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Anda DAVID
Christophe J. NORDMAN

UMR DIAL 225
Place du Maréchal de Lattre de Tassigny 75775 • Paris Cedex 16 •Tél. (33) 01 44 05 45 42 • Fax (33) 01 44 05 45 45
• 4, rue d'Enghien • 75010 Paris • Tél. (33) 01 53 24 14 50 • Fax (33) 01 53 24 14 51
E-mail : dial@dial.prd.fr • Site : www.dial.prd.fr

SKILL MISMATCH AND MIGRATION IN EGYPT AND TUNISIA[1]

Anda David
PSL, Université Paris Dauphine, LEDa,
IRD, UMR DIAL
david@dial.prd.fr

Christophe Jalil Nordman
IRD, UMR DIAL
PSL, Université Paris Dauphine, LEDa
nordman@dial.prd.fr

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Abstract:

The objective of this paper is to shed light on the issue of skill mismatch in the context of return migration in Egypt and Tunisia. Using data on both return and potential migrants in Egypt and Tunisia, we analyze the skills that migrants acquire before and during migration and the way these skills are used upon return. We find evidence of skill mismatch, especially in Tunisia. The undereducation phenomenon is more prevalent among return migrants, indicating that they make up for their lower education using their migration experience. Finally, we estimate the determinants of skill mismatch on the Egyptian and Tunisian labour markets and find a significant negative effect of return migration on the probability of being undereducated.

Key words: Return migration, skill mismatch, labor market, education, Tunisia and Egypt.

Résumé

L'objectif de cet article est d'apporter un éclairage sur la question de l'inadéquation des qualifications dans le cadre de la migration de retour en Egypte et en Tunisie. En utilisant à la fois des données sur les migrants de retour et sur les migrants potentiels en Egypte et en Tunisie, nous analysons les qualifications que les migrants acquièrent avant et pendant la période de migration et la façon dont ces compétences sont utilisées à leur retour. Nos résultats confirment l'existence d'un fort degré d'inadéquation des qualifications, en particulier en Tunisie. Le phénomène de la sous-éducation est plus présent pour les migrants de retour, indiquant qu'ils compensent leur faible niveau d'éducation en utilisant leur expérience migratoire. Enfin, nous examinons les déterminants de l'inadéquation des qualifications sur les marchés du travail égyptien et tunisien et trouvons en effet une corrélation négative et significative de la migration de retour sur la probabilité d'être sous-éduqué.

Mots Clés : Migration de retour, inadéquation des qualifications, marché du travail, éducation, Tunisie et Egypte.

JEL Code: J24, F22, O15 I25

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1 Introduction

For a long time, addressing the migration and education issue came down to the brain-drain phenomenon. With a growing literature on return migration, the positive externalities of the migration-education nexus began to emerge. Dustmann (1994) argues that human capital accumulation is a push factor for return migration due to higher returns to education in the home country. Building upon this early work, Dustmann et al. (2011) use a dynamic Roy model[1] and show that return migration not only reduces brain drain, but creates a "brain-gain" by increasing the skill level in the home country. This argument is supported by Santos and Postel-Vinay (2004) who point out that temporary migration leads to skill-upgrading and results in higher economic growth. The underlying hypothesis is that migrants whose skill level will entail higher returns in home country than in host country, will prefer to return[2]. It also implies that return migrants' skills are transferable and that they will get a job matching their qualifications. Empirical studies such as Co et al. (2000), Barrett and O'Connell (2001) or Iara (2006) find significant wage premium for returning migrants and Reinhold (2009) finds that the increase in earnings for returning migrants is due to skill-upgrading in the case of Mexican return migrants. It is therefore crucial to grasp the mechanisms involved in the acquiring and use of skills in order to maximize the benefits of return migration.

Skill mismatch and particularly overeducation was often studied from the perspective of highly developed countries since it is often associated with a global increase of the average education level and thus an excess in highly skilled labour supply (Freeman, 1976). Indeed, according to Becker's human capital theory (Becker, 1975) wages should

[1] Roy (1951)

[2] Dustmann et al. (2011) also show that individuals with low skill levels choose not to migrate, while those with high skill levels choose to migrate and stay permanently in the home country.

correspond to the worker's productivity, therefore to his education and training, work experience, talent and other unobserved characteristics. Sicherman (1991) points out that if discrepancies appear, they are only transitory and overeducation corresponds to the "entry phase" in the labour market. His findings are supported by Groot (1996) and Groot and Maassen van den Brink (2000) who highlight that overeducation is entailed by a lack in work experience and fades with time spent on the labour market.

With the steady increase in MENA countries' global education indicators, the mismatch between skills and job level arises as a crucial issue in some countries. In an extended analysis of the AMC labour markets, the European Commission (2010) points out that one of the main problems is the mismatch between the outcomes of the educational system and the qualifications required on the job market. One of the highlighted causes was the high prevalence of employment in the public sector until the 1980s that led the universities to orient their training offer towards humanities and social sciences. The result is a high concentration of graduates in fields for which labour demand barely increased in the last decades and the report stresses the importance of articulating employment policies with education and training policies.

