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Is there a 'Jack-of-all-trades' effect?
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Occupational choice of return migrants: Is there a ‘jack-of-all-trades’ effect?

Clotilde Mahé*

Abstract

Although it has been found that return migrants are more likely to be self-employed than non-migrants, the role of migration episodes *per se* remains unclear. With reference to Lazear’s Jack-of-all-Trades Hypothesis, this paper examines whether migrants are more likely to choose self-employment upon return because of the diverse work experience they gained abroad. Using the 2012 Egypt Labor Market Panel Survey, seemingly unrelated regression model estimates show that return migrants’ greater propensity to be and to survive as self-employed might proceed from participating in significantly more occupations, sectors and jobs over their work history than non-migrants. Results hold for non-agricultural activities, rural areas, and controlling for financial resources. In line with Lazear’s framework, they confirm that entrepreneurship can be learnt, and that exposure to multiple occupations and industries matters for entering into and persisting in self-employment.

JEL classifications: F22, J24, L26, O12, O15

Keywords: International migration, Return migration,
Entrepreneurship, Human capital,
North Africa, Egypt

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1 Introduction

Return migrants have been found to have a higher propensity to be self-employed and to survive as entrepreneurs than non-migrants (Marchetta, 2012; Wahba and Zenou, 2012; Wahba, 2015; Batista et al., 2017). Apart from the opportunity provided by migration to accumulate wealth, a possible explanation for these findings is that moving, living abroad or returning ‘home’ could impart a variety of skills needed in entrepreneurship. Entering into and persisting in self-employment involve a variety of tasks that demand multiple skills, such as tolerance for risk, persistence, planning, budgeting and communicating across cultures – being successful requires entrepreneurs to be multi-skilled. ‘Entrepreneurial human capital’ or ‘entrepreneurial ability’ has been recognised as an essential, if often elusive, determinant of entrepreneurship (Hessels et al., 2014). However, there is no consensus on whether one is born with innate entrepreneurial ability or whether entrepreneurial ability can be taught (Silva, 2007).

According to Lazear (2005), entrepreneurial ability can be learnt, not only through education but also by experience. Entrepreneurs need a generalist, well-balanced skill mix profile: they need to be Jacks-of-all-trades, i.e. 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. A growing literature has examined Lazear’s (2005) Jack-of-all-Trades (JAT) Hypothesis.¹ This paper contributes to this literature by investigating whether migration is a process that can affect the likelihood of returnees becoming entrepreneurs; and if so, whether this is due to a migration-induced jack-of-all-trades effect on skill set balance. That migrating plays a role in forming entrepreneurial ability could be informative for entrepreneurship support policies.

This research uses the 2012 Egypt Labor Market Panel Survey (ELMPS) (ERF and CAPMAS, 2013). Offering quality data, Egypt provides a good example. Micro and small enterprises (MSEs) constitute 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). In light of the high incidence of youth unemployment,² MSEs could offer socially and economically excluded youth better living standards.³ Simultaneously, a survival strategy to escape poor social and economic development (Zohry, 2009), international emigration from Egypt is mainly a function of overseas labour demand. It is also strongly affected by the economic and political conditions of labour-importing countries (Wahba, 2009). Largely dominated by men, migration from Egypt to Middle Eastern and North African (MENA) countries is in nature.

Empirical research on return migration and entrepreneurship in Egypt has mainly used the ELMPS to look at occupational choice upon return. Overseas savings and the acquisition of skills during a stay abroad have been shown to increase the propensity to become self-employed upon return by compensating for their potential loss of social capital (Wahba and Zenou, 2012). Marchetta (2012) finds that being a return migrant significantly increases the prospect of survival of entrepreneurial activities in Egypt. However, the role of migration as a learning experience remains unclear. Being self-employed upon return could occur due to migration-induced wealth effects – remittances and repatriated savings – or to the development of a balanced skill set, a migration-induced jack-of-all-trades effect.

¹ For a recent review, see Hessels et al. (2014).

² In 2008, they represented around 95% of Egypt’s unemployed. Previous governmental strategies for youth job creation in the public sector have proven unsustainable (Ghanem, 2013).

³ In 2008, 72% of new entrants into the labour market with secondary education found themselves working in the informal MSE sector, often as unpaid family workers (Ghanem, 2013).

Reduced-form estimates of a seemingly unrelated regression (SUR) model show that having migrated increases the propensity to be self-employed upon return to Egypt. The more occupations (11.91% points), sectors (26.62) and jobs (5.15) return migrants were exposed to over their work history, the more likely they are to be self-employed. Results hold for non-agricultural sectors, individuals living in rural areas, and individuals without savings. Return migrants are also more likely to persist as self-employed, because of a more varied work experience.

I provide additional evidence to the current debate on the development impacts of (return) migration on communities of origin by showing that not only migration-induced wealth effects, but also the work experience gained abroad as such can affect migrants' occupational choice upon return. This evidence is robust to the endogeneity of migration, human capital strategy investment and occupational choice. I furthermore contribute to the scarce literature on empirically testing Lazear's (2005) Jack-of-all-Trades Hypothesis in developing economies where international migration is a prevalent labour market alternative. Since self-employed in those situations evolve in underdeveloped, ill-functioning market-supporting institutions, they should be much more generalistic to be able to handle almost all dimensions of business management (Chen and Hu, 2012). By unpacking migration as a learning process, this paper is eventually in line with Lazear's (2005) framework, as it confirms that entrepreneurship can be learnt, and that learning-by-doing and experiential learning matter in entering into and persisting in self-employment (Hessels et al., 2014). Entrepreneurship (education) support policies should thus focus on widening the work experience of potential, fledging entrepreneurs. Broader labour market policies should allow for flexible transitions between self- and wage employment.

The rest of this paper is structured as follows. Section 2 provides an overview of the relevant literature. Section 3 introduces the estimation strategy, followed by the data in section 4. Section 5 presents estimation results. Section 6 concludes.

2 Conceptual background

In the absence or inefficiency of markets, savings accumulated during migration (and remittances) could act as substitutes for formal insurance, by facilitating access to capital and widening opportunities for income generation. They also promote investments in new or existing ventures and enhance their productivity.⁴ Simultaneously, by moving abroad, emigrants are likely to weaken social ties with origin countries – a loss of social capital that may threaten any entrepreneurial activity upon return. Alternatively, it could enhance their employability as wage-employed upon return, which could lower returnees' will to initiate business activities (Wahba and Zenou, 2012).⁵

The human capital channel is relatively complex. Evidence is mixed with respect to higher education. For example, Gibson et al. (2013) conclude from micro-economic evidence of five islands that, although return migration of the highly skilled is common, their involvement

⁴ See for instance Dustmann and Kirchkamp (2002) or Mesnard (2004), who evidenced the endogeneity of time abroad and business start-up upon return.

⁵ If Wahba and Zenou (2012) find that a loss in social capital during migration can be offset by gains in financial and human capitals for returnees to successfully set their businesses in place in homeland Egypt, Obukhova et al. (2012) show that returnee entrepreneurs to China do not outperform non-migrant, 'homegrown' entrepreneurs. Because of a lack of 'local' social networks – in this case, school ties – where high-tech enterprises are set in place, returnees are likely to underperform compared to non-migrant entrepreneurs or returnees entrepreneurs with such ties.

in entrepreneurial activities once back to origin countries is seldom, in contrast with McCormick and Wahba's (2001) findings. By inducing greater job turnover, migrating could affect returnees' mindsets, e.g. their propensity to take risks, be it in taking a new job or setting up a firm, as well as in their capabilities – their skills and know-how. Occupation, integration processes in destination country and country choice might interact in the decision to set up a business upon return.⁶

On the other hand, entrepreneurs might need a different skill profile than employees do. Instead of being 'specialists', entrepreneurs require a relatively balanced, varied set of skills – knowledge of financing, accounting, production processes, marketing and management. Entrepreneurs may not be expert in all these fields, but they need some notion of each of them, in particular if they are to hire experts for each role (Lazear and Gibbs, 2010). Lazear's (2005) Jack-of-all-Trades Hypothesis of entrepreneurship builds a framework in which an individual, who can have two skills such as product design and marketing, has the choice between having a wage-employed specialised job or becoming an entrepreneur. If an employee specialises in his or her best skill, an entrepreneur needs certain knowledge of both skills to carry out each task, or to supervise the others – the specialists – who perform them. An entrepreneur values his skills based on the level of each skill he possesses. His skill set is limited by his weakest skill. In other words, the more a potential entrepreneur is specialised (in one skill), the more he will be tied by his weakest skill. Maximizing his income is therefore limited by his knowledge level in his weakest skill.

