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Return migration and socioeconomic mobility in MENA

Evidence from labour market panel surveys

Vladimir Hlasny¹ and Shireen AlAzzawi²

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Abstract: This study examines the effects of cross-border return migration on intertemporal and intergenerational transmission of socio-economic status across six new harmonized surveys from three Arab countries: Egypt (1998, 2006, 2012), Jordan (2010, 2016) and Tunisia (2014). We link individuals' current outcomes to those in prior years and to their parents' outcomes. We first isolate the outcomes of interest – income, employment status, household wealth based on both productive and non-productive assets, and residence status. Next, we evaluate individuals' socioeconomic mobility over time and across generations as a function of their migration histories. Return migrants, current migrants, and (yet) non-migrants are distinguished. Transitions in individuals' outcomes across years and generations are made functions of pre-existing socioeconomic status, demographics and migration status.

Migration patterns are found to differ systematically between Egypt, Jordan and Tunisia, as well as across years. Migration destination is driven by economic, geographic but also historical considerations. Migrant flow from Egypt and Tunisia is highly concentrated, but that from Jordan is much more diffused, on account of job search methods and type of work sought. Egyptian migrants predominantly come from rural areas and disadvantaged governorates, and are less educated, while in Jordan the opposite is the case. Tunisia represents an intermediate case, with migrants slightly less educated but also less likely to be rural than non-migrants. Return migrants find employment in higher earning occupations and are more socially and inter-generationally mobile than non-migrants. However, they outperform non-migrants not only currently, but also in the previous occupation, occupation before previous, and eight years prior, suggesting that individual-level effects and demographics contribute more than migration experience per se. More research is needed to isolate the causal effects of migration spells on migrants' lifetime outcomes.

Keywords: return migration, social mobility, MENA, mobility index

JEL Codes: F22, O15, R23, J61, J62

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All tables and figures are located at the end of the paper.

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1 Introduction

An essential component of economic development in a society is the mechanisms by which economic opportunities and outcomes accumulate over an individual's lifetime and are transmitted across generations (Solon 2012). These mechanisms involve dynamic complementarities through which economic returns to a worker's effort or investment – his or her capabilities – increase with the level of prior flows of effort and economic achievements. Societies where it is possible for individuals to move up the income or social scale are viewed positively from a welfare perspective, as well as growth perspective, since they give individuals an incentive to work hard. In general, any level of inequality would be more tolerable if people believe that there are opportunities to move up the social and economic ladder in society.

Geographic migration is one pathway toward improving one's economic status and lifetime achievements. Migration allows workers to be better matched to available jobs, and may help them escape local unemployment, thus alleviating unemployment and equalizing it across regions in the process. Migration can also bestow lifetime benefits on workers as it exposes them to new career or skill-acquisition opportunities, or lowers their costs of access to such growth opportunities. On the other hand, migration is risky and costly, and requires an up-front outlay of resources. Only workers with adequate pre-existing resources, skills, and career plans may effectively pursue it. In general, the complementarities between various investments and efforts that allow individuals' welfare to increase over time also generate inequality across individuals and families starting in different circumstances.

These considerations are impossible to ignore in the MENA region, where migration is a widespread and highly systematic phenomenon. Large numbers of underemployed rural workers and unemployed fresh urban graduates move internally across regions, to other MENA and Gulf countries, or to Europe and beyond. Outmigration, return migration, and flow of remittances are trends associated with large shares of national workforce, accounting for significant shares of average household incomes (World Bank 2016). While outmigration causes some brain drain in the region, the inflow of remittances and the prospect of return migration of more experienced and capital-endowed workers yield potentially higher benefits, both for the individuals as well as for the sending economies at large (Olesen 2002).

A 2009 report by the European Commission Directorate-General for Economic and Financial Affairs (EC-DG ECFIN 2010a,b,c) documented that 10 million Arab region citizens, or 8 per cent of working-age population, were residing abroad. This number was predicted to be increasing in the subsequent years even before the jolt arising from the Arab Spring uprisings. Remittances from abroad accounted for over one-fifth of the Jordanian GDP, and a non-negligible 5 per cent in Egypt and Tunisia (EC-DG ECFIN 2010a:76). According to public perceptions surveys, 28 per cent (ILO 2015) or even upward of 50 per cent (Fargues 2009; EC-DG ECFIN 2010b,c) of MENA youth expressed a willingness to migrate to improve their employment prospects and the welfare of their families.

Migration is thus inextricably linked to the level of development, pattern of growth and inequality in the MENA region. Meanwhile, the true degree of economic inequality in the region has been subject to debate. Public perceptions surveys suggest that inequality is high, while household surveys show that incomes and other economic outcomes are distributed rather equitably. Other notions of inequality may contribute to the divergence of perceptions and observations, such as

inequality of opportunity (Bibi and Nabli 2010; Assaad 2015; Devarajan and Ianchovichina 2015; Hlasny 2017), lack of intergenerational social mobility (Ibrahim 1982; Nugent and Saleh 2009; Assaad and Krafft 2014), and the role of non-merit related assets such as family connections, personal networks '*wasta*' and bribes in workers' career growth (Arampatzi et al. 2015).

Migration may be obscuring the real degree of inequality in the MENA region. Outmigration reduces the observable inequality in opportunities and outcomes – between-region inequality and other forms – partly because migrants are not tracked well (Assaad 2012). Remittances are not accounted for accurately in the region where they are earned or consumed. The fact that migrants typically devote substantial resources to their journeys as investment into their future achievements is also often ignored. For these reasons it is important to track workers' status before and after their migration spells to evaluate their achievements.

Our study aims to contribute to policy debate in several ways. One, we review the characteristics of return migrants as compared to non-migrants to identify predictors of migration. Two, we evaluate the effect of return migration on workers' socio-economic outcomes, and examine intertemporal and intergenerational transmission of status as a function of workers' initial social status and migration history. We tackle questions including: How do workers self-select themselves into (return) migration? To what extent does income, occupational and residential-status mobility exist across MENA, and how does return migration facilitate or hinder such mobility?

Our analysis extends over three Arab countries for which six high-quality, harmonized labour-market surveys are available: Egypt (1998, 2006, 2012), Jordan (2010, 2016) and Tunisia (2014). These surveys cover multiple measures of economic outcomes and various information on workers' backgrounds and migration history that allow us to paint a richer picture regarding the role of migration in the MENA region labour market over the past two decades.

This study is structured as follows. The next section reviews our existing understanding of the flows of migration in the MENA region, the importance of return migration in particular, and their effects on the extent and form of social inequality in the region. Section 3 discusses the methods and data available to evaluate the relationship between migration and social mobility. Section 4 presents the main results of our empirical analysis, and Section 5 concludes with a summary of key findings and their policy implications.

2 Literature review

Studies considering the circumstances of social mobility in the MENA region are rare. Ibrahim (1982) examined the extent of intergenerational educational and occupational mobility in Cairo in 1979, and found a substantial mobility of both, even though he did not tackle the financial dimension in terms of the financial returns to social mobility. Amin (2000) studied the causes and consequences of the accelerated pace of social mobility in Egypt from 1950 to the late 1990s, but not the extent of mobility. Nugent and Saleh (2009) examined the extent of educational intergenerational mobility in Egypt, and the returns to it. They found that intergenerational educational mobility was on the rise, and that parental education had positive influences on the returns to children's education that go well beyond its direct influence on children's education. Assaad and Krafft (2014) confirmed high inequality in opportunity for education across eight Arab countries, linked to parents' education and earnings.

De Silva and Silva-Jáuregui (2004) was one of the first studies that directly examined the relationship between migration and economic outcomes in the MENA region. They evaluated the

effect of migration on national and regional employment. They found that international migration out of the region alleviated unemployment in MENA countries, and brought an inflow of remittances amounting to 39 per cent of exports in Jordan, 22 per cent in Egypt and 9 per cent in Tunisia during 1996–2000. Internal migration from rural to urban regions, on the other hand, put pressure on urban labour markets. EBRD (2013) found significant migration across countries within the Arab region, evidence of brain drain in Egypt, Jordan, Morocco and Tunisia, and a large impact of migrant-worker remittances on domestic economies. This impact may be particularly significant in times of economic hardship (Bouhga-Hagbe 2006).

For Tunisia, Amara and Jemmali (2016) used 2004 census data to explain migration trends across regions. They found that unemployment rates and vacancy rates in the pairs of origin and destination regions were significant drivers of migration, while wages and skill composition were not. David and Marouani (2013a), using a general equilibrium model with endogenous international migration and remittance flows, concluded that labour-supply as well as labour-demand factors were responsible for a spike in unemployment in recent years. They argued that emigration of high-skilled workers could be mitigated by programs promoting service exports, which would benefit low-skilled native workers too.

David and Marouani (2013b,c) used a similar model for Jordan and found that labour demand response to the global crisis was weaker in Jordan. Foreign wages affected migration flow more strongly in Tunisia, but they had a greater effect on wages in Jordan, whose economy is smaller. An increase in foreign wages for high-skilled workers affected low- and medium-skilled workers positively in Tunisia but adversely in Jordan. More recently, David and Marouani (2016) found that out-migration affects households' division of labour, and performance of local labour markets. They found evidence of a rise in skill acquisition in regions with many aspiring migrants, a fall in unemployment rates among fresh graduates due to migration, but also of a brain drain in terms of education. In Tunisia, migrants are more educated and come from better off families that can afford the cost of migration (David and Marouani 2017). Return migrants tend to be those less educated among all migrants. On the other hand, return migrants bring with them other skills as well as capital that can be used for productive uses, such as in self-employment and entrepreneurship (EC-DG ECFIN 2010a:145; Mesnard 2004; David and Nordman 2014). Whether the more highly educated out-migrants would have invested in education in the absence of prospects for migration is also unclear.

Several studies have used micro-level data to estimate individuals' labour market outcomes as functions of migration spells. Wahba (2013, 2014, 2015a,b) compared the characteristics of non-migrants, current migrants and returning migrants in Egypt using ELMPS 2006, and ELMPS 2012 surveys. She found that migrants are typically more educated (and likely to be rural) than non-migrants, and typically it is the less educated among migrants who return. The returning migrants bring back with them other skills and capital. El-Mallakh and Wahba (2016) used ELMPS 2012 to confirm that return migration of highly-skilled workers increases the probability of upward occupational mobility. They did not consider income or other dimensions of social mobility.

Wahba (2012) used information on foreign and domestic remitters in JLMPS 2010 to compare characteristics of immigrants, emigrants, and natives in Jordan. She found that emigrants were typically more skilled and sent substantial remittances home. Immigrants found jobs in low-skill occupations, undercutting local wages. For Egypt 1998–2012, David and Jarreau (2015) found that remittances from emigrants increase household earnings, but also increase standards of living through other pathways including their impacts on skill acquisition, savings and investment. Emigration contributes to inequality in earnings, but some benefits accrue particularly to poor rural households. In a related study, David and Jarreau (2016) found that unemployment and size of the informal employment sector are the main drivers of emigration from Egypt. Due to

migration costs, workers' propensity to emigrate depends positively on household wealth, but the link is mitigated by the existence of network effects estimated from the prevalence of out-migration from one's community.

3 Methods and available data

The central aim of this study is to investigate the prospects of individuals' income, wealth and employment mobility over time and across generations as a function of experience of migration. We use panel data sets from six nationally representative labour market surveys that track the socio-economic outcomes of the same individuals at different points in time, and also link outcomes of parents to those of their children. The ability to track income and occupational status of individuals over time can provide tremendous insight into the process by which well-being changes over time, and how the trends differ across individuals.

3.1 Identifying migration and socioeconomic status

We first isolate our outcome variables of interest, namely residence status, employment status, earnings and household wealth based on both productive and non-productive assets (refer to appendix 2). We identify individuals' migration histories including the timing and destination of migration. We then estimate the transitions of individuals' outcomes over time as functions of their initial social status, other characteristics, and migration history. Changes in individuals' outcomes compared to those of their parents are evaluated.

One challenge is that wage earnings are reported only for household members present, and only for the current year. No earnings information is available for prior years, for respondents' parents, or for current migrants. To impute workers' real earnings in past time periods, fathers' real earnings at the time when the surveyed workers were 15 years old, or the real earnings of current migrants before emigration, we use information on the respective individuals' economic sector, formality of job (permanent/non-permanent, contract/non-contract) and 2-digit occupation group, and assign to them the mean earnings in that sector, type of job and occupation group in the survey year.¹ While this method yields low estimated heterogeneity in earnings across workers (heterogeneity in actual earnings between and within occupation groups is shown in figure A1 in appendix 1), the method is more robust to earnings reporting errors, changes in price level, measurement errors in CPI, etc., over time than comparisons of nominal income levels, and may be more robust to domestic cross-region differences. Secular changes in relative occupation-group earnings are arguably a better indicator of welfare changes over time than year-to-year fluctuations in individual workers' earnings, particularly when we are interested in groups of workers rather than individuals.

This method relies on a number of assumptions. An important assumption is that occupation groups retained their positions in relation to one another in terms of worker earnings. Another assumption is that the importance of monetary earnings relative to other forms of compensation did not change or changed the same way across all occupation groups.² Moreover, because wage

¹ This method is comparable to the calculation of the Paasche Quantity Index. Working conditions in various years and occupation groups are evaluated using the same set of present-year prices, to arrive at workers' typical (hedonic) earnings in the various years.

² These assumptions would be violated if, for example: 1) one occupation group (say, mining) fell out of favor due to technological or natural evolution; 2) labor regulation or competition for workers changed drastically in an occupation

earnings are added up across all jobs that individuals hold (e.g., primary and secondary jobs), it is assumed that typical workers in any primary occupation group have similar earnings from primary and secondary jobs as similarly situated workers in the benchmark year. Finally, by inferring individuals' earnings from the mean earnings in occupation-groups at large, and comparing those estimates over time, we also implicitly posit that individuals' earnings relative to the means remain unchanged over time. If an individual earned one standard deviation above the mean in his original occupation group, (s)he will remain at that relative level in other years, regardless whether he changes occupation groups. These assumptions are plausible over short time spans in the absence of large structural changes in the economy. The assumptions are necessary in the absence of complete panel data on individuals' earnings.

3.2 Quantifying social mobility

Several methods are used to quantify the degree of social mobility. First, we report the level and distribution of current status – including wage earnings, wealth, and urban/rural residence status – among return migrants and among non-migrants. We also estimate the mean growth in wage earnings over time.

Second, we report the probabilities of individuals' moving between quantiles along the distribution of various socio-economic outcomes using Markov Chain transition matrices. Workers' earnings (imputed from their economic sector and 2-digit occupation group) and urban/rural residence at different points in time are used for this analysis. The transitions can be studied between two points in time, before and after a life event such as a migration spell, or between two generations. A transition probability matrix (P) is an $n \times n$ matrix where n refers to the number of possible states. The element in the j th row and k th column gives the probability that an individual moves from the j th to the k th category between periods. The larger the diagonal elements, the lower the degree of mobility. We report two summary measures of mobility including the Shorrocks Mobility Index: $\hat{M}(P) = \frac{n - \text{trace}(P)}{n - 1}$, and the Spearman rank-correlation coefficient.³ Similarly, we review the extent of intergenerational mobility by evaluating the joint density of parents' economic achievements and those of their offspring.

Finally, third, regression analysis is used to link together workers' current earnings to those in past points in time while accounting for workers' migration experience, observable characteristics, and local labour demand conditions.

3.3 Data

We consider all available waves of labour market panel surveys (LMPS) for three MENA countries: Egypt (ELMPS 1998, 2006, 2012), Jordan (JLMPS 2010, 2016) and Tunisia (TLMPS 2014). The surveys were harmonized by Economic Research Forum (ERF), facilitating between-year and between-country comparability of statistics. (Table A1 in appendix 1 briefly introduces all surveys.)

To put the LMPSs in perspective of the historical events that took place in the region during the 'Arab Spring,' we take note of the timing of their fieldwork. The Jordanian 2010 survey was administered during January–April 2010, less than a year before protests erupted in Amman in

group but not in others (say, minimum wage in non-agricultural sectors was raised); 3) regulated non-monetary compensation was raised in some sectors (say, workers' paid leave was expanded in large enterprises).

³ A value of one would mean perfect mobility, while 0 would indicate no mobility at all. This measure was shown to have all the desirable properties of a measure of mobility by Shorrocks (1978).

January 2011 over economic conditions in the country and government incompetence. Those protests came on the heels of a Jasmine Revolution in Tunisia in December 2010 that led to a fall of the Ben Ali regime and ushered in democratic changes. In the following months uprisings swept through most MENA region countries. In Egypt, a popular revolution started only days after the ousting of the Tunisian president and the events in Jordan. Egyptian president Hosni Mubarak was also removed from office soon afterwards, in February 2011. Parliamentary elections at the end of 2011 and presidential elections in June 2012 paved the road for the Muslim Brotherhood to control both the parliament and the government. However, the short rule of Mohamed Morsi was fraught with widespread protests, violence and lack of security, and economic activity did not resume its pre-January 2011 levels. Large-scale protests erupted yet again in June 2013, and a new government came to power through a coup d'état. The Egyptian LMPS was conducted amidst this domestic and region-wide flux and uncertainty, during March–June 2012.

The Tunisian survey was conducted between February and November 2014, period of political stabilization and pluralist rule after the enactment of a new consensus national constitution. Nevertheless, the Tunisian economy then entered a recession, and stagnated for the following three years. Civil discontent resurfaced and simmered over in January 2018, when the government announced an austerity program and a cutback to public subsidies. Finally, the Jordanian 2016 LMPS was administered in a setting of political and economic stability, tested mostly by a large influx of Syrian refugees escaping civil war. UNHCR figures suggest that Syrian refugees account for about 10 per cent of the Jordanian population, and thus have a significant effect on the Jordanian labour market.

