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RESILIENCE STRATEGIES FOR MISMATCHED WORKERS: MICROECONOMIC EVIDENCE FROM EGYPT

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Structured Abstract:

Purpose – The purpose of this paper is to identify and discuss the on-the-job resilience strategies of mismatched workers. We empirically focus on Egyptian workers.
Design/Methodology/Approach – This study relies on a primary micro-data collection based on design and implementation of a self-administered questionnaire survey and on the conduction of a series of semi-structured interviews.
Findings – The results are fourfold: first, the combination of over-qualification and under-skilling is the most frequent in our sample; second, resilience strategies adopted by over-skilled workers mainly depend on mobility and entry to entrepreneurship; third, under-skilled workers do not enter entrepreneurship, but tend to rely on informal on-the-job learning and training opportunities. Fourth, religion and spirituality play a transversal role to cope with adversity for all of our interviewed workers.
Originality/value – This study is unique as it draws our attention on factors of resilience for mismatched workers in a developing country, Egypt.

Keywords: resilience strategies; skill mismatches; qualification mismatches; Egypt
JEL codes: J24, E24, C81

1. Introduction

Mismatches on labour markets have become a crucial fragment of contemporary labour market studies. Sources of human capital and resources losses, and of a reduced overall productivity, they have been explored through different perspectives. Early studies focused their attention on over- and under-qualification mismatches and their occurrence for one or a set of countries (see the review of Quintini, 2011 for instance). The phenomenon of over-qualification *(under-qualification)* arises when a worker has more *(less)* qualifications than required by his job. A more recent wave of studies, following the human capital theory, distinguishes between qualification and skills mismatches (Mavromaras *et al*., 2009; Sanchez-Sanchez and McGuinness, 2015; McGuinness and Sloane, 2011). This distinction implies that there may be situations where workers are formally over-qualified but, since they lack skills that are necessary for doing their jobs, they are not actually over-skilled (Green and McIntosh, 2007).

The Middle East and North African (MENA) region is typically one of these regions where rigidities on the labour market are common, especially due to decades of a credential approach. Tensions between credentials, that take the form of a degree, a diploma or a certificate on the one hand, and skills on the other are characteristics of the region (El Kogali and Krafft, 2018). Driven by the demand for credentials from populations willing to join the public sector, historically the main employer in these countries and more interested in the level of qualification rather than skills of its employees, educational systems turned into providers of credentials rather than skills (Salehi-Isfahani, 2012). Since credentials play the role of a productivity signal on the labour market, assuming a positive relationship between the number of years spent at school and the level of productivity, potential employers from the private sector may be misled since these credentials may not reflect the level and type of skills acquired. Mismatches are therefore a common issue in there.

Egypt has had such approach and has been suffering from a credentialist equilibrium (Salehi-Isfahani, 2012). For the last fifty years, the country invested massively in education. However, outcomes have struggled to appear in the economy and to create change in the society (Krafft *et al*., 2019; El-Kogali and Krafft, 2018; Krafft, 2018) and income opportunities have not been significantly greater conducting to low returns in education.

There is a large consensus about negative impacts on workers' wellbeing. However, we argue that workers are not only passive while facing mismatching. By adopting a behavioural approach built on the psychological literature, we claim that resilience strategies can be adopted by workers, especially in countries where labour market institutions are not as well developed as in more advanced countries to bounce back mismatching situations. Resilience is defined in psychology as a process of being able to adapt well and bounce back quickly in times of stress, disappointment, or failure. Facing mismatching on the labour market is a typical example of a challenging situation.

It is precisely this dimension that our research desires to explore at the micro-level in Egypt. We are guided by the following research question: what type of on-the-job-resilience strategies do they put in place in case of mismatching situations? We address these research questions through a research design based on the implementation of a self-administered survey and semi-structured interview that allow us estimate the gap between qualification and skills acquired and required on the labour market, and identify and discuss on-the-job resilience strategies put in place by workers. The contribution of our study to the literature is threefold: firstly, we tackle the topic of mismatches without their negative connotation in terms of outcome, but our approach is more positive. We argue that outcomes of mismatches can be positive. Secondly, we conduct a mixed approach. Thirdly, we empirically focus on a developing country for which several workers face a combination of over-qualification and under-skilling on the labour market.

The rest of the paper is organized as follows. Section 2 presents the theoretical background while section 3 reviews the previous literature. Section 4 exhibits the methodology, respondents and reflective process of the researcher. Section 5 discusses the main results before concluding in the last section.