As a consequence, the less balanced someone's skill set is – the more expert s/he is – the less likely s/he will opt for self-employment. Balanced skills are key for entrepreneurship. This is particularly the case in developing economies. In a context of highly imperfect markets, (would-be) entrepreneurs have to tackle a number of challenges that may not be as prominent in developed economies, rendering the need for well-balanced skills even more important (Chen and Hu, 2012). This suggests that potential entrepreneurs would give more value to a balanced investment in human capital, privileging investments in their weakest skill, in order to become less specialised. This prediction of the JAT hypothesis can be tested by looking at human capital investment patterns of self-employed and employed. Entrepreneurs should have a more generalistic rather than specialised attitude to human capital – they should tend to invest in various skills at once.

Using a 1997 survey of about 5,000 Stanford MBA alumni, Lazear (2005) finds that entrepreneurs' past experience included a broader variety of activities and a greater number of jobs. They attended less specialised courses that deepened their knowledge compared to more specialised classmates who became wage-employed. Subsequent empirical research has supported (to some extent) and refined his findings, accounting for Silva's (2007) concern about endogeneity.⁷ Astebro and Thompson (2011) use Canadian data to show that inventor-entrepreneurs tend to have more diverse experience on the labour market. Yet, they find varied work experience to be correlated with lower household income, contradicting the JAT prediction. Testing this theory with German data, Lechmann and Schnabel (2014) find that self-employed carry out more tasks, and that their work necessitates more skills, than wage-employed. However, self-employed are also found to want more expert skills as such; their results provide weak support for different human capital investment patterns between self- and wage-employed. Using data from Germany and the Netherlands, Hessels et al. (2014) show that those

⁶ Work experience abroad in a high-income economy, for instance, could explain returnees' propensity for self-employment, as suggested by McCormick and Wahba (2001) for Egypt, Kilic et al. (2009) for Albania, or Gubert and Nordman (2011) for Algeria.

⁷ Silva (2007) shows that individuals' unobservable characteristics such as innate abilities may simultaneously influence individuals' skills and occupational choice.

with more varied work experience are more likely to be self-employed, but being a generalist does not seem to be relevant. Constructing a measure of balance in abilities with military enlistment data from Sweden, Alden et al. (2017) find support for the Jack-of-All-Trades Hypothesis in showing that the probability of being self-employed is higher when skills are balanced.

In this regard, migration could be seen as a process that helps shape entrepreneurial spirit. Moving, living abroad or returning ‘home’ could induce building persistence, acquiring planning and financing skills, or communicating across cultures. By changing jobs in an alien environment, temporary migration could affect the propensity to take risks and the accumulation of occupation- and sector-specific skills – experiences that potentially contribute to a more balanced skill mix, i.e. beneficial for entrepreneurial activities. Acting as a learning process, migration experience could contribute to forging the entrepreneur. Upon return to their home country, migrants would differ from stayers in their propensity and attitudes towards self-employment, entrepreneurial abilities and business characteristics. Studying the behaviour of return migrants could thus be an insightful test of Lazear’s (2005) hypothesis. Chen and Hu (2012), investigating Lazear’s (2005) JAT hypothesis in a migration setting, show in particular that the variety of skills – how ‘balanced’ their skill mix is, measured by the number of professional fields and accumulated skills⁸ – accumulated during migration to urban areas significantly increases returnees’ likelihood to opt for self-employment upon return. Démurger and Xu (2011) confirm this hypothesis. Return migrants are found to be more likely to engage in entrepreneurial activities upon return to origin rural areas than stayers. This probability is increased by savings accumulated and professional experience gained during migration – in this case, migrants’ job turnover.

However, resource accumulation abroad may however be influenced by the perception of profitable investment opportunities in origin communities, reflected for instance in pre-existing business ownership in the migrants’ household. Alternatively, family assets may attract returnees’ investments, given the prospect of inheritance of these assets (Amuedo-Dorantes and Pozo, 2006). Once an investment target is reached, decision to return can be made. Resources gathered during migration might then lead to business investments, but it could also be that existing businesses at home reveal greater investment opportunities. In addition, along with future claims for bequest, existing businesses could act as incentives to invest – hence, potential reverse causality. Similarly, those 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 (Chen and Hu, 2012).

Gaps in the existing literature, in particular regarding how temporary migration affects occupational choice upon return, thus remain to be filled. Despite a few works, such as Chen and Hu (2012), Démurger and Xu (2011) or Black and Castaldo (2009), the relative importance of the abilities gained during migration compared to remittances and repatriated savings – whether it is ‘wealth’ rather than ‘skills’ that are affected by migration – is not yet clear. Migrating, by inducing greater job turnover could indeed affect returnees’ mindsets, e.g. their propensity to take risks, be it in taking a new job or setting up a firm, as well as abilities – their skills and know-how, that is their work experience itself – whereby influencing their skill mix.

⁸ Chen and Hu (2012) measure the accumulation of skills by ranging skills from no skill, non-managerial skill only, managerial skill only, and managerial and non-managerial skills.

3 Estimation strategy

A major analytical issue in analysing the relationship between migration and self-employment is the endogeneity of temporary migration. First, migrating is subject to both negative and positive selection biases due to unobservable features that are likely to affect occupational choice and business performance upon return (Marchetta, 2012). Those who emigrate and return may do so because they are more endowed, i.e. have more balanced skills before departure, than non-migrants. If this is the case, empirical results comparing performance would be biased. On the other hand, dynamics between return migration and entrepreneurship may also be biased if returnees are innately more risk-taking, and so initiate riskier business strategies, or if returnees opt for self-employment due to lack of social capital or greater wage employment opportunities upon return. Emigrating itself could also be driven by the desire to set up an enterprise upon return. They could be simultaneous decisions, and temporary migration could be part of would-be entrepreneurs' business strategies (Wahba and Zenou, 2012; Batista et al., 2017).

The relationship between skill mix balance and occupational choice might similarly be biased by endogeneity. Unobservable characteristics might affect human capital investment strategy and occupation at the same time (self-selection). How (un)balanced one's skill set is might be a conscious effort to reach a well-defined position (reverse causality).

To tackle endogeneity in assessing the effect of migration experience on entrepreneurship through the human capital channel, a seemingly unrelated regression (SUR) linear probability model is used, 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.⁹ Ignoring the interdependence in temporary migration, skill mix balance and occupational choice upon return, interdependence, when actually present,¹⁰ could lead to biased estimates. Exclusion restrictions play the role of instrumental variables.