The labour market panel surveys for Egypt, Jordan and Tunisia are well suited for our endeavor of studying the patterns of migration and their implications for social mobility across the three countries. They contain detailed information on workers' labour market earnings, as well as their occupation, education, household assets and various demographic characteristics. The panel data include linked information on fathers and sons, which helps to ascertain the degree of intergenerational social mobility.⁴ To isolate individuals' migrant histories we compare workers' current, prior and birthplace residence (appendix 1). In the Egyptian (2012), Tunisian (2014) and Jordanian (2016) surveys, retrospectively collected information on the governorate of one's prior jobs is also used. ELMPS 2012 and newer surveys include retrospective modules covering 'life events calendar' (marriage, education, work, residence changes), 'characteristics of current migrants', and 'characteristics of return migrants,' allowing detailed analysis of the timing of life events and socio-economic outcomes.⁵

The sample is restricted to male nationals 35 to 55 years of age to limit the amount of heterogeneity among individuals, particularly in the timing and type of migration. Migrants and return migrants are predominantly men who have finished their formal education. In the Jordanian surveys, Syrian, Egyptian and other non-Jordanian nationals are excluded.⁶ Since our main economic outcome is wage earnings, the age cutoffs limit the sample to men in their prime in their careers. The age

⁴ Specifically, these data are available in two formats, as individual data for those individuals observed in 1998, whose sons then split into separate households by 2006 or 2012, and as retrospective data.

⁵ All surveys also include candidates for valid instrumental variables for migration and return migration decisions (e.g., presence of dependents, exogenous household or source-region or destination-country shocks, health, historic migration rates in region).

⁶ I.e., 1,257 observations or 7.7% of the sample (using sampling weights) in JLMPS 2010, and 4,943 observations or 23.3% in JLMPS16. Syrians alone account for 85 observations or 0.49% in JLMPS 2010; but as many as 2,876 observations or 14.5% in JLMPS 2016. Among Jordanian nationals in JLMPS16, 18 individuals residing in camps are also excluded.

cutoffs also agree with the evidence on the demographics of return migrants, that nearly one-half of migrants returned to their country of origin before the age of 40, and over two-thirds before the age of 50 (EC-DG ECFIN 2010a:80).

Our study for the most part ignores current migrants, because data on their current labour-market outcomes abroad are either missing, reported by relatives imprecisely, or non-comparable to domestic outcomes of the surveyed non-migrants and return-migrants. Our study also ignores individuals without observable occupation or other labour market outcomes. This obviously limits our inference to the population of workers employed in each time period under consideration. More worryingly, this induces a bias since individuals self-select themselves into the sample of domestic active workers according to their expected labour market outcomes. Correcting this bias is the aim of follow-up research.

Finally, we should note that workers labeled as return-migrants are those who have made a decision to out-migrate, and in six months or later an unrelated decision to return. Our study of the determinants of return migration confounds these two processes in a reduced-form fashion. Similarly, workers labeled as non-migrants should rather be thought of as not-yet-migrants subject to hazard of future migration. These issues are to be taken up in follow-up research. As descriptive statistics show, the group of non-migrants is typically younger than return-migrants, suggesting that the act of migrating can be undertaken even in mid-age. By the time individuals appear in the survey as return migrants, they are necessarily older. Also, the duration of stay abroad is bound to make return migrants older by that time spell. This suggests that in the study of motives for migration and migration outcomes, one must, at the least, account for workers' age in order to compare return-migrants to the same cohort of not-yet-migrants.

4 Results

4.1 Geographic patterns of (return) migration

Considering only the most recent returns of individuals from abroad, patterns of geographic migration vary across MENA countries, presumably due to various factors including geographic proximity, historical links (linguistic, cultural, ethnic affiliation etc.), labour market conditions in the countries of origin, and economic conditions at destination.

In Egypt 2012, the top six host-countries were Saudi Arabia (28%), Iraq (25%), Libya (16%), Jordan (11%), Kuwait (5%) and United Arab Emirates (5%), accounting for 91 per cent of most recent return migration. Compared to 2006, Libya and United Arab Emirates (UAE) gained in importance as sources of return migration, while Saudi Arabia and Iraq became less significant as sources. Workers' decisions to out-migrate or return reflect various political and economic developments in the MENA region, including an exodus from Iraq in the early 2000s, exodus from Libya following the country's 2011 uprising, or a construction boom in Saudi Arabia in the 2010s.

In Jordan 2010, the top six countries were Saudi Arabia, Palestine, Kuwait (at 21% each), Iraq (7%), UAE (5%) and the US (4%), accounting for only 79 per cent of return migration. By 2016, return migration became even less concentrated, with the top six countries accounting for only 73% of the total. Saudi Arabia, the US and Bahrain gained in importance as sources (27%, 8% and 7% of the total, respectively) relative to year 2010, while Palestine became less important. The demand for Jordanian workers in the host countries during the 2000s and the 2010s, and the improving security situation in Palestine at the turn of the decade contributed to these trends.

In Tunisia as of 2014, the top six sources of return migration were Italy (35%), Libya (31%), France (19%), followed by the US, Saudi Arabia and Oman (2-3% each), accounting for 92 per cent of the total. Return migration in Egypt and Tunisia is thus highly concentrated among a handful of host countries, while it is distributed widely across more countries in Jordan.⁷

One possible interpretation is that Egyptian and Tunisian workers seeking work abroad find suitable opportunities and work authorizations in a limited number of countries, while Jordanian workers can travel and land jobs in a larger selection of countries. The way workers secure appropriate jobs and accommodation abroad may also provide an explanation. Egyptian and Tunisian workers rely more on social networks and follow their countries' diasporas abroad, while Jordanian workers pursue alternative routes, including getting in direct contact with prospective employers, in countries where they have no acquaintances. While 46 per cent of Egyptian return migrants knew someone in the country of their first migration, only 37 per cent of Tunisians and 17 per cent of Jordanians did (table A2). While 24 per cent of Egyptians received help from relatives, and another 33 per cent got help from friends or acquaintances, only 12 and 23 per cent of Tunisians, and only 18 and 7 per cent of Jordanians did, respectively. Merely 23 per cent of Egyptians received no help from anyone in finding a job abroad, compared to 34 of Tunisians and 42 per cent of Jordanians. At the same time, surprisingly, as many as 24 per cent of Egyptians paid someone to facilitate their migration, compared to a mere 16 per cent in Tunisia and 2 per cent in Jordan.

Characteristics of return migrants, in absolute terms or relative to their non-migrant compatriots, can also help shed light on the divergent patterns of migration across the three MENA countries.

4.2 Socioeconomic characteristics of return migrants

Table 2 reports demographic characteristics of return-migrants relative to non-migrants. Urban birthplace is shown a strong negative predictor of migration in Egypt, and a positive predictor in Jordan and to some degree in Tunisia. Two-thirds of return migrants come from rural areas in Egypt as of 2006 and 2012, while one-half of non-migrants are rural. In Jordan, on the other hand, 89-93 per cent of return migrants are urban, compared to 80-88 per cent among non-migrants. In Tunisia, the rates are 66 per cent among return migrants and 62 per cent among non-migrants.

Interestingly, all surveys show that return migrants are more likely to come from economically disadvantaged regions. This reaffirms the finding regarding workers' urban versus rural status in Egypt, but it provides a qualification to the trends identified in Jordan and Tunisia⁸: return migrants

⁷ Return migration trends vary markedly between different demographic groups of return migrants. In Tunisia, returnees aged 25-35 years were more likely to have come from France or Libya, while older workers were more likely to be arriving from Italy (as table 1 panel ii confirms).

Relatedly, among migrants who had return-migrated repeatedly, the pattern had changed across their migration spells. In Egypt it appears that migration was concentrated among fewer host countries in prior migration spells. Previous return migration involved returnees from Iraq (48% in ELMPS12 but as many as 62% in ELMPS06), Jordan (21% in ELMPS12) and Libya (8-9% in both the 2006 and 2012 waves). In Jordan, record is unclear. In the 2010 survey wave, those who had returned repeatedly arrived mostly from Palestine (41%), Kuwait (25%) and Saudi Arabia (6%) in their one-before-last migration spell, among a rather concentrated set of countries. In 2016, however, the few repeat migrants reporting their one-before-last host country had arrived from a variety of countries. In the Tunisian survey, there are too few repeat return migrants reporting their host countries.

⁸ Higher level of urbanization in the privileged versus disadvantaged regions is partly responsible for the trend in Egypt. Standard classification is used to delineate privileged regions: Greater Cairo, Alexandria and Suez Canal, and Urban Upper Egypt (versus Urban Lower, Rural Lower, and Rural Upper); Middle region (versus North and South) in Jordan; North, Center East, South East and South West (versus North West and Center West) in Tunisia.

appear to come from areas offering inadequate job opportunities to young men, be they rural markets or cities with an abundance of young qualified labour. Particularly in Jordan, very few return migrants come from rural areas in privileged regions.

Return-migrants in Egypt are more likely to have finished high school than non-migrants, but as likely to have earned university or higher degrees as non-migrants (less likely in 2012). In Jordan, return migrants tend to be clearly more educated than non-migrants – more likely to have attained high-school, university or post-graduate degrees. In Tunisia, return migrants are slightly less likely to have earned high-school or university degrees. In sum, this suggests that migration flow from Jordan is positively selected and could represent brain drain for the labour market if the workers' skills benefit other countries, while migration from Egypt (and to some degree Tunisia) is negatively selected and could possibly lead to brain gain if migrants return with improved sets of human and social capabilities. Nevertheless, across all three countries, return migrants are not substantially older than non-migrants (and typically younger in ELMPS 1998), with the average age difference being only 1–3 years. This suggests that it is mostly the duration of their stay abroad, and not some systematic generational or age effect that differentiates return migrants from non-migrants. Most migrants appear to leave at an early age, and to spend at most several years abroad. Hence, in our population of 35–55 year olds, their demographic distribution is similar to that of non-migrants.

Return migrants' own testimonies (table A2) help to confirm our conclusions drawn from table 2. Indeed, the mean age at which return migrants report to have gone abroad for the first time was 25–27. The vast majority of migrants report going abroad for one of the following reasons: finding a better job, unemployed seeking work, seeking higher wages, and helping family financially. Between 50 and 79 per cent of migrants intended to return, while the rest may have planned to stay abroad if economic conditions permitted it. As reasons for returning, most cite the end of their contract, or poor working conditions abroad, but many also mention intentions to get married as the main reason. For one-half of Jordanian migrants, it was the (presumably anticipated) end of their contract that forced them to return, and only one-tenth returned because of unexpectedly poor working conditions abroad. In Egypt and Tunisia, on the other hand, only 8–19 per cent returned because of the expiration of their contract, while 18–24 returned because of intolerable working conditions. 5 per cent of Egyptian return migrants (and 15 per cent of Jordanians) allegedly came back voluntarily, pulled by economic opportunities to start their own business.

Return migrants differ from non-migrants in their starting economic status. Now, information on workers' status prior to their first migration is limited, due to heterogeneity in workers' migration histories, and lack of explicit survey questions across all survey waves. Moreover, it is difficult to match outcomes in migrants' histories to those of non-migrants, because some workers' migrated repeatedly, at different ages, for different spells of time. Hence, we compare workers' wage earnings at particular points in time relative to the date of the survey: in their previous job, in their before-previous job, eight years prior to survey time,⁹ and in their father's job at the time the respondent was 15 years old. (Table A3 in appendix 1 shows this for earnings quintiles, to avoid problems due to imprecisely imputed earnings. Figure A2 illustrates.) Table 3 shows that return-migrants come from families where fathers earned not more, or strictly less than non-migrants' fathers (except a contrary estimate in JLMP16 based on a small sample). However, return migrants themselves have out-earned non-migrants at all of the evaluated points in time. The premium they have been receiving over non-migrants has not changed systematically across the evaluated points

⁹ In ELMPS 1998-2006 and JLMPs 2010, position held in August 1990, 1998, and February 1999 (q3104, q8004, and q904), respectively, is used. In ELMPS 2012 (TLMPs 2014 and JLMPs 2016, respectively), position attained before 2004 (2006, and 2008) and left after that year is used (q6101-q6104, job1-job4, job1-job10).

in time, and there is no evidence of raises that could be due to recent migration experiences. (Figure 1 illustrates. There are few exceptions, such as in TLMPs14 in the previous and before-previous jobs, on account of small samples.) This suggests that return-migrants may possess some time-constant qualities, unrelated to the qualities of their parents, that help explain their engagement in migration and allow them to outperform their peers throughout their careers.

To distill the partial contribution of individual characteristics and circumstances to workers' propensity to engage in return migration, we turn to regression analysis. Table 4 shows the results of probabilistic models of workers' status as return migrants as a function of their preexisting economic status, education, current age, household structure and birthplace. Educational achievement, age, and place of upbringing are confirmed to be systematic predictors of one's migration status, jointly as well as individually. Most coefficients on preexisting economic status, education, age, and urban and privileged birthplace have the expected signs. Across all countries, return migrants are shown to come from lower-earnings families, urban areas and disadvantaged regions, even after controlling for governorate-specific effects. Across most surveys, return migrants are more highly educated (in Tunisia the role of education is unclear), slightly older and come from slightly smaller households, in part because they tend to have some relatives currently abroad.

4.3 Economic outcomes of return migrants

Knowing the history of migrants' and non-migrants' socioeconomic status allows us to assess their respective economic progress, and comment on the role of migration in workers' career paths up to the current year. The top row in table 3 (and figure 1) shows that across all survey waves return migrants fare better in terms of occupation-group wages than their peers who have never migrated. This table reports on an exercise similar to a difference-in-difference analysis, helping to infer the causal effect of migration on workers' outcomes, for workers who were employed at multiple of the evaluated points in time. Under a hypothesis that return migrants self-select themselves from underperforming occupations, but rise to more lucrative occupations by investing in their human, social and physical capital, we should find that return-migrants underperformed in past years but catch up or overtake their non-migrant peers in current years. There is little evidence of that in table 3 panel 1, considering workers' current, previous, before-previous, and 8-years prior occupation group. The table shows that return-migrants always outperformed their non-migrant peers. The premium they received over non-migrants did not change systematically across the evaluated points in time.¹⁰

Table 5 generally confirms the findings in table 3 for several alternative indicators of workers' socioeconomic outcomes: Return migrants' individual gross wage earnings, household wage earnings (total and per capita), household wealth (total and per capita), having a job contract, being married, and heading own household. Across the majority of these indicators and surveys, return migrants tend to score higher or are more likely to have achieved them, substantially so in Egypt 2006, Jordan 2010 and Tunisia 2014.

Only in Egypt 2012 and Jordan 2016 return migrants appear to perform worse than non-migrants in terms of the three earnings indicators. This contradicts the finding in table 3 and figure 1, where

¹⁰ Table 3, panel 2, reports on a different take at the test of this hypothesis. It compares mean occupation-group earnings in selected past points in time to the mean earnings in occupation-groups from which current migrants came. This test is performed on a very small sample of eligible current migrants. We would expect that the occupations from which migrating household members came would be the underperforming occupations. This hypothesis does not appear to be supported in any of the three surveys where it can be evaluated – the occupation groups from which current migrants escaped were performing better than other sectors.

two data limitations were applied: occupation-group means rather than individuals' earnings were used, and the sample was limited to individuals with known occupation eight years previously. The latter restriction means that the larger sample in table 5 includes additional workers without job history in their home country, such as younger workers, the more highly educated or those who underwent longer stays abroad. In the post-revolution Egypt and Jordan, this sample may be including a crowd of return migrants with low qualifications competing with local youth for jobs, and a crowd of highly educated non-migrants with secure jobs. Another result in table 5 worth exploring further is that return migrants are typically more likely to hold job contracts – in all surveys except Jordan 2010 and Tunisia 2014. At the same time, return migrants are less likely to hold formal jobs – in Egypt 2012, Jordan 2010 and Tunisia 2014, with the only exception being Jordan 2016.¹¹ At least in Jordan 2010 and Tunisia 2014, the results may reflect the high prevalence of self-employment and entrepreneurship among return migrants.

Employment status in table 5 only distinguishes contract and non-contract jobs (and formal and informal jobs). It does not distinguish self-employed or unemployed workers, or those out of labour force. If, as evidenced in existing studies, return-migrants are more likely to become self-employed or employers thanks to the capital accumulated abroad (or if their non-employment status tends to be more due to preferences than to necessity or discouragement), the employment statistics in table 5 will underestimate the work status and welfare of return migrants. Another caveat is that gross wage earnings do not account for the number of hours worked, for the effort at work, or difficulty of work. If return migrants are systematically harder-working than non-migrants, their outperformance may be due to their greater effort or greater responsibility on the job, and not their return-migrant status per se. We cannot identify the role of return-migrants' inherent qualities or skills acquired abroad in the observed earnings gaps. Finally worth noting, household earnings and wealth do not account for household composition and size. If return migrants are less likely to currently have dependents, their performance in standards of living per capita may be better than reported in table 5. On the other hand, if return migrants come from larger families, their performance may be overestimated.

4.4 Lifetime and intergenerational mobility: non-migrants versus return migrants

Table 3 showed the mean transitions of wage earnings over time among non-migrants and among return migrants. Tables 6 and 7 follow up on it by reporting the transitions at each quintile of the distribution of wage earnings using Markov Chain transition matrices. These matrices show the joint densities of earnings quintiles in the current year versus eight years previously (or father's wage earnings, respectively), for non-migrants and return migrants. (Tables A4 and A5 in appendix 1 report the same statistics for non-migrants and return migrants combined, to review social mobility in the overall population.) The joint densities for return-migrants are more dispersed than those for non-migrants, implying greater social mobility among return-migrants. Densities are higher around the main diagonal and to the southwest of it, than to the northeast of it, suggesting that great upward jumps of a few fortunate individuals have not been accompanied by great falls of a few unlucky persons, but instead other individuals retained or only slightly lost their social standing. This suggests that opportunities for substantial upward mobility exist even in the MENA societies with substantial dependence between the outcomes of parents and their children. Migration and return migration may serve as pathways to such upward social mobility.

Tables 6 and 7 can be used to compute the Shorrocks (1978) mobility indexes, interpreted as the share of households that are in different quintiles on the two respective univariate distributions.

¹¹ This is not shown in table 5, but is available on request. The prevalence of workers' urban status, and residence in a privileged region is shown in table 2.

The sum of densities on the main diagonal¹² should be subtracted from five, and the result divided by four. Value of 1 would be interpreted as perfect mobility, while a value of 0 would indicate no mobility, or perfect determination. The Shorrocks mobility index – reported in the top row of tables 6–7 and A4–A5 – takes very different values across the national surveys analyzed and even across survey waves, but the values are consistently as high or higher among return-migrants than among non-migrants, confirming greater social mobility among migrants. This is somewhat true for intertemporal mobility over the span of eight years of workers’ careers but particularly for intergenerational mobility between the occupation of fathers and their sons. As a robustness check, Spearman rank-correlation coefficients are also reported for workers’ current and eight-years prior (or their fathers’) earnings quintiles, confirming substantially higher mobility – lower rank-correlation – among return migrants.