2. Theoretical background

This section presents theories on mismatches on the one hand, and on resilience, on the other.

2.1 Theories on mismatches

Despite the growing interest on mismatches, there is no unified theory. Instead, qualification and skill mismatch literature rely on existing competing labour market and human capital theories that refer to labour market imperfections. This section reviews the main ones and discusses the empirical predictions in terms of incidence, persistence (transitory or permanent phenomenon) of mismatches and expected impact on wages, job satisfaction and depressed symptoms.

Historically, the human capital theory (Becker, 1962) is the first approach, emphasizing the role of the supply that helps understand mismatches. In this framework, mismatches can arise only in the short run. Adjustments in the production processes produce qualification mismatches that disappear in the medium and long runs as individuals accumulate experience and skills that play a signal role for the level of human capital. However, the theory suffers lack of unanimous empirical evidence.

Contrasting with the human capital theory, the job competition model developed by Thurow (1975) assumes that the only factors influencing wages are the characteristics of the job. Qualification mismatches may arise because of a gap in the values assigned to both education and job in collective bargaining agreements. Such institutional theory predicts that there is no return to a surplus human capital because wages are fully determined by the required qualification level of a job. In other terms, firm do not benefit from any space to set wages according to the potential worker's level of qualification and set of skills.

In the early 1990s, Sattinger (1993) developed the assignment theory, synthesizing supply-side and demand-side theories on the topic. The assignment theory is based on the assumptions of heterogeneous workers and heterogeneous jobs that make the matching process unlikely. It assumes that the level of productivity of a worker does not only depend on the level of qualification but also on the quality of matching between the worker and the job. In case of over-qualification for which working in a job requiring a level of qualification below the worker's own qualification level, the worker cannot use optimally his skills, reducing productivity and therefore lowering wages. Similarly, in case of under-qualification, the worker's own skills are the main factor limiting productivity. The theory predicts that mismatches persist on the labour market and explains that the allocation can be optimal when workers are allocated to their skills: the most competent worker is assigned to the most complex job and *vice versa*. According to assignment theory, qualification mismatches imply skill mismatches. The incidence of mismatches points therefore out differences between the availability of complex jobs and the bunch of high-skilled workers.

Hartog (2000) draws our attention to different factors that could explain mismatches. Temporary mismatches may appear as a result of imperfect information according to search and matching theory (Mortensen, 1970). Labour markets are characterized by uncertainty and costly information for both potential workers and firms. The basic idea is that both actors are faced with frictions such as different locations leading to regional mismatch or lags and asymmetries in the transmission of information. If these frictions are large, searching activities will tend to be limited, geographically or in time, implying finally mismatches.

2.2 Theories on resilience

In psychology, resilience is the process of being able to adapt well and bounce back quickly in times of stress (Southwick *et al*., 2014). It is a capacity to maintain competent functioning in the face of major life stressors. Theories on resilience are a set of ideas that discuss the impact of challenging events on individuals or groups of individuals and how well they have adapted to that challenging experience such as economic and social turmoil (Masten *et al*., 2014). Over years, this set of theories evolved significantly.

In the literature on resilience, two waves of studies define differently the concept. Gu and Day (2007) review both of them. The first wave considers resilience by referring to personal attributes only such as self-esteem, self-efficacy, motivation and resourcefulness. According to Connor and Davidson (2003), resilient persons share certain features such as viewing change as a challenge or opportunity, commitment, engaging the support of others, self-efficacy, action-oriented approach, adaptability to change, faith or recognition of limits to control. However, the second wave of studies goes a step further and considers resilience as a multidimensional and complex process, 'a dynamic within a social system of interrelationships' (Gu and Day, 2007: 1305). A series of protective factors characterizes these relationships and include not only personal attributes, but also external support systems, like family, friends and community resources.

As per Masten *et al*., (2014), resilience is rooted in the study of adversity. Individual needs to use protective factors to overcome adversity. Interestingly, Patterson *et al*. (2004: 3) define of resilience in relation with the effects of adversity, such as resilience refers to 'using energy productively to achieve […] goals in the face of adverse conditions'. Individuals use specific strategies of resilience when they experience a challenging situation following an adverse context. In their study, they demonstrate that resilience is a process of adaptation that requires agency in overcoming adversity. This agency is well understood by Lasky (2005: 900) who states that it 'starts with the belief that human beings have the ability to influence their lives and environment while they are also shaped by social and individual factors'.

