trend might not mirror a change in the relationship between historical real price of oil and out-migration.

As in Bertoli and Marchetta (2015), Table 5 presents estimates of a sample limited to

[28] Readers should be cautious in interpreting these results as the estimated linear probability model does not account for the censored nature of the number of years abroad.

working-age individuals born before 1979, applying the same selection criterion for instrument selection as above. Figure 2 indeed showed that the steady decrease in the share of returnees from 1979 till the end of the series, in 1989, does not match the peak in real oil price starting in the late 1980s. Coefficient estimates and marginal effects of return migration on self-employment do not differ in sign from baseline results, only their magnitude and statistical significance increase. Having migrated temporarily increases the likelihood of self-employment with experience in an additional occupation (15.10 percentage points) and sector (22.25), among those born before 1979. The robustness of these results confirm the choice of this exclusion restriction to obtain an exogenous source of variation in explaining out-migration, and suggests that the change in oil price trend evidenced graphically might not mirror a change in the structural relationship between historical real price of oil and out-migration. Rather, it is possible that Egyptians born in 1979 or later, and who out-migrated to MENA countries in the early 2000s have not yet returned to Egypt. Alternatively, if they have, they may not be representative of the pool of Egyptians who left in the 2000s; or, they might be experiencing labor market conditions different from their elder cohorts'.

Second, if the historical price of oil is assumed to drive the demand for non-native labor directly, in oil-producing countries, and indirectly, in non-oil producing countries, it could be argued that the latter effect is weaker, if not insignificant. People who first out-migrated to non-oil producing countries – Jordan, Lebanon, Syria and Yemen – are excluded from the estimation sample. Table 5 shows that coefficient estimates and marginal effects of return migration on self-employment follow the same pattern as benchmark results in oil-producing countries. Return migration significantly increases the likelihood of self-employment with sectoral experience (22.20 percentage points). While the channel of occupational experience becomes statistically insignificant, its sign and magnitude are close to baseline estimates. In contrast, results do not hold for non-oil producing countries, as the last set of rows of Table 5 suggests.[29] In spite of not being precisely estimated, signs are negative, indicating that migrating to non-oil producing countries, i.e. as replacement workers, could decrease the probability to be self-employed on return to Egypt, the more varied migrants' skill mix is

[29] Regressions could not be separately run for the different destination countries since too few respondents migrated to each country.

compared to non-migrants.[30] These results confirm the choice of inflation-adjusted oil prices as a determinant of out-migration only directly to oil-producing countries.

4.3 Heterogeneity

In Table 6, the sample is split up by gender, sector of occupation, location and possession of savings, to understand which subgroups drive the effect of migration on self-employment that was found.

First, labor force participation of women in Egypt is one of the lowest, with 19% engaged in paid work in 2010 (World Bank, 2017). The development of male-dominated non-trade sectors over traditional export sectors, combined with the interruption of an employment guarantee scheme for higher education graduates in the 1990s that offered women attractive working conditions, have triggered growing unemployment, and led to a de-feminization of its labor force. The 2008 economic crisis and the economic slowdown following the January 2011 Uprising have accentuated these trends. At the same time, tradition limits women's mobility, and restricts them to the domestic sphere or to small home-based income-generating activities with few opportunities to expand (Sadania, 2017).[31] As Table 6 indicates, results are only statistically significant for men; the estimation strategy is not robust for the female sub-sample. This is in line with the Egyptian labor market being gender differentiated.

Second, the positive effect of a migration-induced jack-of-all-trades effect on self-employment is driven by those working in non-agricultural sectors. Table 6 points to an insignificant relationship between return migration and self-employment through the development of a balanced skill set in agriculture. None marginal effect is significant, and the sign on the number of occupation is negative. This suggests that self-employment in agriculture might not require the same set of abilities as non-agricultural sectors, but a rather specialized skill mix. Alternatively, it can mean that return migration affects self-employment

[30] While estimates via the occupational experience channel are not statistically significant, when the estimation sample is limited to respondents born before 1979 and to oil-producing countries, they do become significant; they remain insignificant when looking at the effect of return migration from non oil-producer countries.

[31] As a result, the labor market tends to be segmented for women between public sector (44% of Egyptian women engaged in public sector work in 2012), private sector (32) and household work (24). This is because if working in the public sector is accepted by Egyptian society for the most educated women, engaging in private work – self-employment – outside the household is seen as degrading (Sadania, 2017).

in agricultural sectors through channels other than the accumulation of human capital, e.g. monetary flows. This would support McCormick and Wahba's (2001) findings that overseas savings have a stronger effect on self-employment in agriculture than human capital, if the self-employed in agriculture have lower educational attainment, or did not change occupations while away or upon return – if migrating did not give them the opportunity to accumulate diverse enough skills.

Differences in results may also reflect the fact that the Egyptian agricultural sector has a rather traditional structure, marked by a high degree of land fragmentation (Morsy et al., 2014). As a consequence, a substantial part of individual farmers work on small low-productivity plots, and are unable to benefit from economies of scale. Working in agriculture may not require the experience gathered while working abroad. In other words, the skills gained while working abroad may not be relevant enough, as it may not provide the capital necessary to start agricultural activities (or access land).

Third, job opportunities in rural areas tend to differ from those in urban areas because farming might not be an option in the latter, while in the former, it might be the main activity. In addition, self-employment in cities might not be the most desirable option if wage works are offered and are more socially rewarded, as it is the case in Egypt. Table 6 indicates that return migration significantly increases the likelihood of self-employment with occupational and sectoral experience in rural areas. This suggests that return migration in Egypt might affect rural off-farm self-employment, potentially contributing to the structural reallocation of its labor force.

Fourth, since return migrants are significantly more likely to have savings (9.27%) than non-migrants (7.23) (see Table 1), not accounting for potentially migration-induced savings could bias the estimates. In the absence of an additional instrumental variable, the financial and human capital channels are disentangled by running the above linear probability model on two sub-samples, according to possession of savings. Table 6 reveals that having migrated increases the probability of being self-employed upon return by developing a balanced skill mix only for those who do not have savings. These estimates support the previous set of result for individuals without savings, indicating the existence of a migration-induced entrepreneurial

human capital in particular for those financially-constrained.

