

# **Return Migration and Social Mobility in MENA: Evidence from Labor Market Panel Surveys**

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## **Abstract**

This study aims to examine the implications of cross-border return migration for intertemporal and intergenerational transmission of socio-economic status across three Arab countries: Egypt (1988-2012), Jordan (2010-2016) and Tunisia (2014). We utilize panel data from seven harmonized nationally-representative labor-market surveys tracking socio-economic outcomes of individuals, and linking outcomes of parents to their children's. Various economic circumstances, outcomes, and measures of migration status are considered. We first isolate our outcomes of interest – income, employment status and household wealth based on both productive and nonproductive household assets. Next, we identify individuals' migration histories including destination, and time since the migration spell. We then evaluate individuals' social mobility over time and across generations, and inequality in outcomes across demographic groups. Transitions of individuals' outcomes across years and generations are estimated as functions of the individuals' initial social status, history of migration, individuals' demographics and local labor-market conditions.

Preliminary findings show that migration patterns differ systematically between Egypt, Jordan and Tunisia, in prevalence and impact on workers' labor-market outcomes. Cross-region migration matches workers to employers, and alleviates unemployment among youth, while it puts pressure on urban labor markets. Out-migration affects households' division of labor, and labor market performance. Remittance inflow to rural regions, particularly in Jordan and Egypt, alleviates economic inequality. Returning migrants bring new skills and capital allowing them to obtain better occupations or self-employment. This affects not only migrants' short-term welfare,

but particularly their lifelong occupational and social mobility. These effects also mitigate the high intergenerational correlation of status in the MENA.

*Keywords:* Social mobility, cross-region migration, remittances, return migration, MENA, group-based developmental trajectory model.

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

## **I. 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. These complementarities allow individuals' and families' welfare to increase over time, but they also generate inequality across individuals and demographic groups.

The popular perception among large segments of the population in the region is that inequality is high and increasing, and that this high inequality was a prime reason for the popular uprisings that shook the region during 2011 (Verme 2014; Verme et al. 2014; Arampatzi et al. 2015). Studies comparing standards of living across MENA countries also find high region-wide inequality (Alvaredo and Piketty 2014). By contrast, studies based on national income and expenditure surveys using measures such as the Gini coefficient or the share of income of the top to bottom deciles, have found that inequality in the Middle East and North Africa (MENA) is low compared to other developing regions, and has been declining over time. These findings have been subjected to various robustness checks in a number of recent studies that use different correction methods taking into account data quality and survey representation issues (Bibi and Nabli 2009; Ncube and Anyanwu 2012; Hlasny and Intini 2015; Hlasny and Verme 2015, 2017), and the use of real-estate ownership and tax records to try to estimate an income distribution for the top income groups (Assouad 2015; Van der Weide et al. 2017). The relatively low inequality results hold for much of the region even after these robustness checks.

Other notions of inequality are likely responsible for the diversion of perceptions and observations of inequality, such as inequality of opportunity (Bibi and Nabli 2010; Devarajan and Ianchovichina 2015), lack of intergenerational social mobility (Ibrahim 1982; Nugent and

Saleh 2009; Belhaj-Hassine 2011; 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). An important dimension of welfare that has not been given much attention in the literature on MENA is that of income and social mobility, both over one's lifetime and across generations. Even if one believes the generally low levels of inequality as measured by the static Gini, this in itself might be a reflection of dynamic movements down the income and social scale rather than up. If the middle class is in fact converging toward the lower classes, as Assaad (2015) and others have argued, this could explain the seeming puzzle of a divergence of the perceptions and observations of inequality.

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.

Another important phenomenon that is highly systematic in MENA and that may be obscuring the real degree of inequality is migration. Large numbers of underemployed rural workers and unemployed fresh urban graduates move internally across regions, to other MENA 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). 28 percent of MENA youth express a willingness to migrate to improve their employment prospects and the welfare of their families (ILO 2015). Outmigration reduces the observable inequality in opportunities and outcomes – between-region inequality and other forms – partly because migrants are not tracked accurately (Assaad 2012). Remittances are not accounted for precisely 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 ignored. For these reasons it is important to account for workers' migration status to evaluate the workers' achievements, and social inequality.

This study examines intertemporal and intergenerational transmission of socio-economic status over the past two decades across three Arab countries for which high-quality, harmonized labor-market surveys are available: Egypt, Jordan and Tunisia. Multiple measures of economic outcomes and all available information on workers' migration status are used. Social mobility over time and across generations, as well as inequality in such movements across demographic groups are evaluated, with particular emphasis on the role of international return migration.

We tackle questions including: To what extent does educational, income and occupational mobility exist across MENA? How does return migration facilitate or hinder individuals' social mobility? Is there a difference in mobility by gender, geographic location and family type (whether female or male headed)? What other characteristics of the individual and family facilitate or hinder economic or social mobility? We aim to estimate the transitions of individuals' outcomes across years and between generations, as functions of the individuals' initial social status, history of migration, individuals' demographics and local labor market conditions.