In our study, we follow the strategy orientation of Patterson *et al*. (2004) and adopt a multidimensional approach of resilience. This allows us consider workers as active agents who adopt various strategies to cope adaptatively and rebound after adversity. Besides, resilience in this context becomes relative, meaning that an individual may be resilient in his personal life, but not in his professional one, and changes over time.

3. Literature review

This section is dedicated to the review of past literature on qualification and skill mismatches and resilience strategies.

3.1 Studies on occurrence of mismatches and impact on earnings

Several studies have tried to empirically test which theoretical framework is most consistent with the detected facts on mismatch. Because qualification and skill mismatches are distinct phenomena, papers combining the study of both dimensions are rare.

Regarding qualification mismatches, previous literature focused more abundantly and more systematically on over-qualification than on under-qualification. Two main reasons can explain such trend: first, because of a structural emergence of an oversupply of tertiary educated candidates to the labour market and its correlate of academic inflation; second, because of its negative connotations regarding disadvantage and unfulfilled potential.

The study of Duncan and Hoffman (1981) which focused on the United States is considered a starting point to a considerable body of empirical literature on qualification mismatch (Diem, 2015; Sanchez-

Sanchez and McGuinness, 2015; Büchel and Mertens, 2004 among others). Several extensive reviews appeared as well (McGuinness *et al*., 2017; Sloane, 2003; Hartog, 2000).

A first aspect of mismatches well studied in the literature is the impact of qualification mismatch on earnings. Empirical results are more consensual in direction –there is a wage penalty–, but not in amplitude for over-qualification mismatches (Bandara, 2019; Hartog, 2000). Such studies show that over-qualified individuals usually earn less than individuals with similar level of qualification while working in jobs for which these qualifications are required. Mixed results are obtained when one focuses on under-qualification. Verhaest and Omey (2006) for instance found a significant positive impact on wage –wage premium–, while Sanchez-Sanchez and McGuinness (2015) did not find any statistical impact. Such findings support the assignment theory, which explains and justifies an asymmetry in the wage effect of over- and under- qualification.

A second aspect of mismatches well invested in the literature relates to job satisfaction. Results are mixed for both over-qualification and under-qualification mismatches. Studies like Congregado *et al*. (2016), Diem (2015) and Verhaest and Omey (2006) show a significant negative impact of over-qualification on job satisfaction, while Sloane (2014) and Green and Zhu (2010) specify the sufficient role of overskill mismatch as well. To the best of our knowledge, only Peiro *et al*. (2010) focus on the impact of under-qualification on job satisfaction and do not find any significant coefficient.

At the very end of the 1990s, scholars started giving more attention to skill mismatches, for which it has been argued that that they provide a more accurate measure of mismatches than qualification mismatches by including not only formal, but also non-formal and informal skills. Mavromaras *et al*. (2009) discuss the limits of the qualification approach in that sense. The few studies on skill mismatches focus primarily their attention to over-skilling. They show that its effect is negative on wage –wage-penalty–, but smaller in amplitude than the over-qualification one (Sanchez-Sanchez and McGuinness, 2015; McGuinness and Sloane, 2011) and on job satisfaction (Congregado *et al*., 2016; Green and Zhu, 2010; Allen and van der Velden, 2001).

The lack of available data in less developed countries implies a center of attention on Western countries, especially on Europe. An evolution of this focal point seems, however, to occur. Handel *et al*. (2016), for instance, using the STEP Skills Measurement Program dataset from the World Bank estimate the incidence and determinants of mismatches in twelve low- and middle-income countries. The authors show that over-qualification is common in these countries and amongst high-skilled individuals. They show as well that over-qualification is associated to over-skilling leading to potential wastes of human capital and educational resources. More recently, Bandara (2019) published a paper on the relationship between youth labour market expectations and outcomes, using the School-to-Work Transition Surveys (SWTS) for eight Sub-Saharan African countries. The author detects a severe qualification mismatch in Sub-Saharan African countries that it generalized to all occupations, both before and after the transition into the labour market.

3.2 Resilience strategies associated with mismatches: training participation and job mobility

A second aspect of mismatches less studied in the literature related to the effects of qualification and skill mismatches on training participation and job mobility. These studies focus on resilience strategies, but implicitly since their authors do not introduce specifically these concepts in their papers.