4.4 Jacks of all trades, masters of none?

With reference to benchmark specifications (Table 4), whether return migration influences entrepreneurship is assessed through the formation of a varied skill set in terms of productivity, as a measure of entrepreneurial performance. Not all entrepreneurial activities have lasting impacts on economic development. *Being self-employed* might not be a good indicator of entrepreneurship, since most self-employed neither innovate much nor generate jobs; many fail. Whether return migrants survive in their entrepreneurial activities has received relatively little attention in the literature.[32] Business survival might be a precondition for a lasting, positive effect of migrants' activities upon return, in particular in a developing country context such as Egypt, where the turnover of micro- and small enterprises is high (Marchetta, 2012).[33]

Table 7 considers the productivity of self-employed activities. Because self-employed activities tend to cluster at earning levels where there are jumps in the marginal tax rate, they might incorrectly report earnings (Alden et al., 2017). If the scale of misreporting varies over the probability of being a return migrant, the effect of return migration on self-employed earnings might be inaccurately estimated. Therefore, earnings should be read only as an imperfect proxy for self-employment productivity, and three alternative measures of performance are used: the natural logarithm of average net earnings per month, whether self-employed are own-account workers or employers, and length in self-employment.

The first row of Table 7 presents average net earnings per month in the past year from self-employed activities (in natural logarithm plus 1).[34] Estimates of return migration on self-employed earnings through the accumulation of occupations and sectors are negative.

[32] Only Marchetta (2012) has specifically studied the persistence of returnees' entrepreneurial activities, and Bensassi and Jabbour (2017) the profits of returnees' family enterprises.

[33] Similarly to the decision to become self-employed, the accumulation of financial, human or social capitals while abroad could loosen financial constraints to set up a firm, grow or thrive by developing the abilities and networks of the self-employed. Migration experience could help to establish more stable activities. However, during their migration, migrants may lose some social capital at home, a disadvantage upon return as contacts can be useful in managing rather small entities. Returnees might also enjoy more or better wage-employed opportunities on return, which could reduce their incentives to opt for self-employment, or the interest in persisting as self-employed (Marchetta, 2012).

[34] The estimation sample is restricted to self-employed respondents in all sectors who reported non-missing earnings.

Albeit imprecisely estimated, these results question whether the development of a balanced skill set during migration contributes to setting in place successful entrepreneurial ventures. By differing from Bensassi and Jabbour (2017), estimates support the idea that the returns on returnees' family enterprises the authors find might not result from any migration-induced jack-of-all-trades effects, but rather the accumulation of financial capital abroad, as they put forth.

Using the number of years (tenure) of the current self-employed position as dependent variable, the second set of rows suggests that having migrated significantly increases the number of years of current self-employment with occupational (1.84 years) and sectoral experience (4.17), in line with the dynamics between return migration and self-employment presented above. Using the average number of years of self-employment over the four last spells of job as outcome variable, the average tenure of self-employment[35] is found to be significantly affected by return migration in the number of sector (0.96 years) and occupation (0.42) an individual was exposed to.

Gaining experience in diverse occupations and industries similarly affects the propensity to be an employer or own-account worker upon return in magnitude, although estimate significance slightly differs (last set of rows in Table 7). These estimates confirm the influence of migration in developing human capital critical for entrepreneurship to set up a business and persist as self-employed. Growth-enhancing self-employment, by generating jobs or creating wealth, might however require more.

5 Concluding remarks

This study explores whether migration leads to a more balanced skill set, resulting in a greater propensity to be self-employed for return migrants. Using data from Egypt, baseline results suggest that return migration is associated with an increase of 9.41 and 21.38 percentage points in the probability to be self-employed upon return in a one unit increase in occupational and sectoral experience, respectively. Results are less consistent with regard to the job change channel. This indicates that job turnover as such might not be sufficient to acquire

[35] Measured as the number of years as self-employed divided by number of jobs over a maximum of four job spells.

entrepreneurial abilities.

Heterogeneous effect analysis indicates that this relationship is driven by men, reflecting a major level of gender segregation proper to the Egyptian labor market. It is also explained by individuals working in non-agricultural sectors, in comparison to a traditional, highly fragmented agricultural sector; and those living in rural areas, where self-employment might be more desirable. The estimated effect of return migration on self-employment by developing entrepreneurial abilities is only identified for individuals who do not have savings, that is who are financially constrained. Last, limited but suggestive evidence of such a link is found for persistence in self-employment.

The results of this analysis provide evidence on an understudied mechanism linking return labor migration to self-employment in origin countries. They support the idea that labor migration is a learning experience, by showing that not only the wealth, but also the work experience gained abroad as such, can affect migrants' labor market behaviors upon return. In facilitating the formation of occupational and sectoral experience, migration could be seen as a process shaping entrepreneurial abilities. This supports the idea that migration is part of a dynamic life-cycle sequence of learning and experimentation, and confirms that entrepreneurship can be learned.

These results have implications for entrepreneurship policies in developing economies, with prevalent international migration, where understanding the development potentials of out-migration is key for economic development. They suggest some new considerations in this debate. Because self-employed evolve in underdeveloped, ill-functioning market-supporting institutions in those contexts, they need to be much more generalist to handle almost all dimensions of business management. As migrating tends to occur out of necessity in developing economies such as Egypt, that migration offers learning opportunities beneficial for self-employment might be of particular interest to policymakers, since the micro and small enterprise sector has often been thought of as a solution to high youth unemployment. When high unemployment and low real wages necessitate increasing labor demand and alternative sources of income, stimulating enterprise creation becomes a vehicle of social and economic development. Entrepreneurship has emerged as a priority for governments, based on the

evidence that creating new businesses matters for economic development.

Findings indicate that entrepreneurship support policies could focus on widening the work experience of potential, fledgling entrepreneurs, accounting for differences in industries (farm and off-farm) and location (rural and urban). Specifically, agricultural entrepreneurship might be facing institutional and geography-specific challenges. It might require easier access to land as well as skill specialization rather than diversification for successful entrepreneurship. Easier access to land, land consolidation and modernization of the farming sector could enable farmers to move away from subsistence farming towards higher efficiency and economies of scale. It could allow them to reallocate labor towards sectors of higher productivity – potentially seizing more of what migration can bring.