Our main model specification is the following:

$$Returnee_i = \delta_{10} + \delta_{11}X_{Ri} + \delta_{12}Z_{Ri} + \epsilon_{1i} \quad (1)$$

$$SkillSet_{ij} = \alpha_{20} + \alpha_{21}X_{SSi} + \alpha_{22}Z_{SSi} + \alpha_{23}Returnee_i + \epsilon_{2i} \quad (2)$$

$$SelfEmployed_i = \gamma_{30} + \gamma_{31}X_{SEi} + \gamma_{32}Z_{SEi} + \gamma_{33}SkillsSet_{ij} + \epsilon_{3i} \quad (3)$$

where *Returnee* is alternatively a binary variable, taking unity if a working-age individual *i* has worked at least six months abroad, and a continuous variable of years abroad. *SkillSet* is a continuous variable, with $j = 1, 2, 3$, alternatively measuring the number of different occupations or industries accumulated over the last four job spells, or the number of positions over the entire job history. *SelfEmployed* is a binary variable taking unity if an individual is currently self-employed.

⁹ Correlated disturbances assume that corresponding endogenous variables share at least one common omitted explanatory variable.

¹⁰ I.e. estimating this system of equations as single equations, in their structural rather than reduced form.

X_R is a vector of individual and household characteristics capturing gender, marital status, education, whether an individual’s mother is literate,¹¹ and child dependency ratio. X_{SS} controls for the same variables as X_R . X_{SE} controls for gender, household characteristics and lagged unemployment rates at the governorate level.

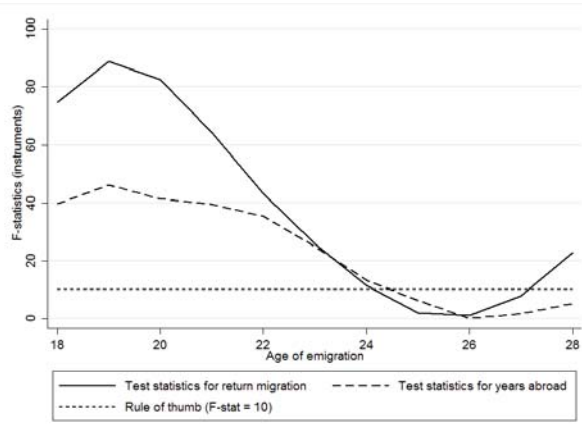
Z_R , exclusion restriction for equation (1), is the interaction between (i) the real price of oil at some age of emigration and (ii) the average distance to estimation sample destination countries in 1,000 kilometers. As in Wahba and Zenou (2012), Marchetta (2012) or Bertoli and Marchetta (2015), changes in the real price of oil are used to obtain an exogenous source of variation in the probability of temporary migration. Inflation-adjusted prices of oil are assumed to drive the demand for non-native labour either directly in oil-producing countries – through employer-based immigration policies – responsive to change in local economic conditions 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 emigration should influence the decision to migrate, but should not be directly related to current – observed – occupational choice upon return. In addition, because migration to MENA countries tends to be temporary, predicting emigration should suffice to instrument for return migration. 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.

The selection of the age, i.e. year of potential emigration, at which an individual is matched to the real price of oil draws on Bertoli and Marchetta (2015). To do so, equation (1) is estimated, and the strength of this instrument is 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, implemented by Stata’s *test* command, for each alternative. As Cameron and Trivedi (2009, p.196) note that ‘a widely used rule of thumb [...] views an F-statistic of less than 10 as indicating weak instruments. This rule of thumb is ad hoc and may not be sufficiently conservative [...]’, the age of potential emigration giving the highest F-statistic is selected.

Figure 1 depicts the values of the F-statistics for equation (1), with being a return migrant and the number of years abroad as alternative dependent variables, at each age, as well as the 10 F-statistic rule of thumb. The F-statistic is the highest for age 19 for the two dependent variables – being a return migrant, or the number of years spent working abroad – 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 (2016). The real price of oil is thus opted for when individuals were 19 as an instrument for temporary 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.

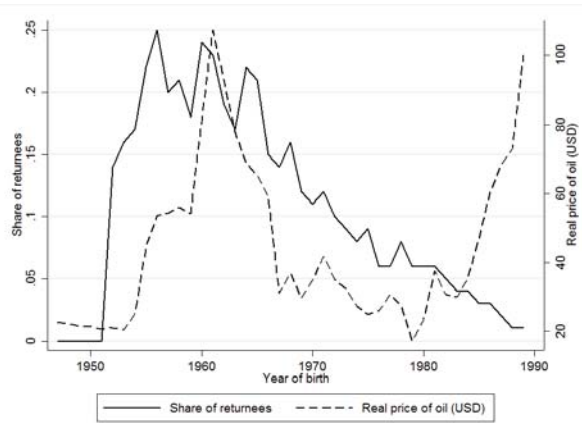
¹¹ Mother’s education proxies potential inequalities of opportunities that individuals might face based on their family background (Paxson and Schady, 2004; Paxson and Schady, 2007; *in* Atinc et al., 2005).

Figure 1: First stage test statistics (F-stats) for the real oil price at different ages



Following Bertoli and Marchetta (2015), Figure 2 shows the relationship between the share of returnees of the estimation sample, 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 emigrated following the sharp increases in oil prices in the 1970s and 1980s. The proportion of returnees then falls, until the end of the series, 1989.¹² 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 onwards, who emigrated 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 the pool of Egyptians who left in the 2000s well, which could induce bias – hence their exclusion from the estimation sample.

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



This cohort-based instrument is interacted with the average distance from the capital of a respondent’s governorate of birth¹³ to estimation sample destination country capitals in 1,000 kilometers.¹⁴ Table A6 in the Appendix provides information on the construction of distances. Migrants are likely to migrate where it is cheaper because of geographical proximity, that is to

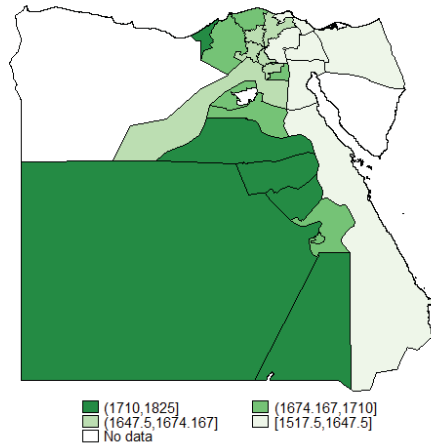
¹²No return migrants born in 1990 or later were surveyed. The estimation sample thus only includes individuals with no missing information, who were born in 1989 or before.

¹³First level of Egypt’s administrative subdivision.

¹⁴Respondents who were not born in Egypt were assigned an average distance based on their first governorate of residence in Egypt.

countries closer to Egypt.¹⁵ Figure 3 presents the average distance to potential destination country capitals by governorate of birth in 1,000 kilometers. The effect of oil prices on the probability to temporarily emigrate is thus allowed to differ across governorates through governorate (spatial) 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: Average distance from governorate of birth to potential destination countries in 1,000 kilometers



Z_{SS} , exclusion restriction for equation (2), is a binary variable taking unity if an individual worked in a micro-firm over his/her last four job spells, assumed to influence occupational choice only through the accumulation of entrepreneurial skills or abilities. The potential endogeneity between skill mix balance and occupational choice is tackled by using work experience in a micro-firm over workers' last four job spells as exclusion restriction, as it is assumed to influence occupational choice only through the accumulation of entrepreneurial skills or abilities. Micro- and small firms tend to lack complex hierarchical structures, and are less likely to be highly specialised work places where working conditions give employees the opportunity to perform a variety of tasks (Stuetzer et al., 2013). Performing various tasks might then develop balanced skills via learning-by-doing (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%).

Z_{SE} , in equation (3), is a vector of variables thought to influence occupational choice 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.¹⁶

As Z_R , Z_{BS} and Z_{SE} are unique to each structural equation, the above model can be solved, and its structural parameters uniquely identified. These three structural model equations can be rewritten as three reduced form equations in the endogenous variables *Returnee*, *SkillsSet* and *SelfEmployed*, so that each of these variables will depend on the exogenous variables in the entire system as well as the structural errors. The reduced form is estimated via a generalized simultaneous equations model (GSEM) estimator, adding governorate fixed-effects, and excluding individuals living in a household with current or return migrants. Standard errors

¹⁵The average distance is also weighted by the share, and its inverse, of migrants by destination countries. This yields similar estimates. Estimates are available on request.