Empirical evidence reveals that over-qualified (*under-qualified*) workers are less (*more*) likely to participate to training programs than well-matched workers with similar level of qualification (Verhaest and Omey, 2006; Büchel and Mertens, 2004). Also, Korpi and Tahlin (2009) show that under-skilled workers have more learning opportunities than other workers. Additionally, a series of studies show that over-qualified workers are more likely to be mobile than well-matched workers with the same level of qualification (Sicherman, 1991) or with a similar job (Tsang *et al*., 1991).

We only found two studies that attempt to go beyond the negative connotation associated with skill mismatches. The first one, conducted by De Grip *et al.* (2007) explicitly investigates the impact of mismatches on cognitive attributes. Two hypotheses are formulated and tested. The first one called use-it-or-lose-it states that overeducated workers face a higher risk of cognitive decline that matched workers. The second hypothesis called the intellectual challenge hypothesis states that undereducated workers face less cognitive decline than workers employed in a job matching their level of qualification. The authors consider the extent of overeducation as well, which refers to the vertical distance between workers' level of qualification and job's required level of qualification. Findings interestingly indicate that under-qualified workers engage in more cognitive resilience than over-qualified workers. In other terms, they confirm that being employed in a challenging job contributes to workers' cognitive resilience. However, the study focuses mainly on qualification mismatches, rather than skill mismatches and on overqualification.

The second valuable study that interestingly aims to overcome the inherent negative connotation of mismatches is authored by Van der Velden and Verhaest (2015). The authors base their research on learning psychology, an approach which allows them to consider some under-skilling as an optimal situation in which workers can find themselves. Using the European Skill Survey led by the European Centre for the Development of Vocational Training (CEDEFOP), they test skill growth and decline, training and learning activities and job satisfaction in case of skill mismatches considering the intensity in the mismatch as well. Findings are in line with those from De Grip *et al*. (2007). A small skill deficit provides a better learning environment, benefiting from spontaneous informal learning activities and informal learning-on-the-job activities, than in a matched-skills situation or in a serious mismatched-skills situation.

3.3 Studies focusing on the Egyptian situation

Egypt has received little attention on that topic, mainly because of a lack of data, but this seems to have recently changed. Since the beginning of 2010s, a growing number of studies tackle directly mismatches (Kriechel and Vetter, 2019; David and Nordman, 2017; El-Hamidi, 2010), while some others discuss them as a potential cause for high unemployment, especially for the new labour market entrants (Assaad *et al*., 2018; Krafft, 2018; Bertoni and Ricchiuti, 2017; Hassan and Sassanpour, 2008) or as a source for low returns to education. El-Hamidi (2010) uses the Egyptian Labour Market Panel Survey (ELMPS) of 1998 and 2006 to assess the incidence and magnitude of qualification mismatches in the private sector, and their impact on wages. The author found severe in level but decreasing in trend qualification mismatches between 1998 and 2006 from 51% to 42%. Very recently, Kriechel and Vetter (2019) attempted to measure skill mismatches in Egypt in a cross-country comparison across European Training Foundation (ETF) partner countries. The authors relied on harmonized microdata from additional sources to the Labour Force Survey. They found that the occupational mismatch in elementary occupations reaches 10.4%, while it equals 18.7% in semi-skilled occupations. While providing us with new insights, the paper suffers, however, from a lack of updated data –the most recent are 2016- and does not intent to assess the effects of mismatches.

Finally, previous research on Egypt can be considered a useful first step towards an updated, accurate and detailed analysis and understanding of Egyptian labour market mismatches and their implications. Our paper is additional stepping stone using on self-reported microdata to explore the perceived occurrence of mismatches on the labour market, and to explore different resilience strategies adopted by our workers.

4. Methodology, participants and process of reflection

This section presents the methodology used, the respondents and the reflexive approach employed by the researcher about the interviewing process.

4.1 Questionnaire survey

Our analysis is based on the data obtained as part of a large survey conducted in greater Cairo and suburbs and on semi-structured interviewed with some of the respondents. The survey is structured in three sections that follow a brief introduction, and consent. Three screening questions are included at the beginning of the survey to limit participation to those who have the Egyptian citizenship, who are currently living in Egypt and who are currently working in Egypt.