The following study is structured as follows. The next section reviews our existing understanding of the MENA-region migration and return migration, and their effects on the extent and form of social inequality in the MENA. The following section discusses the methods and available data available to evaluate the relationship between migration, and social mobility and inequality. Section IV presents the main results of our empirical analysis. Section V concludes with a summary of key finding and their policy implications.

## **II. 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 amount 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 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 very high inequality in opportunity for education across eight Arab countries, linked to parents' education and earnings.

One of the first significant studies of migration and economic outcomes in the MENA region, by De Silva and Silva-Jáuregui (2004), 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 percent of exports in Jordan, 22 percent in Egypt and 9 percent in Tunisia during 1996–2000. Internal migration from rural to urban regions, on the other hand, put pressure on urban labor 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 economy. This impact may be particularly significant in times of economic hardship (Bouhga-Hagbe 2006).

In 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 regions were significant drivers of migration, while wages and skill composition were not. David and Marouani (2013a) built a general equilibrium model with endogenous international migration and remittance flows. Their results suggested that labor-supply as well as labor-demand factors are responsible for the spike in unemployment in recent years. Emigration of high-skilled workers could be mitigated by programs promoting service exports, which would benefit low-skilled native workers too. A similar model for Jordan (David and Marouani 2013b,c) yielded similar results, but the demand side response to the global crisis was estimated to be weaker in Jordan. Foreign wages affect migration flow more strongly in Tunisia, but they have a stronger effect on wages in Jordan, whose economy is smaller. An increase in foreign wages for high-skilled workers affects low- and medium-skilled workers positively in Tunisia but adversely in Jordan. Summarizing, David and Marouani (2016) found that out-migration affects households' division of labor, and performance of local labor markets. There is 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. On the other hand, returning migrants bring other skills with them as well as capital that can be used for productive uses.

Several studies have used micro-level data to estimate individuals' labor market outcomes as functions of migration spells. Wahba (2013, 2014, 2015) 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 that allow them to obtain better occupations or self-employment. 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 do 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.

David and Jarreau (2015), using ELMPS for 1998-2012, 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. David and Jarreau (2016) found that unemployment and size of the informal employment sector are the main drivers of emigration. Due to migration costs, workers' propensity to emigrate depends positively on household wealth, but the effect is mitigated by the prevalence of emigration in one's community.

### **III. 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 labor market surveys that track the socio-economic outcomes of the same individuals at different points in life, and also link outcomes of parents to those of their children. The ability to track the income levels and poverty status of individuals over time can provide tremendous insight into the process by which poverty declines or increases over time, and the relationship of any such changes with growth and distributional changes. We estimate the transitions of individuals' outcomes as functions of

the individuals' history of migration, as well as initial social status, individuals' demographics, and local labor market conditions.

### *Identifying migration and socioeconomic status*

We first isolate our outcome variables of interest, namely earnings, employment status, and household wealth based on both productive and nonproductive assets. 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 migration history, demographics and local market conditions. Changes in individuals' outcomes compared to those of their parents are evaluated.

To impute workers' earnings in past time periods, as well as fathers' real earnings at the same age as the surveyed worker, we use information on workers' or fathers' occupation group, and assign to them the mean present earnings in the occupation group.<sup>1</sup> While this method yields low observed heterogeneity in earnings across workers, the method is more robust to changes in prices, product quality, reporting errors, etc., over time than comparisons of nominal income levels, and arguably yields a better measure of welfare change over time, particularly when we are interested in groups of workers rather than individuals.

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. These assumptions are plausible over short time spans in the absence of large structural changes in the economy.<sup>2</sup> Finally, by inferring individuals' earnings from the mean earnings in occupation-groups at large, we also implicitly posit that the 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, he will remain at that level regardless whether he changes occupation group.

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<sup>1</sup> 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.

<sup>2</sup> They 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 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).

### *Quantifying social mobility*

We report the probabilities of individuals' moving between quantiles along the distribution of various socio-economic outcomes using Markov Chain transition matrices. 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 ( $\mathbf{P}$ ) 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 on various summary measures of mobility such as the Shorrocks Mobility Index:  $\hat{M}(P) = \frac{n - \text{trace}(P)}{n - 1}$ .<sup>3</sup> Similarly, we review the extent of intergenerational mobility by comparing the parents' economic achievements to those of the offspring. Parents' educational attainment, employment and contract status, and earnings (imputed from parents' occupation) will be used.

### *Data*

We combine all available waves of labor market panel surveys (LMPS) for three MENA countries: Labor Market Panel Surveys for 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 comparison of statistics.