¹⁶Labour force-related information is measured over the last four job spells available in Module 6 of the ELMPS.

are clustered at the household level to account for potential correlation within families.

$$Returnee = f(., Z_R, \delta) \quad (4)$$

$$SkillSet = f(., Z_{SS}, \alpha; Z_R, \beta) \quad (5)$$

$$SelfEmployed = f(., Z_{SS}, \gamma) \quad (6)$$

By estimating the relationship between having a balanced skill set and being a returnee, controlling for the endogeneity of return migration, i.e. the change in the probability of having a balanced skill set in an exogenous change in being a return migrant, the marginal effect of balanced skills over return migration is obtained:

$$\frac{\partial SkillSet}{\partial Returnee} = \frac{\beta}{\delta} \quad (7)$$

The marginal effect of self-employment over balanced skills, controlling for the endogeneity of a balanced skill mix, i.e. the change in the probability of being self-employed in an exogenous change in having a balanced skill set, is obtained by estimating the relationship between being self-employed and having a balanced skill set:

$$\frac{\partial SelfEmployed}{\partial SkillsSet} = \frac{\gamma}{\alpha} \quad (8)$$

Migration-induced jack-of-all-trades effects on self-employment, i.e. the change in the probability of being self-employed in an exogenous change in being a return migrant, are given by the marginal effect of self-employment over return migration through skill set accumulation, computed by multiplying these two marginal effects:

$$\frac{\partial SelfEmployed}{\partial Returnee} = \frac{\partial SelfEmployed}{\partial SkillSet} \cdot \frac{\partial SkillSet}{\partial Returnee} = \frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta} \quad (9)$$

4 Data

4.1 Data source

This paper uses a longitudinal and nationally representative household survey, the ELMPS, administrated since 1998 by the Economic Research Forum in cooperation with the Central Agency for Public Mobilization and Statistics. The ELMPS is made up of four cross-sections – 1988, 1998, 2006 and 2012 – the last three constituting a three-round panel. This paper uses its last wave as a cross-section since, some variables only collected in its last wave are used. The 2012 round covers 12,060 households and 49,186 individuals, tracking households and individuals

surveyed in 2006, plus a refresher sample of people interviewed in 1998. More details on data collection are available in Assaad and Kraft (2013). The ELMPS contains information on a variety of topics. Modules on labour market outcomes (4-6), residential mobility (3), current (12) and return (international) migration (10)¹⁷ are of particular interest.

4.2 Descriptive statistics

Egypt has been a labour exporter since the 1970s economic reforms and opening of the country. It is the biggest labour exporter of the MENA region (Wahba, 2014). Two main trends have characterized Egyptian emigration: (i) relatively 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 labour-importing MENA countries, in particular the oil-producing Gulf States, Libya and Iraq because of labour shortages. 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. Although the majority is still heading to MENA States, around 30% of Egyptian migrants were residing in OECD countries in 2000 (Wahba, 2009). 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 labour-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.

The estimation sample includes individuals born before 1990, as no return migrants are reported for individuals born after 1990. This is to avoid potential bias in the use of this estimation strategy. The sample excludes individuals who changed jobs after the January 2011 Uprising. It 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 to focus better on the effects induced by temporary migration since (i) Egyptians emigrating to Western countries tend to stay permanently, and (ii) the majority of Egyptians emigrates to MENA countries. Table 1 presents estimation sample descriptive statistics.

¹⁷This paper uses this newly added module on return migration that surveys individuals between 15 and 59 years old, who worked abroad for at least six months, to classify individuals as return migrants.

Table 1: Descriptive statistics of estimation sample

	Full sample		By status		By migration		Self-employed	
	Mean	SD	Empl. Mean	Self. Mean	Stay. Mean	Retu. Mean	Stay. Mean	Retu. Mean
Self-employed	.228	.420	.000	1.00	.217	.331	1.00	1.00
Returnee	.097	.296	.084	.141	.000	1.000	.000	1.000
Years abroad	.442	2.02	.343	.779	.000	4.55	.000	5.53
Occupations	1.30	.510	1.28	1.38	1.27	1.58	1.35	1.56
Sectors	1.20	.471	1.20	1.22	1.16	1.65	1.17	1.55
Jobs	2.03	.877	1.98	2.21	1.90	3.25	2.04	3.23
Male	.837	.369	.822	.887	.821	.983	.870	.992
Age	38.2	10.8	37.1	42.0	37.6	44.1	41.5	45.0
Married	.825	.380	.808	.881	.810	.960	.866	.972
Illiterate	.187	.390	.135	.361	.183	.217	.361	.363
Literate (w/o diploma)	.045	.206	.038	.066	.042	.067	.065	.069
Elementary sch.	.095	.293	.087	.122	.094	.098	.124	.114
Middle sch.	.050	.219	.050	.050	.050	.050	.050	.053
High sch.	.356	.479	.385	.261	.350	.416	.253	.305
Post-sec., uni. and higher	.268	.443	.305	.140	.280	.152	.147	.097
Literate mother	.213	.409	.235	.137	.223	.122	.144	.094
Child dep. ratio	.296	.231	.291	.312	.293	.320	.310	.325
Vocational sch.	.334	.472	.362	.238	.327	.399	.229	.296
Father self-employed	.357	.479	.303	.537	.346	.454	.536	.546
Past self-employment	.039	.192	.027	.078	.032	.095	.062	.175
First job self-employed	.062	.241	.013	.227	.066	.027	.257	.047
Years of unemployment	.688	1.962	.768	.415	.700	.573	.418	.396
Tenure	14.1	9.97	13.7	15.5	14.0	15.0	15.6	14.9
Potential years work	22.4	12.7	20.5	28.8	21.7	29.1	28.3	31.9
Savings	.077	.267	.075	.085	.075	.093	.083	.097
Agriculture	.152	.359	.096	.340	.145	.211	.33	.402
Mining	.003	.050	.003	.000	.003	.003	.001	.000
Manufacturing	.127	.333	.139	.089	.131	.091	.090	.078
Utilities	.020	.139	.026	.000	.020	.017	.000	.000
Construction	.113	.317	.128	.062	.109	.148	.055	.103
Trade	.169	.375	.115	.352	.173	.131	.366	.263
Transport	.089	.284	.091	.080	.089	.098	.076	.108
Business services	.036	.185	.037	.032	.037	.027	.034	.022
Government	.258	.438	.332	.007	.260	.243	.008	.003
Personal services	.035	.184	.034	.038	.035	.031	.041	.022
Extraterrit. org.	.000	.016	.000	.001	.000	.090	.000	.000
2007 unemployment	.090	.030	.092	.082	.091	.089	.086	.087
Micro-enterprise	.397	.489	.332	.614	.357	.767	.569	.892
Oil price	44.1	22.0	44.7	41.9	43.5	49.9	40.8	49.1
Distance	1.684	.0379	1.684	1.686	1.685	1.681	1.687	1.681
N	11,224		8,660	2,565	10,134	1,090	2,203	361

Notes: Summary statistics for variables included in the analysis, after dropping observations with missing information, for the full sample, broken down by occupation and by migration experience as well as limited to self-employed individuals by migration. The sample consists of 16-64 year-old individuals (N=11,224). Means between treated (self-employed, returnees and self-employed returnees) and control groups (respectively employees, stayers and self-employed stayers) statistically significantly different at the 10% significance level are in bold.

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. Out of 11,224 observations, 22.84% are self-employed. Three measures of a balanced skill profile are alternatively used:

- (i) Accumulated occupations, a continuous variable capturing the *number of occupational skills* 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 workers;¹⁸
- (ii) Accumulated industries, a continuous variable representing the *number of industries* (or sectors) an individual has worked in over the four last spells of his job history;¹⁹ and
- (iii) Accumulated jobs, a continuous variable recording the *number of jobs* an individual has had over his entire job history.