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Figure 1: First stage test statistics for the real oil price at different ages

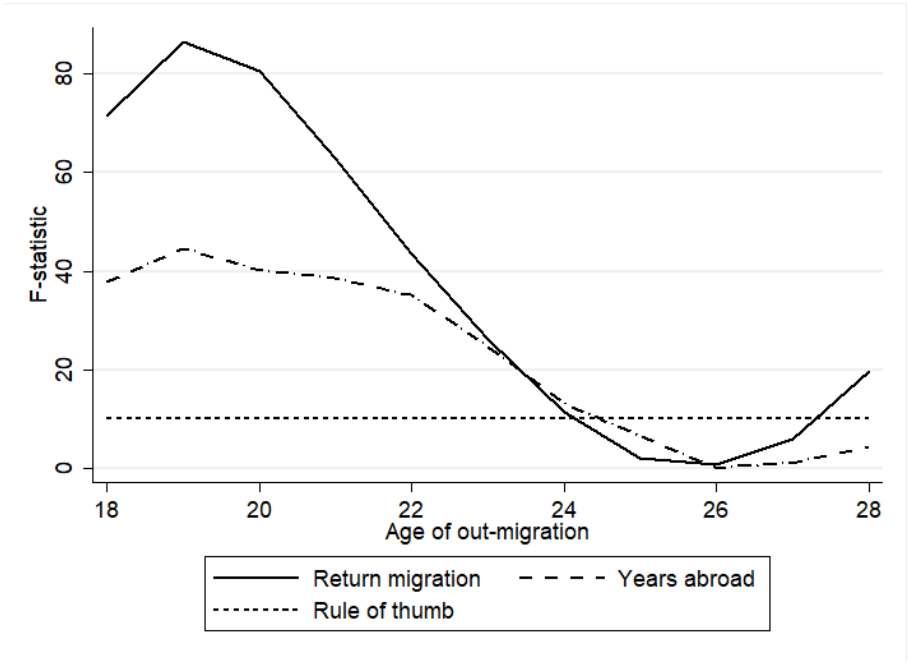

Figure 2: Share of returnees by year of birth and real oil price at age 19

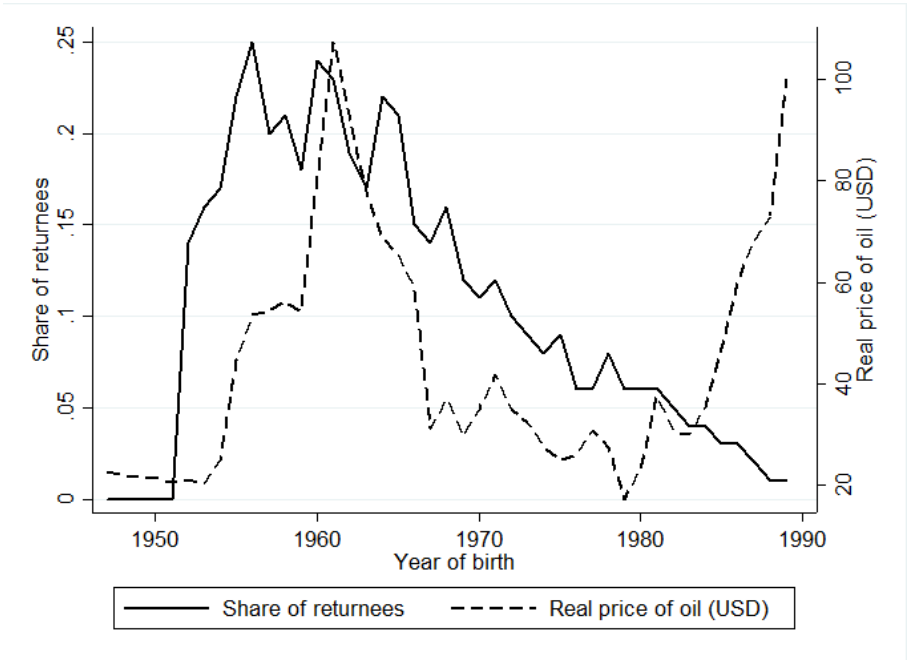

Figure 3: Average distance from governorate of birth to destination countries in kilometers