Evaluating symmetry of the transition matrices around the main diagonal we find that minor transitions (from one quintile to the next) are more prevalent than major transitions (across 2–4 quintiles), particularly within one’s lifetime. More people experience upward social mobility than downward mobility, particularly in Egypt 1998 and 2012, and particularly among return migrants. Not surprisingly, intergenerational mobility is much more substantial than mobility over the span of eight years (in terms of the quintiles jumped as well as in terms of the Shorrocks and Spearman statistics), particularly for upward mobility. Return migrants exhibit as much (and as beneficial) lifetime mobility as non-migrants, but significantly higher intergenerational mobility than non-migrants.¹³ This confirms yet again that return migrants have some qualities that are associated with their migration status and with higher socioeconomic achievements, but these qualities do not come from their parents, or from the migration experience itself.

Figure 1 illustrates. Fathers of return migrants are shown to occupy similar positions as the fathers of non-migrants, suggesting that household-level effects are not responsible for return migrants’ higher lifetime performance. Return migrants are shown to outperform non-migrants even in the previous occupation, occupation before previous, and eight-years prior occupation (with the exception of Tunisia). In Egypt 2012, return migrants come from lower-earning families, but they themselves earn as much as non-migrants in all of the evaluated times. These findings suggest that individual-level fixed effects contribute to migrants’ lifetime achievements.

Regression analysis can help us identify the stand-alone effect of workers’ characteristics and circumstances on their earnings (table 8). Current personal wage earnings are made a function of workers’ status as return migrants, migration destination, education, age, mean earnings in the occupation held eight years prior, mean earnings in father’s occupation group, and birthplace in an urban area or an economically privileged region. The results indicate that migration status does not have a significant earnings effect of either sign once other background characteristics are considered. Having worked in rich or Gulf countries has a weak positive effect. As expected, education has a strong and highly systematic effect on earnings, as does age. Now, earnings are also shown to be subject to path dependence over time. Occupation group from eight years prior has a large positive effect on current earnings, confirming strong lifetime propagation of one’s status. In Egypt 2012 and Jordan 2016, father’s occupation group also contributes significantly,

¹² I.e., either the upper-right or lower-left densities shown in tables 5 and 6. For instance, in table 5 for Egypt 2006 non-migrants, the Shorrocks mobility index is $= [5 - (0.31 + 0.38 + 0.56 + 0.68 + 0.77)] / 4 \approx [5 - (0.81 + 0.20 + 0.45 + 0.64 + 0.65)] / 4 \approx 0.57$.

¹³ Figure A3 in appendix 1 shows kernel joint-density plots of workers’ current and fathers’ earnings. Tables A6 and A7 show the analogous Markov Chain matrices for workers’ urban status (residence in a privileged region, respectively) at birth and currently. Because these indicators are binary, we restrict ourselves to observing whether worker’s mobility is upward or downward.

giving evidence of some intergenerational transmission of status. Similarly, having been born in an economically privileged region, and to some extent in an urban area, also helps.

Regressions in table 8 linked workers' individual earnings to a limited set of exogenous background factors, and omitted intermediate outcomes correlated with earnings such as workers' current job type or location. (As a robustness check, table A11 in appendix 3 reports this re-estimated for household wage earnings per capita. The results are analogous but less precise than in table 8.) The aim was to estimate the cumulative effect of background factors and migration on earnings, via various direct or indirect routes. This basic specification can be supplemented with indicators for current occupation group, employment status and sector (i.e., $\text{contract} \times \text{permanent} \times \text{sector}$ indicators), and governorate of residence. This alternative specification (table A12), can be used to estimate the between-occupation versus within-occupation difference between non-migrants & return migrants. If we viewed workers' occupation and location choice is exogenous, the impact of migration would be limited to the within-occupation earnings gap. Under this view, return-migration status is shown to have a negligible direct effect on wage earnings, of alternating signs across surveys. On the other hand, workers' occupation group, type of employment, and location indicators have significant impacts. This could mean that, rather than affecting wage earnings in any job directly, status as a return migrant has bearing on workers' opportunities regarding occupation, type of employment, sector and location. These choices may in turn affect workers' take-home earnings.

Results in table 8 (and table A12) offer a nuanced view of the role of factors that are in workers' power to influence, and those determined by their initial background. The results confirm a number of observations made earlier using pairs of variables, but also clarify which associations hold directly and which are due to correlations with some third factors. A word of caution is that these results should be viewed as tentative, without causal interpretation, because a number of important factors are omitted from the regressions, and some of the included factors (including migration status) may be driven by workers' unobservable qualities, ambitions and expectations. An important goal for future analysis will be to isolate the one-way causal effects of workers' characteristics and exogenously proffered skill investments on workers' lifetime outcomes. Instrumental variables that have been promulgated in existing research are, unfortunately, suspected to be weak or themselves problematic.

5 Conclusions

Existing studies have asserted that cross-border migration serves to match workers to employers, and alleviates national unemployment among young workers even as it puts pressure on urban labour markets. Outmigration affects households' division of labour and performance of local labour markets. By bringing an inflow of remittances to disadvantaged and rural regions, particularly in Jordan and Egypt, migration alleviates economic inequality.

Our study has attempted to shed clearer light on the role of migration in workers' lifetime and intergenerational mobility. Our findings offer important insights about the extent, nature and dynamics of social mobility, particularly in relation to the prevalent flows of cross-border migration. We find that migration trends differ systematically between the three countries, as well as across years before and after the Arab Spring, both in their prevalence and their impact on workers' labour market outcomes.

Workers' migration destination is driven by economic as well as historical and geographic considerations, resulting in highly concentrated migrant flow from Egypt and Tunisia, but more

diffused migration from Jordan. Prospects of work authorization, labour demand factors, and network effects due to existing ethnic communities in destination countries are some of the factors at play. Egyptian migrants predominantly come from rural areas and disadvantaged governorates, and are less educated, while in Jordan the opposite is the case. Tunisia represents an intermediate case, with migrants slightly less educated but also less likely to be rural than non-migrants. Upon return, migrants tend to find employment in higher earning occupations, move to more economically privileged and urbanized areas, and achieve other desirable socioeconomic outcomes relative to non-migrants. Comparing their current outcomes to those eight years prior and to those of their fathers shows that return migrants are more socially and inter-generationally mobile than non-migrants. This holds across all three countries. These findings suggest that regulated (re-)return migration could mitigate constraints on intergenerational mobility in MENA countries with opportunity traps. Moreover, we know that regulated migration can offer short-term benefits to recipient countries without subjecting them to long-term political risks. This would call for interagency and intergovernmental cooperation in enabling and managing informed flow of migration across the MENA region and beyond.

In regard to social mobility within workers' lifetimes, however, return migrants outperform non-migrants not only currently, but also in the previous occupation, occupation before previous, and eight years in the past. Whether we evaluate mobility between 2 successive occupations, or occupations 8 years apart, return migrants and non-migrants exhibit similar degree of earnings mobility. This puts into question whether migration experience per se has a causal impact, rather pointing to individual-level predispositions and time-invariant characteristics (but not household backgrounds).

How to interpret the results, however, is unclear. One possibility is that prospective migrants invest more intensively in their marketable skills – beyond those revealed by their educational attainment – and this allows them to outperform non-migrants in all stages of their careers regardless when the actual migration took place. More research is needed to isolate the causal effect of migration spells, and migration expectations, on their lifetime outcomes. Instrumental variables that have been promulgated in existing research are, unfortunately, suspected to be weak or problematic on theoretical grounds. New instruments for the shocks to workers' migration plans or to the timing of migration are needed. Another area for further research is the construction of the migration indicator itself. Rather than a binary indicator, a better measure would incorporate some of the economic implications of migration, such as direct and indirect costs, duration of stay, or exposure of a worker to economic life abroad, including how relevant employment abroad was to a worker's career at home. All of these affect the true impact of migration experience on workers' welfare. A migration index accounting for distance and direction of travel would be a start.

As the last thought, we concur that we have yet failed to find evidence that migration helps to promote mobility of economic status over workers' lifetimes. We surmise that migration does have a beneficial role with respect to intergenerational and lifetime mobility, but in order for this benefit to be shared with individuals other than those predisposed for migration and for economic success, non-governmental and governmental actors should exert effort to enable even disadvantaged workers to partake in this opportunity enhancing careers, family welfare and social structure.

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Table 1. Top 10 destination countries (% of return migrants)

i. Most recent spell of return migration

Egypt 1998i			Egypt 2006		Egypt 2012		Jordan 2010		Jordan 2016		Tunisia 2014	
1	#8 (Iraq?)	36.27	Iraq	38.47	Saudi A.	28.23	Saudi A.	21.16	Saudi A.	27.11	Italy	34.77
2	#1 (Saudi A.?)	32.75	Saudi A.	31.39	Iraq	25.43	Palestine	20.86	Kuwait	19.37	Libya	30.53
3	#15 (Jordan?)	7.95	Jordan	13.06	Libya	16.07	Kuwait	20.70	USA	8.43	France	19.18
4	#2 (Libya?)	7.47	Libya	7.93	Jordan	10.94	Iraq	6.56	Bahrain	7.26	USA	3.02
5	#12 (Kuwait?)	7.12	Kuwait	3.95	Kuwait	5.41	UAE	5.41	Palestine	7.14	Saudi A.	2.95
6	#6	2.22	UAE	1.27	UAE	4.72	USA	4.42	Germany	4.01	Oman	1.93
7	#21	2.02	Yemen	1.08	Qatar	1.72	Syria	2.54	Oman	3.22	Morocco	1.23
8	#4	1.67	Lebanon	0.83	Lebanon	1.39	Bahrain	1.46	Qatar	2.88	Belgium	0.81
9	#3	0.83	Italy	0.66	Netherl.	1.11	Romania	1.26	Iraq	2.74	Algeria	0.73
10	#22	0.73	Greece	0.50	USA	0.62	UK	1.13	Libya	2.03	Other	--
		99% of 278 migrants		99% of 291 migrants		96% of 903 migrants		86% of 320 migrants		84% of 87 migrants		95% of 76 migrants

Note: Statistics account for individuals' sampling weights. Sample is restricted to male nationals 35–55 years old.

ⁱ In Egypt 1998, due to an unknown country-labeling system, only the top 5 destination countries can be identified with some degree of certainty.

ii. Spell of return migration before the most recent one

Egypt 1998 ⁱ			Egypt 2006		Egypt 2012		Jordan 2010		Jordan 2016		Tunisia 2014	
1	#1 (Saudi A.?)	33.77	Iraq	62.06	Iraq	47.93	Palestine	40.82	Yemen	15.64	Italy	34.38
2	#8 (Iraq?)	27.11	Libya	7.76	Jordan	21.42	Kuwait	24.93	Saudi A.	14.67	Saudi A.	30.87
3	#15 (Jordan?)	13.24	Saudi A	7.39	Libya	8.8	Saudi A.	6.18	France	10.74	Libya	20.55
4	#12 (Kuwait?)	10.21	Jordan	5.81	Saudi A.	7.27	Lebanon	4.17	Palestine	8.58	France	14.2
5	#2 (Libya?)	6.94	UAE	5.56	Kuwait	3.2	USA	3.98	Oman	8.51		
6	#21	5.07	Kuwait	5.08	Lebanon	2.62	Syria	3.82	Syria	0.42		
7	#7	1.82	Lebanon	2.56	UAE	1.77	Germany	2.06	Egypt	0.24		
8	#10	1.82	Yemen	2.10	Yemen	1.74	Russia	2.05	Other	--		
9			Austria	1.69	Netherl.	1.25	Brazil	1.73				
10					Iceland	0.94	Iraq	1.56				

100% of 36 migrants	100% of 38 migrants	97% of 130 migrants	91% of 108 migrants	59% of 10 migrants	100% of 5 migrants
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Note: Statistics account for individuals' sampling weights. Sample is restricted to male nationals 35–55 years old.

ⁱ In Egypt 1998, due to an unknown country-labeling system, only the top 5 destination countries can be identified with some degree of certainty.

Source: Authors' calculations based on LMPS data.

Table 2. Demographics by status as return migrant (%workers; age)

	Return migrant	EG98	EG06	EG12	JO10	JO16	TU14
Urban residence at birth	N	47.53%	44.92%**	46.38%***	80.48%***	87.56%**	61.99%
	Y	48.22%	35.12%	35.81%	88.92%	92.79% ⁱ	65.82% ⁱ
Privileged region at birth	N	37.65%*	35.51%***	37.01%***	55.46%**	57.78%*	75.56%
	Y	37.09%	20.85%	23.71%	48.06%	38.19%	70.61%
Preparatory-school educated	N	8.40%***	7.92%***	20.15%**	15.82%***	0.52%	13.91%**
	Y	4.30%	2.82%	14.88%	10.98%	7.17% ⁱ	17.50% ⁱ
High-school educated	N	26.71%***	35.86%***	32.59%***	30.69%**	28.76%	14.64%**
	Y	47.27%	53.83%	41.88%	37.07%	38.24% ⁱ	14.06% ⁱ
University educated	N	18.56%**	19.41%	17.94%***	11.23%***	10.31%***	9.10%
	Y	25.23%	19.11%	15.23%	19.43%	20.89% ⁱ	7.43% ⁱ
Post-graduate educated	N						
	Y	1.78%	1.03%	1.70%	2.69%***	2.73%***	1.04%
	Y	1.50%	0.90%	0.90%	9.12%	11.60% ⁱ	2.10% ⁱ
Mean age (age 35≤age≤55)	N						
	Y	44.42***	44.39***	43.19***	42.51***	44.26	44.75**
	Y	42.92	45.51	45.89	44.94	45.22 ⁱ	45.82 ⁱ

Notes: Education level attained rather than just attended. ⁱ Evaluated over small sample sizes of return migrants in JO16 and TU14 (48–85 individuals). Samples are restricted to male nationals 35–55 years old. Difference of means significant at * 10%, ** 5%, *** 1% using estimate standard errors.

Source: Authors' calculations based on LMPS data.

Table 3. Mean occupation-group gross earnings at different points in time, by status as migrant (PPP2012\$)

	Return migrant	EG98	EG06	EG12	JO10	JO16	TU14
Panel 1: Mean earnings in all occupation-groups, among non-migrant and return-migrant workers							
Occupation-group mean earnings, current job	N	250.48***	361.96	370.96	704.23	707.34	576.06
	Y	288.60	375.28	375.81	772.92	797.80 ⁱ	593.98 ⁱ
Occupation-group mean earnings, previous job	N	248.27***	350.36**	315.29	743.16*	405.70	489.43*
	Y	295.46	365.97	315.82	848.56	438.96 ⁱ	460.41 ⁱ
Occupation-group mean earnings, before previous job	N	235.30***	337.09**	316.24	687.43**	385.27 ⁱ	483.38
	Y	278.53	350.16	313.58	803.75	362.97 ⁱ	451.10 ⁱ
Occupation-group mean earnings, 8 years prior	N	244.86***	382.06*	355.02*	743.80*	418.61*	563.80
	Y	287.38	390.19	348.43	838.80	444.70 ⁱ	594.63 ⁱ
Occupation-group mean earnings, father's occupation	N	187.74	328.07	345.08***	850.60	376.59*	481.67
	Y	187.78	321.95	324.68	814.80	465.19 ⁱ	447.01 ⁱ

Note: Statistics account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Evaluated only among workers with known occupations 8 years prior. ⁱ Evaluated over small sample sizes in JO16 and TU14 (12–97 individuals). Sample is restricted to male nationals 35–55 years old. Difference of means significant at * 10%, ** 5%, *** 1% using estimate standard errors on non-weighted samples.

Panel 2: Mean earnings in all occupation groups vs. those from which currently-migrating household members came							
Occ.-group mean earnings, previous job		257.37	353.88	315.45	761.14	409.06	487.93
Occ.-group mean earnings, before prev.		245.73	342.55	314.65	715.36	386.50	469.16
Occ.-group mean earnings, 8 years prior		250.07	382.93	353.82	763.63	419.68	566.15
Mean current earnings, occupation-groups from which current migrants left		--	--	385.42	--	740.07	521.10

Note: Statistics account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job (for current migrants, only by their 2-digit occupation code and public vs. private sector). In rows 1–2, overall sample is restricted to male nationals 25–55 years old, and weighted by the representation of each occupation group in the overall sample (including individuals' sampling weights). In row 3, current-migrant sample is restricted to male nationals 23–55 years old, giving samples of 6 current migrant in JO16, 6 in TU14, and 50 in EG12 (using the 35–55 age cutoff, the samples would have been 1, 2 and 9, respectively; a 25–55 cutoff would have yielded 5, 5 and 40 observations, respectively). Mean earnings are weighted by the count of current migrants from each occupation group.

Source: Authors' calculations based on LMPS data.

Table 4. Probit regressions of demographic drivers of return migration

Dep.var.: 1(return migrant)	EG98	EG06	EG12	JO10	JO16	TU14
Log occupation-group wage earnings of father	-0.093*	-0.114	-0.068	-0.155	-0.021	-0.104
	(0.051)	(0.139)	(0.091)	(0.187)	(0.375)	(0.228)
Log occupation-group wage earnings, 8 yrs prior	0.079	0.105	-0.198*	-0.065	0.157	0.036
	(0.107)	(0.138)	(0.117)	(0.127)	(0.233)	(0.249)
Post-primary, preparatory edu.	-0.015	-0.027	0.091	0.174	2.131***	-0.123
	(0.220)	(0.182)	(0.085)	(0.192)	(0.509)	(0.224)
Secondary edu.	0.456***	0.518***	0.413***	0.407***	0.593**	-0.125
	(0.128)	(0.101)	(0.073)	(0.144)	(0.278)	(0.239)
University edu.	0.330**	0.415***	0.265***	0.714***	0.638**	0.041
	(0.153)	(0.131)	(0.100)	(0.174)	(0.327)	(0.339)
Post-graduate edu.	0.301	0.490	-0.124	1.048***	1.673***	--
	(0.337)	(0.335)	(0.254)	(0.253)	(0.461)	
Age	-0.030***	0.019***	0.047***	0.070***	-0.004	0.006
	(0.009)	(0.006)	(0.005)	(0.010)	(0.014)	(0.013)

Household size	-0.032 (0.026)	0.027 (0.020)	-0.004 (0.015)	-0.057** (0.029)	0.004 (0.070)	-0.020 (0.060)
Urban birthplace	0.096 (0.172)	0.019 (0.126)	-0.070 (0.083)	0.154 (0.158)	0.365 (0.243)	0.271 (0.180)
Privileged birthplace residence	-0.137 (0.231)	-0.142 (0.150)	-0.084 (0.124)	-0.203 (0.226)	-0.201 (0.468)	-0.802*** (0.314)
Governorate indicators	Y*** ^a	Y***	Y***	Y***	Y***	Y***
Constant	-0.133 (0.803)	-2.989*** (1.130)	-1.795** (0.782)	-3.123** (1.511)	-3.641 (2.619)	-2.134 (2.209)
Observations	1,719	2,757	4,423	1,729	1,529	1,070
Pseudo R2	0.0910	0.153	0.0927	0.157	0.212	0.153
Wald Chi2	95.79***	186.90***	264.70***	112.60***	67.11***	58.79***

Notes: Binary indicator for return migrants is the dependent variable. All regressions are weighted using survey sampling weights. Probit coefficients are shown. Significant at * 10%, ** 5%, *** 1% using two-sided tests on standard errors robust to arbitrary heteroskedasticity (in parentheses). Sample is restricted to male nationals 35–55 years old with a known return-migrant status.