The objective of this paper is to shed light on the issue of skill mismatch in the context of return migration in Egypt and Tunisia. Using data on both return and potential migrants[3] in Egypt and Tunisia, we analyze the skills that migrants acquire before and during migration and the way these skills are used upon return. We quantify the skill-mismatch in both countries and try to analyze some of its determinants. Egypt and Tunisia provide interesting case studies since their migration profiles are different, Egyptian migrants being often temporary and choosing the Gulf countries as main des-

[3]Individuals that are currently living in the survey country and are representative of the young adult population.

tination and Tunisian migrants being more oriented towards European countries and spending a significant share of their working-life abroad. This results of course in a differentiated behavior in terms of human capital accumulation and thus a distinct impact of return migration.

For the Egyptian case, Assaad (2007) finds that the Government's policy to guarantee public jobs to upper secondary and university graduates shaped households' education decision towards education levels that have very low returns in the private sector, thus resulting in a low productivity of human resources in the economy. The high unemployment rates for young graduates are a direct result of these mismatches between education outcomes and labour market demands. Indeed, Egypt witnessed an important shift in terms of education, going from a share of 40% of the new entrants on the labour market having less than primary education in the 1980s to a share of 70% of the new entrants having at least a secondary education level in 2005 (Assaad, 2007). In a study entirely dedicated to job mismatch and its impact on Egyptian wages, El-Hamidi (2009) finds evidence of an education-occupation mismatch in the private sector. This results in high returns to over-education, contrary to the other findings in the literature. Nevertheless, no particular attention is paid to return migrants and their situation on the labour market. Accordingly to the Employment and Labour Market Panel Survey (ELMPS) 2006, the share of returnees in the public sector is 36%, much more important than in the private sector due to a law that allows Egyptians employed by the Government to work abroad for a maximum of two years, without any penalty concerning their position the the labour market (Wahba, 2007a). Furthermore, Wahba (2007a) shows that return migrants have a higher education level than non-migrants and that returnees earn on average 38% more than non-migrants (Wahba, 2007b).

Moreover, these mismatches can result in lower returns to education and thus lower

incentives to return for migrants. Among the increasing number of studies on migrations in the MENA region[4], the most important analysis on the return migrants and their reintegration was provided by Cassarino (2008) and the MIREM project or "Collective action to support the reintegration of migrants in their country of origin"[5]. Using this survey, Mahuteau and Tani (2011) point out the links between skill acquisition and activity choice upon return and Gubert and Nordman (2011) analyze the determinants of entrepreneurship. Despite the rich data and extensive information on the various phases of migration and return, the survey only includes returnees, thus not allowing a comparison with non-migrants.

The rest of the paper is organized as follows: section 2 introduces the dataset we are using and the methodology and section 3 presents some descriptive statistics and depicts return migrant's skills. Skill mismatch is analyzed in section 4 and section 5 concludes.

2 Data source and methodology

We use a survey conducted as part of the ETF "Migration and Skill" project, aiming to analyze the skills of migrant flows from sending countries. The survey was carried out between 2006 and 2007 in Albania, Egypt, Moldavia and Tunisia on a sample of approximately 1,000 potential migrants and 1,000 returnees in each country[6]. Separate questionnaires were administered to potential migrants and returnees, but part of the questions were common to both categories. The questions mainly concern the education and skills of migrants, acquired before and after migration, and their usefulness, subjective, on labour markets in the countries of destination and countries of origin.

[4] See Marchetta (2012) for a detail review.
[5] For details see http://rsc.eui.eu/RDP/research-projects/mirem/
[6] For more details on the ETF project see Sabadie et al. (2010).

The potential migrants sample is composed of individuals aged 18 to 40 living in the country at the time of the interview and was intended to be representative of the young population. Return migrants are individuals that left the home country at the age of 18 or older, lived and worked abroad for at least six months and returned at least 3 months before the interview and within the previous 10 years. For the scope of this paper, we will only focus on the Egyptian and Tunisian data.

The issue of measuring skill mismatch has been widely addressed in the literature and studies such as Hartog (2000) and Leuven and Oosterbeek (2011) offer a complete picture of the proposed approaches. The measures can thus be classified as either subjective, when information on required skill for a given occupation is provided by the worker himself, or as objective, when standard comparisons are used. This latter approach covers two main methodologies, the first one being the job analysis, consisting in an evaluation by job experts of the required level of education for a typical occupation (the *Dictionary of Occupational Titles* (DOT) for instance), and the second one being the realized matches, that implies measuring the gap between the worker's education level and the mean[7] or modal[8] education level for the given occupation.

The job analysis measure is used in most studies, such as in Sicherman (1991), Groot and Maassen van den Brink (2000) or Chevalier (2003), and in a study comparing the various measures, Verhaest and Omey (2006) argue its robustness and reliability as compared to the other methods. Nevertheless, due to the high level of detail on both technologies and skill used in each occupation, it proves to be a very expensive and time-consuming measure, therefore hardly applicable in developing countries. Indeed the choice of one measure over another comes down to the availability of data on edu-

[7]Developed by Clogg (1979) and Clogg and Shockey (1984).
[8]Developed by De Grip et al. (1998).

cation and occupations. Herrera and Merceron (2013) point out the advantages of using the realized-matches approach for developing countries and estimate the incidence of skill-mismatch and its determinants in Sub-Saharan Africa.