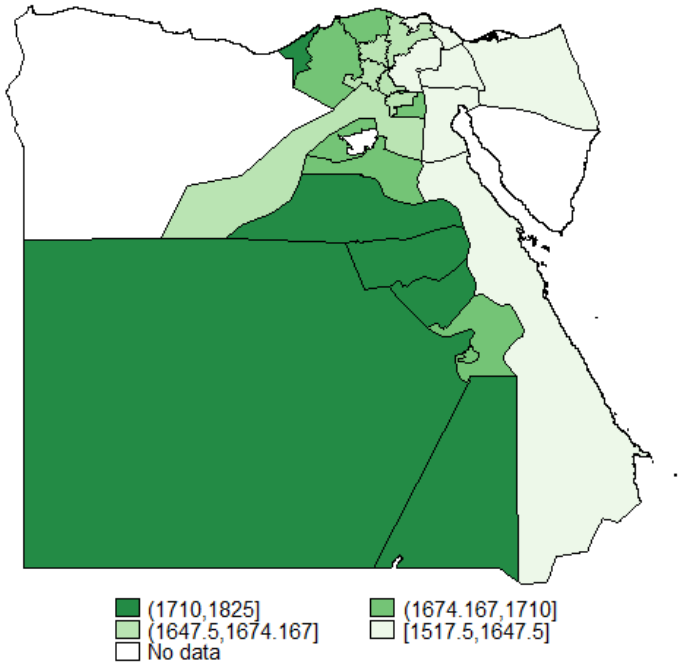

Table 1: Descriptive statistics of estimation sample

	Full sample		Employed	Self-employed		Non-migrant	Returnee	
	Mean	SD	Mean	Mean		Mean	Mean	
	(1)	(2)	(3)	(4)	(3)-(4)	(5)	(6)	(5)-(6)
Self-employed	0.228	0.420	0.000	1.000	-1.000	0.217	0.331	-0.114***
Returnee	0.097	0.296	0.084	0.141	-0.057***	0.000	1.000	-1.000
Years abroad	0.442	2.020	0.343	0.779	-0.436***	0.000	4.554	-4.554***
Occupations	1.303	0.510	1.281	1.379	-0.099***	1.273	1.584	-0.311***
Sectors	1.204	0.471	1.199	1.220	-0.021*	1.156	1.650	-0.493***
Jobs	2.034	0.877	1.983	2.205	-0.222***	1.903	3.248	-1.345***
Male	0.837	0.369	0.822	0.887	-0.065***	0.821	0.983	-0.161***
Age	38.210	10.790	37.081	42.021	-4.940***	37.581	44.057	-6.476***
Married	0.825	0.380	0.808	0.881	-0.072***	0.810	0.960	-0.149***
Illiterate	0.186	0.390	0.135	0.361	-0.226***	0.183	0.217	-0.034***
Literate (w/o diploma)	0.045	0.206	0.038	0.066	-0.028***	0.042	0.067	-0.025***
Elementary sch.	0.095	0.293	0.087	0.122	-0.035***	0.094	0.098	-0.004
Middle sch.	0.050	0.219	0.050	0.050	0.000	0.050	0.050	0.001
High sch.	0.356	0.479	0.385	0.261	0.124***	0.350	0.416	-0.066***
Post-sec., uni. and higher	0.267	0.443	0.305	0.140	0.165***	0.280	0.152	0.128***
Literate mother	0.213	0.409	0.235	0.137	0.098***	0.223	0.122	0.101***
Child dep. ratio	0.296	0.231	0.291	0.312	-0.021***	0.293	0.320	-0.026***
Vocational sch.	0.334	0.472	0.362	0.238	0.124***	0.327	0.399	-0.072***
Father self-employed	0.357	0.479	0.303	0.537	-0.234***	0.346	0.454	-0.108***
Past self-employment	0.038	0.192	0.027	0.078	-0.051***	0.032	0.095	-0.063***
First job self-employed	0.062	0.241	0.013	0.227	-0.214***	0.066	0.027	0.039***
Years of unemployment	0.688	1.962	0.768	0.415	0.353***	0.700	0.572	0.127**
Tenure	14.091	9.973	13.668	15.520	-1.852***	13.994	14.990	-0.996***
Potential years work	22.419	12.676	20.521	28.828	-8.307***	21.702	29.076	-7.374***
Savings	0.077	0.267	0.075	0.085	-0.010*	0.075	0.093	-0.017**
Urban	0.482	0.500	0.507	0.397	0.110***	0.495	0.355	0.140***
Agriculture	0.152	0.359	0.096	0.340	-0.244***	0.145	0.211	-0.066***
Mining	0.002	0.050	0.003	0.000	0.003**	0.002	0.003	-0.000
Manufacturing	0.127	0.333	0.139	0.088	0.050***	0.131	0.091	0.040***
Utilities	0.020	0.139	0.026	0.000	0.026***	0.020	0.017	0.004
Construction	0.113	0.317	0.128	0.062	0.066***	0.109	0.148	-0.038***
Trade	0.169	0.375	0.115	0.352	-0.237***	0.173	0.131	0.042***
Transport	0.089	0.284	0.091	0.080	0.011*	0.088	0.098	-0.010
Business services	0.036	0.185	0.037	0.032	0.005	0.037	0.027	0.010*
Government	0.258	0.438	0.332	0.007	0.325***	0.260	0.243	0.016
Personal services	0.035	0.184	0.034	0.038	-0.004	0.035	0.031	0.004
Extraterrit. org.	0.000	0.016	0.000	0.000	0.000	0.000	0.001	-0.001
Micro-enterprise	0.396	0.489	0.332	0.614	-0.282***	0.357	0.767	-0.410***
Oil price	44.075	21.964	44.705	41.949	2.756***	43.452	49.867	-6.415***
Distance (1,000 kms)	1.684	.038	1.684	1.686	-0.002***	1.685	1.681	0.004***
Observations	11,224		8,660	2,564		10,134	1,090	

Notes: Summary statistics of the full estimation sample for variables included in the analysis, after dropping observations with missing information. The sample consists of 16-64 year-old individuals (N=11,224). *** p<0.01, ** p<0.05, * p<0.1 indicate the statistical significance of differences in means.

Table 2: Differences in means by employment and migration status

	Self-employed			Employed		
	Non-migrant	Returnee		Non-migrant	Returnee	
	(1)	(2)	(1)-(2)	(3)	(4)	(3)-(4)
Occupations	1.350	1.562	-0.213***	1.252	1.595	-0.343***
Sectors	1.165	1.554	-0.389***	1.154	1.697	-0.543***
Jobs	2.037	3.230	-1.193***	1.866	3.257	-1.391***
Male	0.870	0.992	-0.122***	0.808	0.978	-0.170***
Age	41.532	45.006	-3.473***	36.483	43.587	-7.104***
Married	0.866	0.972	-0.107***	0.795	0.953	-0.159***
Illiterate	0.361	0.363	-0.002	0.134	0.145	-0.012
Literate (w/o diploma)	0.065	0.069	-0.004	0.036	0.066	-0.030***
Elementary sch.	0.123	0.114	0.010	0.086	0.091	-0.004
Middle sch.	0.050	0.053	-0.003	0.051	0.048	0.003
High sch.	0.253	0.305	-0.051**	0.377	0.471	-0.094***
Post-sec., uni. and higher	0.147	0.097	0.050**	0.317	0.180	0.137***
Literate mother	0.144	0.094	0.050**	0.244	0.136	0.109***
Child dep. ratio	0.310	0.325	-0.015	0.289	0.317	-0.029***
Vocational sch.	0.229	0.296	-0.068***	0.354	0.450	-0.096***
Father self-employed	0.536	0.546	-0.010	0.294	0.409	-0.115***
Past self-employment	0.062	0.175	-0.113***	0.024	0.056	-0.032***
First job self-employed	0.256	0.047	0.209***	0.013	0.016	-0.004
Years of unemployment	0.418	0.396	0.022	0.778	0.660	0.118
Tenure	15.614	14.945	0.669	13.544	15.012	-1.468***
Potential years work	28.327	31.884	-3.556***	19.862	27.686	-7.824***
Savings	0.083	0.097	-0.014	0.073	0.091	-0.017*
Urban	0.414	0.294	0.120***	0.518	0.385	0.132***
Agriculture	0.330	0.402	-0.072***	0.094	0.117	-0.023**
Mining	0.000	0.000	0.000	0.003	0.004	-0.001
Manufacturing	0.090	0.078	0.012	0.142	0.097	0.045***
Utilities	0.000	0.000	0.000	0.026	0.025	0.001
Construction	0.055	0.102	-0.047***	0.124	0.170	-0.046***
Trade	0.366	0.263	0.103***	0.119	0.066	0.053***
Transport	0.076	0.108	-0.032**	0.091	0.093	-0.002
Business services	0.034	0.022	0.011	0.037	0.029	0.009
Government	0.008	0.003	0.005	0.329	0.362	-0.033*
Personal services	0.041	0.022	0.019*	0.034	0.036	-0.002
Extraterrit. org.	0.000	0.000	0.000	0.000	0.001	-0.001
Micro-enterprise	0.569	0.892	-0.323***	0.298	0.705	-0.407***
Oil price	40.779	49.086	-8.308***	44.195	50.254	-6.059***
Distance (1,000 kms)	1.687	1.681	0.006***	1.684	1.680	0.004**
Observations	2203	361		7931	729	

Notes: Please, refer to Table 1.