Section 1 of the questionnaire consists of ten socio-demographic and academic background questions (age, gender, citizenship, marital status, number of children, level of education, major field if any, type and location of studies, and rating of the employment potential of the degree) to control for the individual characteristics.

Section 2 focuses on the work experience and current job of the respondent. It consists of ten questions. The year of entry on the labour market, the number of months being potentially unemployed, the type (full time versus part time; permanent versus temporary contract; private versus public sector) and the field of current job, the size of the establishment of the current job and the hourly salary are the questions raised in this section.

Finally, section 3 consists of six questions which allow to measure the potential subjective qualification and skill mismatches following the approach adopted by McGuinness and Sloane (2011). The first question (*OP_1*) aims to strictly measure vertical mismatch (over-education and under-education), which is having a level of education above or below that required for their current job. To do so, we compare the answer given in question SED_6 with the answer given in question OP_1:

OP_1: Which level of education is most appropriate for your current job?
SED_6: What is your level of education?

We chose the term "most appropriate" rather than "required" in *OP_1* following Allen and van der Allen (2001) who explain that the latter may partly consider formal selection requirements, whilst the former may refer to actual job content. In order to compare, both questions have the same five response categories: primary (7 years of education), secondary (12 years of education), high: Bachelor, high: Master and tertiary (PhD). Respondents are defined as overeducated if the most appropriate level of education for the current job is below their level. Conversely, they are defined as undereducated if the required level of education is above theirs.

The second question (*OP_2*) aims to measure skill mismatch (over-skilling and under-skilling). Respondents are asked to rate on a 1-5 scale (from 1 strongly agree to 5 strongly disagree) their degree of agreement on the following statement:

OP_2: "In my current job, I have enough opportunity to use the knowledge and skills that I have."

Under-utilization of knowledge and skills is thus indicated by the extent to which respondents disagree with statement *OP_2*. Respondents are therefore defined as over-skilled if they responded 4 (disagree) or 5 (strongly disagree).

As per indicated in the literature, another question (*OP_3*) is added to measure under-skilling. Again, respondents are asked to rate on a 1-5 scale (from 1 strongly agree to 5 strongly disagree) their degree of agreement on the following statement*OP_3*:

OP_3: "I would perform better in my current job if I possessed additional knowledge and skills."

A skill deficit is indicated by the extent to which respondents agree with statement *OP_3*. They are therefore defined as under-skilled if they responded if they responded 1 (strongly agree) or 2 (agree).

One important contribution to the previous literature is the insertion of questions *OP_4* and *OP_5* which consist on a comprehensive disaggregation of skills into 17 key competences to obtain an accurate idea of the potential self-reported skill mismatch by comparing skill acquisition and skill usage related to the current job performance. Respondents are therefore asked to rate on a four-point scale (from 1 none to 4

strong) their level of experience in a given competency (*OP_4*) and the extent to which this competency is required for their current work (*OP_5*). The competency dimensions are listed in table 1.

Table 1

Respondents are deemed over-skilled in a specific key competence when their level of expertise is two points higher than the required job level.

Finally, in question *OP_6*, respondents are asked to rate their level of satisfaction from their current job. A 5-point ordered Likert-scale question was raised ranging from 1 (highly unsatisfied) to 5 (highly satisfied).

4.2 Respondents

This study relies on a primary dataset of 410 participants, who voluntarily accepted to complete an online survey accessible from March, 15. 2019 to June, 15. 2019. The survey was shared through social media in different educational hubs (i.e. universities and social clubs). We designed the questionnaire in Arabic, the national and official language in Egypt. A questionnaire written in English would have created a self-selection bias by only reaching Egyptian people who speak, write and read English. However, we decided to design the questionnaire in English first, since the level of Arabic of the author was not high enough to do it directly in Arabic. A professional Egyptian translator translated this first version into Arabic. In order to validate the translated version, we rely on Syed Zwick (2019) who used back translation done by a second professional Egyptian translator. Then, we compared the first version in English with the second one. There were some sentences and statements that were not fully matching. We therefore amended at the margin and repeated the same process once. We found no significant differences between the two versions in the second wave. Additionally, a pilot-survey conducted with 5 potential respondents did not raise any issue. Finally, there are no missing data for the survey response, since the respondents could not submit the questionnaire online without having answered all the questions.