^a Asterisks on governorate indicators indicate joint significance. Governorate indicators (and post-graduate education in TU14) that perfectly predict return/non-migration are omitted by the design of the probit model; all observations from those governorates are also omitted.

Source: Authors' calculations based on LMPS data.

Table 5. Economic outcomes by status as return migrant (PPP2012\$, %workers)

	Return migrant	EG98	EG06	EG12	JO10	JO16	TU14
Ind. wage earnings	N						
	Y	274.43	379.53*	388.99	861.45	689.58	604.44**
Hhd. wage earnings per capita	N	273.58	422.68	368.60	908.99	604.43	740.92
	Y	71.76	101.24	105.41*	184.40**	158.52	180.50*
Hhd. wage earnings	N	72.53	99.86	98.75	243.61	120.32	222.32
	Y	363.25	479.31	465.65	1,025.47	801.68	721.49***
Hhd. wealth index per capita	N	367.22	502.50	461.78	1,180.40	684.44	837.30
	Y	7.32***	8.65	6.79*	7.11***	7.44***	9.98*
Hhd. wealth index	N	8.91	8.65	6.95	9.58	8.67	11.55
	Y	35.56***	39.34***	29.12	37.66***	36.05***	39.11**
Contract job	N	41.57	41.27	29.20	44.82	39.39	41.88
	Y	52.34%	49.42%	59.67%	56.35%**	50.43%	53.83%**
Married	N	59.03%	52.75%	59.26%	52.41%	60.37%	45.66%
	Y	94.46%	94.28%***	95.43%*	94.86%	93.86%	89.86%
Household head	N	94.99%	96.39%	95.97%	95.34%	94.94%	91.61%
	Y	90.45%**	89.63%***	91.32%***	95.41%	94.18%	89.45%
		93.29%	95.38%	94.53%	96.23%	96.17%	92.53%

Note: Statistics account for individuals' sampling weights. Sample is restricted to male nationals 35–55 years old. Difference of means significant at * 10%, ** 5%, *** 1% using estimate standard errors on non-weighted samples.

Source: Authors' calculations based on LMPS data.

Table 6. Joint distribution densities of current and 8-year earlier earnings: non-migrants vs. return migrants (%individuals in earnings quintiles)

		Non-migrants (Shorrocks=0.13, Spearman=0.89)					Return migrants (Shorrocks=0.30, Spearman=0.72)				
Egypt 98	8-yr prior:										
	1	2	3	4	5	1	2	3	4	5	
Current:	94.37		2.51	2.09	1.03	70.08		6.92	20.25	2.75	
1	91.17		3.84	2.28	0.92	78.26		5.82	11.10	0.99	
2											
3	6.13		83.26	4.04	6.57	5.19		76.22	1.63	16.96	
	4.21		90.80	3.13	4.19	6.06		67.06	0.93	6.37	
4	2.63		1.01	92.70	3.65	4.64		7.19	77.91	10.26	
	2.21		1.35	87.77	2.84	9.74		11.39	80.35	6.94	
5	2.18		2.29	5.49	90.04	1.92		6.76	5.02	86.29	
	2.41		4.01	6.82	92.05	5.94		15.74	7.61	85.71	

		Non-migrants (Shorrocks=0.57, Spearman=0.63)					Return migrants (Shorrocks=0.71, Spearman=0.49)				
Egypt 06	8-yr prior:										
	1	2	3	4	5	1	2	3	4	5	
Current:	31.19	0.85	54.13	9.29	4.54	32.32	0	54.35	10.89	2.44	
1	81.45	36.65	34.67	7.58	3.48	80.84	0	44.54	7.89	1.71	
2	16.41	37.74	15.57	5.21	25.06						
	0.53	20.13	0.12	0.05	0.24						
3	3.26	0.26	55.94	18.46	22.08	2.60	0	29.67	27.89	39.84	
	10.58	14.15	44.56	18.74	21.04	7.62	0	28.53	23.73	32.83	
4	1.49	0.31	18.29	68.01	11.90	1.44	0	18.39	59.81	20.37	
	4.46	15.52	13.45	63.74	10.47	4.35	0	18.25	52.53	17.33	
5	1.04	0.29	10.28	11.08	77.31	2.75	0.55	10.14	20.92	65.63	
	2.98	13.55	7.20	9.88	64.77	7.19	100	8.67	15.84	48.13	

		Non-migrants (Shorrocks=0.22, Spearman=0.80)					Return migrants (Shorrocks=0.41, Spearman=0.65)				
Egypt 12	8-yr prior:										
	1	2	3	4	5	1	2	3	4	5	
Current:	81.43	5.55	5.18	3.89	3.95	65.22	10.05	19.50	3.37	1.86	
1	73.22	8.28	4.59	3.43	4.18	44.8	11.32	9.64	2.87	1.38	
2	8.29	87.41	2.63	0.94	0.73	20.70	60.17	17.05	0	2.08	
	4.70	82.33	1.47	0.53	0.48	14.52	69.21	8.61	0	1.58	
3	7.98	1.44	84.01	4.31	2.25	12.89	3.95	75.63	2.45	5.07	
	8.07	2.41	83.62	4.27	2.68	15.13	7.60	63.91	3.58	6.45	
4	7.98	1.35	5.93	81.64	3.10	16.97	3.51	13.46	63.89	2.17	
	8.47	2.37	6.20	84.92	3.88	17.58	5.96	10.04	82.20	2.44	
5	5.83	2.92	4.42	7.37	79.45	7.05	3.19	9.59	8.10	72.07	
	5.54	4.60	4.13	6.86	88.77	7.96	5.91	7.80	11.35	88.15	

		Non-migrants (Shorrocks=0.85, Spearman=0.23)					Return migrants (Shorrocks=0.84, Spearman=0.22)				
Jordan 10	8-yr prior:										
	1	2	3	4	5	1	2	3	4	5	
Current:	3.26	9.82	6.75	52.77	27.40	5.98	12.27	18.32	26.47	36.96	
1	13.28	8.46	3.70	11.88	8.33	24.27	12.82	8.93	11.76	9.62	
2	1.93	25.29	13.45	40.82	18.51	7.16	28.50	26.84	26.49	11.01	
	4.75	13.19	4.46	5.56	3.41	11.38	11.67	5.12	4.61	1.12	
3	1.74	23.63	36.07	24.46	14.10	0.83	11.53	39.05	22.59	26.01	
	13.83	39.71	38.56	10.74	8.36	7.80	27.82	43.96	23.17	15.64	
4	3.34	7.10	12.82	49.74	27.01	2.37	7.79	12.27	34.86	42.72	
	51.56	23.16	26.60	42.42	31.10	22.80	19.29	14.17	36.70	26.35	
5	1.12	4.97	13.46	36.09	44.37	2.54	8.29	17.42	16.33	55.42	

	16.58	15.48	26.68	29.40	48.80	33.75	28.40	27.82	23.76	47.26
Non-migrants (Shorrocks=0.66, Spearman=0.48)						Return migrants (Shorrocks=0.83, Spearman=0.46)				
Jordan 16	8-yr prior: 1	2	3	4	5	1	2	3	4	5
Current:	31.06	58.94	7.90	1.07	1.03	33.38	42.42	0	24.19	0
1	34.39	33.66	9.01	1.43	6.02	58.57	15.04	0	7.36	0
2	22.96	71.29	5.37	0.38	0	0.50	16.77	82.73	0	0
	25.65	41.09	6.19	0.51	0	0.53	3.59	11.23	0	0
3	22.66	8.12	60.07	6.25	2.89	15.65	6.67	77.67	0	0
	19.29	3.56	52.69	6.45	12.99	40.89	3.52	25.99	0	0
4	14.50	12.93	8.90	61.49	2.18	0	19.67	44.27	36.06	0
	12.24	5.63	7.74	62.87	9.70	0	31.89	45.49	50.14	0
5	8.40	30.98	23.55	23.61	13.45	0	36.04	21.41	38.87	3.68
	8.44	16.05	24.37	28.73	71.29	0	45.95	17.30	42.50	100

Non-migrants (Shorrocks=0.22, Spearman=0.82)						Return migrants (Shorrocks=0.37, Spearman=0.53)				
Tunisia 14	8-yr prior: 1	2	3	4	5	1	2	3	4	5
Current:	81.14	7.82	7.50	2.14	1.40	79.51	14.49	0	6.01	0
1	79.75	7.50	4.71	2.22	1.26	68.50	21.70	0	15.89	0
2	6.78	74.37	13.03	5.46	0.37	17.24	68.44	14.31	0	0
	6.88	73.59	8.47	5.84	0.34	4.59	31.65	2.76	0	0
3	4.85	4.33	87.02	2.35	1.45	11.40	7.17	65.54	5.41	10.47
	7.11	6.19	81.61	3.64	1.95	23.35	25.53	97.24	34.04	21.25
4	5.15	9.26	3.29	80.60	1.70	20.50	23.41	0	56.09	0
	5.05	8.85	2.06	83.39	1.54	3.57	7.08	0	29.97	0
5	1.02	3.37	4.15	3.94	87.51	0	8.58	0	6.96	84.46
	1.21	3.88	3.14	4.91	94.92	0	14.04	0	20.10	78.75

Note: Densities account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

Table 7. Joint distribution densities of son's and father's earnings: non-migrants vs. return migrants (%sons in earnings quintiles)

Non-migrants (Shorrocks=0.81, Spearman=0.33)						Return migrants (Shorrocks=0.82, Spearman=0.25)				
Egypt 98	Father: 1	2	3	4	5	1	2	3	4	5
Son:	85.26		8.05	4.62	2.06	89.49		7.09	3.41	0
1	38.44		5.71	6.97	2.69	25.40		3.16	2.99	0
2										
3	38.51		37.44	12.11	11.93	32.36		38.18	10.66	18.80
	24.94		38.12	26.22	22.30	18.37		34.05	18.69	25.62
4	40.80		27.52	18.44	13.23	41.66		26.94	15.88	15.51
	18.81		19.95	28.43	17.60	23.49		23.86	27.65	21.00
5	24.66		31.90	15.89	27.55	34.04		25.78	17.07	23.12
	17.81		36.22	38.38	57.42	32.73		38.93	50.67	53.37

Non-migrants (Shorrocks=0.79, Spearman=0.44)						Return migrants (Shorrocks=0.87, Spearman=0.38)				
Egypt 06	Father:									
	1	2	3	4	5	1	2	3	4	5
Son:	31.96	55.97	6.45	2.57	3.05	34.64	57.13	2.94	2.56	2.72
1	43.57	43.63	6.05	2.88	3.99	43.42	37.81	3.75	2.59	4.04
2	29.29	47.36	3.84	6.91	12.61	0	0	0	100	0
	1.62	1.50	0.15	0.31	0.67	0	0	0	0.88	0
3	16.31	23.39	29.44	16.27	14.59	15.12	33.42	24.62	14.45	12.40
	33.93	27.81	42.13	27.85	29.10	27.43	32.02	45.47	21.18	26.66
4	9.47	17.79	26.79	28.71	17.24	11.81	22.15	17.68	30.62	17.74
	17.24	18.52	33.56	43.01	30.08	20.15	19.95	30.69	42.20	35.88
5	3.19	13.07	23.08	27.62	33.05	7.67	16.51	16.82	34.97	24.04
	3.64	8.53	18.12	25.94	36.16	9.00	10.22	20.08	33.14	33.42

Non-migrants (Shorrocks=0.83, Spearman=0.35)						Return migrants (Shorrocks=0.89, Spearman=0.29)				
Egypt 12	Father:									
	1	2	3	4	5	1	2	3	4	5
Son:	78.82	5.12	4.24	7.69	4.13	86.57	3.66	2.74	3.72	3.31
1	33.65	7.60	10.21	11.94	4.81	31.72	7.45	7.87	6.32	4.92
2	47.76	23.88	6.74	10.89	10.73	52.22	15.55	4.70	10.76	16.77
	21.54	37.49	17.13	17.86	13.18	17.22	28.49	12.14	16.46	22.41
3	41.42	16.48	15.89	11.21	15.00	53.48	15.39	14.55	10.79	5.79
	13.61	18.85	29.43	13.39	13.42	15.55	24.86	33.17	14.57	6.83
4	41.96	11.81	9.22	18.21	18.8	46.49	8.76	11.80	18.10	14.86
	19.99	19.58	24.75	31.55	24.40	14.52	15.19	28.91	26.23	18.81
5	26.45	11.18	7.73	16.37	38.27	44.61	9.19	4.85	16.68	24.67
	11.21	16.49	18.48	25.25	44.20	20.99	24.01	17.90	36.42	47.03

Non-migrants (Shorrocks=0.14, Spearman=0.72)						Return migrants (Shorrocks=0.09, Spearman=0.78)				
Jordan 10	Father:									
	1	2	3	4	5	1	2	3	4	5
Son:	65.70	14.73	9.15	2.76	7.65	58.91	14.79	16.67	2.93	6.69
1	72.62	12.51	5.08	5.78	5.18	88.72	10.91	12.07	6.11	8.67
2	1.77	95.79	1.45	0.27	0.72	1.96	98.04	0	0	0
	1.86	77.42	0.76	0.54	0.47	3.39	82.93	0	0	0
3	7.89	4.58	63.55	2.92	21.06	2.40	6.59	71.44	5.97	13.61
	21.03	9.39	84.98	14.79	34.41	4.58	6.16	65.60	15.79	22.37
4	3.54	1.09	22.9	68.12	4.35	0	0	24.29	67.61	8.10
	2.10	0.49	6.79	76.47	1.58	0	0	8.72	69.91	5.20
5	2.30	0.24	4.58	1.22	91.66	2.97	0	25.37	5.29	66.36
	2.39	0.19	2.39	2.42	58.37	3.32	0	13.62	8.18	63.76

Non-migrants (Shorrocks=0.14, Spearman=0.17)						Return migrants (Shorrocks=0.09, Spearman=0.17)				
Jordan 16	Father:									
	1	2	3	4	5	1	2	3	4	5
Son:	78.19	14.00	7.19	0.61	0	54.59	45.41	0		0
1	26.08	10.63	12.90	6.27	0	6.12	10.13	0		0
2	59.84	30.50	8.61	0.77	0.28	52.18	42.47	5.35		0
	17.9	20.76	13.84	7.09	10.08	20.97	33.96	5.01		0
3	63.36	20.13	15.96	0.28	0.27	43.66	24.76	20.04		11.54
	21.68	15.67	29.36	2.96	10.97	31.68	35.74	33.89		100.00
4	52.34	33.94	10.53	2.27	0.91	49.17	10.97	39.86		0
	21.12	31.17	22.86	28.10	44.56	27.37	12.15	51.73		0
5	45.92	33.22	13.58	6.29	0.99	63.24	18.4	18.36		0
	13.22	21.77	21.03	55.58	34.39	13.84	8.02	9.37		0

Non-migrants (Shorrocks=0.79, Spearman=0.32)						Return migrants (Shorrocks=0.83, Spearman=0.12)				
Tunisia 14	Father: 1	2	3	4	5	1	2	3	4	5
Son:	78.68	10.92	3.60	2.63	4.18	83.90	0	11.48	4.63	0
1	33.35	9.21	5.52	8.20	8.41	35.48	0	17.85	14.08	0
2	44.46	35.18	7.23	5.03	8.10	39.30	51.3	9.40	0	0
	28.44	44.78	16.75	23.68	24.61	25.63	76.19	22.55	0	0
3	39.34	21.21	26.17	7.03	6.26	12.64	31.60	48.97	6.8	0
	13.57	14.56	32.69	17.85	10.25	4.18	23.81	59.6	16.18	0
4	31.44	25.98	20.94	11.83	9.79	69.34	0	0	30.66	0
	9.81	16.12	23.66	27.17	14.5	8.96	0	0	28.48	0
5	36.64	19.04	14.58	7.75	21.98	67.63	0	0	15.07	17.31
	14.83	15.33	21.37	23.10	42.22	25.74	0	0	41.26	100

Note: Densities account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

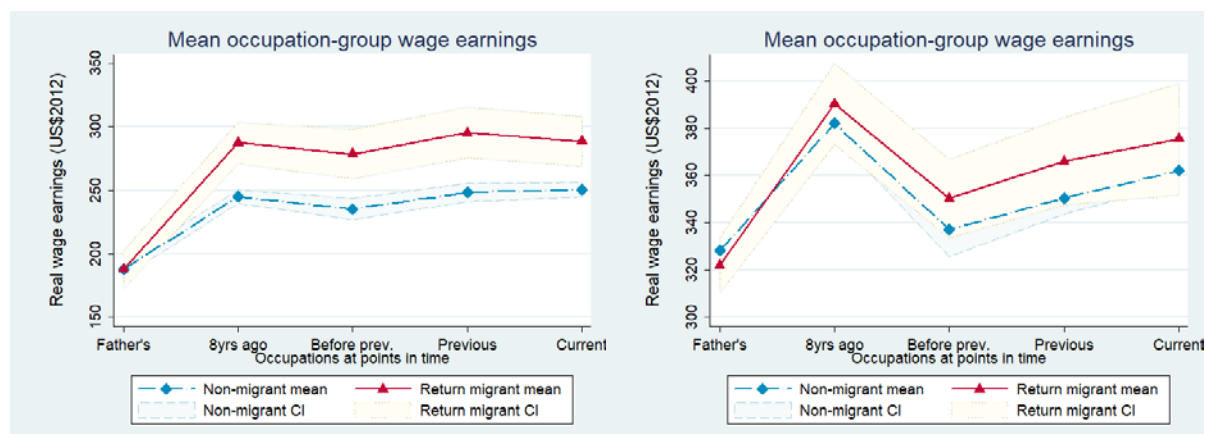
Table 8. Results of OLS regressions estimating return-migrant premium in personal wage earnings