Table 3: Pairwise correlations

	Self-employed	Returnee	Occupations	Sectors
Self-employed	1.0000			
Returnee	0.0803***	1.0000		
Occupations	0.0812***	0.1808***	1.0000	
Sectors	0.0183*	0.3099***	0.4848***	1.0000

Notes: Pairwise correlations. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Benchmark coefficient estimates

Variables	Self-employed	Skill set	Returnee
	(1)	(2)	(3)
Panel A: Occupational experience			
Micro-firm	0.1409***	0.4572***	
	(0.0083)	(0.0110)	
Oil price X Distance		0.0002**	0.0008***
		(0.0001)	(0.0001)
$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$		0.0941**	
		(0.0467)	
Panel B: Sectoral experience			
Micro-firm	0.1409***	0.2716***	
	(0.0095)	(0.0108)	
Oil price X Distance		0.0003***	0.0008***
		(0.0001)	(0.0001)
$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$		0.2138***	
		(0.0794)	
Covariates	Yes	Yes	Yes
Observations	10,592	10,592	10,592
F-statistics (returnee)			82.66
P-value (returnee)			0.0000

Notes: Observations are working-age individuals, excluding individuals living in a household with members currently abroad and those living in a household with members who returned from migration abroad. Governorate fixed effects are included in column (1). Column (1) presents GSEM coefficient estimates of the self-employment equation; column (2) presents GSEM coefficient estimates of the balanced skill mix (accumulated occupations and sectors in panel A and B, respectively) equation; and column (3) presents GSEM coefficient estimates of the return migration equation. See Table A3 for more details. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Robustness checks

	Occupational experience (1)	Sectoral experience (2)	F-statistic (returnee) (3)	P-value (returnee) (4)	Observations (5)
Panel A: Occupational and sectoral experience					
Years abroad	0.0158**	0.0360**	43.34	0.0000	10,592
	(0.0080)	(0.0141)			
Born before 1979	0.1510***	0.2225***	96.34	0.0000	6,434
	(0.0469)	(0.0721)			
Oil-producing countries	0.0758	0.2220***	85.35	0.0000	10,409
	(0.0464)	(0.0819)			
Non oil-producing countries	-0.2464	-1.8937	3.51	0.0611	9,685
	(0.5526)	(1.5106)			

	Job experience (1)	F-statistic (returnee) (2)	P-value (returnee) (3)	Observations (4)
Panel B: Job experience				
Self-employed	-0.0317	82.66	0.0000	10,592
	(0.0410)			

Notes: In Panel A, columns (1)-(2) present average marginal effects of return migration on the propensity to be self-employed through skill set development, $\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$, obtained from GSEM estimates (column (1) in Panel B). Column (3) presents F-statistics of the exclusion restriction of the $Returnee$ equation, the interaction between oil price at 19 years old and average migration distance; column (4), the corresponding p-values (columns (2)-(3) in Panel B). Column (5) indicates the number of observation for each set of regression (column (4) in Panel B). *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Heterogeneous effects

	Occupational experience (1)	Sectoral experience (2)	F-statistic (returnee) (3)	P-value (returnee) (4)	Observations (5)
Men	0.0980**	0.2179***	88.94	0.0000	9,046
	(0.0451)	(0.0772)			
Women	3.7080	6.0156	0.01	0.9401	1,546
	(50.9918)	(81.7619)			
Agriculture	-0.1082	0.2651	19.98	0.0000	1,587
	(0.5144)	(0.3027)			
Non agriculture	0.0517	0.1531**	62.54	0.0000	9,005
	(0.0359)	(0.0706)			
Urban	0.0403	0.1097	22.23	0.0000	5,138
	(0.0849)	(0.1542)			
Rural	0.1590**	0.2989***	65.62	0.0000	5,454
	(0.0647)	(0.0981)			
Without savings	0.1006**	0.2114***	74.02	0.0000	9,790
	(0.0470)	(0.0777)			
With savings	0.0146	0.2926	8.90	0.0029	802
	(0.2538)	(0.5771)			

Notes: Please, refer to Table 5.

Table 7: Productivity of entrepreneurial activities

	Occupational experience (1)	Sectoral experience (2)	F-statistic (returnee) (3)	P-value (returnee) (4)	Observations (5)
Log of average net earnings per month	-0.0533 (0.0991)	-0.0459 (0.1110)	27.91	0.0000	1,691
Length of current self-employment	1.8361** (0.9092)	4.1724*** (1.5380)	82.66	0.0000	10,592
Average tenure of self-employment	0.4237* (0.2189)	0.9628** (0.3782)	82.66	0.0000	10,592
Employer	0.0508 (0.0387)	0.1363** (0.0655)	66.53	0.0000	9,452
Own-account	0.0433* (0.0231)	0.1010** (0.0392)	55.39	0.0000	9,299

Notes: In the first set of row, the dependent variable is a continuous variable measuring the average net earnings per month in the past year of those self-employed (in natural logarithm plus 1). In the second set of row, the dependent variable is a continuous variable measuring the number of years of current self-employed activities; in the third, the number of years as self-employed divided by number of jobs over a maximum of four job spells; in the fourth, a binary variable taking unity if a working-age individual is an employer; and in the fifth, if s/he is an own-account worker, and 0, if employed, wage-employed or unpaid, contributing to family work. Observations are working-age individuals, excluding individuals living in a household with members currently abroad, and those living in a household with members who returned from migration abroad. The estimation sample excludes respondents who are not self-employed in the first panel.The estimation sample excludes own-account workers in the fourth, and employers in the fifth. Columns (1) and (2) present the average marginal effects of return migration on the associated row dependent variables through the accumulation of occupations and sectors, respectively. Standard errors clustered at the household level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Appendices