Summary statistics for our sample, available upon request, indicate that respondents are aged 18-52 (M = 28, S.D. = 8.6) and are gendered-wise roughly equally distributed (52% of men). 40% of respondents are married, with two children. The majority has a Bachelor degree (39%) obtained in the private educational system (74%) in Egypt (85%). In regards with job satisfaction, most respondents rated above 3, indicating a relatively medium to high job satisfaction (72% of the sample).

Table 2 interestingly highlights the prevalence of mismatches. Over-qualification rate equals 19%, whilst over-skilling reaches 3%. Additionally, under-skilling equals 21%, which is a high rate both in absolute and relative terms compared to international evidence. Under-qualification represents only 2% of the sample. These statistics clearly show that over-qualification and under-skilling are the most often cited types of mismatches. The upcoming point is to check whether people who are over-qualified are also under-skilled. Correlation may acquaint us with such.

Table 2

A qualification and skill mismatches' correlation matrix is presented in table 3. It includes over and under qualification and skilling. Results confirm empirical evidence of a low correlation between over-qualification and over-skilling (0.21). They more interestingly show that the coefficient correlation is relatively high between over-qualification and under-skilling (0.424), which contrasts with findings of previous research (see Quintini, 2011 for a review). Our respondents combine a perception of under-skilling with a perception of over-qualification.

Table 3

This combination confirms the credential-led approach that has been characterizing the Egyptian educational approach (El-Kogali and Krafft, 2018; Salehi-Isfahani, 2012). Besides, when we focus on over-skilling by specific skill areas[1], we do not identify clear patterns. However, we can note a high level of correlation between under-skilling by specific skill areas and over-qualification. For instance, the correlation coefficients between over-qualification and the ability to work autonomously (skill No. 17) on the one hand, and over-qualification and decision-making skill on the other, display high coefficient correlations in absolute values of 0.38 and of 0.36, respectively. The correlation coefficient between over-qualification and planning and time management is somewhat high (0.17).

4.3 Semi-structured interviews and process of reflection

Following our questionnaire survey, we decided to conduct semi-structured interviews with respondents drawn from the sample. We conducted seven individual face-to-face interviews. Table 4 shows the profile of these interviewees and their situation in terms of mismatch. The choice of these ten interviewees is based on the use of convenience sampling technique which consists in collecting data from population members who are conveniently available to participate in the study but also reflect the diversity of mismatch situations on the labour market. Such method has the advantages of being simple, cheaper than alternative sampling methods and helpful for exploratory studies like ours. Nonetheless, we are aware that convenience sampling technique presents some disadvantages, including risks of sampling errors and vulnerability to selection bias.

Table 4

The first step consists in elaborating the questions. Such requires a careful selection and wording of the questions. Also, we are aware of the fact that our conceptual baggage which is a record of the thoughts and ideas of the researcher about the research question (Kirby and McKenna, 1989) may influence knowledge production and reproduction by affecting what questions are asked and from which angle issues are taken up. In order to tackle this issue, we held two rounds of pilot semi-structured interviews. The first round led us to revise the design of our questions and avoid the conceptual terms like motivation, opportunity and ability on our topic. The outcome of the second round of pilot interviews did not raise any issues and allowed us answer our research question. We raised the following analytical questions: since you started your job with your current employer, have you… (1) …attended training sessions offered by your employer? (2) …learnt directly from your line manager? (3) …learnt by interacting with your colleagues at work? (4) …learnt by yourself thanks to private tutoring? (5) …learnt by trying on your own? Such questions aim to launching a discussion between the researcher and the interviewee.

The second step consists in conducting the interviews. In order to produce informative and rich information, we adopted an attentive listening approach based on some well-known techniques in the literature such as supportive speech utterance, few follow-up questions and receptive body language on the one hand, and a tacit knowledge, on the other. My understanding of qualification and skilling mismatches in Egypt is influenced by my identity as a research economist who has been living and working in Cairo for the last six years.

The third and last step consists in narrative analysis. This step aims to create a holistic and low-inference narrative that preserves the respondents' voice (Sfard and Prusak, 2005). We are willing to produce generalizations of thinking, actions, attitudes and meanings related to on-the-job resilience strategies.

[1] Results are available upon requests.

Finally, due to space considerations, rather than including full case studies, we have included pertinent information from the interviews at appropriate point in the discussion in the following section.

5. Results and discussion

This section presents and discusses the main findings of our study.