To put the surveys in perspective of historical events in the MENA region, the Jordanian 2010 survey was administered during January–April 2010, less than a year before protests erupted in Amman in January 2011 over economic conditions in the country and government incompetence. Those protests came already on the heels of a revolution in Tunisia in December 2010 that led to a change of government and ushered in democratic changes. In the following months Arab Spring uprisings swept through most MENA region countries. In Egypt, popular revolution started only days after the ousting of the Tunisian president and the events in Jordan. Egyptian president was also ousted, and secular regime was replaced by Islamic government led by the Muslim Brotherhood. In June 2012, an Islamist candidate was elected president, and

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<sup>3</sup> 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).



began a campaign to pass a new national constitution. Popular 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 regionwide flux and uncertainty, during March–June 2012. The Tunisian survey was conducted between February and November 2014, a period of political stabilization and pluralist rule after the enactment of a new consensus national constitution. Finally, the Jordanian 2016 LMPS was administered in a setting of lasting political and economic stability in the country.

These surveys 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' labor market earnings, as well as their occupation, education, household assets and various demographic characteristics. In addition the panel data include linked information on fathers and sons, which helps to ascertain the degree of intergenerational social mobility.<sup>4</sup> Another method is to compare workers' current and prior residence. In the Egyptian (2012) and Tunisian (2014) surveys, retrospectively collected information on the governorate of one's job in 2011 can be used. ELMPS 2012 includes 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.<sup>5</sup>

All LMPSs 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 also ask about the reason for migration and return migration. Assaad and Krafft (2013), and El Enbavy 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. (2016c) reviews the Tunisian 2014 survey.

This study notably ignores current migrants, because data on their current labor-market outcomes abroad are either missing or non-comparable to the domestic outcomes of surveyed

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<sup>4</sup> 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.

<sup>5</sup> 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).

non-migrants and return-migrants. The study also ignores individuals without observable occupation or other labor 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 labor market outcomes. Correcting this bias is the aim of follow-up research.

Finally, we should note that workers labeled as non-migrants should rather be thought of as not-yet-migrants. As descriptive statistics show, this group is typically younger than return-migrants, suggesting that the act of migrating can be undertaken in mid-age (also, the duration of migration 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 account for workers' age, in order to compare return-migrants to their cohort of not-yet-migrants.

#### **IV. Results**

##### *Descriptive statistics of return migration: geographic patterns*

Considering only the most recent returns of individuals from abroad, the patterns vary across MENA countries, due to factors including geographic proximity, linguistic similarity and economic conditions. In Egypt 2012, the top five host-countries are Saudi Arabia (30%), Iraq (21%), Libya (18%), Jordan (11%) and Kuwait (6%), accounting for 86 percent of most recent return migration. Compared to 1998 and 2006, Libya and United Arab Emirates (UAE) gained in importance with respect to return migration, while Saudi Arabia, Jordan and Iraq became less significant as sources of return migration. In Jordan 2010, the top five countries are Palestine (20%), Kuwait (17%), Saudi Arabia (17%), Egypt (15%) and Iraq (7%), accounting for only 76 percent of return migration. In Tunisia 2014, the top five host-countries are France (37%), Libya (28%), Italy (15%), Belgium (7%) and Saudi Arabia (3%), accounting for 91 percent of return migration. One notable difference between Jordan and Tunisia is that Tunisian return migration is concentrated among a small number of countries, while Jordanian return migration is dispersed more widely. In Tunisia, only 7 countries account for more than 1% of return migration each, while in Jordan 10 countries account for more than 1% of return migrants.

Among migrants who return-migrated repeatedly, the pattern changed across their migration spells. It appears that migration trends were much more concentrated in prior migration spells

among fewer host-countries. In their previous migration, one-third of Tunisian return migrants came from Algeria (31%). In Egypt, return migrants came from Iraq (41%) and Jordan (19%). In Jordan, 42% came from Palestine.

### *Economic outcomes of return migrants*

Table 3 confirms that across most survey waves and across several indicators of economic outcomes, return migrants fare better than their peers who have never migrated. Their individual gross wage earnings, household earnings and household wealth are higher, significantly so in Egypt 2006 and Tunisia 2014. Only in Egypt 1998 return migrants appear to perform worse than non-migrants in terms of earnings. Return migrants are less likely to hold contract jobs, and formal jobs (except in Jordan).

A couple of caveats are in order. First, employment status in table 3 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 labor force. If, as evidenced in existing studies, return-migrants are more likely to become self-employed thanks to the capital accumulated abroad (or if their non-employment status tends to be more due to preferences than due to necessity or discouragement), the employment-status statistics in table 3 will underestimate the work status and welfare of return migrants. The second 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 gap. Similarly, household earnings and wealth do not account for household composition and size. If return migrants are less likely to currently have dependents, their outperformance in standards of living per capita may be even greater than reported in table 3. On the other hand, if return migrants come from larger families, their outperformance may be overestimated.

### *Determinants of (return) migration*

Table 3, panel 1, evaluates mean earnings in 2-digit occupation groups where return migrants versus non-migrants work, both currently and in the past. This table reports on an exercise

similar to a difference-in-difference analysis, for workers who were employed at all 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 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 receive over non-migrants did not change systematically across the evaluated points in time.