Unfortunately, in the ETF survey, we do not have data on individual's occupation, only on their job type and job level. We will therefore be using job levels instead of occupations. For consistency reasons, we use the return migrant's job level upon return and compute the mean and median using both samples. We test different definitions of skill-mismatch using levels of education and mean or median for a given job level. The results are presented in Table 1. We will use the mean level of education per job level as a norm for skill mismatch and obtain a similar result in terms of over-education as El-Hamidi (2009) : an incidence of overeducation in Egypt of 11.4%. In addition, the results for Tunisia are the same regarding the norm used.

Table 1: Overeducation incidence

Norm	**Egypt**	**Tunisia**
Mean	11.4%	12.2%
Median	5.1%	12.1%

The figures are presented as a percentage of the total sample for each country.
Source: Authors' computation based on the ETF survey

3 What skills do migrant acquire prior to their migration

In what follows, we will briefly analyze some descriptive statistics of the two samples and then concentrate on the skill dimension and evidence of overeducation.

On average, return migrants are older than potential migrants (Table 2), due to the way the sample was constructed (potential migrants representative for the young adult

population). They are also more often married, but this can also be linked with the age difference and translates a different phase of the life cycle for the two samples. Unfortunately, for return migrants, the survey design does not allow us to distinguish between the education level before and after migration. It implies that the education level we will be using for return migrants includes education that might have been acquired during time abroad. When looking at the education level as measured by the number of years of education[9], there seems to be no significant difference between return and potential migrants in Egypt, while in Tunisia potential migrants appear to be more educated than return migrants[10]. The education level statistics give us a better insight on the differences between the two samples. For Egypt, the only education level for which the proportion of potential migrants is significantly higher than that of return migrants is secondary education, while the opposite is true for the other levels (except primary education where there is no significant difference). For the Tunisian sample, the education level statistics confirm that return migrants are less educated on average than potential migrants. Two factors could explain this situation: on the one hand, Tunisian return migrants belong to the first waves of labour migration, mainly low-skilled; on the other hand, the education level increased significantly in Tunisia over the last decades (World Bank, 2010), resulting in a young adult population more educated than their elders. The comparison between the two samples also shows a significant difference in terms of attitude towards education with the share of return migrants that considers education to be improving living standards and that is important to invest in education being considerably higher than that of potential migrants.

Finally, the comparison of the job level between the two samples gives us a first

[9] Imputed from the declared highest education level.

[10] In the ETF survey, the share of Tunisian return migrants having an higher education is around 15%, while the same share in the MIREM survey is of 20%.

glimpse of the labour market performances of return migrants. As Table 2 shows, the share of return migrants doing a high-level work is significantly more important than the share of potential migrants, especially in Egypt. In return, the share of unskilled workers is substantially higher among potential migrants. Regarding the "Out of labour force" category, the significant difference in Tunisia can be explained, as above, by the return of "early" migrants at the end of their professional life.

The survey design allows us to analyze the skills that individuals acquire that can be linked to their migration intentions. First of all, the respondents that continued past secondary education were asked what was the reason for choosing their field of study and a possible answer was "to be able to go abroad". The share of potential migrants that have chosen this answer is very low in both countries (0.4%) and even if we consider only those who want to migrate the percentage barely reaches 0.5% in Egypt and 0.6% in Tunisia. The figures are slighty larger for Egyptian return migrants, with 1.2% of the skilled returnees that have chosen the field of study in order to be able to go abroad. Even if we do not have any evidence yet on whether the prospect to migrate had any influence on the education behaviour, we can already observe that the choice of the field is not linked to the wilingness to migrate.

Since the rest of the questionnaire is different for return and potential migrants, we will present the remaining descriptive statistics for each category at a time.

As Mountford (1997) and Stark et al. (1997) argue, the outflow of skilled migrants will have a positive externality on non-migrants, by increasing their skill premium and thus encouraging them to invest in education. Of course, the magnitude of this effect will depend on the probability to migrate and is conditioned on stayers not fulfilling their expectations. The ETF survey gives us a glance at the non-migrants investment

Table 2: Difference between return and potential migrants

	Egypt	**Tunisia**
Age	-18.90***	-14.23***
Married	-0.58***	-0.35***
Years of education	0.19	3.18***
Education level		
Did not attend school	-0.027**	-0.02***
Less than primary	-0.02**	-0.04***
Primary	-0.018*	-0.17***
Preparatory/post-primary	0.01	-0.09***
Secondary general	0.21***	0.03
Secondary vocational	-0.03	0.05***
Post-secondary	-0.04**	0.01
University	-0.09***	0.24***
Considers education improves living standards	-0.57***	-0.55***
Important to invest in education	-0.90***	-0.72***
job level		
Other	0	-0.01
Professional	-0.09***	-0.09***
High management	-0.040***	-0.01
Middle management	-0.07***	0.05***
Skilled worker	-0.03	0.09***
Unskilled worker	0.05***	0.15***
Out of labour force	0.18***	-0.20***
Obs	1812	2019