These three measures of skill mix balance are not aggregated as each one may capture different dynamics. For instance, if accumulating occupational skills is likely to increase the degree of balance and how generalistic an individual is, working in various industries may be correlated with a specialised skill profile. Only those with specialist occupational skills, either low- or high-skilled, would be able to work in different sectors, keeping the same occupation. Job accumulation – job turnover – in contrast, may affect the degree of risk aversion that plays a part in changing jobs. Individuals in the full estimation sample seem to have a relatively low degree of skill mix balance. They have accumulated, on average, 1.30 occupations, and worked in 1.20 sectors over their last four job spells. They have had 2.03 jobs on average over their entire job history.²⁰

Table 1 reveals notable differences between self-employed and employees. On average, those self-employed are more likely to be men, married, older and less educated than individuals working as employees. They are more likely to come from a poorer family and to have a father who was also self-employed at the time of their fifteenth birthday. They tend to have been self-employed in the past (including their first job), to have worked in a micro-enterprise, and to have experienced fewer years of unemployment than employees. Self-employed also tend to work relatively more in agriculture and in trade and employees as public servants. Figure 4 shows that those self-employed have accumulated significantly more occupational skills (1.38), sectors (1.22) and jobs (2.20), compared to employees (respectively 1.28, 1.99 and 1.9).

Being a return migrant is defined as a binary variable, taking 1 if an individual has emigrated at 15 or older for work for at least six months, and returned to Egypt at the time of the survey; otherwise, 0. About 10% of the estimation sample are return migrants who, on average, spent 4.55 years abroad. Those self-employed are more likely to have migrated than employees. Return migrants are significantly more often men, older, and less educated than stayers. They come from poorer households with a greater number of dependents. They are more likely to have had vocational training and self-employed father, and to have been self-employed in the past. They tend to work relatively more in agriculture and construction. Returnees show a higher rate of self-employment: 33.12 compared to 21.74% of stayers, the rest being wage-employed.

¹⁸ Following the International Standard Classification of Occupations (ISCO-88), occupations are classified in terms of skill level and skill specialisation, 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.

¹⁹ Following the International Standard Industrial Classification of all economic activities (ISIC4).

²⁰ This means that if an individual has only had two jobs in his lifetime, only these two jobs will be observed.

Return migrants also display a significantly greater number of occupational skills, sectors and jobs, accumulated over their work experience, suggesting that they have a more balanced skill mix profile, as shown in Figure 5.

It should also be noted that the real price of oil at 19 years old is significantly higher for return migrants compared to non-migrants, consistent with the oil price acting as a factor encouraging emigration. The average distance from governorate of birth to potential destination countries is, in contrast, significantly lower for return migrants compared to migrants. This is line with the previous section suggesting that distance proxies costs to migrate – the closer the average distance to destination countries, the greater the likelihood to migrate.

Moreover, limiting the sample to working-age self-employed, those who migrated appear to be more often men, older and more likely to be married and to come from poorer families than those who did not migrate. The former are also more likely to have had vocational training and to have set up a firm in the past, but less likely to have been self-employed in their first job. Figure 6 reveals that self-employed returnees have acquired substantially more skills (1.56, 1.55 and 3.23), worked in more sectors, and had a greater number of jobs than self-employed who have not migrated (respectively 1.35, 1.17 and 2.04).

Figure 4: Skill mix profile by occupation

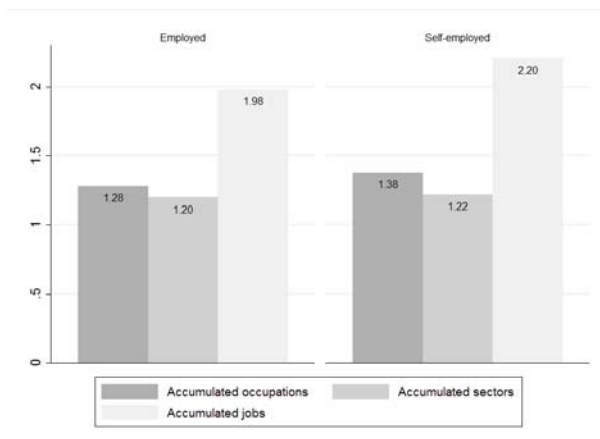


Figure 5: Skill mix profile by migration experience

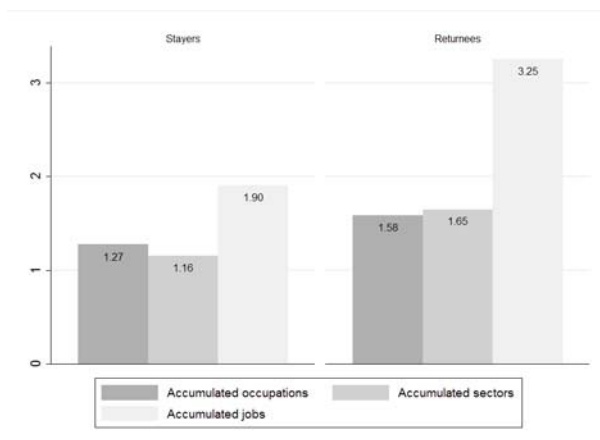
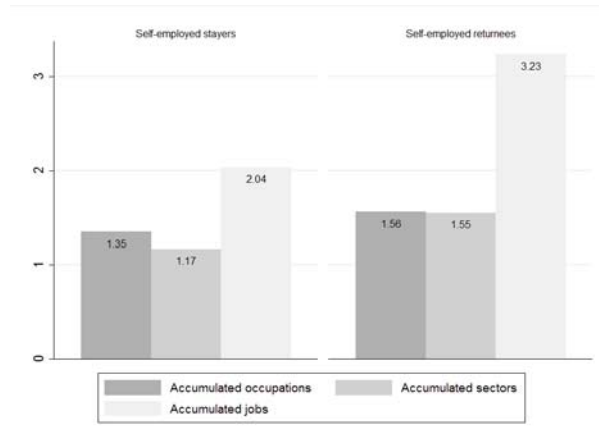


Figure 6: Skill mix profile of self-employed by migration experience



5 Results

5.1 Benchmark specifications

Table 2 presents GSEM reduced-form coefficient estimates of a SUR linear probability model of return migration, number of occupational skills, sectors or jobs accumulated, and self-employment.

The sign and significance of the control variables do not significantly differ across specifications. Being male, having a father who was self-employed, reflecting a ‘family’ (cultural) entrepreneurial capital, and having been self-employed in his/her first job, a measure of entrepreneurial motivation, tend to increase the probability of a working-age individual of being self-employed. Years of potential work experience seem to have a negative, non-linear relationship with self-employment, suggesting that younger Egyptians often privilege self-employed positions, whereas older ones, who are more averse to risk, have a lower propensity than prime-aged individuals to set up their own firms. Vocational training and past self-employment experiences decrease the propensity to self-employment, suggesting that varied, non self-employed occupations are required prior to starting a business. Having to support children tends to increase the likelihood of self-employment, maybe out of necessity.

Micro-firm experience is positively correlated with exposure to different occupations, sectors and having held several jobs. This is consistent with the hypothesis that working in a micro-firm gives employees the opportunity to perform a variety of tasks, helping to develop a balanced skill mix via learning-by-doing (Stuetzer et al., 2013). 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 relatively small magnitude of its coefficient estimates, it is relatively close to what Wahba and Zenou (2012), Wahba (2015) and Bertoli and Marchetta (2015) obtain. While the interaction of these two variables has a significant and positive association with temporary migration, estimates from equation (1) run with only one of these variables, presented in Table ??, confirm that oil price increases, and average distance to destination countries decreases the probability to migrate, in line with the assumptions made in section 3.