Dep.var.: log(pers. wage earn.)	EG98	EG06	EG12	JO10	JO16	TU14
Return migrant	-0.064 (0.050)	0.001 (0.044)	-0.005 (0.038)	0.045 (0.123)	-0.048 (0.101)	0.175 (0.155)
Destination: rich & Gulf countries	--	0.283 (0.264)	0.155** (0.079)	0.039 (0.160)	-0.058 (0.212)	-0.077 (0.218)
Post-primary, preparatory edu.	0.107* (0.065)	0.120* (0.069)	0.126*** (0.045)	0.079 (0.066)	0.527*** (0.150)	0.107 (0.079)
Secondary edu.	0.069* (0.040)	0.117*** (0.039)	0.213*** (0.040)	0.289*** (0.058)	0.161** (0.080)	0.276*** (0.066)
University edu.	0.339*** (0.052)	0.344*** (0.054)	0.384*** (0.050)	0.655*** (0.084)	0.419*** (0.091)	0.539*** (0.074)
Post-graduate edu.	0.654*** (0.111)	0.560*** (0.159)	0.404*** (0.124)	0.780*** (0.165)	0.721*** (0.136)	0.709*** (0.112)
Age	0.016*** (0.003)	0.017*** (0.003)	0.008*** (0.002)	0.004 (0.005)	-0.001 (0.007)	0.006 (0.004)
Log occupation-group wage earnings, 1990	0.563*** (0.078)	0.438*** (0.061)	0.424*** (0.057)	0.071 (0.070)	0.075 (0.079)	0.678*** (0.079)
Log occupation-group wage earnings, father	0.028** (0.014)	0.055 (0.059)	0.128*** (0.044)	0.067 (0.066)	0.294*** (0.114)	0.063 (0.078)
Urban birthplace	-0.026 (0.040)	0.096* (0.052)	0.015 (0.039)	0.066 (0.046)	0.131* (0.075)	0.041 (0.059)
Privileged birthplace region	0.268*** (0.036)	0.117** (0.051)	0.160*** (0.042)	0.072 (0.048)	-0.093 (0.063)	0.065 (0.058)
Constant	1.586*** (0.452)	1.962*** (0.405)	2.024*** (0.395)	5.064*** (0.657)	3.555*** (0.947)	1.237 (0.778)
Observations	1,272	1,929	3,080	1,088	851	478
R-squared	0.412	0.210	0.163	0.151	0.106	0.364
Wald F	48.42***	39.52***	33.96***	12.48***	9.920***	38.73***

Notes: Log personal wage earnings are the dependent variable. All regressions are weighted using survey sampling weights. Significant at * 10%, ** 5%, *** 1% using two-sided tests on standard errors robust to arbitrary heteroskedasticity (in parentheses). Sample is restricted to male nationals 35–55 years old.

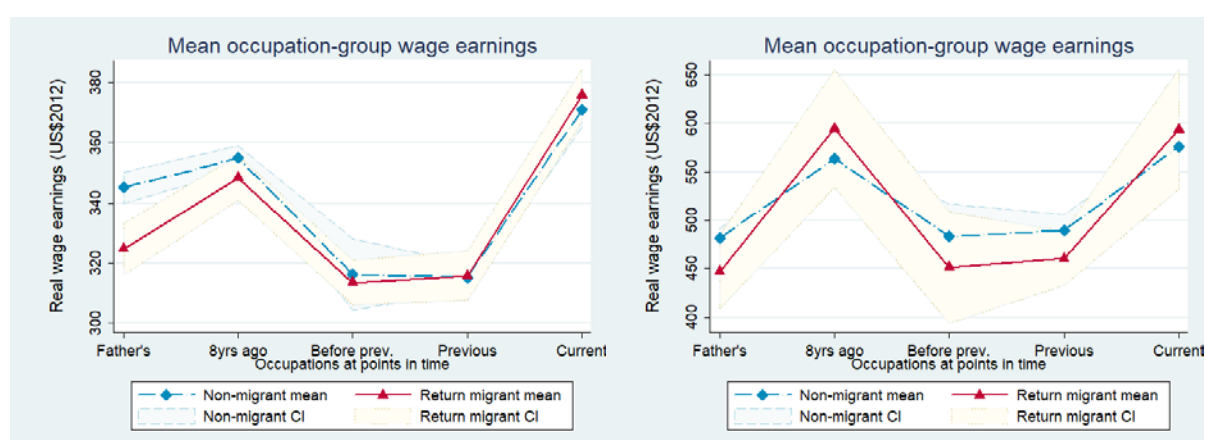
Source: Authors' calculations based on LMPS data.

Figure 1. Wage earnings evolution over lifetime, non-migrants vs. return migrants (PPP2012\$)



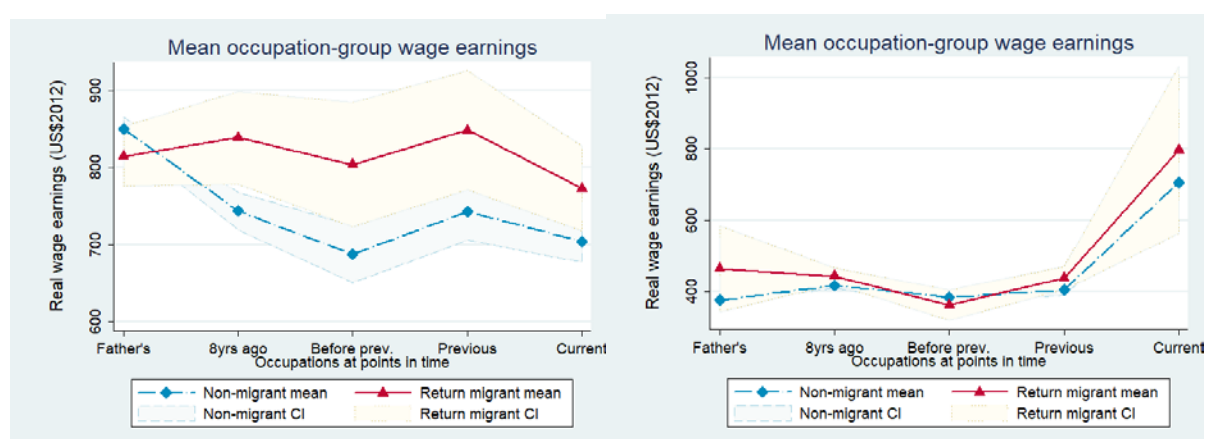
i. Egypt 1998

ii. Egypt 2006



iii. Egypt 2012

iv. Tunisia 2014



v. Jordan 2010

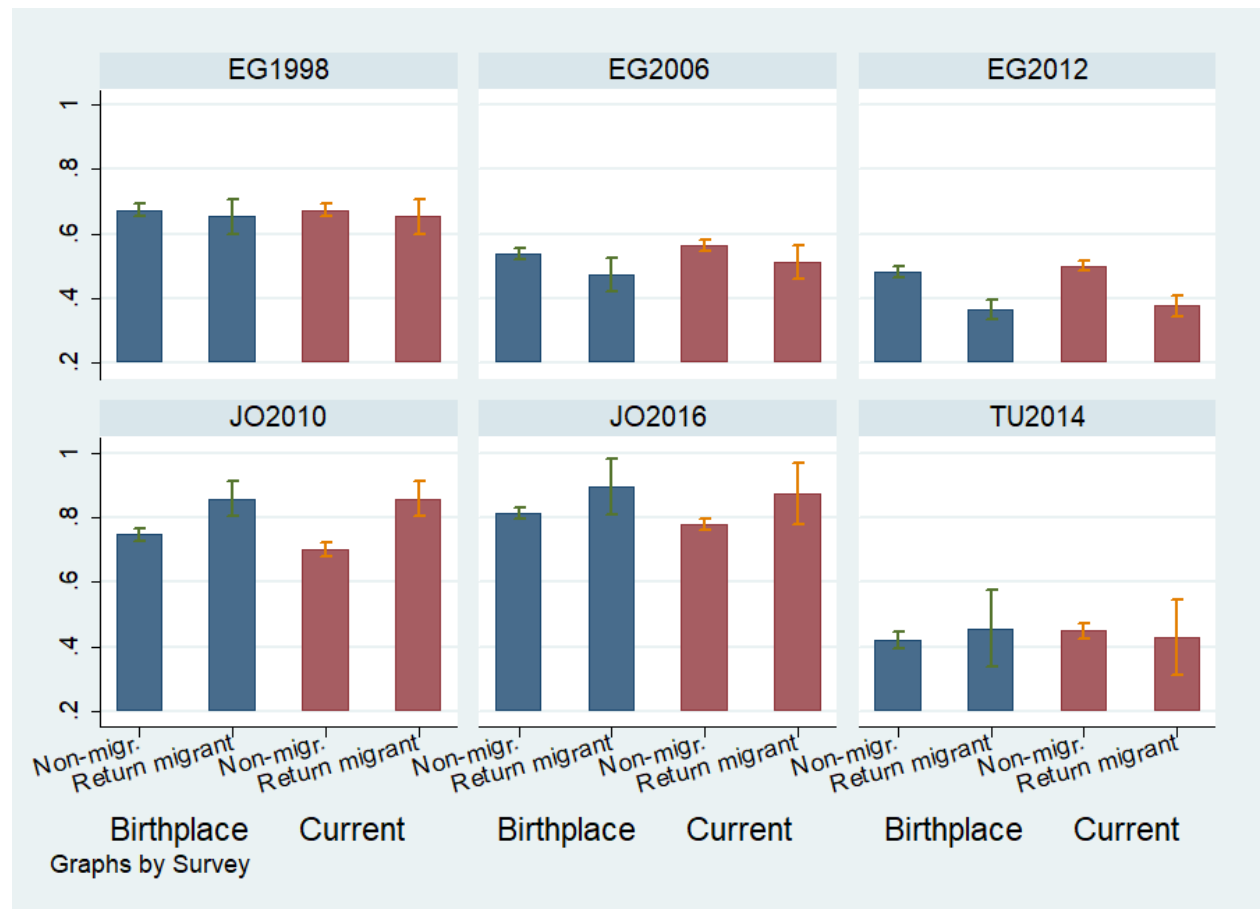
vi. Jordan 2016

Note: These predicted lines are computed among individuals for whom both current and 8-year prior occupation is observable, to ensure sample consistency. Mean occupation-group wage earnings are shown. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. 95% confidence intervals based on standard errors are shown.

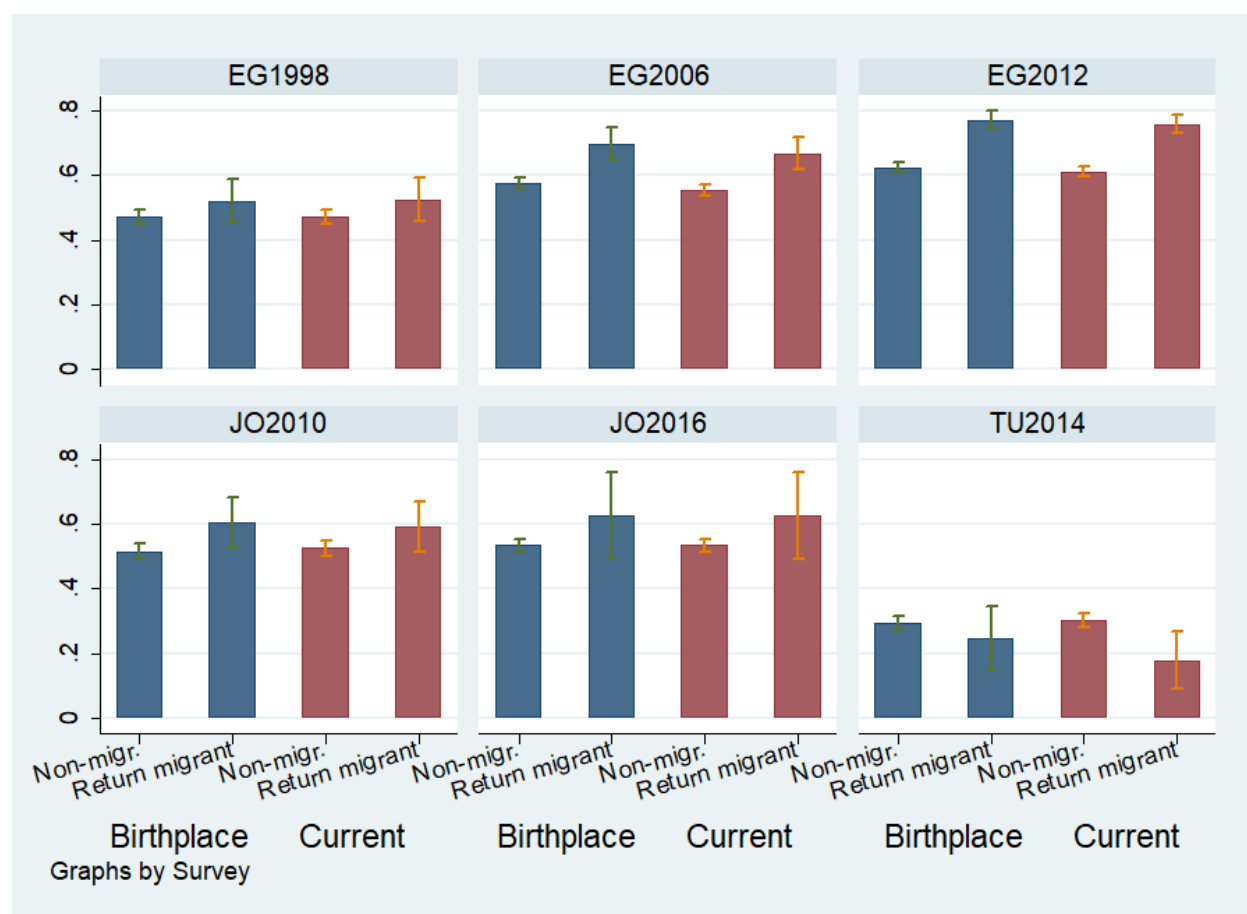
Source: Authors' illustration based on LMPS data.

Figure 2. Geographic mobility since birth, non-migrants vs. return migrants

i. Urban status (% urban)



ii. Residence in privileged region (% in privileged region)



Note: Mean urban status among non-migrants and among return migrants is shown with 95% confidence intervals based on standard errors. Sample restricted to individuals with known birthplace and current residence status, to ensure sample consistency.

Source: Authors' illustration based on LMPS data.

Appendices

Appendix 1. Variable definitions and descriptive statistics

The LMPSS report on a number of variables gauging workers' outcomes, including employment status, wage earnings, consumption, asset holdings, urban/rural residence, and others. Assaad and Krafft (2013), and El Enbaby and Galal (2015) discuss the availability of information across waves of the Egyptian surveys. Assaad (2012) and Krafft (2017) discuss the data availability in the Jordanian 2010 and 2016 surveys, respectively, while Assaad et al. (2016) reviews the Tunisian 2014 survey.

Monthly total wage earnings are reported in real purchasing-power parity 2012 dollars (uncorrected for spatial price differences across national regions). A substantial number of households have all members failing to report wage earnings. These households are omitted from the analysis of earnings, at the potential cost of inefficiency or even bias to the estimated relationship between individuals' characteristics and their earnings, because it is possible that the information is missing systematically in relation to, say, migration status.

Household wealth is imputed from the available set of productive and non-productive assets (appendix 2). All LMPSSs also contain information on the type and amount of remittances, and the identity and residence of the migrant members of the household, distinguishing current and past migrants. Some surveys ask about the reason for migration. However, these variables are not used because they may not be reported consistently across households, and because similar questions are not asked of non-migrants.

Survey respondents are classified as return migrants using the following method. In Egypt 1998, return migrants are those who respond that they have 'previous location of residence abroad' (q3202d), 'before previous location of residence abroad' (q3203d), 'residence in August 1990 abroad' (q3204d), provided that the move to those locations occurred after birth (q3202e, q3203e, q3204e). In Egypt 2006, return migrants are those who respond that they have 'previous location of residence abroad' (q3002e), 'before previous location of residence abroad' (q3003e), provided that they have changed location since birth (q3001e). In Egypt 2012, return migrants are those who have worked abroad for more than 6 months (q10101), had a foreign country as the destination of their first migration (q10105), moved to a foreign country during one of their most recent three moves (q3102_5, q3103_5, q3104_5), or one of their most recent four jobs were in a foreign country (job1_16o, job2_16o, job3_16o, job4_16o).

In Jordan 2010, return migrants are those whose previous or before previous place of residence was abroad (q1002_ou, q1005_ou), unless they have not changed their residence since birth (q1001). In Jordan 2016, return migrants are those who have worked abroad for 6+ months (v11001), had a foreign country as the destination of their first migration (v11005), moved to a foreign country during one of their most recent eight moves (q2146_1 ... q2146_8). Return migrants are also those for whom one of their most recent eight jobs were in a foreign country (job1_16o ... job8_16o). Jobs 9–10 were also surveyed but were apparently never abroad. If the individuals responded that they never moved from the place of birth, they are re-classified as non-migrants.

Finally, in Tunisia 2014, return migrants are those who have worked abroad for 6+ months (v1101), had a foreign country as the destination of their first migration (v1105), moved to a foreign country during one of their most recent three moves (v409, v415, v421), unless they have never left their birth place for a period of more than six months (v404). Return migrants are also

those for whom one of their most recent eight jobs were in a foreign country (job1_16o ... job8_16o).