* p<0.05, **p<0.01, *** p<0.001
The figures reported are computed as the difference between the mean of the variable for return migrants and the mean for potential migrants.
The standard deviations are not presented in this table.
Source: Authors' computation based on the ETF survey

Table 3: Reason for choosing the field of study

	Returnees		**Potential migrants**	
	Egypt	**Tunisia**	**Egypt**	**Tunisia**
Personal interest	27.5%	12.2%	17.1%	29.4%
Encouraged by others	3.1%	1.4%	2.0%	4.5%
To get a job	3.8%	3.5%	2.7%	8.2%
To be able to go abroad	**1.2%**	**0.5%**	**0.4%**	**0.4%**
Because of the grades I obtained	41.4%	1.2%	39.4%	4.9%
Other	0.1%	0.0%	0.2%	0.2%
Not applicable	22.9%	81.2%	38.2%	52.4%

The figures are presented as a percentage of the total sample for each country
Source: Authors' computation based on the ETF survey

in education that can be directly linked to the intention to migrate. Unfortunately, it captures only a snapshot of the individual's intentions and not their realizations. We can nevertheless observe that, for potential migrants, among the 56% who want to migrate, only 27.5% plan to attend specific training to prepare them for living or working abroad. For those who consider training, language training is the most frequent answer.

Returnees were asked whether, before going abroad, they attended any training aiming to prepare them for the migration. Only 6% of Egyptian returnees answered yes for this question, while they were almost 20% in Tunisia. For Egypt, this pre-departure training was formalized through a certificate for only 4.6% of them, mainly because it was necessary to get a job. The share of those that have obtained a certificate for the training is higher for Tunsian returnees (15.3%). Even though the returnees that underwent the pre-departure training are mainly concentrated in four destination countries (France, Italy, Germany and Saudi Arabia), this is a characteristic of the whole sample, reflecting the migration patterns, and thus no correlation is observed.

While human capital accumulation during migration is concerned, almost 28% of

Table 4: Potential migrants

	Egypt	**Tunisia**
Age	25	28
Plans to migrate	47%	63%
Has sufficient information about destination country[11]		
Yes	76%	61%
No	24%	39%
Do you plan to attend any training		
Yes	26%	29%
No	56%	44%
Doesn't know	18%	27%
What kind of training		
Language training	12%	11%
Cultural orientation	0%	1%
Vocational training	7%	10%
University studies	4%	5%
Other	3%	0%
Not applicable	74%	72%

The figures are presented as a percentage of the total sample of potential migrants for each country
Source: Authors' computation based on the ETF survey

Tunisian returnees declared having studied or trained abroad, while the percentage is of 9% for Egyptian returnees (for details, see Table 12 in the Annex). The lower percentage in the case of Egypt can be interpreted as a result of its migration profile, more oriented towards temporary labour migration. For Tunisia, the migration patterns are slightly more diverse, covering students' migration and family reunification schemes as well as labour mobility, and this is reflected in the reasons invoked for their migration. Furthermore, training during migration mainly concerned workplace training. In terms of employment abroad, most of the returnees worked as salaried workers (71% for Egyptian migrants and 67% for Tunisian migrants), but the job levels differ between the two countries. Most Egyptian returnees worked as skilled workers (41%) or profession-

Table 5: Pre-migration training

	Egypt	**Tunisia**
Pre-departure training	6.0%	19.5%
Language training	*26.7%*	*21.5%*
Cultural orientation	*5.0%*	*1.1%*
Vocational training	*50.0%*	*44.6%*
University studies	*18.3%*	*32.8%*
Has obtained a certificate for this training	4.6%	15.3%
The certificate was useful to get a job	5.2%	15.6%
The certificate was necessary to get a job	3.9%	14.5%
Aware of programmes that help people go abroad	20.4%	24.0%
Government programmes	*30.4%*	*74.6%*
Recruitment companies	*58.3%*	*5.0%*
Both of the above	*11.3%*	*20.4%*

The figures are presented as a percentage of the total sample of returnees for each country
Source: Authors' computation based on the ETF survey

als (27%) and Tunisian returnees worked mainly as skilled workers (52%) and unskilled workers (30%). Once more, this can be explained by the different migration patterns, with labour demand from Gulf countries being more oriented towards professional and skilled workers (Hoekman and Sekkat, 2010) and labour demand from OECD countries more concentrated on skilled and unskilled workers (Gubert and Nordman, 2008a).

Upon return, more than half of the Egyptian returnees state that their experience abroad helped them find better work and among the most helpful they consider the experience in general and the skills learned at work. The percentage of Tunisian returnees declaring that their migration experiences contributed to finding a better job upon return is lower (almost 43%), but this is due to the fact that a significant share among them did not work since their return (almost half of them declared having return for retirement or because they have saved enough money).