The marginal effects of return migration on self-employment through the development of a

balanced skill profile are displayed at the bottom of Table 2. Having migrated statistically significantly increases the probability of being self-employed, as accumulating occupational and sectoral experience increases the likelihood of being self-employed by 11.91, 26.62 percentage points, respectively. The marginal effect of migration on self-employment through the accumulation of jobs has a positive but insignificant effect. Using a continuous variable measuring return migration, years abroad, as in Table 3, yields estimates similar in sign and significance, albeit of a much smaller magnitude. An additional year abroad increases the likelihood of being self-employed by 1.99 percentage points via exposure to diverse occupations; by 4.44, when exposed to multiple industries; and by 0.86, the greater the number of jobs had (insignificant).²¹

These results suggest that migration can contribute to the formation of entrepreneurial abilities by building skills through varied occupations and industrial sectors. These findings corroborate those of Lechmann and Schnabel (2014) and Hessels et al. (2014). Migration appears to be a process shaping entrepreneurs. The job accumulation channel is weaker. Changing jobs – job turnover – could affect entrepreneurial mindsets²² by lowering the degree of risk aversion to job change, rather than affecting entrepreneurial abilities,²³ as accumulating occupations and sectors do. 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; this might happen by an alternative mechanism such as the degree of risk aversion.

²¹ 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.

²² Entrepreneurial mindsets are defined as ‘the socio-emotional skills and overall awareness of entrepreneurship associated with entrepreneurial motivation and future success as an entrepreneur’ such as self-confidence, leadership, creativity, risk propensity or resilience (Valerio et al., 2014, p. 36).

²³ 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 2: Benchmark coefficient estimates

Variables	Self-employed (1)	Accumulated occupations (2)	Returnee (3)	Self-employed (4)	Accumulated sectors (5)	Returnee (6)	Self-employed (7)	Accumulated jobs (8)	Returnee (9)
Father was self-employed	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)	0.0975*** (0.0081)
Vocational high-school	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)	-0.0217*** (0.0073)
Past self-employment	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)	-0.1786*** (0.0293)
First job was self-employed	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)	0.6909*** (0.0154)
Years of unemployment	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)	-0.0033* (0.0018)
Tenure	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)	-0.0022 (0.0015)
Tenure squared	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)
Years of potential work experience	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)	-0.0024* (0.0014)
Years of potential work experience squared	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)	0.0003*** (0.0000)
2007 unemployment rate	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)	-0.8277 (0.5431)
Micro-firm	0.1448*** (0.0095)	0.4655*** (0.0110)	0.1448*** (0.0095)	0.1448*** (0.0095)	0.2829*** (0.0109)	0.1448*** (0.0095)	0.1448*** (0.0095)	0.9142*** (0.0165)	0.1448*** (0.0095)
$\frac{\alpha}{\sigma} \cdot \frac{\beta}{\sigma}$		.1191*** (.0421)			.2662*** (.0706)			.0515 (.0345)	
Observations	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592
Variance of errors	0.1243*** (0.0020)	0.2055*** (0.0039)	0.0884*** (0.0022)	0.1243*** (0.0020)	0.2041*** (0.0053)	0.0884*** (0.0022)	0.1243*** (0.0020)	0.5561*** (0.0080)	0.0884*** (0.0022)
F-statistics (returnee)			100.73			100.73			100.73
P-value (returnee)			.0000			.0000			.0000

Notes: The dependent variable is a binary variable taking unity if a working-age individual is self-employed; 0, if employed, wage-employed or unpaid, contributing to family work. Observations are working-age individuals with no migration experience or return migrants from abroad, excluding individuals living in a household with members currently abroad and those living in a household with members who returned from migration abroad, adding governorate fixed effects. Columns (1), (4) and (7) present GSEM coefficient estimates of the self-employment equation; columns (2), (5) and (8) present GSEM coefficient estimates of the balanced skill mix (accumulated occupations, sectors or jobs, respectively) equation; and columns (3), (6) and (9) present GSEM coefficient estimates of the return migration equation. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Benchmark coefficient estimates (continued)

Variables	Self-employed (1)	Accumulated occupations (2)	Returnee (3)	Self-employed (4)	Accumulated sectors (5)	Returnee (6)	Self-employed (7)	Accumulated jobs (8)	Returnee (9)
Male	0.0222*** (0.0081)	0.1027*** (0.0086)	0.0872*** (0.0046)	0.0222*** (0.0081)	0.0996*** (0.0075)	0.0872*** (0.0046)	0.0222*** (0.0081)	0.1702*** (0.0194)	0.0872*** (0.0046)
Married	-0.0230** (0.0096)	0.0628*** (0.0114)	0.0916*** (0.0065)	-0.0230** (0.0096)	0.0756*** (0.0107)	0.0916*** (0.0065)	-0.0230** (0.0096)	0.2768*** (0.0206)	0.0916*** (0.0065)
Literate mother	0.0136 (0.0087)	0.0071 (0.0115)	-0.0191*** (0.0070)	0.0136 (0.0087)	0.0168 (0.0117)	-0.0191*** (0.0070)	0.0136 (0.0087)	0.0333 (0.0213)	-0.0191*** (0.0070)
Under 15 dependency ratio	0.1319*** (0.0180)	0.0034 (0.0221)	-0.0067 (0.0147)	0.1319*** (0.0180)	-0.0077 (0.0224)	-0.0067 (0.0147)	0.1319*** (0.0180)	-0.0852** (0.0374)	-0.0067 (0.0147)
Literate (without diploma)		0.1358*** (0.0278)	0.0281 (0.0176)		0.0937*** (0.0285)	0.0281 (0.0176)		0.2114*** (0.0361)	0.0281 (0.0176)
Elementary school		0.1076*** (0.0191)	-0.0143 (0.0119)		0.0582*** (0.0185)	-0.0143 (0.0119)		0.1065*** (0.0252)	-0.0143 (0.0119)
Middle school		0.0825*** (0.0239)	-0.0179 (0.0147)		0.0501** (0.0229)	-0.0179 (0.0147)		0.1578*** (0.0332)	-0.0179 (0.0147)
High school		0.1759*** (0.0135)	0.0109 (0.0090)		0.1209*** (0.0131)	0.0109 (0.0090)		0.3140*** (0.0196)	0.0109 (0.0090)
Post-secondary, university and higher		0.1166*** (0.0145)	-0.0272*** (0.0092)		0.0872*** (0.0142)	-0.0272*** (0.0092)		0.3127*** (0.0237)	-0.0272*** (0.0092)
Oil price X Distance		0.0004*** (0.0001)	0.0009*** (0.0001)		0.0005*** (0.0001)	0.0009*** (0.0001)		0.0003 (0.0002)	0.0009*** (0.0001)
Constant	0.1090 (0.0704)	0.8404*** (0.0194)	-0.1060*** (0.0123)	0.1090 (0.0704)	0.8331*** (0.0191)	-0.1060*** (0.0123)	0.1090 (0.0704)	1.0783*** (0.0337)	-0.1060*** (0.0123)
Governorate fixed effects	Yes No	No No	No No	Yes No	No No	No No	Yes No	No No	No No
$\chi^2 \cdot \frac{\beta}{\sigma}$		.1191*** (.0421)			.2662*** (.0706)			.0515 (.0345)	
Observations	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592	10,592
Variance of errors	0.1243*** (0.0020)	0.2055*** (0.0039)	0.0884*** (0.0022)	0.1243*** (0.0020)	0.2041*** (0.0053)	0.0884*** (0.0022)	0.1243*** (0.0020)	0.5561*** (0.0080)	0.0884*** (0.0022)
F-statistics (returnee)			100.73			100.73		100.73	
P-value (returnee)		.0000	.0000		.0000	.0000		.0000	

Notes: The dependent variable is a binary variable taking unity if a working-age individual is self-employed; 0, if employed, wage-employed or unpaid, contributing to family work. Observations are working-age individuals with no migration experience or return migrants from abroad, excluding individuals living in a household with members currently abroad and those living in a household with members who returned from migration abroad, adding governorate fixed effects. Columns (1), (4) and (7) present GSEM coefficient estimates of the self-employment equation; columns (2), (5) and (8) present GSEM coefficient estimates of the balanced skill mix (accumulated occupations, sectors or jobs, respectively) equation; and columns (3), (6) and (9) present GSEM coefficient estimates of the return migration equation. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

5.2 Robustness checks

The robustness of the identification strategy is checked, as in Bertoli and Marchetta (2015). First, Figure 5 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 emigrated 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. Therefore, this trend might not necessarily mirror a change in the relationship between historical real price of oil and temporary migration used to control for the endogeneity of migration.