Figure A1: Aggregate indicators and real price of oil

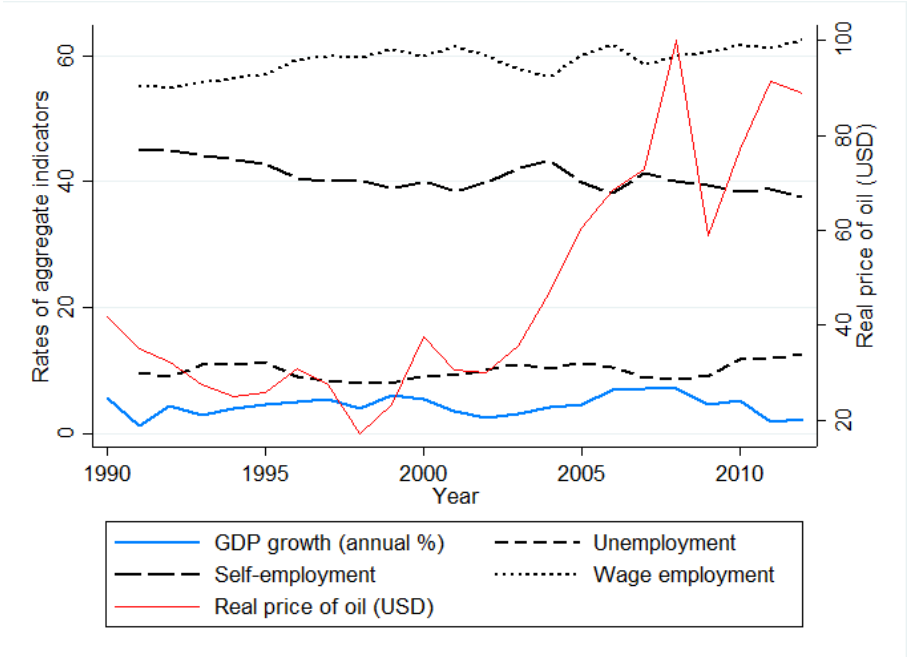

Table A1: Sensitivity to exclusion restriction definition in equation (1)

Variables	Returnee (1)	Returnee (2)	Returnee (3)
Male	0.1029***	0.1015***	0.1026***
	(0.0049)	(0.0048)	(0.0049)
Age	0.0052***	0.0054***	0.0052***
	(0.0003)	(0.0003)	(0.0003)
Literate (without diploma)	0.0323*	0.0284	0.0326*
	(0.0174)	(0.0176)	(0.0174)
Elementary school	0.0093	0.0056	0.0095
	(0.0119)	(0.0120)	(0.0119)
Middle school	-0.0013	-0.0015	-0.0010
	(0.0147)	(0.0147)	(0.0147)
High school	0.0429***	0.0424***	0.0432***
	(0.0092)	(0.0093)	(0.0092)
Post-secondary, university and higher	-0.0026	-0.0071	-0.0024
	(0.0094)	(0.0094)	(0.0094)
Literate mother	-0.0112	-0.0138**	-0.0111
	(0.0069)	(0.0069)	(0.0069)
Married	0.0344***	0.0261***	0.0344***
	(0.0065)	(0.0065)	(0.0065)
Under 15 dependency ratio	0.0580***	0.0327**	0.0569***
	(0.0148)	(0.0144)	(0.0148)
Oil price	0.0014***		
	(0.0002)		
Distance		-0.2763***	
		(0.0701)	
Oil price X Distance			0.0008***
			(0.0001)
Constant	-0.3048***	0.2308*	-0.3032***
	(0.0184)	(0.1188)	(0.0184)
Observations	10,592	10,592	10,592
R-squared	0.0689	0.0608	0.0685
F-statistic (instrument)	86.42	15.53	82.66
P-value (instrument)	0.0000	0.0001	0.0000

Notes: Please, refer to Table 4.

Table A2: Average marginal effects of oil price on the probability of return migration, holding migration distance constant at different values

		dy/dx (1)	SE (2)	t (3)	p-value (4)
Oil price (19)					
At	1.5967	0.00130	0.00014	9.09	0.000
	1.6217	0.00132	0.00014	9.09	0.000
	1.6467	0.00134	0.00015	9.09	0.000
	1.6717	0.00136	0.00015	9.09	0.000
	1.6967	0.00138	0.00015	9.09	0.000
	1.7217	0.00140	0.00015	9.09	0.000
	1.7467	0.00142	0.00016	9.09	0.000
	1.7717	0.00144	0.00016	9.09	0.000
	1.7967	0.00146	0.00016	9.09	0.000
	1.8217	0.00148	0.00016	9.09	0.000

Notes: Average marginal effects of real oil price (in USD) on the probability of return migration, holding the average migration distance (in 1,000 kms) constant at different values by increment of 25 (0.025*1,000) kms. Estimates of column (1) give the amount of change in the probability to be a return migrant with a one unit change in oil price while holding migration distance constant at different values.

Table A3: Benchmark coefficient estimates

Variables	Self-employed	Accumulated occupations	Returnee	Self-employed	Accumulated sectors	Returnee
	(1)	(2)	(3)	(4)	(5)	(6)
Father was self-employed	0.0981***			0.0981***		
	(0.0081)			(0.0081)		
Vocational high-school	-0.0162**			-0.0162**		
	(0.0072)			(0.0072)		
Past self-employment	-0.1722***			-0.1722***		
	(0.0292)			(0.0292)		
First job was self-employed	0.6862***			0.6862***		
	(0.0155)			(0.0155)		
Years of unemployment	-0.0026			-0.0026		
	(0.0018)			(0.0018)		
Tenure	-0.0018			-0.0018		
	(0.0015)			(0.0015)		
Tenure squared	-0.0001***			-0.0001***		
	(0.0000)			(0.0000)		
Years of potential work experience	0.0008			0.0008		
	(0.0016)			(0.0016)		
Years of potential work experience squared	0.0002***			0.0002***		
	(0.0000)			(0.0000)		
Micro-firm	0.1409***	0.4572***		0.1409***	0.2716***	
	(0.0095)	(0.0110)		(0.0095)	(0.0108)	
Male	0.0174**	0.1190***	0.1026***	0.0174**	0.1220***	0.1026***
	(0.0083)	(0.0089)	(0.0048)	(0.0083)	(0.0079)	(0.0048))
$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$		0.0941**			0.2138***	
		(0.0467)			(0.0794)	
Observations	10,592	10,592	10,592	10,592	10,592	10,592
Variance of errors	0.1241***	0.2035***	0.0860***	0.1241***	0.2003***	0.0860***
	(0.0020)	(0.0038)	(0.0021)	(0.0020)	(0.0051)	(0.0021)
F-statistics (returnee)			82.66			82.66
P-value (returnee)			.0000			.0000

Notes: Please, refer to Table 4.