Table A1. Basic description of evaluated surveys

Survey wave	Source & documentation	Hhds	35–55 year-old men, known remigrant status	Return migrants, 35–55yo men (%)	Mean pop. sampling weight
EG98 LMPS v.1.0	OAMDI 2017; Assaad & Barsoum (2000)	4,816	2,508	304 (12.60)	2,432.09
EG06 LMPS v.4.1	--; Barsoum (2007)	8,351	3,718	353 (10.57)	1,807.98
EG12 LMPS v.2.1	--; Assaad & Krafft (2013)	12,060	4,665	904 (18.39)	1,606.38
JO10 LMPS v.3.2	--; Jordan (2010), Assaad (2012)	5,102	2,406	393 (21.49)	236.18
JO16 LMPS v.0.5	--; Krafft (2017)	6,803	2,495	85 (4.04)	254.55
TU14 LMPS v.2.0	--; Assaad et al. (2016)	4,521	1,748	73 (3.65)	601.44

Notes: OAMDI is the Economic Research Forum's Open Access Micro Data Initiative. Per cent return migrant among 35–55 year-old men accounts for individuals' sampling weights.

Source: Authors' calculations based on LMPS data.

Table A2. Survey responses to selected migration-related questions (age; % return migrants)

	EG12	JO16	TU14
When was your first migration? (Imputed age in years)	25.0	26.7	25.6
Why did you migrate (first reason)? Unemployed/seek work	19.6	12.6	39.8
Found a better job	68.4	51.3	43.5
Higher wages	3.7	4.3	6.8
Help family financially	2.4	5.0	0.9
Were you planning to stay abroad temporarily? Yes, temp.	79.0	68.2	50.1
Did you pay anybody to facilitate your departure abroad? Yes.	24.0	2.0	15.8
Who helped you in getting a job abroad? Relatives	23.9	18.1	11.9
Friends/acquaintances	33.3	6.7	23.3
Employer	5.7	15.9	17.0
Employment agency	9.5	5.1	0.9
No one	23.3	41.6	33.6
Know anyone living in country of first migration? Yes.	46.3	16.9	37.0
Why did you return from abroad? Contract ended	18.9	44.7	8.0
Poor working conditions	24.3	10.2	17.5
To get married	13.4	13.7	29.9
To start business	4.9	--	15.2

Note: Per cent of respondents among 35–55 year-old male return migrants, accounting for individuals' sampling weights. Percentages are out of all responses, including 'unknown' and 'others.' To save space, only some questions and some response options are shown. This survey module is unavailable in ELMPS98,06 and JLMPS10.

Source: Authors' calculations based on LMPS data.

Table A3. Mean quintile of occupation-group gross earnings at different points in time, by status as migrant (PPP2012\$)

	Return migrant	EG98	EG06	EG12	JO10	JO16	TU14
Panel 1: Mean earnings in all occupation-groups, among non-migrant and return-migrant workers							
Occupation-group mean earnings, current	N	3.31***	3.29	3.13**	3.77	2.90***	3.06
	Y	3.81	3.29	3.26	3.70	3.81	3.02
Occupation-group mean earnings, previous	N	3.18***	3.11***	2.41**	3.63	2.18	2.53**
	Y	3.75	3.43	2.50	3.70	2.69	2.37
Occupation-group mean earnings, before previous	N	2.84***	2.82***	2.40*	3.52**	1.99	2.55**
	Y	3.64	3.26	2.47	3.70	1.58	2.09
Occupation-group mean earnings, 8 years prior	N	3.29***	3.68*	3.02*	3.85	2.37***	3.02
	Y	3.84	3.77	2.98	3.91	2.81	2.99
Occupation-group mean earnings, father's occupation	N	2.55	2.92*	2.38***	3.08***	1.50**	2.08
	Y	2.69	2.83	2.21	2.87	1.74	1.87

Note: Statistics account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Evaluated only among workers with known occupations 8 years prior. i Evaluated over small sample sizes in JO16 and TU14 (12–97 individuals). Sample is restricted to male nationals 35–55 years old.

Panel 2: Mean earnings in all occupation groups vs. those from which currently-migrating household members came

Occ.-group mean earnings, previous job		3.30	3.17	2.43	3.64	2.23	2.53
Occ.-group mean earnings, before prev.		3.04	2.95	2.43	3.55	1.97	2.40
Occ.-group mean earnings, 8 years prior		3.36	3.69	3.01	3.87	2.39	3.04
Mean current earnings, occupation-groups from which current migrants left		--	--	2.52	--	4.18	2.46

Note: Statistics account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job (for current migrants, only by their 2-digit occupation code and public vs. private sector). In rows 1–2, overall sample is restricted to male nationals 25–55 years old, and weighted by the representation of each occupation group in the overall sample (including individuals' sampling weights). In row 3, current-migrant sample is restricted to male nationals 23–55 years old, giving samples of 6 current migrant in JO16, 6 in TU14, and 50 in EG12 (using the 35–55 age cutoff, the samples would have been 1, 2 and 9, respectively; a 25–55 cutoff would have yielded 5, 5 and 40 observations, respectively). Mean earnings are weighted by the count of current migrants from each occupation group.

Source: Authors' calculations based on LMPS data.

Table A4. Joint distribution densities of current and 8-year earlier earnings (%individuals in earnings quintiles)

Egypt 98 (Shorrocks=0.15, Spearman=0.88)	8-yr prior:	1	3	4	5	Total
Current:						
1	92.67	2.82	3.36	1.15		100
	90.38	4.08	3.42	0.93		25.44
3	6.03	82.56	3.80	7.60		100
	4.33	87.94	2.85	4.53		18.70
4	2.91	1.88	90.63	4.58		100
	2.67	2.56	86.8	3.49		23.92
5	2.14	2.98	5.42	89.46		100
	2.62	5.42	6.92	91.05		31.93
Total	100	26.09	100	100	100	(N=2,296)
			17.56	24.98	31.38	

Egypt 06 (Shorrocks=0.59, Spearman=0.61)		8-yr prior:	1	2	3	4	5	Total
Current:	31.31			0.76	54.15	9.46	4.32	100
1	81.38			35.57	35.53	7.62	3.28	22.27
2	16.41			37.74	15.57	5.21	25.06	100
	0.47			19.54	0.11	0.05	0.21	0.25
3	3.19			0.24	53.24	19.43	23.90	100
	10.25			13.74	43.17	19.34	22.42	27.53
4	1.48			0.28	18.3	67.08	12.86	100
	4.45			15.06	13.87	62.39	11.27	25.73
5	1.22			0.31	10.27	12.10	76.10	100
	3.45			16.09	7.33	10.60	62.82	24.23
Total	100	8.57		100	100	100	100	(N=3,610)
				0.47	33.95	27.66	29.35	

Egypt 12 (Shorrocks=0.25, Spearman=0.77)		8-yr prior:	1	2	3	4	5	Total
Current:	79.26			6.15	7.10	3.82	3.67	100
1	68.43			8.80	5.69	3.35	3.68	19.07
2	10.78			81.94	5.53	0.76	1.00	100
	6.36			80.09	3.02	0.45	0.68	13.03
3	8.92			1.92	82.41	3.96	2.79	100
	9.26			3.29	79.33	4.18	3.36	22.93
4	9.47			1.71	7.17	78.70	2.95	100
	10.01			2.99	7.03	84.54	3.62	23.34
5	6.07			2.97	5.43	7.51	78.02	100
	5.95			4.83	4.93	7.48	88.66	21.63
Total	100	22.08		100	100	100	100	(N=4,376)
				13.33	23.82	21.73	19.03	

Jordan 10 (Shorrocks=0.85, Spearman=0.23)		8-yr prior:	1	2	3	4	5	Total
Current:	3.90			10.40	9.48	46.55	29.66	100
1	15.89			9.34	5.05	11.86	8.67	9.45
2	2.80			25.83	15.69	38.43	17.26	100
	6.32			12.88	4.63	5.43	2.80	5.24
3	1.50			20.39	36.87	23.95	17.29	100
	12.40			37.30	39.95	12.43	10.29	19.24
4	3.18			7.21	12.73	47.32	29.55	100
	44.74			22.38	23.40	41.64	29.84	32.63
5	1.43			5.69	14.33	31.76	46.78	100
	20.65			18.10	26.97	28.63	48.39	33.43
Total	100	2.32		100	100	100	100	(N=2,058)
				10.52	17.76	37.09	32.32	

Jordan 16 (Shorrocks=0.66, Spearman=0.49)		8-yr prior:	1	2	3	4	5	Total
Current:	31.10			58.67	7.77	1.46	1.01	100
1	34.55			33.17	8.29	1.85	5.94	21.91
2	22.73			70.74	6.15	0.38	0	100
	25.31			40.09	6.59	0.48	0	21.97
3	22.44			8.07	60.64	6.05	2.80	100
	19.46			3.56	50.56	6.00	12.82	17.11
4	13.42			13.52	12.15	58.95	1.97	100
	12.35			6.33	10.75	61.98	9.58	18.15
5	7.87			31.30	23.42	24.58	12.83	100
	8.32			16.85	23.81	29.69	71.67	20.86
Total	100	19.72		100	100	100	100	(N=1,539)
				38.76	20.52	17.27	3.73	

Tunisia 14 (Shorrocks=0.23, Spearman=0.81)		8-yr prior:	1	2	3	4	5	Total
Current:	80.72			8.01	7.45	2.29	1.54	100
1	79.10			7.90	4.55	2.42	1.33	17.33
	6.94			74.28	13.05	5.37	0.36	100
2	6.66			71.79	7.81	5.56	0.31	16.97
	5.36			4.39	85.69	2.50	2.06	100
3	8.21			6.77	81.79	4.12	2.80	27.07
	5.04			8.93	4.70	79.10	2.23	100
4	4.90			8.74	2.85	82.85	1.92	17.20
	0.93			3.93	3.97	3.87	87.30	100
5	1.12			4.79	3.00	5.06	93.64	21.43
Total	100	17.68		100	100	100	100	(N=1,205)

Note: Densities account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

Table A5. Joint distribution densities of son's and father's earnings (%sons in earnings quintiles)

Egypt 98 (Shorrocks=0.78, Spearman=0.32)		Father:	1	3	4	5	Total
Son:	85.61			7.97	4.52	1.89	100
1	36.83			5.39	6.44	2.29	18.76
	37.83			37.53	11.95	12.69	100
3	24.13			37.62	25.22	22.78	27.81
	40.93			27.44	18.06	13.57	100
4	19.39			20.43	28.32	18.09	20.65
	26.15			30.93	16.08	26.85	100
5	19.66			36.56	40.02	56.83	32.79
Total	100	43.60		100	100	100	(N=2,150)

Egypt 06 (Shorrocks=0.83, Spearman=0.43)		Father:	1	2	3	4	5	Total
Son:	32.24			56.09	6.07	2.57	3.02	100
1	43.55			42.91	5.86	2.85	4.00	21.09
	28.55			46.17	3.74	9.24	12.29	100
2	1.43			1.31	0.13	0.38	0.61	0.78
	16.19			24.41	28.95	16.09	14.37	100
3	33.18			28.33	42.40	27.07	28.86	32.01
	9.72			18.27	25.80	28.92	17.29	100
4	17.58			18.70	33.33	42.92	30.63	28.23
	3.72			13.48	22.34	28.48	31.98	100
5	4.26			8.74	18.28	26.78	35.90	17.89
Total	100	15.62		100	100	100	100	(N=3,486)

Egypt 12 (Shorrocks=0.82, Spearman=0.34)		Father:	1	2	3	4	5	Total
Son:	80.23			4.85	3.97	6.97	3.98	100
1	33.25			7.58	9.84	10.99	4.83	20.34
	48.47			22.56	6.41	10.87	11.69	100
2	20.65			36.23	16.35	17.63	14.55	20.91
	43.67			16.28	15.64	11.13	13.28	100
3	14.01			19.69	30.02	13.59	12.44	15.74
	42.62			11.37	9.59	18.20	18.23	100
4	18.86			18.97	25.40	30.65	23.57	21.72

5	30.51 13.23	10.73 17.54	7.09 18.39	16.44 27.14	35.23 44.62	100 21.28
Total	100 49.08	100 13.02	100 8.20	100 12.89	100 16.80	(N=4,369)

Jordan 10 (Shorrocks=0.31, Spearman=0.73)						
	Father: 1	2	3	4	5	Total
Son:	63.97	14.75	11.08	2.80	7.41	100
1	75.87	12.06	6.53	5.87	5.71	18.07
2	1.83	96.45	1.02	0.19	0.51	100
	2.17	78.98	0.60	0.40	0.40	18.10
3	7.05	4.89	64.76	3.39	19.92	100
	17.72	8.47	80.94	15.05	32.57	38.29
4	2.69	0.82	23.24	68.00	5.26	100
	1.67	0.35	7.19	74.78	2.13	9.48
5	2.44	0.19	9.02	2.09	86.26	100
	2.57	0.14	4.73	3.90	59.19	16.06
Total	100 15.23	100 22.10	100 30.63	100 8.62	100 23.41	(N=2,163)

Jordan 16 (Shorrocks=0.93, Spearman=0.17)						
	Father: 1	2	3	4	5	Total
Son:	77.84	14.48	7.08	0.60	0	100
1	25.21	10.60	11.61	6.27	0	19.25
2	59.40	31.19	8.42	0.73	0.26	100
	18.03	21.41	12.93	7.09	6.90	18.04
3	61.44	20.47	16.57	0.26	1.25	100
	22.11	16.66	30.18	2.96	39.02	21.39
4	52.15	32.58	12.27	2.14	0.86	100
	21.39	30.23	25.46	28.10	30.52	24.38
5	46.49	32.73	13.74	6.08	0.96	100
	13.25	21.09	19.82	55.58	23.55	16.94
Total	100 59.43	100 26.28	100 11.74	100 1.85	100 0.69	(N=1,314)

Tunisia 14 (Shorrocks=0.81, Spearman=0.30)						
	Father: 1	2	3	4	5	Total
Son:	79.18	10.34	3.85	2.67	3.96	100
1	32.54	8.56	5.84	8.18	8.26	19.58
2	44.2	35.52	7.61	5.05	7.62	100
	27.63	44.71	17.53	23.55	24.18	29.78
3	37.93	21.61	27.55	6.79	6.12	100
	12.91	14.82	34.57	17.23	10.59	16.22
4	36.19	25.29	18.41	11.50	8.61	100
	11.79	16.60	22.10	27.93	14.24	15.52
5	38.12	19.18	13.66	7.81	21.22	100
	15.12	15.32	19.97	23.10	42.73	18.89
Total	100 47.64	100 23.66	100 12.93	100 6.39	100 9.38	(N=1,313)

Note: Densities account for individuals' sampling weights. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

Table A6. Joint distribution densities of individuals' current and birthplace urban-rural status: non-migrants vs. return migrants (% individuals in urban-rural categories)

Non-migrants				Return migrants		
	At birth:			At birth:		
Egypt 98	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	52.24	0.31	52.55	50.72	2.50	53.22
Urban	0.23	47.21	47.45	1.06	45.72	46.78
Total	52.47	47.53	100.00	51.78	48.22	100.00

	At birth:			At birth:		
Egypt 06	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	50.53	2.92	53.45	60.55	2.96	63.51
Urban	4.55	41.99	46.55	4.33	32.16	36.49
Total	55.08	44.92	100.00	64.88	35.12	100.00

	At birth:			At birth:		
Egypt 12	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	49.72	2.06	51.78	60.31	2.55	62.86
Urban	3.90	44.32	48.22	3.88	33.26	37.14
Total	53.62	46.38	100.00	64.19	35.81	100.00

	At birth:			At birth:		
Jordan 10	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	11.93	8.51	20.43	3.72	5.55	9.27
Urban	7.60	71.97	79.57	7.36	83.37	90.73
Total	19.52	80.48	100.00	11.08	88.92	100.00

	At birth:			At birth:		
Jordan 16	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	11.17	2.91	14.08	7.21	2.70	9.91
Urban	1.27	84.65	85.92	0.00	90.09	90.09
Total	12.44	87.56	100.00	7.21	92.79	100.00

	At birth:			At birth:		
Tunisia 14	Rural	Urban	Total	Rural	Urban	Total
Current: Rural	28.68	1.73	30.41	27.22	6.69	33.91
Urban	9.34	60.25	69.59	6.97	59.13	66.09
Total	38.01	61.99	100.00	34.18	65.82	100.00

Note: For ELMPS98, residence as of August 1990 is used.

Source: Authors' calculations based on LMPS data.

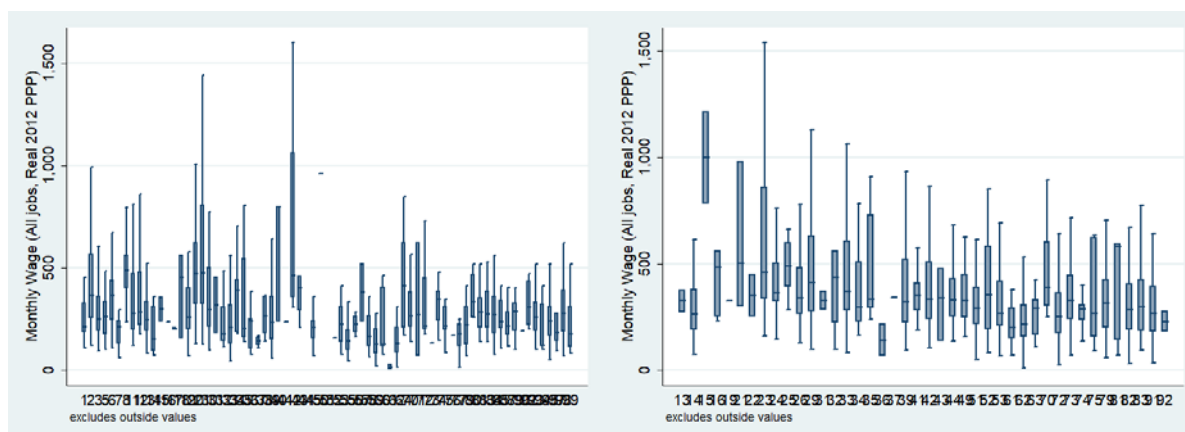
Table A7. Joint distribution densities of individuals' current and birthplace residence in privileged or disadvantaged regions: non-migrants vs. return migrants (% individuals in urban-rural categories)

Non-migrants				Return migrants		
	At birth:			At birth:		
	Disadv.	Privileg.	Total	Disadv.	Privileg.	Total
Egypt 98						
Current:						
Disadv.	62.12	0.37	62.49	61.35	2.49	63.84
Privileg.	0.23	37.28	37.51	1.56	34.60	36.16
Total	62.35	37.65	100.00	62.91	37.09	100.00
Egypt 06						
Current:						
Disadv.	59.88	3.10	62.98	74.38	3.30	77.68
Privileg.	4.62	32.41	37.02	4.76	17.55	22.32
Total	64.49	35.51	100.00	79.15	20.85	100.00
Egypt 12						
Current:						
Disadv.	59.04	2.44	61.47	72.43	2.07	74.50
Privileg.	3.96	34.57	38.53	3.86	21.64	25.50
Total	62.99	37.01	100.00	76.29	23.71	100.00
Jordan 10						
Current:						
Disadv.	41.01	2.89	43.90	45.25	2.39	47.64
Privileg.	3.52	52.57	56.10	6.68	45.67	52.36
Total	44.54	55.46	100.00	51.94	48.06	100.00
Jordan 16						
Current:						
Disadv.	39.49	1.05	40.54	57.47	1.78	59.25
Privileg.	2.73	56.73	59.46	4.34	36.41	40.75
Total	42.22	57.78	100.00	61.81	38.19	100.00
Tunisia 14						
Current:						
Disadv.	19.48	3.55	23.03	16.89	0.00	16.89
Privileg.	4.96	72.01	76.97	12.49	70.61	83.11
Total	24.44	75.56	100.00	29.39	70.61	100.00

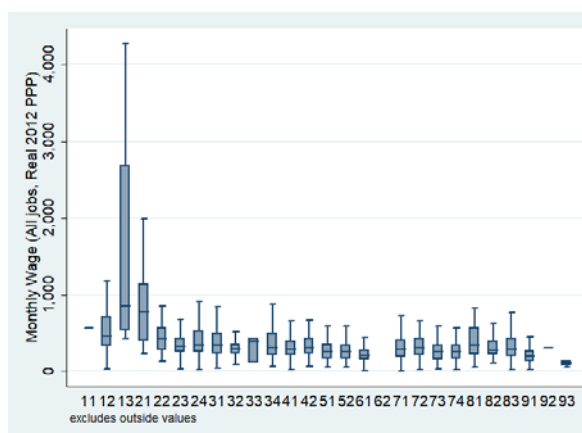
Note: For ELMPS98, residence as of August 1990 is used.