Table 3, panel 2, reports on a different take at the test of this hypothesis. It compares mean occupation-group earnings today to the mean earnings in occupation-groups from which the first migrating members from each household came (weighted appropriately). One caveat is that only the first migrating member from each household, and only those with known prior employment are evaluated. Once again, we would expect that the occupations from which migrating household members came would be the underperforming occupations. Across three survey waves – Egypt 2006 and 2012, and Tunisia – this hypothesis is supported. Only in Jordan 2010, the occupation groups from which the considered migrants escaped were performing better than other sectors.

Table 4 follows up on tables 2 and 3 by reporting demographic characteristics of return-migrants versus non-migrants. Return migrants are shown to come from rural areas, be more educated and be older than non-migrants.

#### *Social and intergenerational mobility: non-migrants versus return migrants*

Tables 5 and 6 report the joint densities of earnings quintiles in the current year versus eight years previously, for non-migrants versus return migrants. (Tables A2 and A3 in Appendix 1 report the same statistics for non-migrants and return migrants combined, to indicate 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 serve as pathways to such upward social mobility.

Tables 5 and 6 can be used to compute the Shorrocks (1978) mobility index, interpreted as the share of households that are in different quintiles on the two respective univariate distributions. The sum of densities on the main diagonal (either the upper-right or lower-left densities) should be subtracted from five, and the result divided by four. A 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 5–6 and A2–A3 – takes very different values across the national surveys analyzed and even across survey waves, but the values are consistently higher among return-migrants than among non-migrants, confirming greater social mobility among migrants. This is true for intertemporal mobility over the span of eight years of workers’ careers as well as for intergenerational mobility between the occupation of fathers and their sons.

## **V. Conclusions**

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

Preliminary findings of our study offer important insights about the extent, nature and dynamics of social mobility, particularly in relation to the prevalent flows of cross-border migration. Recommendations about what types of policy interventions might bear the greatest positive outcomes will be offered. We find that cross-region migration trends differ substantially between Egypt, Jordan and Tunisia, both in their prevalence and their impact on workers’ labor market mobility and outcomes. This has differential implications for economic inequality in the three countries.

Return migration facilitates lifetime and intergenerational social mobility. There is evidence that returning migrants bring new skills and capital with them that allow them to obtain better occupations or self-employment. This affects not only the short-term welfare of migrants’

families, but particularly their lifelong occupational and social mobility. These effects help to mitigate the rather high intergenerational correlation of economic status in the MENA region.

The findings suggest that regulated (re-)return migration can offer substantial benefits to underemployed workers in countries with opportunity traps. At the same time, we know that regulated migration can offer short-term benefits to recipient countries without subjecting them to long-term political risks.

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Table 1. Top 10 destination countries for most-recent return migration (% of return migrants)

Egypt 2006		Egypt 2012		Jordan 2010		Jordan 2016		Tunisia 2014		
1	Saudi A.	32.6	Saudi A.	30.03	Palestine	20.36	Saudi A.	46.15	France	36.6
2	Iraq	29.91	Iraq	21.06	Kuwait	17.34	UAE	8.65	Libya	28.04
3	Jordan	12.53	Libya	18.16	Saudi A.	16.92	Kuwait	7.69	Italy	15.32
4	Libya	11.88	Jordan	10.9	Egypt	14.51	Bahrain	5.77	Belgium	7.48
5	Kuwait	5.89	Kuwait	5.64	Iraq	7.31	Oman	5.77	Saudi A.	3.32
6	Yemen	2.01	UAE	4.88	UAE	5.93	USA	4.81	Algeria	1.81
7	UAE	1.36	Qatar	1.64	USA	2.84	Palestine	3.85	Germany	1.48
8	Lebanon	0.98	Yemen	1.32	Syria	2.02	Libya	3.85	USA	0.91
9	Qatar	0.74	Lebanon	1	Libya	1.67	Yemen	3.85	Oman	0.58
10	Italy	0.48	Netherl.	0.96	Germany	1.45	Qatar	2.88	Morocco	0.37
		98% of 411	96% of 1,607		90% of 942		93% of 104		96% of 212	
		migrants	migrants		migrants		migrants		migrants	

Note: Statistics account for individuals' sampling weights. Sample is restricted to men 25 years or older.

Table 2. Economic outcomes by status as return migrant (PPP2012\$, % workers)

	Return migrant	EG98	EG06	EG12	JO10	TU14
Ind. wage earnings	N	348.29	353.22	362.22	951.19	599.44
	Y	264.45	444.03	351.16	981.27	753.38
Hhd. wage earnings per capita	N	110.77	106.05	112.45	252.32	190.82
	Y	73.78	118.85	102.64	339.45	264.52
Hhd. wage earnings	N	485.30	488.28	465.89	1,272.30	748.03
	Y	368.69	565.91	455.24	1,398.31	1,090.12
Hhd. Wealth index per capita	N	15.00	10.30	7.65	8.80	11.35
	Y	14.09	10.43	7.34	12.96	12.91
Hhd. wealth index	N	56.94	41.73	29.82	40.49	40.09
	Y	57.09	44.70	29.67	45.21	44.69
Contract job	N	56.72%	43.49%	47.28%	68.61%	50.55%
	Y	53.05%	52.83%	47.63%	56.96%	50.71%
Formal job	N	--	--	46.54%	57.75%	58.27%
	Y	--	--	45.10%	36.06%	50.45%
Current urban residence	N	82.1	47.7	46.3	78.2	70.5
	Y	47.5	39.3	35.7	93.7	74.8

Note: Statistics account for individuals' sampling weights. Sample is restricted to men 25 years or older.