Despite this survey lacking an accurate sequencing of migration phases, transitional probabilities suggested by Gubert and Nordman (2008b) between the job level abroad and the job level upon return can give us an idea of whether return migrants managed to use their skills and experience in order to maintain or upgrade their professional position[12].

Table 6: Transitional mobility between job levels for Egyptian returnees

		Job level after return					
		Professional	High management	Middle management	Skilled worker	Unskilled worker	Obs
Job level during migration	Professional	73.8%	11.9%	7.9%	4.4%	2.0%	252
	High management	18.9%	56.6%	17.0%	5.7%	1.9%	53
	Middle management	14.9%	8.1%	58.6%	10.3%	8.1%	87
	Skilled worker	2.6%	4.4%	15.2%	67.8%	9.9%	342
	Unskilled worker	9.7%	4.4%	22.8%	29.0%	34.2%	114
	Total	27.0%	10.3%	18.6%	34.0%	10.1%	848

Source: Authors' computation based on the ETF survey

Table 7: Transitional mobility between job levels for Tunisian returnees

		Job level after return					
		Professional	High management	Middle management	Skilled worker	Unskilled worker	Obs
Job level during migration	Professional	74.4%	4.7%	7.0%	11.6%	2.3%	43
	High management	10.5%	84.2%	0.0%	5.3%	0.0%	19
	Middle management	19.2%	23.4%	51.1%	6.4%	0.0%	47
	Skilled worker	44.5%	5.0%	5.5%	42.0%	3.0%	200
	Unskilled worker	37.2%	5.3%	6.2%	23.0%	28.3%	113
	Total	41.4%	10.6%	10.6%	28.2%	9.2%	425

Source: Authors' computation based on the ETF survey

A first assessment would be that Tunisian returnees experience an upgrade is work-level more often than Egyptian returnees. This may be due to a higher migration du-

[12]The sample size is reduced because individuals who are out of the labour force were left out from this analysis.

ration, to higher skill transferability, but also to the fact that a higher share of Tunisian return migrants declared having received training during their migration. Despite the observed upgrade in skill being very frequent, we also notice a downward mobility, more accentuated in Egypt. Since transitional probabilities can have various causes, a skill mismatch analysis would be required in order to assess the the presence of downgrading or upgrading.

4 Skill mismatch and its determinants

As previously mentioned, we measure skill mismatch by comparing an individual's education level with the norm in his job level, taking into account a confidence interval. For an individual i having the job level *k* this can be synthesized as follows:

$$\text{Skill mismatch}_i = \begin{cases} 1 \rightarrow \textbf{Undereducated} \text{ if } \textit{Education level}_i \leq Norm_k - \sigma_k \\ 2 \rightarrow \textbf{Skill match} \text{ if } Norm_k - \sigma_k \leq \textit{ Education level}_i \leq Norm_k + \sigma_k \\ 3 \rightarrow \textbf{Overeducated} \text{ if } \textit{Education level}_i \geq Norm_k + \sigma_k \end{cases} \tag{1}$$

where $Norm_k$ is the education norm for a given job level *k*, as measured by the mean education level, and σ_k is the standard deviation.

Using the skill mismatch measure discussed earlier, we find that the share of job matching the education level is lower in Tunisia than in Egypt (66.2% versus 72.8%). As already mentioned, we defined as overeducated those who have an education level above the mean education level within their job level plus a standard deviation. Reciprocally, those qualified as undereducated are those whose education is below the mean

education norm within the job level minus a standard deviation. According to these definitions, we find an overeducation incidence of 11.4% in Egypt and of 12.2% in Tunisia and an undereducation incidence of 15.8% and 21.6% respectively (Table 8). Nevertheless, we notice that overducation is lower for returnees relative to non-migrants, while undereducation is higher. A possible explanation for the higher incidence of undereducation would be that returnees use their skill acquisition abroad and their migration experience in order to make up for lower education. They might also make better use of their skills and experience, which would partly explain the lower overeducation levels relative to non-migrants.

Table 8: Skill match and mismatch incidence

	Egypt	**Tunisia**
Undereducation	**15.8%**	**21.6%**
Non-migrant	14.3%	17.2%
Returnee	16.9%	27.8%
Skill match	**72.8%**	**66.2%**
Non-migrant	73.4%	68.4%
Returnee	72.4%	63.1%
Overeducation	**11.4%**	**12.2%**
Non-migrant	12.5%	14.4%
Returnee	10.7%	9.2%

The figures are presented as a percentage of the total sample for each country.
Source: Authors' computation based on the ETF survey

If we focus on return migrants[13], the overeducated are more often trained during their migration suggesting that skills acquired abroad might not have been entirely transferable, thus resulting in a skill excess. Furthermore, in Tunisia, the overeducated returnees were more often involved in government migration schemes thus implying that participating in a public programme does not guarantee an efficient use of skills acquired abroad. Surprisingly, Egyptian overeducated returnees are more incline to say that expe-

[13]For the sake of brevity, only striking result are presented here.

rience abroad helped them find a better job than undereducated return migrants, despite spending more time finding a job upon return. In turn, Tunisian overeducated return migrants spend less time looking for their first job when returning than the undereducated returnees. Regarding post-return degree of content, on average, overeducated returnees are slightly more satisfied than the other categories, especially in Egypt. This observation is in line with El-Hamidi (2009) results on a positive return to overeducation. In other words, the fact of undergoing downgrading is not necessary translated in a loss of welfare. This is also reflected in the returnees' intention to migrate again. We can see that the overeducated do not necessarily higher migration intentions and, for those who want to migrate, their reasons are not significantly different from those of the other categories.