Source: Authors' calculations based on LMPS data.

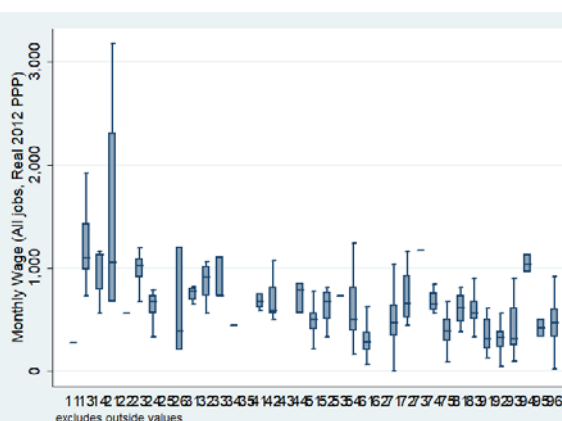
Figure A1. Distribution of wage earnings by occupation group



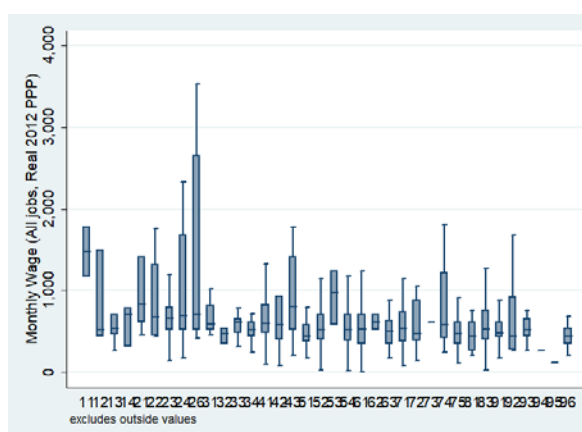
i. Egypt 1998



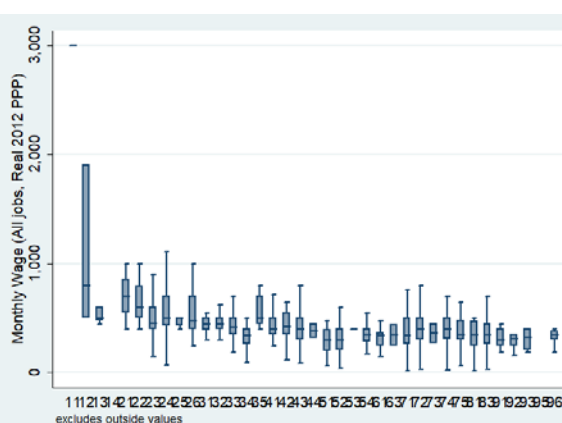
ii. Egypt 2006



iii. Egypt 2012



iv. Tunisia 2014

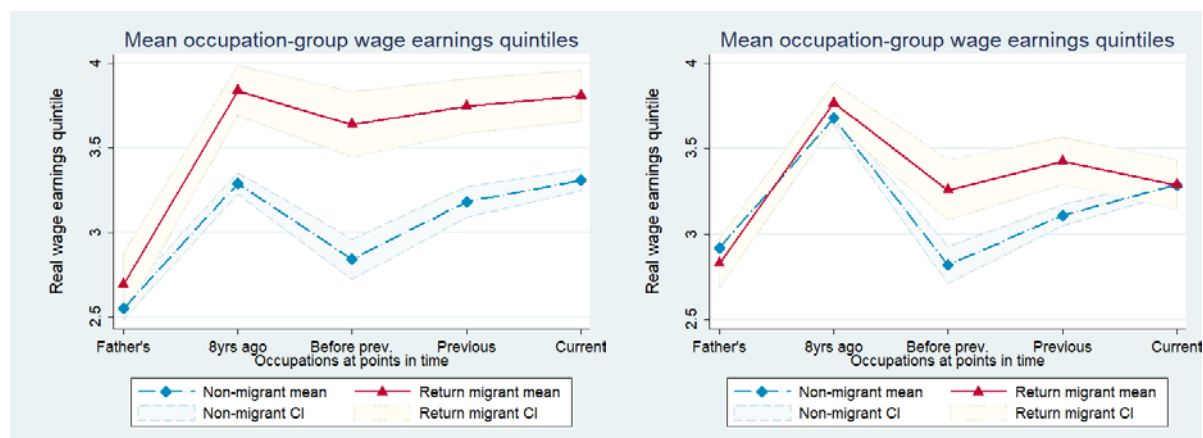


v. Jordan 2010

vi. Jordan 2016

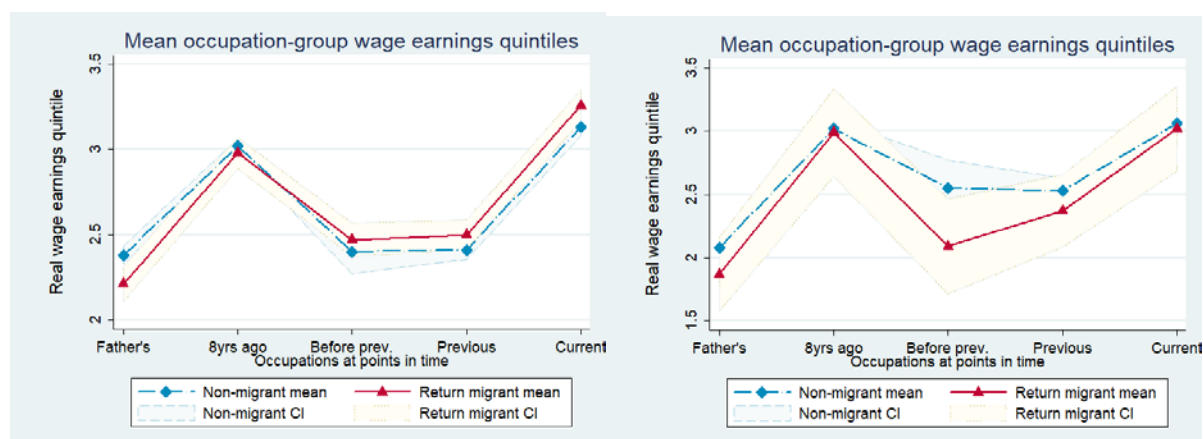
Source: Authors' illustration based on LMPS data.

Figure A2. Wage earnings evolution, non-migrants vs. return migrants (earnings quintiles)



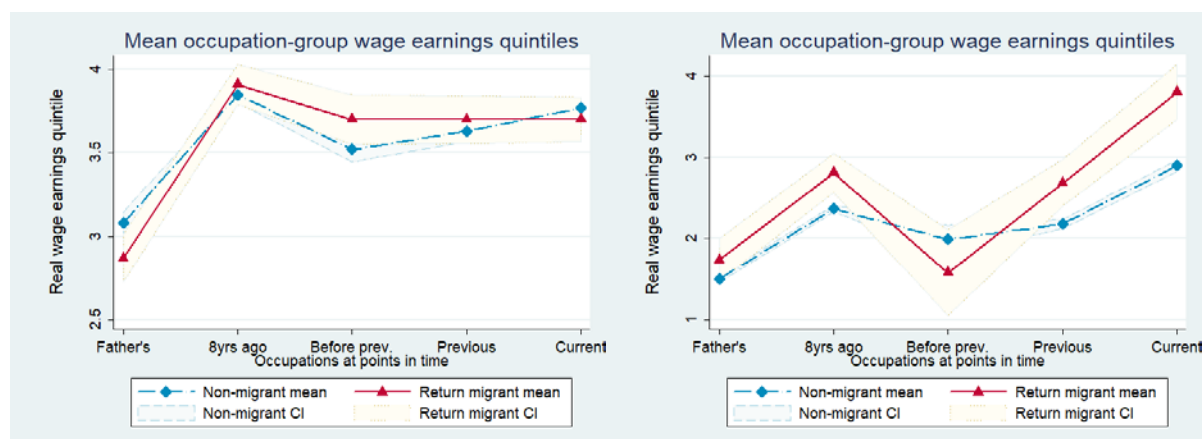
i. Egypt 1998

ii. Egypt 2006



iii. Egypt 2012

iv. Tunisia 2014



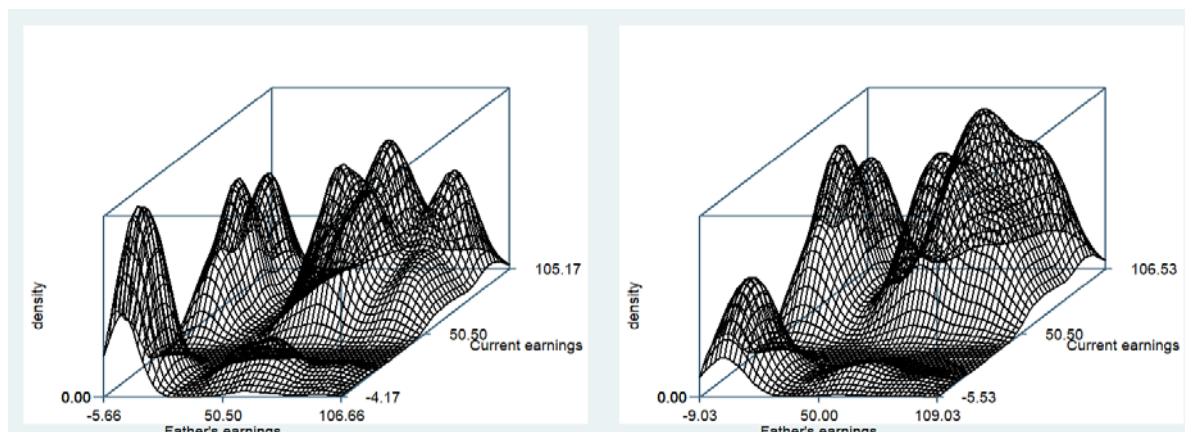
v. Jordan 2010

vi. Jordan 2016

Note: These predicted lines are computed among individuals for whom both current and 8-year prior occupation is observable, to ensure sample consistency. Mean occupation-group wage earnings quintiles are shown for non-migrants and for return migrants. Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job. 95% confidence intervals based on standard errors are shown.

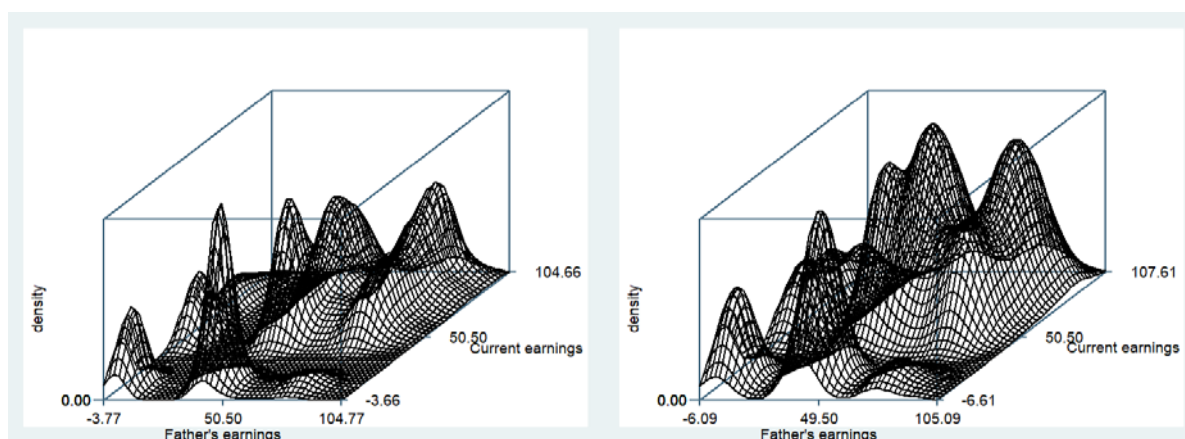
Source: Authors' illustration based on LMPS data.

Figure A3. Kernel joint-density plots of current vs. father's occupation-group wage earnings



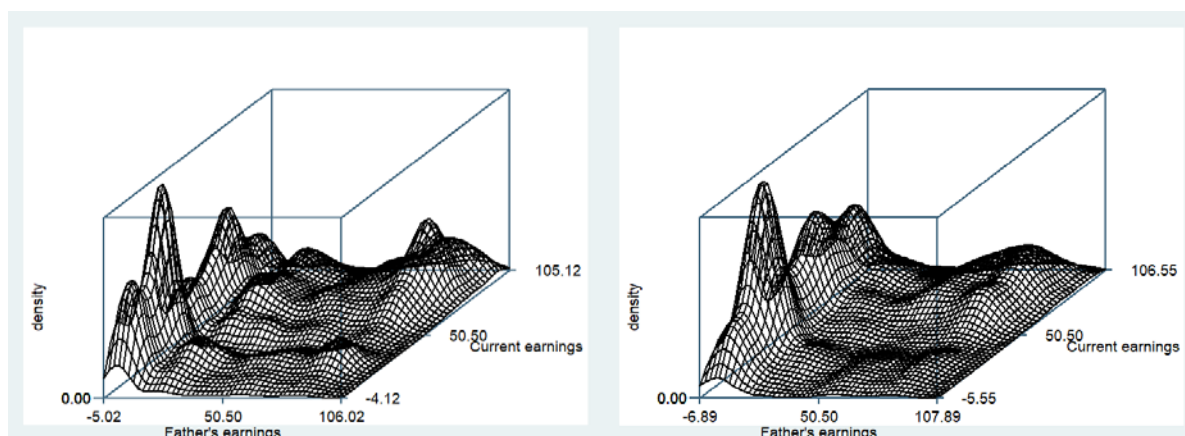
i. Egypt 1998: Non-migrants

Return migrants



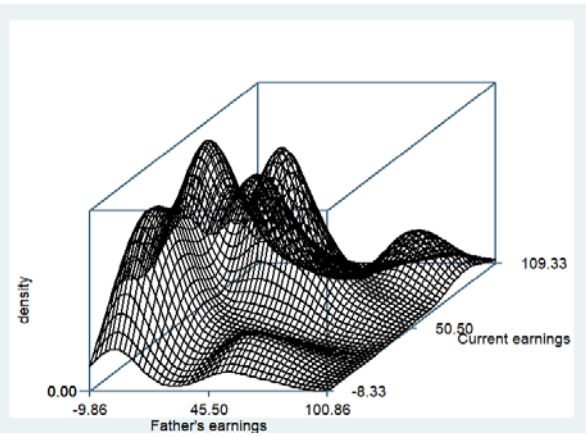
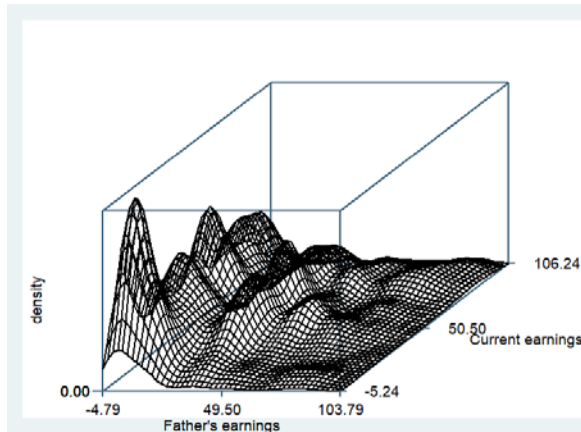
ii. Egypt 2006: Non-migrants

Return migrants



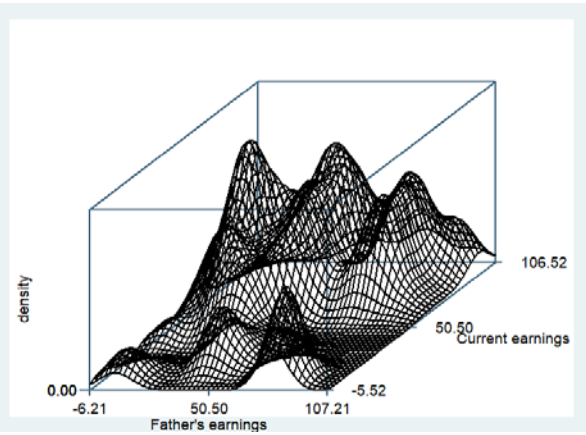
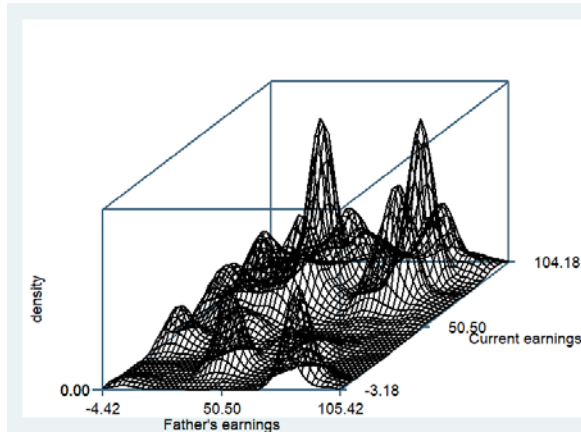
iii. Egypt 2012: Non-migrants

Return migrants



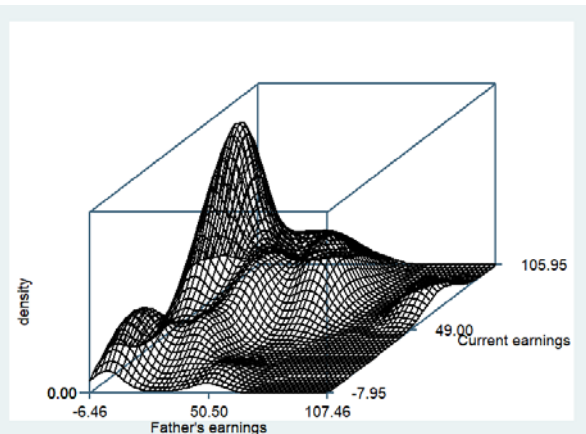
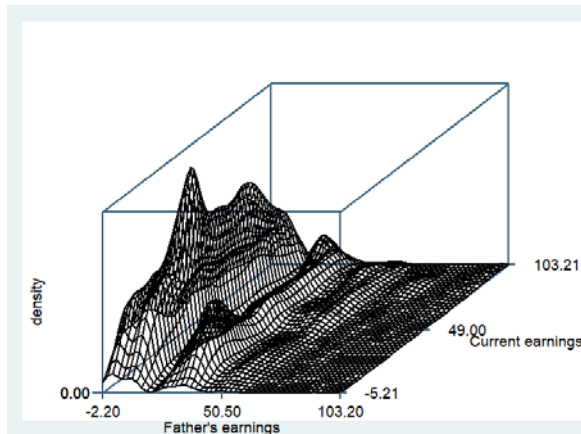
iv. Tunisia 2014: Non-migrants

Return migrants



v. Jordan 2010: Non-migrants

Return migrants



vi. Jordan 2016: Non-migrants

Return migrants

Notes: Workers are classified into occupation groups by their 2-digit occupation code, permanent vs. non-permanent job, public vs. private sector, and contract vs. non-contract job.