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

	Return migrant	EG98	EG06	EG12	JO10	TU14
Panel 1: Mean earnings in all occupation-groups, among non-migrant and return-migrant workers						
Occupation-group mean earnings, current	N	266.65	301.46	332.56	763.03	534.60
	Y	234.36	319.50	336.52	782.80	528.77
Occupation-group mean earnings, previous	N	303.37	239.91	--	825.70	528.73
	Y	239.64	318.50	--	811.42	528.53
Occupation-group mean earnings, before previous	N	245.43	164.70	--	766.62	531.34
	Y	229.20	271.70	--	780.06	531.34
Occupation-group mean earnings, 8 years prior	N	256.07	282.30	319.95	784.94	524.71
	Y	227.78	324.39	319.05	809.43	543.83
Panel 2: Mean earnings in all occupation groups vs. those from which first migrating household members came						
Occupation-group mean earnings, current		219.36	303.21	335.87	774.54	533.42
Mean current earnings, occupation-groups from which first migrants left		--	127.04	310.77	842.07	531.32

Note: Statistics account for individuals' sampling weights. Evaluated only among workers with known occupations in past years. Sample is restricted to men 25 years or older.

Table 4. Demographics by status as return migrant (% workers)

	Return migrant	EG98	EG06	EG12	JO10	TU14
Urban residence at birth	N	83.7	44.8	44.8	--	62.6
	Y	50.1	34.1	34.0	--	67.2
Preparatory-school educated	N	8.9	11.3	18.0	33.3	12.7
	Y	4.4	13.3	15.3	13.0	16.9
High-school educated	N	29.2	41.9	37.6	36.8	14.9
	Y	43.3	43.9	42.6	43.2	9.3
University educated	N	24.6	29.6	19.3	17.5	9.3
	Y	23.9	39.2	14.3	28.8	13.9
Post-graduate educated	N	2.8	0.5	1.3	3.2	1.3
	Y	1.4	0.0	1.0	10.8	2.2
Mean age (age age≥25)	N	49.6	43.8	38.0	40.3	47.6
	Y	42.8	46.1	44.0	48.1	54.4

Table 5. Joint distribution densities of current and 8-year earlier earnings: non-migrants vs. return migrants (% individuals in earnings quintiles)

Egypt 98	8-yr prior:	Non-migrants (Shorrocks=0.13)					Return migrants (Shorrocks=0.25)				
		1	2	3	4	5	1	2	3	4	5
Current:	92.9	3.6	3.6	0.0	0.0	76.3	0.0	18.4	2.6	2.6	
1	78.8	0.9	0.6	0.0	0.0	80.6	0.0	7.9	1.2	1.0	
2	2.7	90.0	4.6	2.7	0.0	6.3	78.1	3.1	6.3	6.3	
	9.1	87.6	3.1	1.9	0.0	5.6	58.1	1.1	2.4	1.9	
3	1.4	2.7	91.1	0.7	4.1	3.8	3.8	87.5	5.0	0.0	
	6.1	3.5	83.7	0.6	2.3	8.3	7.0	78.7	4.9	0.0	
4	0.6	4.0	4.0	83.6	7.9	2.3	8.1	8.1	75.6	5.8	
	3.0	6.2	4.4	91.9	5.4	5.6	16.3	7.9	79.3	4.8	
5	0.4	0.8	4.9	3.4	90.6	0.0	6.7	3.4	8.4	81.5	
	3.0	1.8	8.2	5.6	92.3	0.0	18.6	4.5	12.2	92.4	

Egypt 06	8-yr prior:	Non-migrants (Shorrocks=0.65)					Return migrants (Shorrocks=0.67)				
		1	2	3	4	5	1	2	3	4	5
Current:	100.0			0.0	0.0	100.0			0.0	0.0	
1	15.0			0.0	0.0	10.3			0.0	0.0	
2											
3											
4	13.8			62.8	23.4	5.7			47.8	46.5	
	31.7			90.8	18.6	23.1			78.1	24.4	
5	17.6			4.8	77.6	9.5			7.7	82.8	
	53.3			9.2	81.5	66.7			21.9	75.6	