5.1 Strategies to cope with over-skilling: mobility & entrepreneurship

Two interviewees are over-skilled. Interviewee III is a 44 years-old over-qualified and over-skilled female worker who belongs to the Information and Communication Technologies (ICTs). She says:

> *I was bored at work. It is not only a question of money, but also a question of what they give me to do or what I am allowed to do. I told them that I could do much more than that. […] I did not wait so long before deciding to launch my own business, and still have this job. I feel that now I do what I was willing to do. […] I don't think I will quit because the company has a good reputation, but I needed to be more stimulated and challenged.*

Our worker here is voluntarily mismatched. She accepted her situation, but did not quit because of work conditions and salary opportunities. However, she engaged a resilience strategy as well, since she decided to launch her own business. This is consistent with the evidence highlighted in the literature that mismatched workers tend to be more mobile (Astebro and Thompson, 2011; Alba-Ramirez, 1993; Tsang and Levin, 1985), and that voluntary mismatched workers are more likely to enter entrepreneurship and self-employment than matched or involuntary mismatched workers (Sell, 2013). Entrepreneurship allows workers to take advantage of a greater variety of skills than employment (Sorensen, 2007; Lazear, 2005). The same strategy as our interviewee was engaged by interviewee VI in a situation of under-qualification, but over-skilled. This 52-year old male worker launched his own consulting company 15 months after being hired.

5.2 Strategies to compensate under-skilling: help-seeking & problem-solving strategies

Five interviewees are in a situation of under-skilling, and over-qualification or matching qualification (interviewees I, II, IV, V and VII). Interviewee II, 26 years old, is in a situation of over-qualification and under-skilling in the banking sector. She describes:

> *This is frustrating. At the beginning, I was depressed and thought that I do not have my place within this team. I was blaming the university for giving me such empty diploma. I have an MBA and spent lots of money to study and get it. I did not learn the concepts used on a daily basis at work and I never had to work autonomously like that. […] After two months there in the office, I decided to study and I got a private tutor […]. She would come twice a week and teach me all of the fundamentals I had no idea about. It helped me, it challenged me and I feel much more confident than that at the beginning.*

Like her, many of the others we interviewed in the same configuration at work (interviewees IV and VII) expressed a sense of being trapped at the beginning and positively challenged afterwards. These three workers decided to adopt a solving-problem strategy based on private tutoring and private study, but also on learning-by-doing activities. Interviewee VII who works as a manager in the pharmaceutical sector for the last six years explains:

> *At the beginning, I was very proud. You know, I got a Master degree from a reputable university. I mean, this gives you over-confidence. After some time, I felt I do not know how to manage my time and plan ahead. […] I was anxious and stressed to make mistakes. […] I started seeking allies among colleagues to see how they manage their time. They were quite cooperative. I got a software also, that helped me quite well. Also, I advocated for additional resources to my line manager […].*

Interviewee VII dedicated time and effort to bounce back. Asking for help may be challenging and tensions may appear between seeming competent and acquiring necessary support from peers, but this worker showed action-oriented skills and recognized quickly his limits to control. These are typical features of resilient people (Connor and Davidson, 2003). This type of strategies refers to spontaneous informal learning activities and informal on-the-job learning activities highlighted by Van der Velden and Verhaest (2015).

Additionally, interviewee V provides us insights about the lack of formal training opportunities:

> *I know that I don't have the same baggage as my colleagues working at the same level. So, I talked to the HR [i.e. human resources] manager about my skills' needs. He said that I do not demonstrate enough capabilities, and that I will not get any formal trainings before I catch up the expected level. […] I was really upset. I tried to explain that this should be opposite, that I should benefit from training sessions […].*

This quotation interestingly confirms the lack or under-provision of formal training opportunities for under-skilled workers highlighted in the literature (Van der Velden and Verhaest, 2015; Staff *et al*., 2004 among others).

5.3 Religion and spirituality as transversal factors of resilience

All of our interviewees mentioned their faith in coping with adversity. Interviewee VIII explains:

> *I have always believed that our God is fair and takes care of me. If I face challenging situations at work, I think that God wanted to test me. So, that's fine!*

Interviewee VIII elaborated on his faith and displayed a belief in a loving and just God, considering God as a supporting partner. Interviewee VI illustrated typical religious coping strategies:

> *When I am anxious and stressful, like I was for some time at work, I would go more often than usual to the Mosque with my siblings.*

His strategy consisted of seeking spiritual support and being involved in religious rituals.