Table 3 presents estimates of a sample limited to working-age individuals born before 1979, for which the real price of oil at age 20 is used, applying the same selection criterion for instrument selection as above. Coefficient estimates and marginal effects of return migration on self-employment do not differ in sign from benchmark results, but magnitude and statistical significance increase. Being a return migrant of working age and born before 1979 increases the likelihood of self-employment with the number of occupations (17.98 percentage points), sectors (28.17) and jobs (21.42) (significant).

Second, if the historical price of oil is assumed to drive the demand for non-native labour both directly, in oil-producing countries, and indirectly, in non-oil producing countries, some could argue that the later effect is weaker, if not insignificant. As in Bertoli and Marchetta (2015), people who first emigrated to non-oil producer countries – Jordan, Lebanon, Syria and Yemen – are excluded from the estimation sample. Table 3 shows that coefficient estimates and marginal effects of return migration on self-employment follow the same pattern as benchmark results. Return migration increases the likelihood of self-employment with the number of occupations (10.13 percentage points), and with the number of sectors (27.40). The job accumulation channel, with a positive sign, remains statistically insignificant.

Table 3: Robustness checks

		Accumulated occupations (1)	Accumulated sectors (2)	Accumulated jobs (3)
Benchmark	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1191*** (.0421)	.2662*** (.0706)	.0515 (.0345)
	F-statistic (returnee)	100.73	100.73	100.73
	P-value (returnee)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Years abroad	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0199*** (.0073)	.0444*** (.0127)	.0086 (.0058)
	F-statistics (years abroad)	54.57	54.57	54.57
	P-value (years abroad)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Born before 1979	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1798*** (.0435)	.2817*** (.0658)	.2142*** (.0363)
	F-statistics (returnee)	139.15	139.15	139.15
	P-value (returnee)	.0000	.0000	.0000
	N	6,434	6,434	6,434
Oil-producer countries	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1013** (.0423)	.2740*** (.0738)	.0384 (.0361)
	F-statistics (returnee)	101.37	101.37	101.37
	P-value (returnee)	.0000	.0000	.0000
	N	10,409	10,409	10,409

Notes: Please, refer to Table 2.

5.3 Heterogeneity

In Table 4, the sample is split up by sector of occupation, location and possession of savings, to understand which subgroups drive the migration effect found on self-employment. 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 4 points to an insignificant relationship between return migration and self-employment through the development of a balanced skill set. None marginal effect is significant, and the sign on the number of occupations is negative. Benchmark results are driven by those working in non-agricultural sectors.

This difference in sign and significance suggests that agricultural entrepreneurship might not require the same set of occupational skills as non-agricultural sectors, but a rather specialized skill mix. Alternatively, it can mean that return migration affects self-employment in agricultural sectors through channels other than the accumulation of human capital, e.g. migration-induced 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 are of 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 occupational skills. This 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, and in particular being farmer, may not require the experience gathered while working abroad. In other words, having migrated may not be 'enough' or relevant, as it may not provide the capital necessary to start agricultural activities or access land.

In addition, Table 4 shows that return migration increases the likelihood of self-employment with the number of distinct occupations, sectors and jobs, mostly in rural areas. This suggests that return migration in Egypt might affect rural off-farm entrepreneurship, potentially contributing to the structural reallocation of its labour force.

Lastly, 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 SUR linear probability model on two subsamples, based on possession of savings. Table 4 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 results for individuals who do not have savings, indicating the existence of a migration-induced entrepreneurial human capital, beyond any potential wealth effect.

With reference to benchmark specifications (Table 2), whether return migration influences entrepreneurship is eventually assessed through the formation of a varied skill set not only 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.²⁴ Business survival might indeed be a precondition

²⁴To the best of the author's knowledge, only Marchetta (2012) has specifically studied the persistence of returnees' entrepreneurial activities.

for a lasting, positive effect of migrants' activities upon return, in particular in a developing country context, where the turnover of MSEs is high (Marchetta, 2012).

Similarly to the decision to become self-employed, the accumulation of financial, human or social capitals while abroad could, respectively, loosen financial constraints to set up a firm, grow or thrive by improving entrepreneurs' abilities and developing their networks. Migration experience could thus 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 upon return, which could reduce their incentives to opt for self-employment, or the interest in persisting as self-employed (Marchetta, 2012).

Table 4: Heterogenous effects

		Accumulated occupations (1)	Accumulated sectors (2)	Accumulated jobs (3)
Benchmark	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1191*** (.0421)	.2662*** (.0706)	.0515 (.0345)
	F-statistic (returnee)	100.73	100.73	100.73
	P-value (returnee)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Agriculture	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	-.4427 (.5679)	.0591 (.3478)	.0330 (.0947)
	F-statistics (returnee)	14.61	14.61	14.61
	P-value (returnee)	.0001	.0001	.0001
	N	1,587	1,587	1,587
Non agriculture	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0879*** (.0307)	.2245*** (.0604)	.0453 (.0322)
	F-statistics (returnee)	89.25	89.25	89.25
	P-value (returnee)	.0000	.0000	.0000
	N	9,005	9,005	9,005
Rural	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1672*** (.0599)	.3039*** (.0882)	.07927** (.0372)
	F-statistics (returnee)	68.81	68.81	68.81
	P-value (returnee)	.0000	.0000	.0000
	N	5,454	5,454	5,454
Urban	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0802 (.0635)	.2343 * (.1250)	.0205 (.0705)
	F-statistics (returnee)	33.49	33.49	33.49
	P-value (returnee)	.0000	.0000	.0000
	N	5,138	5,138	5,138
Without savings	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1247*** (.0421)	.2597*** (.0689)	.0437 (.0326)
	F-statistics (instrument)	91.07	91.07	91.07
	P-value (instrument)	.0000	.0000	.0000
	N	9,790	9,790	9,790
With savings	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0333 (.2620)	.3895 (.5946)	.3383 (.3783)
	F-statistics (returnee)	9.88	9.88	9.88
	P-value (returnee)	.0017	.0017	.0017
	N	802	802	802

Notes: Please, refer to Table 2.

Tables 5 and A2-A5 consider the productivity of self-employed activities. Correlations suggest that, upon return to Egypt, migrants who were self-employed at the time of the survey experience more occupational (Table A4) and sectoral (Table A5) immobility compared to the

whole sample of migrants (Tables A2-A3). Although self-employed returnees are more likely to switch to managerial occupations, they present less upward occupational mobility overall. In addition, Table A5 indicates that self-employed returnees are more likely to switch to jobs in agriculture, manufacturing, trade and transport than the entire group of returnees.

Table 5 seeks to measure 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 second row of Table 5 presents changes in average net earnings per month from self-employed activities in natural logarithm.²⁵ Estimates of temporary migration on self-employed earnings through the accumulation of occupations, sectors and jobs are all negative. Albeit imprecisely estimated, this last set of results questions whether the development of a balanced skill set during migration contributes to setting in place successful entrepreneurial ventures.