Egypt 12	8-yr prior:	Non-migrants (Shorrocks=0.23)					Return migrants (Shorrocks=0.37)				
		1	2	3	4	5	1	2	3	4	5
Current:	90.5	3.4	3.6	1.5	0.9	75.5	3.0	18.5	2.1	0.9	
1	81.3	5.2	3.5	2.6	1.4	78.8	8.9	15.6	3.6	1.7	
2	6.2	83.1	5.7	1.5	3.5	10.6	64.9	14.9	4.3	5.3	
	3.3	74.4	3.3	1.5	3.2	3.2	54.5	3.6	2.1	2.8	
3	7.8	3.7	85.1	2.0	1.5	9.6	2.5	83.6	1.4	2.9	
	7.0	5.7	83.0	3.4	2.3	8.5	6.3	60.0	2.1	4.5	

4	9.6	5.7	6.9	74.3	3.6	7.8	6.1	17.6	64.5	4.1
	5.9	5.9	4.6	86.7	3.8	6.0	13.4	11.0	81.4	5.6
5	3.7	7.7	7.7	4.5	76.4	4.6	7.9	15.8	8.7	63.1
	2.5	8.8	5.7	5.9	89.4	3.5	17.0	9.7	10.8	85.4

		Non-migrants (Shorrocks=0.79)					Return migrants (Shorrocks=0.84)				
<b>Jordan</b>	8-yr prior:	1	2	3	4	5	1	2	3	4	5
Current:	42.7	19.2	12.9	4.6	20.6	45.2	7.3	10.2	11.3	26.0	
1	29.9	12.2	14.3	9.7	15.9	30.8	14.6	11.5	16.5	21.3	
2	20.3	42.1	11.4	6.1	20.1	24.3	18.4	16.9	8.8	31.6	
	26.2	49.6	23.3	23.5	28.7	12.7	28.1	14.7	9.9	19.9	
3	20.7	25.6	25.8	5.9	22.0	28.0	10.7	28.9	12.6	19.8	
	24.7	27.7	48.8	21.0	29.0	34.2	38.2	58.6	33.1	29.2	
4	22.9	14.4	7.6	36.4	18.6	28.8	7.6	10.2	31.4	22.0	
	7.6	4.4	4.0	36.1	6.9	13.1	10.1	7.6	30.6	12.0	
5	25.8	14.9	13.4	7.1	38.8	25.5	8.5	12.8	12.8	40.4	
	11.7	6.2	9.6	9.7	19.5	9.2	9.0	7.6	9.9	17.6	

		Non-migrants (Shorrocks=0.86)					Return migrants (Shorrocks=0.86)				
<b>Tunisia</b>	8-yr prior:	1	2	3	4	5	1	2	3	4	5
Current:	91.9					8.1	88.8				11.2
1	90.0					31.9	92.0				43.2
2											
3											
4											
5	37.2					62.8	34.4				65.6
	10.0					68.1	8.0				56.8

Note: Densities account for individuals' sampling weights. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to men 25 years or older.

Table 6. Joint distribution densities of son's and father's earnings: non-migrants vs. return migrants (% sons in earnings quintiles)

		Non-migrants (Shorrocks=0.79)					Return migrants (Shorrocks=0.76)				
<b>Egypt</b>	Father:	1	2	3	4	5	1	2	3	4	5
Son:	83.3	3.3	0.0	6.7	6.7	85.7	2.9	8.6	0.0	2.9	
1	13.2	0.7	0.0	1.4	1.5	24.6	1.9	6.4	0.0	1.8	
2	28.0	29.9	15.9	15.9	10.3	38.7	22.6	12.9	12.9	12.9	
	15.8	22.7	14.7	11.6	8.2	9.8	13.5	8.5	5.6	7.1	
3	31.5	22.8	14.8	9.4	21.5	40.2	14.6	18.3	13.4	13.4	
	24.7	24.1	19.0	9.5	23.7	27.1	23.1	31.9	15.5	19.6	
4	18.9	18.9	16.6	31.4	14.3	18.5	16.1	8.6	44.4	12.4	
	17.4	23.4	25.0	37.4	18.5	12.3	25.0	14.9	50.7	17.9	
5	20.5	15.3	17.9	22.0	24.3	26.9	16.0	15.1	16.8	25.2	
	29.0	29.1	41.4	40.1	48.2	26.2	36.5	38.3	28.2	53.6	

		Non-migrants (Shorrocks=0.83)					Return migrants (Shorrocks=0.87)				
<b>Egypt</b>	Father:	1	2	3	4	5	1	2	3	4	5
Son:	53.8				21.5	24.7	25.0			0.0	75.0
1	9.9				1.3	1.6	3.4			0.0	1.6
2											
3											

4	14.7			60.2	25.0	7.1			69.9	23.1
	41.5			57.2	25.5	37.9			51.4	18.9
5	13.0			32.9	54.1	6.3			37.9	55.9
	48.6			41.4	72.9	58.6			48.6	79.6