Table A3: Benchmark coefficient estimates (continued)

Variables	Self-employed	Accumulated occupations	Returnee	Self-employed	Accumulated sectors	Returnee
	(1)	(2)	(3)	(4)	(5)	(6))
Age	-0.0038***	0.0047***	0.0052***	-0.0038***	0.0065***	0.0052***
	(0.0009)	(0.0005)	(0.0003)	(0.0009)	(0.0005)	(0.0003)
Married	-0.0157	0.0118	0.0344***	-0.0157	0.0053	0.0344***
	(0.0097)	(0.0121)	(0.0065)	(0.0097)	(0.0114)	(0.0065)
Literate mother	0.0233***	0.0141	-0.0111	0.0233***	0.0265**	-0.0111
	(0.0090)	(0.0115)	(0.0069)	(0.0090)	(0.0116)	(0.0069)
Under 15 dependency ratio	0.1241***	0.0619***	0.0569***	0.1241***	0.0729***	0.0569***
	(0.0179)	(0.0228)	(0.0148)	(0.0179)	(0.0225)	(0.0148)
Literate (without diploma)		0.1405***	0.0326*		0.1002***	0.0326*
		(0.0275)	(0.0174)		(0.0283)	(0.0174))
Elementary school		0.1294***	0.0095		0.0883***	0.0095
		(0.0191)	(0.0119)		(0.0186)	(0.0119)
Middle school		0.0973***	-0.0010		0.0705***	-0.0010
		(0.0237)	(0.0147)		(0.0229)	(0.0147)
High school		0.2038***	0.0432***		0.1592***	0.0432***
		(0.0136)	(0.0092)		(0.0134)	(0.0092)
Post-secondary, university and higher		0.1365***	-0.0024		0.1146***	-0.0024
		(0.0145)	(0.0094)		(0.0144)	(0.0094)
Oil price X Distance		0.0002**	0.0008***		0.0003***	0.0008***
		(0.0001)	(0.0001)		(0.0001)	(0.0001)
Constant	0.0840***	0.6626***	-0.3032***	0.0840***	0.5882***	-0.3032***
	(0.0254)	(0.0263)	(0.0184)	(0.0254)	(0.0270)	(0.0184)
Governorate fixed effects	Yes	No	No	Yes	No	No
$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$		0.0941**			0.2138***	
		(0.0467)			(0.0794)	
Observations	10,592	10,592	10,592	10,592	10,592	10,592
Variance of errors	0.1241***	0.2035***	0.0860***	0.1241***	0.2003***	0.0860***
	(0.0020)	(0.0038)	(0.0021)	(0.0020)	(0.0051)	(0.0021)
F-statistics (returnee)			82.66			82.66
P-value (returnee)			.0000			.0000

Notes: Please, refer to Table 4.

Table A4: Occupational transition of returnees, before and after migration (%)

		After									
		Manag	Prof	Tech	Clerk	Serv	Ag	Craft	Plant	Elem	%
Before	Manag	**76.92**	7.69	0.00	0.00	0.00	0.00	7.69	7.69	0.00	100.00
	Prof	7.46	**77.61**	5.97	1.49	1.49	0.00	2.99	1.49	1.49	100.00
	Tech	14.29	4.08	**73.47**	2.04	0.00	0.00	4.08	2.04	0.00	100.00
	Clerk	0.00	12.50	12.50	**62.50**	0.00	0.00	0.00	12.50	0.00	100.00
	Serv	14.89	6.38	12.77	2.13	**29.79**	4.26	10.64	10.64	8.51	100.00
	Ag	3.90	2.27	4.87	0.32	4.55	**59.09**	8.12	7.14	9.74	100.00
	Craft	10.20	1.18	9.41	3.14	4.71	5.10	**52.55**	9.02	4.71	100.00
	Plant	10.00	0.00	10.00	4.00	0.00	6.00	4.00	**62.00**	4.00	100.00
	Elem	6.25	18.75	0.00	0.00	6.25	0.00	18.75	31.25	**18.75**	100.00
	Obs.	73	72	91	19	42	200	174	90	52	813
	%	8.98	8.86	11.19	2.34	5.17	24.60	21.40	11.07	6.40	100.00

Notes: Entries represent correlations between returnees' occupations before migrating and upon return to Egypt. Entries are computed with information available for returnees before and after migration. Below diagonal, upward occupational mobility from before to after migration. Above diagonal, downward occupational mobitlity from before to after migration. Manag stands for managers; Prof, professionals; Tech, technicians; Clerk, clerical support; Serv, service workers; Ag, skilled agriculture; Craft, craft worker; Plant, plant and machinery; Elem, elementary occupations.

Table A5: Sectoral transition of returnees, before and after migration (%)

		After											
		Ag	Mi	Ma	Ut	Cons	Trade	Trans	Bus	Gov	Perso	Extr	%
Before	Ag	**59.35**	0.32	2.58	0.97	7.42	7.10	5.81	0.32	11.94	3.87	0.32	100.00
	Mi	0.00	**0.00**	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	Ma	3.45	0.00	**60.92**	0.00	1.15	10.34	9.20	1.15	13.79	0.00	0.00	100.00
	Ut	0.00	0.00	0.00	**66.67**	16.67	0.00	0.00	0.00	16.67	0.00	0.00	100.00
	Cons	6.70	0.56	3.91	2.23	**52.51**	11.17	8.94	1.12	10.61	2.23	0.00	100.00
	Trade	2.53	1.27	3.80	1.27	8.86	**58.23**	11.39	2.53	8.86	1.27	0.00	100.00
	Trans	5.13	0.00	5.13	0.00	10.26	5.13	**61.54**	5.13	7.69	0.00	0.00	100.00
	Bus	0.00	0.00	0.00	0.00	0.00	7.14	14.29	**50.00**	28.57	0.00	0.00	100.00
	Gov	0.00	0.00	2.27	0.00	3.41	2.27	1.14	1.14	**88.64**	1.14	0.00	100.00
	Perso	0.00	0.00	0.00	0.00	0.00	10.00	20.00	0.00	10.00	**60.00**	0.00	100.00
	Extr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	100.00
	Obs.	203	3	76	12	133	103	80	16	162	24	1	813
	%	24.97	0.37	9.35	1.48	16.36	12.67	9.84	1.97	19.93	2.95	0.12	100.00

Notes: Entries represent correlations between returnees' sectors before migrating and upon return to Egypt. Entries are computed with information available for returnees before and after migration. Ag stands for agriculture; Mi, mining; Ma, manufacturing; Ut, utilities; Cons, construction; Trade, trade; Trans, transportation; Bus, business services; Gov, government; Perso, personal services; Extr, extraterritorial organizations.