Source: Authors' illustration based on LMPS data.

Appendix 2. Index of wealth: principal component analysis of household assets

Because household incomes and expenditures fluctuate across years and do not account for in-kind donations, transfers and publicly provided goods, they may not be the best measures of true welfare. As an alternative, we impute households' accumulated wealth and use that as an alternative measure. We develop a one-dimensional index of wealth based on both productive and non-productive household assets (Hlasny and AlAzzawi 2018). The wealth index is obtained from the first component in the principal component analysis of all observable household assets. This first component can be expressed as the weighted sum of households' assets (numbering p assets), where asset ownership is standardized by the mean and standard deviation across households, and where the weights (a_p) are selected to maximize sample variance of the index subject to $\sum_p a_p^2 = 1$ (Filmer and Pritchett 2001; McKenzie 2005):

$$w = \sum_p a_p \frac{(x_p - \bar{x}_p)}{stdev(x_p)} \quad (1)$$

The principal component method assigns the highest weights to assets that vary most across households, thus informing on maximum discrimination in asset ownership between households. Among observable assets, we use households' type of housing and construction materials, savings, loans, ownership of household durables and rural-related assets, ownership of land, farming equipment and animals, and shares in enterprises, and access to facilities and public utilities (McKenzie 2005). Household assets accounted for here include both private and public goods, capturing household-members' individual consumption as well as consumption shared by all household members, whose value is not easy to allocate to individual members.

Total household wealth rather than wealth per capita is used for several reasons. One, identity of purchasers, owners and users of assets is not reported in household surveys. Asset holdings are typically surveyed in household modules rather than individual modules of questionnaires. Two, many durables are of public-good nature in that they bestow benefits on multiple household members, and these benefits are not easy to split or allocate to individual members. Three, it is unclear what adult-equivalence scale should be used for asset ownership, particularly since there are various classes of assets.

Asset ownership could be categorized into three groups: housing capital (real estate type and size, materials, infrastructure, access to utilities), physical non-productive capital (household durables, appliances), and physical productive capital (transportation, two-way communication, commercial and agricultural capital, livestock, land) (McKenzie 2005; Ward 2014). The value of physical productive capital is adjusted for the household's co-ownership share of this capital, and if the value is in monetary units (i.e., firm ownership), for inflation. Monetary values are converted to year-2012 dollars using currency conversion factors and US GDP-deflator inflation.¹⁴ We study all assets jointly rather than utilize the above classification, because the three indexes would not be related cardinally, and because there are too few asset types in each category – particularly for productive assets – to perform the PCA successfully. Cross-sectional population weights are used to obtain nationally-representative and cross-survey comparable results.

The available data have several notable limitations that affect the usability and interpretation of the obtained wealth indexes. Asset ownership is partially harmonized between waves of the Egyptian and Jordanian surveys, but less so across countries, particularly for types of housing,

¹⁴ Conversion rates are as follows: 1998 Eg. pound: 1.087; 2006 Eg. pound: 1.138; 2012 Eg. pound: 1.795; 2010 Jord. dinar: 0.292; 2016 Jord. dinar: 0.315; 2014 Tun. dinar: 0.612 (World Bank 2015a,b).

construction materials, and commercial and agricultural assets. For this reason, this study will provide limited comparison of the levels of wealth across survey waves and across countries, for the most part commenting on the degree of relative inequality and polarization of wealth across surveys.

Several components of net assets are notably missing from our analysis for lack of consistent data. One, household debt and other present or future liabilities (e.g., inheritance taxes, dowry etc.) are omitted as unavailable. Wealth indexes thus have gross-wealth rather than net-worth interpretation. We also exclude the accumulation of durable non-physical capital, such as social networks, education or skills (Echevin 2013). Valuables such as jewelry, and value of households' financial assets (including savings, pension, insurance etc.) are omitted because surveys do not cover them, or too few households report them. Our asset index can thus be thought of as gross physical wealth, or assets that are convertible to cash within several years.

One problem in the available survey data is missing observations. If a household fails to report ownership of any single asset, the entire household would be dropped from the PCA. Possible solutions include dropping such households, dropping assets suffering from high item nonresponse, or imputing values of the missing items using information about the households or typical rate of ownership of that asset in population. The first two approaches would omit valuable information from the calculation of the wealth index in the survey sample. To take advantage of the greatest possible number of household observations and asset types surveyed, we impute missing values. In the case of surveys with multiple waves, households' ownership of the same asset in adjacent survey waves is used. (As an exception, this is not done for technology assets including computers, cell phones, mp3 players, and internet access.) In the absence of ownership information for a household from adjacent waves, we use sampling-weights adjusted mean ownership rate across survey households in the same survey wave, differentiating urban and rural households, to fill in missing values.

Table A8 summarizes the household assets used for the PCA in each survey wave. Table A9 presents basic results of the PCA, confirming that data in all survey waves is adequate in terms of asset types used, and joint variation in asset-type ownership across households. Table A10 reports various measures of the distribution of the asset-based wealth index imputed using the scores obtained from the PCA (and normalizing the index to range from 0 to 100). It should be noted that these distribution and inequality indicators should be viewed with caution, since the wealth index does not have cardinal interpretation (Hlasny and AlAzzawi 2018).

Table A8. Productive and non-productive assets available in evaluated surveys

Survey wave	Non-productive asset types	House type	Productive asset types	Enterprise own.	Farm & agric. assets	Land own. ^a	Total factors in PCA ^b
EG98 LMPS	27	No	5	Cur.value	No	No	46
EG06 LMPS	27	No	22	Cur.value	Mkt.value	No	64
EG12 LMPS	30	Yes	25	Cur.value	Mkt.value	Binary	73
JO10 LMPS	29	Yes	15	Cur.value	Mkt.value	Binary	57
JO16 LMPS	32	Yes	15	Cur.value	Mkt.value	Binary	61
TU14 LMPS	27	Yes	24	Cur.value	Mkt.value	Area	71

^a This excludes land included in the valuation of enterprises. ^b This includes all available asset types (e.g., washer) and, when available, their possible characteristics (e.g., roof: straw/mud; wood; iron/tiles/concrete; other). Source: Authors' calculations based on LMPS data.

Table A9. Productive and non-productive asset wealth index: PCA results, all surveys

	EG9 8	EG0 6	EG12	JO1 0	JO16	TU14
% of variance explained by 1 st component	19.50	12.59	11.33	15.14	11.29	10.82
Eigenvalue of first component	8.97	8.06	8.27	8.63	6.89	7.68
Kaiser-Meyer-Olkin	0.64	0.65	0.65	0.69	0.68	0.57
Bartlett test of sphericity, Chi ²	139k	239k	466k	106k	134k	143k
Degrees of freedom	1,035	2,016	2,628	1,596	1,830	2,485
Observations	4,816	8,351	12,060	5,102	6,841	4,521
Principal components (asset types)	45	63	73	57	61	71
Trace (sum of eigenvalues)	46	64	73	57	61	71

Note: PCA accounts for households' sampling weights. PCA is performed separately on each survey wave; factor loadings thus differ across columns.

Source: Authors' calculations based on LMPS data.

Table A10. Inequality measures, asset-based wealth indexes

	EG98	EG06	EG12	JO10	JO16	TU14
Range (by design)	0–100	0–100	0–100	0–100	0–100	0–100
Mean	35.02	39.33	28.79	37.32	33.62	38.35
Standard deviation	16.26	10.58	9.20	15.00	9.39	15.13
Skewness	-0.06	+0.10	+0.16	+0.53	+0.54	+0.29
Kurtosis	2.46	3.93	3.99	3.25	5.47	3.12
95 th percentile	60.21	55.94	43.25	64.57	49.19	64.24
90 th percentile	54.53	51.05	39.20	57.87	44.67	57.66
75 th percentile	47.01	45.42	34.46	46.41	38.81	47.58
50 th percent (median)	36.60	40.24	29.58	36.02	33.11	38.32
25 th percentile	22.37	33.00	22.76	26.53	27.76	27.61
Top 5% share	11.21	9.42	10.00	11.40	9.76	11.04
%						
Top 10% share	19.13	16.06	17.00	19.34	16.61	18.82
Top 25% share	40.52	34.11	35.81	39.68	34.93	38.88
Top 50% share	70.16	61.26	63.38	66.85	61.46	66.56
Bottom 25% share	9.41	16.25	14.65	13.06	16.96	12.53
Gini	26.45	14.83	17.71	22.51	15.18	22.18
	(0.41)	(0.17)	(0.17)	(0.28)	(0.33)	(0.30)
Concentration index (×100)	37.06	23.33	20.40	33.62	20.41	34.04
(Erreygers 2009)	(0.09)	(0.08)	(0.05)	(0.12)	(0.09)	(0.12)
Polarization (×100)	0.593	0.189	0.129	0.502	0.929	0.639
α=1.0 (Esteban & Ray 1994)	(0.036)	(0.008)	(0.008)	(0.042)	(0.080)	(0.081)
	0.057	0.015	0.010	0.048	0.173	0.068
α=1.3	(0.006)	(0.001)	(0.001)	(0.006)	(0.011)	(0.018)
	0.006	0.001	0.001	0.005	0.036	0.008
α=1.6	(0.001)	(0.000)	(0.000)	(0.001)	(0.004)	(0.004)
N	4,816	8,351	12,060	5,102	6,841	4,521

Note: Statistics are for all surveyed households, and account for households' sampling weights.

Wealth index scores are estimated using factor loadings from own survey wave; factor loadings thus differ across columns. Standard errors on Ginis and polarization indexes are bootstrap estimates.

Source: Authors' calculations based on LMPS data.

Appendix 3. Additional results

Table A11. OLS regressions of return-migrant premium in household wage earnings per capita

Dep.var.: log(hh wage earn./cap)	EG98	EG06	EG12	JO10	JO16	TU14
Return migrant	-0.053 (0.066)	-0.043 (0.051)	-0.006 (0.047)	0.154 (0.157)	-0.142 (0.112)	0.210 (0.161)
Destination: rich & Gulf countries	--	0.040 (0.207)	0.045 (0.086)	0.113 (0.224)	-0.115 (0.219)	-0.017 (0.273)
Post-primary, preparatory edu.	0.156 (0.098)	0.141* (0.079)	0.068 (0.049)	0.094 (0.068)	0.455*** (0.109)	0.001 (0.088)
Secondary edu.	0.286*** (0.049)	0.209*** (0.045)	0.193*** (0.044)	0.300*** (0.061)	0.199** (0.086)	0.413*** (0.102)
University edu.	0.704*** (0.058)	0.558*** (0.058)	0.438*** (0.053)	0.858*** (0.097)	0.423*** (0.104)	0.770*** (0.135)
Post-graduate edu.	0.990*** (0.104)	0.811*** (0.237)	0.535*** (0.142)	0.890*** (0.123)	0.590*** (0.122)	0.724*** (0.179)
Age	0.013*** (0.004)	0.018*** (0.003)	0.016*** (0.003)	-0.005 (0.005)	-0.007 (0.007)	-0.002 (0.005)
Log occupation-group wage earnings, 1990	0.360*** (0.062)	0.407*** (0.069)	0.410*** (0.059)	0.029 (0.057)	0.025 (0.073)	0.457*** (0.114)
Log occupation-group wage earnings, father	0.032 (0.020)	0.146** (0.065)	0.206*** (0.045)	0.109 (0.085)	0.393*** (0.116)	0.061 (0.112)
Urban birthplace	0.121** (0.058)	0.166*** (0.056)	0.081* (0.043)	0.090* (0.053)	0.111 (0.082)	0.143* (0.074)
Privileged birthplace region	0.310*** (0.050)	0.180*** (0.056)	0.181*** (0.047)	0.052 (0.050)	-0.144** (0.071)	0.043 (0.076)
Constant	1.162*** (0.366)	0.077 (0.487)	-0.107 (0.408)	3.781*** (0.715)	2.004** (0.943)	1.575 (1.025)
Observations	1,389	2,136	3,381	1,300	1,066	543
R-squared	0.392	0.237	0.176	0.157	0.078	0.261
Wald F	58.49***	46.18***	43.55***	14.00***	7.66***	14.78***

Notes: Log personal wage earnings are the dependent variable. All regressions are weighted using survey sampling weights. Significant at * 10%, ** 5%, *** 1% using two-sided tests on standard errors robust to arbitrary heteroskedasticity (in parentheses). Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

Table A12. OLS regressions of return-migrant premium in personal wage earnings: within occupation groups

Dep.var.: log(pers. wage earn.)	EG98	EG06	EG12	JO10	JO16	TU14
Return migrant	-0.088 (0.064)	-0.007 (0.057)	-0.035 (0.045)	0.105 (0.128)	-0.132 (0.145)	0.201 (0.170)
Destination: rich & Gulf countries	--	0.126 (0.225)	0.048 (0.088)	0.160 (0.200)	-0.070 (0.262)	-0.063 (0.255)
Post-primary, preparatory edu.	0.174** (0.084)	0.042 (0.076)	0.054 (0.051)	0.086 (0.066)	0.520** (0.233)	-0.018 (0.091)
Secondary edu.	0.239*** (0.074)	0.043 (0.052)	0.121** (0.052)	0.234*** (0.060)	0.133* (0.078)	0.302*** (0.114)
University edu.	0.622*** (0.088)	0.308*** (0.070)	0.343*** (0.068)	0.697*** (0.092)	0.263 (0.186)	1.027*** (0.134)
Post-graduate edu.	0.907*** (0.145)	0.488** (0.227)	0.441*** (0.149)	0.710*** (0.104)	0.315 (0.192)	0.730** (0.340)
Age	0.014*** (0.004)	0.012*** (0.003)	0.016*** (0.003)	0.002 (0.005)	-0.001 (0.007)	-0.004 (0.005)
Log occupation-group wage earnings, 1990	0.213*** (0.073)	0.145* (0.078)	0.200*** (0.073)	-0.048 (0.053)	-0.067 (0.082)	0.237* (0.130)
Log occupation-group wage earnings, father	0.032 (0.021)	0.022 (0.062)	0.138*** (0.046)	-0.281* (0.151)	0.386*** (0.113)	-0.178 (0.112)
Urban birthplace	0.392** (0.181)	0.101 (0.086)	-0.082 (0.096)	0.074 (0.061)	0.008 (0.129)	-0.063 (0.144)
Privileged birthplace region	-0.221* (0.133)	0.000 (0.092)	0.020 (0.092)	-0.042 (0.083)	0.198* (0.117)	-0.017 (0.158)
Urban	-0.387** (0.176)	0.076 (0.087)	0.221** (0.096)	-0.000 (0.064)	0.092 (0.132)	0.375*** (0.142)
Privileged region, current	0.594*** (0.149)	0.106 (0.103)	-0.038 (0.099)	-0.019 (0.140)	-0.507*** (0.195)	-0.273 (0.381)
Governorate indicators	Y***a	Y***	Y***	Y***	Y***	Y***
Occupation group ind.	Y***	Y***	Y***	Y***	Y***	Y***
Sector/permanent/contract ind.	Y***	Y***	Y***	Y***	Y***	Y***
Constant	2.556*** (0.487)	3.251*** (0.582)	1.804*** (0.545)	7.098*** (1.230)	1.934** (0.844)	4.212*** (1.105)
Observations	1,369	2,136	3,310	1,300	916	522
R-squared	0.505	0.338	0.244	0.261	0.153	0.453

Notes: Log personal wage earnings are the dependent variable. All regressions are weighted using survey sampling weights. Significant at * 10%, ** 5%, *** 1% using two-sided tests on standard errors robust to arbitrary heteroskedasticity (in parentheses). ^a Asterisks indicate joint significance. Sample is restricted to male nationals 35–55 years old.

Source: Authors' calculations based on LMPS data.

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