Non-migrants (Shorrocks=0.82)						Return migrants (Shorrocks=0.87)					
<b>Egypt</b>	Father:	1	2	3	4	5	1	2	3	4	5
<b>12</b>											
Son:	77.5	5.1	7.7	5.9	3.9		84.1	2.7	6.0	2.7	4.5
1	36.7	11.9	14.6	11.6	5.7		37.2	11.7	16.3	7.3	10.8
2	40.1	19.3	12.9	10.8	16.9		57.6	14.1	5.1	10.1	13.1
	12.1	29.0	15.7	13.5	15.9		7.5	18.2	4.1	8.1	9.4
3	52.2	8.5	18.1	10.0	11.3		60.6	6.0	13.7	7.8	12.0
	25.5	20.6	35.6	20.2	17.2		22.8	22.1	31.7	17.7	24.5
4	41.4	12.3	11.8	20.4	14.2		53.4	7.7	10.9	18.6	9.3
	13.9	20.6	15.9	28.3	14.8		17.5	24.7	22.0	37.1	16.6
5	28.7	8.7	11.0	15.5	36.1		44.7	7.1	12.6	14.5	21.2
	11.9	18.0	18.2	26.4	46.4		15.1	23.4	26.0	29.8	38.9

Non-migrants (Shorrocks=0.88)						Return migrants (Shorrocks=0.95)					
<b>Jordan</b>	Father:	1	2	3	4	5	1	2	3	4	5
<b>10</b>											
Son:	31.3	23.4	21.1	11.7	12.5		14.3	28.6	14.3	21.4	21.4
1	34.5	19.6	23.9	33.3	16.3		12.5	30.8	13.3	25.0	16.7
2	16.8	42.2	19.9	6.21	14.9		44.4	22.2	11.1	0.0	22.2
	23.3	44.4	28.3	22.2	24.5		25.0	15.4	6.7	0.0	11.1
3	21.7	24.7	30.9	8.3	14.4		30.8	0.0	23.1	23.1	23.1
	18.1	15.7	26.6	17.8	14.3		25.0	0.0	20.0	25.0	16.7
4	20	27.5	15.0	10.0	27.5		16.7	25.0	25.0	25.0	8.3
	6.9	7.19	5.3	8.9	11.2		12.5	23.1	20.0	25.0	5.6
5	20.2	20.2	18.2	8.1	33.3		15.4	15.4	23.1	11.5	34.6
	17.2	13.1	15.9	17.8	33.7		25.0	30.8	40.0	25.0	50.0

Non-migrants (Shorrocks=0.97)						Return migrants (Shorrocks=0.97)					
<b>Tunisia</b>	Father:	1	2	3	4	5	1	2	3	4	5
<b>14</b>											
Son:	91.4					8.6	93.0				7.0
1	80.9					59.4	83.7				62.5
2											
3											
4											
5	78.5					21.5	81.3				18.8
	19.1					40.6	16.4				37.5

Note: Densities account for individuals' sampling weights. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to men 25 years or older.

## Appendices

### Appendix 1. Data summary and additional results

Table A1. Basic description of evaluated surveys

Survey wave	Source & documentation	Hhds	25+ year-old men	Return migrants, 25+yo men (%)	Mean pop. sampling weight
EG98 LMPS	OAMDI 2017; Assaad & Barsoum (2000)	4,816	1,482	430 (33.77)	2,452.61
EG06 LMPS	--; Barsoum (2007)	8,351	8,670	435 (5.85)	1,841.91
EG12 LMPS	--; Assaad & Krafft (2013)	12,060	5,312	1,190 (13.88)	1,627.11
JO10 LMPS	--; Jordan (2010), Assaad (2012)	5,102	9,665	1,364 (29.07)	243.51
JO16 LMPS	--; Krafft (2017)	6,803	6,902	104 (2.30)	281.80
TU14 LMPS	--; Assaad et al. (2016c)	4,521	3,490	175 (5.15)	600.09

Notes: OAMDI is the Economic Research Forum's Open Access Micro Data Initiative. Percent return migrant among 25+ year-old men accounts for individuals' sampling weights.

Table A2. Joint distribution densities of current and 8-year earlier earnings (% individuals in earnings quintiles)

<b>Egypt 98</b> (Shorrocks=0.16)											
8-yr prior:	1	2	3	4	5	Total					
Current:	93.9	1.08	3.23	0.54	1.26	100					
1	86.88	1.02	2.15	0.42	0.77	15.24					
2	5.61	86.14	4.39	2.46	1.4	15.59					
3	5.32	83.5	2.99	1.95	0.88	21.36					
4	3.16	2.43	3.91	2.94	84.35	21.36					
5	3.16	2.43	3.91	2.94	84.35	21.36					
1	2.99	2.34	6.8	5.2	4.9	5.33	83.22	3.9	100		
2	2.99	2.34	6.8	5.2	4.9	5.33	83.22	3.9	100		
3	1.66	1.02	4.76	2.86	5.62	4.8	5.01	86.31	100		
4	1.66	1.02	4.76	2.86	5.62	4.8	5.01	86.31	100		
5	1.66	1.02	4.76	2.86	5.62	4.8	5.01	86.31	100		
Total	100	16.47	100	16.08	100	22.89	100	19.67	100	24.89	100