Such religious and spiritual resilience strategies are well studied in the literature since the beginning of the 2000s. The religious coping theory, put forward within psychology, sociology and anthropology and explains that religious coping is an activity of drawing on religious beliefs to understand and deal with adverse life events. It recognizes, like in our case here, that religious beliefs have a potential impact on individual behaviour (see Ano and Vasconcellos, 2005).

VI. Conclusion and policy implications

This study sheds light on resilience strategies adopted by skill and qualification mismatched workers based in Egypt. Our research design relies on the design and implementation of a questionnaire survey and on the semi-structured interviews. Our findings are fourfold.

Firstly, our results highlight the prevalence of the combination of over-qualification and under-skilling situations. People may hold certificates, degrees or diplomas that are above their job requirements, but at the same, feel that they do not have the set of skills required by the job position. This finding confirms the credential-led approach that has characterized the Egyptian educational system for decades (El-Kogali and Krafft, 2018; Salehi-Isfahani, 2012). According to the respondents, skill deficits are mainly on the ability to work autonomously, on the decision-making process and on planning and time-management.

Secondly, resilience strategies adopted by over-skilled workers mainly depend on mobility and entry to entrepreneurship. All of our interviewees in this situation have been cumulating both their job where they face mismatching and entrepreneurship. Such finding is in line with evidence on the relationship between mismatching and mobility. However, the fact that our sample combines both jobs is less common. The main

reason is to find in the lower level of development of Egypt, our country of study than other countries or regions of study found in the literature.

Thirdly, we find that under-skilled workers do not enter entrepreneurship. On the contrary, they adopt resilience strategies based on informal on-the-job learning and training opportunities. Most interviewees hired a private tutor, whilst others asked for peer support and believed in learning-by-doing strategies. Formal strategies are less adopted than expected by our interviewees. Most of the time the reason is to find in the reluctance of their direct line manager or their HR manager.

Fourthly, we highlight the role of coping religious and spiritual strategies. Almost all of our interviewees highlighted that they believe that God put them in this situation, and that God will help them overcome adversity. Spirituality and religion are well-known factors of resilience, but remain understudied in the literature.

Our study contributes to the previous literature in several ways. We focused on a less developed country, Egypt, for which the attention is growing but remains understudied yet. The positive approach in mismatches is necessary: people need to be considered as active agents, who are capable to bounce back while facing adversity. Our findings suggest a variety of resilience strategies for mismatched workers.

Our findings based on our small sample of interviewees reflect the need for continued research. For instance, future work must address the relationship between entry to self-employment or entrepreneurship and mismatches in less developed countries, like Egypt. We feel that extending the research on resilience at the micro-level on the labour market is crucial to conceiving a comprehensive approach to mismatches that is not only based on their negative connotation.

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List of tables

Table 1: List of the 17 competency dimensions used in questions *OP_4* and *OP_5*

(1) capacity of analysis and synthesis	(10) critical abilities
(2) capacity for applying knowledge in practice	(11) leadership
(3) planning and time management	(12) teamwork
(4) basic general knowledge in the field of study	(13) problem solving
(5) oral and written communication skills in the native language	(14) decision making
(6) oral and written communication skills in the second language	(15) ethical commitment
(7) elementary computing skills	(16) ability to work in an international context
(8) research skills	
(9) capacity to learn	(17) ability to work autonomously

Source: Author's computation

Table 2: Summary statistics

	Mean
Over-qualification	0.19
Under-qualification	0.02
Over-skilling	0.03
Under-skilling	0.21

Table 3: Correlation matrix

	Over-Q	*Under-Q*	*Over-S*	*Under-S*
Over-Q	1			
Under-Q	-0.065	1		
Over-S	0.210	-0.042	1	
Under-S	0.424	0.078	-0.021	1

Source: Author's computation

Notes: Q and S stand for qualification and skilling, respectively

Table 4: Profiling of our interviewees

ID	Gender	Age	Qualification matching	Skilling matching
I	F	24	MQ	US
II	F	26	OQ	US
III	F	44	OQ	OS
IV	F	49	OQ	US
V	M	27	OQ	US
VI	M	52	UQ	OS
VII	M	34	OQ	US
VIII	M	46	OQ	MS

Source: Author's computation

Notes: F = Female; M = Male; MQ = matching qualification; OQ = over-qualification; UQ = under-qualification; MS = matching skills; OS = over-skilling; US = under-skilling.