Table A6: Occupational transition of returnees self-employed at the time of the survey, before and after migration (%)

		After									
		Manag	Prof	Tech	Clerk	Serv	Ag	Craft	Plant	Elem	%
Before	Manag	**90.00**	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	100.00
	Prof	20.00	**40.00**	0.00	0.00	20.00	0.00	0.00	20.00	0.00	100.00
	Tech	71.43	0.00	**14.29**	0.00	0.00	0.00	14.29	0.00	0.00	100.00
	Clerk	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	100.00
	Serv	38.89	5.56	5.56	0.00	**16.67**	5.56	0.00	22.22	5.56	100.00
	Ag	7.69	0.70	0.00	0.00	3.50	**78.32**	1.40	6.99	1.40	100.00
	Craft	26.37	0.00	9.89	0.00	4.40	12.09	**40.66**	6.59	0.00	100.00
	Plant	20.00	0.00	6.67	0.00	0.00	20.00	6.67	**46.67**	0.00	100.00
	Elem	33.33	0.00	0.00	0.00	33.33	0.00	0.00	33.33	**0.00**	100.00
	Obs.	61	4	12	0	14	127	42	29	3	292
	%	20.89	1.37	4.11	0.00	4.79	43.49	14.38	9.93	1.03	100.00

Notes: Please, refer to Table A4.

Table A7: Sectoral transition of returnees self-employed at the time of the survey, before and after migration (%)

		After											
		Ag	Mi	Ma	Ut	Cons	Trade	Trans	Bus	Gov	Perso	Extr	%
Before	Ag	**78.47**	0.00	1.39	0.00	0.69	11.11	7.64	0.69	0.00	0.00	0.00	100.00
	Mi	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	Ma	6.45	0.00	**61.29**	0.00	0.00	22.58	9.68	0.00	0.00	0.00	0.00	100.00
	Ut	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
	Cons	17.86	0.00	0.00	0.00	**44.64**	26.79	8.93	1.79	0.00	0.00	0.00	100.00
	Trade	2.78	0.00	2.78	0.00	5.56	**72.22**	13.89	2.78	0.00	0.00	0.00	100.00
	Trans	18.18	0.00	18.18	0.00	18.18	0.00	**45.45**	0.00	0.00	0.00	0.00	100.00
	Bus	0.00	0.00	0.00	0.00	0.00	25.00	25.00	**50.00**	0.00	0.00	0.00	100.00
	Gov	0.00	0.00	25.00	0.00	0.00	50.00	0.00	0.00	**0.00**	25.00	0.00	100.00
	Perso	0.00	0.00	0.00	0.00	0.00	16.67	16.67	0.00	0.00	**66.67**	0.00	100.00
	Extr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	100.00
	Obs.	128	0	25	0	30	68	31	5	0	5	0	292
	%	43.84	0.00	8.56	0.00	10.27	23.29	10.62	1.71	0.00	1.71	0.00	100

Notes: Please, refer to Table A5.

Table A8: Distances between capitals of governorates of birth and capitals of estimation sample destination countries in kilometers

Governorates of birth		Destination countries: Iraq Baghdad	Saudi Arabia Riyadh	Libya Tripoli	Jordan Amman	Kuwait city Kuwait city	UAE Abu Dhabi	Lebanon Beirut	Qatar Doha	Algeria Algiers	Oman Muscat	Yemen Sana'a	Syria Damascus	Average distance from birth governorate
Alexandria	Alexandria	1370	1790	1590	570	1740	2510	600	2210	2540	2930	2280	650	1731.7
Aswan	Aswan	1510	1400	2160	920	1600	2170	1120	1890	3170	2590	1530	1100	1763.3
Asyut	Asyut	1430	1570	1850	700	1660	2340	860	2040	2840	2760	1880	860	1732.5
Beheira	Damanhur	1330	1740	1640	530	1690	2460	570	2160	2600	2870	2230	610	1702.5
Beni Suef	Beni Suef	1350	1620	1760	560	1640	2360	680	2060	2740	2780	2030	700	1690
Cairo	Cairo	1300	1630	1740	490	1620	2370	590	2060	2710	2780	2100	610	1666.7
Dakahlia	Mansoura	1240	1660	1730	440	1600	2370	500	2070	2680	2790	2170	530	1648.3
Damietta	Damietta	1200	1640	1760	390	1570	2340	440	2040	2700	2760	2180	480	1625
Faiyum	Faiyum	1360	1660	1720	570	1660	2390	670	2090	2710	2810	2070	700	1700.8
Gharbia	Tanta	1290	1680	1700	490	1640	2410	550	2100	2660	2820	2170	580	1674.2
Giza	Giza	1300	1640	1740	500	1620	2370	590	2070	2710	2790	2100	620	1670.8
Ismailia	Ismailia	1180	1560	1830	380	1520	2280	480	1980	2770	2690	2090	500	1605
Kafr El Sheikh	Kafr El Sheikh	1280	1710	1680	480	1650	2410	530	2110	2640	2840	2200	570	1675
Luxor	Luxor	1420	1410	2050	770	1570	2190	950	1900	3050	2610	1660	940	1710
Matruh	Marsa Matruh	1620	2050	1340	820	2000	2770	820	2470	2300	3180	2470	880	-
Minya	Minya	1420	1630	1770	660	1680	2380	790	2090	2760	2810	1970	800	1730
Monufia	Shibin El Kom	1290	1670	1700	490	1640	2400	560	2100	2664	2810	2160	590	1672.8
New Valley	Kharga	1600	1630	1880	890	1770	2400	1050	2100	2890	2820	1810	1050	1824.2
North Sinai	Arish	1020	1460	1950	220	1370	2150	350	1850	2890	2560	2040	350	1517.5
Port Said	Port Said	1160	1590	1810	350	1520	2290	420	1990	2750	2710	2150	450	1599.2
Qalyubia	Banha	1280	1650	1730	480	1620	2380	560	2080	2690	2790	2140	590	1665.8
Qena	Qena	1380	1410	2030	720	1540	2180	900	1890	3030	2600	1690	890	1688.3
Red Sea	Hurghada	1220	1320	2080	560	1410	2080	750	1780	3070	2510	1700	730	1600.8
Sharqia	Zagazig	1250	1630	1750	450	1590	2350	530	2050	2710	2770	2130	560	1647.5
Sohag	Sohag	1430	1510	1920	730	1630	2280	890	1990	2920	2710	1800	890	1725
South Sinai	El Tor	1170	1360	2020	470	1400	2110	650	1810	3000	2530	1790	640	-
Suez	Suez	1180	1510	1870	390	1490	2240	520	1940	2830	530	2010	2650	1596.7

Notes: A cell should be read as the distance in kilometers between the capital of a respondent's governorate of birth and the capital of one of the 12 estimation sample destination countries. The second and third columns list Egyptian governorates and their respective capitals. Columns (4)-(15) present distances from each birth governorate capital to each destination country capital. The last column presents average migration distances from each birth governorate capital to estimation sample destination country capitals. Distances were measured using Google Maps.