Table 9: Skill matched and mismatched characteristics

	Egypt			Tunisia		
	Undereducation	**Skill match**	**Overeducation**	**Undereducation**	**Skill match**	**Overeducation**
Trained during migration						
Yes	6%	9%	10%	21%	25%	51%
No	94%	91%	90%	79%	75%	49%
Participation on migration schemes						
Governement programme	20%	38%	19%	43%	56%	70%
Private recruitement company	12%	25%	38%	9%	4%	7%
Both of the above	0%	0%	0%	4%	2%	4%
No	68%	37%	42%	43%	38%	19%
Experience abroad help find better job						
Yes	72%	79%	80%	86%	85%	86%
No	28%	21%	20%	14%	15%	14%
Months before finding a job upon return	1.38	2.15	2.42	5.30	5.80	4.85
Better off than before migration						
Much better off	13%	17%	25%	38%	37%	31%
Better off	66%	68%	58%	36%	33%	47%
About the same	17%	13%	13%	22%	25%	20%
Worse off	4%	2%	2%	2%	3%	2%
Much worse off	1%	0%	1%	2%	2%	0%
Intention to migrate again						
Yes	22%	21%	22%	11%	14%	16%
No	78%	79%	78%	89%	86%	84%

source: Authors' computation based on the ETF survey

Building on the work of Herrera and Merceron (2013), we analyze the determinants of the observed educational mismatch for the whole sample (Table 10). We use a multinomial logit model in order to capture the effect of each variable on undereducation and overeducation separately. Nevertheless, the effects should be interpreted as relative to the skill match situation. Among the determinants of the skill mismatch, we consider socio-economic factors such as various individual characteristics and we also try to capture employment aspects using the sector of activity and structural factors by introducing regional controls. Since migration is a selective phenomenon, we try to correct the potential selectio bias through a two-step procedure *à la Heckman*, by computing the inverse Mills ratio and introducing it into the multinomial logit[14]. The identifying variable used in the first-stage equation is the awareness of official migration schemes. This variable is an answer to the question At the time you left, were you aware of any government programmes or companies that helped people to work abroad?). Indeed, this variable has a strong influence on migration all else being equal in the first stage migration decision probit. We believe it can be used as an exclusion restriction in the second stage skill mismatch equation because, if it may impact the skill mismatch, the only potential channel could be through the migration experience. The results show that Mills ratio is highly significant (except for the sample of undereducated in Tunisia), indicating that unobservable characteristics have either a positive correlation with the probability to migrate and a negative one with the probability to experience skill mismatch, or a negative influence on the probability to migrate and a positive correlation on skill mismatch. The former explanation seems more relevant since one of these unobservable characteristics might be the individual's social network. For instance, the social network already abroad would have a positive influence on the probability to mi-

[14]The results of the first step estimation are available upon request.

grate (diaspora or pull effects) and it would also act as a safety net upon return, helping the migrant to find the appropriate job for his skills.

First of all, the results show that return migrants have significantly lower chances of being underqualified in Tunisia. However, we cannot be sure that the education level we are using for returnees is the education level after the migration since there is no information on their training before leaving the home country. If the education we observe was acquired before migrating (thus there is no skill acquisition during the migration episode), then the impact passes through a higher level job upon return. In Egypt, being a return migrant has no significant impact on the skill mismatch. These results could point to the existence of a migration premium in terms of job level - return migrants can compensate for a lower level of formal education with their migration experience and therefore obtain a job level above their qualifications.

Furthermore, the probability to be undereducated decreases with age, while age increases the probability to be overeducated, although the effects are not linear. [15] As expected, there is positive effect of experience on the probability to be undereducated and a negative effect on the probability to be overeducated. Our results support the findings of Sicherman (1991), who state that individuals make up for low levels of education with experience. The willingness to migrate has a significant negative impact on the probability to be undereducated, but only in Tunisia. Being engaged or married has a positive effect on the incidence of overeducation as compared to never having been married. Intuitively, individuals with family responsibilities will have higher incentives to take up a job even if it is below their education level in order to provide for their families. Finally, the indicator of owned assets impacts positively the undereducation incidence and negatively the overeducation, pointing a strong correlation between

[15] Herrera and Merceron (2013) obtain similar results.

wealth and job level.