Using the number of years (tenure) of the current self-employed position as dependent variable, the third set of rows suggests that having migrated significantly increases the number of years of current self-employment with occupations (2.34 years) and sectors (5.24), in line with the dynamics between return migration and occupational choice 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-employment²⁶ is found to be significantly affected by return migration through the number of number of industries (1.33 years) and occupations (.60) an individual was exposed to.

In comparison, gaining experience in diverse occupations and industries abroad similarly affects the propensity to be an employer or own-account worker upon return (last set of rows in Table 5). These estimates confirm the influence of migration in developing human capital critical for entrepreneurship to set up a business and persist as self-employed. In line with descriptive statistics presenting lower upward occupational mobility among self-employed returnees, productive self-employment might require more.

²⁵The estimation sample is restricted to self-employed respondents in all sectors who reported non-missing earnings.

²⁶ Measured as the number of years as self-employed divided by number of jobs over a maximum of four job spells.

Table 5: Productivity of entrepreneurial activities

		Accumulated occupations (1)	Accumulated sectors (2)	Accumulated jobs (3)
Benchmark	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.1191*** (.0421)	.2662*** (.0706)	.0515 (.0345)
	F-statistic (returnee)	100.73	100.73	100.73
	P-value (returnee)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Log of average net earnings per month in past year	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	-.1203 (.1122)	-.1300 (.1864)	-.0756 (.0734)
	F-statistics (returnee)	30.29	30.29	30.29
	P-value (returnee)	.0000	.0000	.0000
	N	1,691	1,691	1,691
Length of current self-employment	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	2.344*** (.8249)	5.237*** (1.372)	1.013 (.6765)
	F-statistic (returnee)	100.73	100.73	100.73
	P-value (returnee)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Average tenure of self-employment	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.5959** (.2217)	1.332*** (.3804)	.2577 (.1746)
	F-statistic (returnee)	100.73	100.73	100.73
	P-value (returnee)	.0000	.0000	.0000
	N	10,592	10,592	10,592
Employer	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0769** (.0337)	.1846*** (.0566)	.0313 (.0294)
	F-statistics (returnee)	84.44	84.44	84.44
	P-value (returnee)	.0000	.0000	.0000
	N	9,452	9,452	9,452
Own-account	$\frac{\gamma}{\alpha} \cdot \frac{\beta}{\delta}$	.0624*** (.0212)	.1348*** (.0363)	.0210 (.0179)
	F-statistics (returnee)	76.90	76.90	76.90
	P-value (returnee)	.0000	.0000	.0000
	N	9,299	9,299	9,299

Notes: In the second row, the dependent variable is a continuous variable measuring the average net earnings per month of those self-employed in log. In the third set of rows, 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 fifth, a binary variable taking unity if a working-age individual is an employer and in the sixth, if s/he is an own-account worker (middle panel), and 0, if employed, wage-employed or unpaid, contributing to family work. Observations are working-age individuals with no migration experience or return migrants from abroad, excluding individuals living in a household with members currently abroad, and those living in a household with members who returned from migration abroad in the first, second and third sets of rows. The estimation sample excludes own-account workers in the fifth, and employers in the sixth. It excludes respondents who are not self-employed in the first panel. Columns (1), (2) and (3) present the average marginal effects of return migration on the associated row dependent variables through the accumulation of occupations, sectors and jobs, respectively. Standard errors clustered at the household level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

6 Concluding remarks

There is no consensus on whether one is born with innate entrepreneurial ability or whether entrepreneurial ability can be learnt. This paper contributes to filling gaps in the empirical literature on entrepreneurship by unpacking migration as a learning experience for self-employment. Using Lazear's (2005) Jack-of-all-Trades Hypothesis, migration was posited to lead to a more balanced skill set, resulting in a greater propensity to self-employment among return migrants than among those who never migrated, so-called stayers.

The results, robust to the endogeneity of temporary migration and skill accumulation, indicate that return migration increases the propensity to be self-employed by affecting entrepreneurial mindsets and abilities. Migration increases the likelihood of self-employment and survival of entrepreneurial activities through the development of entrepreneurial abilities – in this paper, the exposure to varied occupations or industries. By inducing job changes, migration leads to greater job turnover, likely to enhance the propensity to take risks, to either change jobs or opt for self-employment. Results hold for non-agricultural activities, rural areas, and controlling for the possession of savings.

I provide additional evidence to the current debate on the development impacts of (return) migration on communities of origin by showing that not only migration-induced wealth effects, but also the work experience gained abroad as such can, affect migrants' occupational choice upon return. Migration could contribute to the formation of a balanced human capital conducive to entrepreneurship by facilitating the accumulation of skills. It can be seen as a process shaping entrepreneurial abilities.

I also contribute to the scarce literature on empirically testing Lazear's (2005) Jack-of-all-Trades Hypothesis in a developing economy with prevalent international migration, where understanding the development potentials of migration might be relevant. Because self-employed evolve in underdeveloped, ill-functioning market-supporting institutions in those situations, they should be much more generalistic to handle almost all dimensions of business management (Chen and Hu, 2012). As migrating tends to occur out of necessity in Egypt, this paper confirms that entrepreneurship can be learnt, by understanding how migration might offer learning opportunities. It also confirms that learning-by-doing and experiential learning matter for entering into and persisting in self-employment (Hessels et al., 2014), especially since the MSE sector has often been thought of a potential solution to Egypt's high youth unemployment.

Entrepreneurship (education) support policies should thus focus on widening the work experience of potential, fledging entrepreneurs, accounting for differences in sectors of occupation (farm versus off-farm) and location (rural versus urban). Agricultural entrepreneurship in particular might be facing institutional and geography-specific challenges, and might require easier access to land as well as skill specialisation rather than diversification of the human capital critical for successful entrepreneurship. Easier access to land, land consolidation and modernisation 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 labour towards sectors of higher productivity – potentially seizing more of what migration can bring (Morsy et al., 2014).

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Appendices

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

Variables	Returnee (1)	Returnee (2)	Returnee (3)
Male	0.0876*** (0.0046)	0.0851*** (0.0044)	0.0872*** (0.0046)
Literate (without diploma)	0.0278 (0.0176)	0.0232 (0.0178)	0.0281 (0.0176)
Elementary school	-0.0145 (0.0119)	-0.0199* (0.0120)	-0.0143 (0.0119)
Middle school	-0.0181 (0.0147)	-0.0192 (0.0148)	-0.0179 (0.0148)
High school	0.0106 (0.0090)	0.0084 (0.0090)	0.0109 (0.0090)
Post-secondary, university and higher	-0.0273*** (0.0092)	-0.0337*** (0.0093)	-0.0272*** (0.0093)
Literate mother	-0.0192*** (0.0070)	-0.0226*** (0.0070)	-0.0191*** (0.0070)
Married	0.0915*** (0.0065)	0.0852*** (0.0064)	0.0916*** (0.0065)
Under 15 dependency ratio	-0.0054 (0.0147)	-0.0380*** (0.0145)	-0.0067 (0.0147)
Oil price	0.0016*** (0.0002)		
Distance		-0.2987*** (0.0712)	
Oil price X Distance			0.0009*** (0.0001)
Constant	-0.1082*** (0.0123)	0.4861*** (0.1204)	-0.1060*** (0.0123)
Observations	10,592	10,592	10,592
R-squared	0.0428	0.0319	0.0422
F-statistic (instrument)	104.91	17.62	100.73
p-value (instrument)	.0000	.0000	.0000

Notes: Please, refer to Table 2.

Table A2: 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	

Table A3: 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 organisations.

Table A4: 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 A2.

Table A5: 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 A3.

Table A6: Distances between capitals of governorates of birth and capitals of estimation sample destination countries in kilometres

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

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