  

<b>Egypt 06</b> (Shorrocks=0.78)										
8-yr prior:	1	2	3	4	5	Total				
Current:	100.00			0.00	0.00	100				
1	14.92			0.00	0.00	2.65				
2										
3										
4		13.47		62.09	24.44	100				
5	31.47			90.3	18.93	41.56				
1		17.1		4.97	77.93	100				
2		53.62		9.7	81.07	55.79				
Total	100	17.79		100	28.57	100	53.63	100		

  

<b>Egypt 12</b> (Shorrocks=0.23)											
8-yr prior:	1	2	3	4	5	Total					
Current:	87.87	3.27	5.92	1.8	1.13	100					
1	82.7	6.02	6.38	3.42	1.91	27.37					
2	3.08	6.69	80.62	6.6	2.32	3.77					
3	3.08	72.53	3.48	2.15	3.12	13.39					
4	6.4	7.97	3.59	84.8	1.92	1.72					
5	6.4	5.63	77.97	3.1	2.48	23.35					
1	5.25	9.15	5.64	8.53	72.9	3.78					
2	5.25	9.15	5.64	8.53	72.9	3.78					
3	2.57	3.89	7.36	8.68	5.33	74.75					
4	2.57	3.89	7.36	8.68	5.33	74.75					
5	2.57	3.89	7.36	8.68	5.33	74.75					
Total	100	29.08	100	14.88	100	25.39	100	14.45	100	16.19	100



Son:	79.8	4.21	7.17	4.86	3.97	100
1	39.75	11.97	15.69	11.24	6.82	26.10
2	41.58	18.84	12.71	10.57	16.31	100
	10.95	28.31	14.72	12.92	14.81	13.80
3	53.18	8.1	17.68	9.71	11.33	100
	23.29	20.25	34.04	19.76	17.11	22.95
4	43.48	11.37	11.5	20.04	13.62	100
	13.65	20.37	15.87	29.21	14.74	16.46
5	31.32	8.48	11.34	14.67	34.18	100
	12.36	19.1	19.68	26.87	46.52	20.68
Total	100	52.41	100	9.18	100	11.29
						100

<b>Jordan 10</b>						
(Shorrocks=0.88)						
Father:	1	2	3	4	5	Total
Son:	29.58	23.94	20.42	12.68	13.38	100
1	31.82	20.48	22.66	31.58	16.38	23.71
	18.24	41.18	19.41	5.88	15.29	100
2	23.48	42.17	25.78	17.54	22.41	28.38
	22.73	21.82	30	10	15.45	100
3	18.94	14.46	25.78	19.3	14.66	18.36
	19.23	26.92	17.31	13.46	23.08	100
4	7.58	8.43	7.03	12.28	10.34	8.68
	19.2	19.2	19.2	8.8	33.6	100
5	18.18	14.46	18.75	19.3	36.21	20.87
Total	100	22.04	100	27.71	100	21.37
						100

<b>Tunisia 14</b>						
(Shorrocks=0.95)						
Father:	1	2	3	4	5	Total
Son:	92.37				7.63	100
1	85.24				64.1	83.15
2						
3						
4						
5	78.91				21.09	100
	14.76				35.9	16.85
Total	100	90.10			100	9.90
						100

Note: Densities account for individuals' sampling weights. Joint distributions of earnings quintiles, rather than earnings themselves, are shown. Sample is restricted to men 25 years or older.

Table A4. Inequality measures, asset-based wealth indexes

	EG98	EG06	EG12	JO10	TU14
Range (by design)	0-100	0-100	0-100	0-100	0-100
Mean	36.469	41.735	29.684	41.198	38.829
Median	38.052	42.694	30.551	40.077	38.732
Standard deviation	15.933	10.247	8.962	14.059	15.058
Skewness	-0.081	0.067	-0.080	0.579	0.343
Kurtosis	2.499	3.922	4.065	3.482	3.230
Concentration index ( $\times 100$ )	36.28	22.58	19.73	31.34	33.81
(Erreygers 2009)	(0.09)	(0.08)	(0.06)	(0.12)	(0.12)
Polarization ( $\times 100$ )	$\alpha=1.0$	0.581	0.183	0.125	0.468
(Esteban & Ray 1994)		(0.035)	(0.008)	(0.008)	(0.041)
	$\alpha=1.3$	0.055	0.014	0.009	0.045
		(0.006)	(0.001)	(0.001)	(0.006)
	$\alpha=1.6$	0.005	0.001	0.001	0.004
		(0.001)	(0.000)	(0.000)	(0.001)

Note: All inequality calculations account for households' sampling weights.

Wealth indexes reported here are estimated using factor loadings from own survey wave; factor loadings thus differ across columns.

Standard errors on Ginis, generalized Ginis and polarization indexes are bootstrap estimates.

## **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 2017). 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.