Table 10: Odd ratios for the determinants of skill mismatch

	Whole Sample		Egypt		Tunisia	
	Undereducation	**Overeducation**	**Undereducation**	**Overeducation**	**Undereducation**	**Overeducation**
Returnee	0.33	0.57	0.84	0.31	-1.78**	0.70
Age	-0.50***	0.64***	-0.51***	0.60***	-1.21***	0.89***
Age square	-0.00	0.00	0.00	0.00	-0.00***	-0.00
Male	-1.47***	0.44	-1.46**	1.47*	-0.20	0.21
Sector						
Secondary	0.71	-0.59	0.24	0.93	1.38	-1.43*
Tertiary	0.29	-0.49	0.02	-0.23	0.41	-0.43
Ref: Primary						
Experience	0.60***	-0.85***	0.47***	-0.79***	1.54***	-1.04***
Wants to re-migrate	-0.12	0.42	0.21	0.32	-1.67**	0.60
Marital status						
Engaged	-0.01	0.52	-1.34	-0.68	0.78	1.18**
Married	0.07	0.50	0.14	1.26**	0.45	0.18
Ref: Never married						
Cohort						
Adult	-1.00**	0.32	-0.93*	0.81	-0.03	-1.87
Young	-0.73	-0.42	-0.61	0.89	0.70	-2.95*
Ref: Elderly cohort						
Assets owned indicator	0.18**	-0.21***	0.23*	-0.40***	0.12	-0.14
Income indicator	0.23**	0.10	0.16	0.14	0.25	0.19
Constant	8.36***	-10.43***	5.17	-12.11***	14.55***	-14.41***
Mills ratio	-2.68***	-3.34***	-2.22***	-2.78***	-0.33	-2.96**
Observations	1,987	1,987	1,105	1,105	882	882
Pseudo R2	0.500	0.500	0.433	0.433	0.652	0.652

Controls for districts are not presented in this table.
Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' computation based on the ETF survey

In order to better capture the impact of the variables specific to migration, we run the regressions on each on the two samples separately, return migrants and non-migrants. The results for non-migrants are similar to those found for the whole sample, but with a lower significance (see Table 13 in the Annex). We will briefly discuss here the results of the determinants of skill mismatch of return migrants (Table 11). We notice that the influence of age and experience is still the same as for the whole sample. The same is true for the wealth indicators and for the marital status. We find that having studied abroad increases the incidence of overeducation, but only in the Tunisian sample. This is an important finding, especially when one considers the considerable number of Tunisian youth who want to study abroad, expecting a better professional status upon return. It thus appears that the Tunisian labuor market still has obstacles that prevents return migrants from fully using the skills acquired abroad. However, it seems there is no effect of acquiring experience abroad and skill mismatch in the home country. Interestingly, we find that emigrating in Europe increases the incidence of skill-mismatch in Egypt, while there is no such impact in Tunisia. The effect might be due to the Egyptian pattern of migration: if migration towards the Gulf countries is almost institutionalized, migration to Europe is less frequent and migrants do not benefit from the same recognition of their migrant experience (for the overeducated).

Table 11: Odd ratios for the determinants of skill mismatch - returnees

	Returnees		Egyptian returnees		Tunisian returnees	
	Undereducation	**Overeducation**	**Undereducation**	**Overeducation**	**Undereducation**	**Overeducation**
Age	-0.48***	0.70***	-0.70***	0.94***	-0.75***	0.53**
Age squared	-0.00	-0.00	0.00*	-0.00	-0.00**	0.00
Male	-0.00	1.56**	-0.24	15.04	0.14	0.73
Sector						
Secondary	0.78	-0.25	0.98	1.50	0.76	-2.35
Tertiary	0.32	0.23	0.59	0.50	0.05	0.29
Ref: Primary						
Experience	0.55***	-0.55***	0.50***	-0.77***	0.97***	-0.55***
Wants to re-migrate	-0.21	0.34	0.05	0.32	-1.14	0.03
Marital status						
Engaged	-0.55	0.55	-1.28	-0.41	1.00	0.46
Married	0.00	-0.42	0.42	0.16	0.24	-1.02
Ref: Never married						
Assets owned indicator	0.23**	-0.23**	0.15	-0.87***	0.05	-0.06
Income indicator	0.19	0.05	0.08	0.39*	0.29	-0.21
Has studied abroad	0.22	0.17	0.50	-0.55	-0.03	0.77*
Experience abroad helped find job	-0.28	0.13	-0.52	0.08	0.67	0.25
Migration duration	-0.00	0.02	0.01	0.07	0.01	-0.03
Europe	0.42	0.29	0.76*	1.25***	0.20	-0.37
Constant	2.68	-14.74***	4.81	-29.78	6.86*	-12.29**
Observations	1,291	1,291	848	848	443	443
Pseudo R2	0.445	0.445	0.439	0.439	0.545	0.545

Controls for districts are not presented in this table.
Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' computation based on the ETF survey

5 Conclusion

The importance of diaspora and return migrations for a country's economic development is widely acknowledged and governments' interest in the programmes oriented towards their migrant residents is growing. A returning migrant brings not only financial capital to be invested in her home country, but also her experience and skills acquired abroad. It is thus important to design frameworks for integrating the return migrants and maximizing the benefits they can bring. Using the ETF survey on potential and return migrants in Egypt and Tunisia, we highlight the skills that individuals acquire before migration (for those who want to migrate) and during their time abroad and how these skills used in the origin country.

Among the limits of this study is the lack of data on wages and incomes, which narrows the possibilities to carry an in-depth analysis of labour market outcomes. Also, the measure we use for skill mismatch can be improved and data on occupations and required skills would be needed in order to upgrade the under- and overeducation benchmarks. However, this study offers an insight on the missing elements for the design of policies aiming to attract and re-integrate return migrants.

We find evidence of skill mismatch, especially in Tunisia. The undereducation phenomenon is more present for return migrants, indicating that they make up for their lower education using their migration experience. Finally, we look into the determinants of skill mismatch on the Egyptian and Tunisian labour markets and find a significant negative effect of return migration on the probability of being undereducated. Our results, especially on the effects of experience on skill mismatch, are in line with the literature on the subject.

6 Annex

Table 12: Descriptive statistics for return migrants

	Egypt	Tunisia		Egypt	Tunisia
Migration duration (years)	7.4	11.7	Time since return (years)	4.2	4.0
Reason for migrating			Did experiences abroad help find better work since return		
Had no job / could not find job	32.1%	21.8%	*Yes*	66.2%	42.9%
Nature of work unsatisfactory	0.1%	2.6%	*No*	18.6%	7.3%
To improve standard of living	30.5%	32.7%	*Not applicable*	15.2%	49.8%
To get married / just married	3.5%	9.0%	Most helpful experience abroad		
To accompany/follow spouse or parent	1.2%	4.5%	*Experiences in general*	37.0%	36.4%
To get education	0.5%	3.2%	*Formal education/training*	2.4%	0.9%
Did not like living in this country	0.2%	4.3%	*Skills learned at work*	26.8%	5.2%
Wanted to go abroad	1.1%	5.4%	*Not applicable*	33.8%	57.5%
No future here	1.0%	5.6%	Better off than before migration		
Higher salary	26.9%	0.7%	*Much better off*	19.0%	36.5%
Study or train abroad			*Better off*	63.6%	28.5%
Yes	9.0%	27.9%	*About the same*	14.2%	24.1%
No	91.0%	72.1%	*Worse off*	2.6%	6.1%
Type of study or training			*Much worse off*	0.6%	4.8%
University	1%	6%	Work type since return		
Orientation training	0%	2%	*Employer*	31.9%	18.1%
Language training	1%	4%	*Self-employed*	3.6%	11.9%
Qualification equivalence	0%	1%	*Salaried worker*	40.4%	16.7%
Workplace training	6%	15%	*Casual worker*	8.5%	4.6%
Other	0%	0%	*Unpaid family worker*	0.1%	0.2%
Not applicable	91%	73%	*Not applicable*	15.5%	48.5%
Longest job level abroad			Longest job level since return		
Professional	27%	6%	*Professional*	22.9%	19.2%
High management	7%	3%	*High management*	8.7%	4.8%
Middle management	11%	7%	*Middle management*	15.8%	5.3%
Skilled worker	41%	52%	*Skilled worker*	28.8%	13.0%
Unskilled worker	14%	30%	*Unskilled worker*	8.6%	4.2%
Not applicable	0%	2%	*Not applicable*	15.2%	53.5%

Source: Authors' computation based on the ETF survey

Table 13: Odd ratios for the determinants of skill mismatch - non-migrants

	Non-migrants		Egyptian non-migrants		Tunisian non-migrants	
	Undereducation	**Overeducation**	**Undereducation**	**Overeducation**	**Undereducation**	**Overeducation**
Age	-1.54***	0.71**	-4.28***	0.83	-1.25***	0.67*
Age square	0.01**	-0.00	0.05**	0.01	0.01	-0.01
Male	-3.59***	0.61	-5.74***	2.33**	-2.95**	-0.13
Sector						
Secondary	-0.61	-0.16	-5.98	0.92	-0.02	-0.93
Tertiary	-1.06	-0.30	-3.64**	-1.48	-0.67	-0.21
Ref: Primary						
Experience	0.82***	-0.48***	1.50***	-1.33***	0.85***	-0.35***
Wants to re-migrate	14.95	16.01			15.93	15.61
Marital status						
Engaged	0.83	0.24	-2.20	-0.68	1.39	0.79
Married	-0.33	0.55	-3.72*	2.07**	-0.03	-0.10
Ref: Never married						
Assets owned indicator	-0.02	-0.05	0.82	-0.10	-0.19	-0.08
Income indicator	0.18	0.04	0.98	-0.26	-0.16	0.21
Propensity to migrate	-0.18	-0.09	-1.11	-0.46*	-0.05	-0.06
Constant	2.72	-14.10***	3.14	-17.34***	3.55	-14.30***
Mill's ratio	-3.28***	-3.06***	-2.40***	-2.59***	-3.20***	-3.25***
Observations	2,968	2,968	1,384	1,384	1,584	1,584
Pseudo R2	0.391	0.391	0.384	0.384	0.451	0.451

Controls for districts are not presented in this table.
Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' computation based on the ETF survey

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