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2016

working paper series

**LABOR MARKET DYNAMICS AND YOUTH
UNEMPLOYMENT IN THE MIDDLE EAST
AND NORTH AFRICA:
EVIDENCE FROM EGYPT, JORDAN AND TUNISIA**

Ragui Assaad and Caroline Krafft

Working Paper No. 993

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AFRICA: EVIDENCE FROM EGYPT,
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Working Paper 993

April 2016

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First published in 2016 by
The Economic Research Forum (ERF)
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Dokki, Giza
Egypt
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Abstract

Although it is well-established in the literature that unemployment is a labor market insertion problem in the Middle East and North Africa (MENA), the dynamics driving youth unemployment remain poorly understood. Using panel and retrospective data from the Labor Market Panel Surveys in Egypt, Jordan and Tunisia, we are able to substantially improve our understanding of youth unemployment in MENA by studying flows into and out of employment and unemployment. We also decompose trends in the unemployment rates in Egypt, Jordan, and Tunisia over the past decade into the contributions of individuals entering unemployment from outside the labor force and from previous employment, and changes in the duration of unemployment these individuals experience. Models for the incidence and duration of unemployment illustrate the relationship between individuals' characteristics and their unemployment dynamics.

JEL Classifications: J64, J63, J21, J45, J46

Keywords: Labor Market Dynamics, Unemployment, Youth, Middle East and North Africa

ملخص

(MENA على الرغم من أنها الفكرة راسخة في الأدب أن البطالة هي مشكلة الإدراج في سوق العمل في منطقة الشرق الأوسط وشمال أفريقيا) وديناميات القيادة ببطالة الشباب إلا أنها لا تزال غير مفهومة. باستخدام المسوحات والبيانات بأثر رجعي من المسوحات التتبعية لسوق العمل في مصر والأردن وتونس، نستطيع تحسين فهمنا لبطالة الشباب في الشرق الأوسط من خلال دراسة التدفقات من وإلى العمالة والبطالة. نقوم أيضا بتحليل الاتجاهات في معدلات البطالة في مصر والأردن وتونس على مدى العقد الماضي في مساهمات الأفراد الذين يدخلون البطالة من خارج القوى العاملة ومن العمل السابق، والتغيرات في مدة البطالة لهؤلاء الأفراد. توضح نماذج لحالات ومدة البطالة العلاقة بين خصائص الأفراد وديناميكية بطالتهم.

1. Introduction

It is by now well established that unemployment in the Middle East and North Africa (MENA) is a phenomenon that is primarily associated with the labor market insertion of youth as they transition from school to work (Amer, 2009, 2014, 2015; Assaad & Barsoum, 2007; Assaad & Krafft, 2015a; Assaad, 2008, 2014a; Dhillon & Yousef, 2009; Kabbani & Kothari, 2005; Mryyan, 2014). Although the predominance of youth among the unemployed is well-established in the literature, the dynamics driving youth unemployment remain poorly understood. The study of dynamics requires information about various labor market flows and not simply about the stocks of the employed and unemployed. Such information is not present in the cross-sectional labor force surveys that are typically available in the MENA region. By making use of panel and retrospective data from the Labor Market Panel Surveys implemented by the Economic Research Forum (ERF) in Egypt, Jordan and Tunisia, we are able to substantially improve our understanding of youth unemployment in MENA by studying flows into and out of employment and unemployment.

Changes in the unemployment rate in any given period are driven by the size of the initial stock of the unemployed, entrants into the unemployment state from out of the labor force or from employment, and exit from unemployment into employment or non-participation. The rates at which individuals find and leave jobs over time and the rates at which they enter and exit the labor force drive these unemployment dynamics. There have been some preliminary efforts to assess job finding and separation rates (Yassine, 2015) and unemployment durations (Kherfi, 2015) in the case of Egypt. However, how these elements contribute to the unemployment rate remains an unanswered question.

This paper examines the drivers of unemployment in MENA from a dynamic perspective. Comparisons are made across three countries: Egypt, Jordan and Tunisia. We also take advantage of multiple surveys in Egypt to discuss patterns over time in that country. We draw on the life-course transitions literature to contrast “modern” and “traditional” life courses as they relate to transitions into work (Assaad & Krafft, 2014; Dhillon & Yousef, 2009). The “traditional” life course entails early entry into work without first experiencing unemployment, usually by means of family businesses or farms or other livelihood strategies, such as casual wage employment or petty self-employment. In the “modern” life course, individuals typically seek formal wage employment by spending time actively searching for it while remaining unemployed. Individuals who attempt the modern life course transition in MENA countries are usually educated. Although they seek formal employment, they often fail to find it and must then fall back on informal employment, or if they do not absolutely need to work, as is the case for many educated women, they exit the labor force out of discouragement.

As part of the subsequent analysis, we decompose trends in the unemployment rates in Egypt, Jordan, and Tunisia over the past decade into the contributions of individuals entering unemployment from outside the labor force and from previous employment, and changes in the duration of unemployment these individuals experience. The contributions of the youth versus prime-age population to unemployment rates are also compared. This allows for an assessment of the different challenges youth and prime-age individuals face in entering the labor market and in remaining employed. We also disaggregate unemployment by gender, as males and females pursue different labor market trajectories and face very different dynamics (Assaad, Hendy, & Yassine, 2014; Assaad & Krafft, 2015a, 2015b; Assaad, 2014b; Hendy, 2015; Mryyan, 2014; Yassine, 2015).

Understanding the dynamics of unemployment is particularly important to identifying effective policies for reducing unemployment. For instance, if the unemployed who have worked before have been experiencing lengthening durations of unemployment since the Arab Spring, policies

to shorten the period of search and accelerate matching will be a priority for this group. If the newly unemployed are experiencing increasing durations of unemployment after the Arab Spring because of employers' hesitancy to hire, policies that promote temporary contract hires of new entrants may allow employers to hire without being locked into long-term employment contracts during uncertain times.

Five main questions are addressed by this paper, which compares the situations of Egypt, Jordan, and Tunisia:

1. What are the contributions to unemployment rates from new entrants, the previously employed, and the duration of unemployment? What is the role of layoffs (involuntary unemployment) in unemployment among the previously employed? How have these dynamics changed over time?
2. How do these dynamics vary across countries and by individuals' characteristics, especially by gender? What is the role of family and network factors in unemployment dynamics?
3. How do the dynamics of youth and prime-age unemployment differ?
4. How have these dynamics been affected by the global financial crisis and the economic volatility resulting from the uprisings of the Arab Spring?
5. What should the policy focus be in responding to unemployment?

2. Data

2.1 Surveys

Data from Egypt, Jordan, and Tunisia are used. The three rounds of the Egypt Labor Market Panel Survey (ELMPS), fielded in 1998, 2006, and 2012,¹ the Jordan Labor Market Panel Survey (JLMPS) of 2010,² and the Tunisian Labor Market Panel Survey (TLMPS) of 2014³ are used. All the surveys include both detailed current employment and unemployment information as well as labor market histories that allow for an assessment of employment and unemployment dynamics. The surveys elicit information on detailed individual and household characteristics, allowing for an assessment of the impact of these characteristics on unemployment dynamics—for instance, showing whether highly educated individuals have experienced improving or worsening unemployment dynamics relative to less educated individuals.

2.2 Outcomes

We start our analysis with a discussion of unemployment rates. The unemployment rate, the number of unemployed divided by the sum of the employed and unemployed, can be measured in a number of different ways. Both the definition of who is unemployed and who is employed will affect the unemployment rate. We initially compare four definitions of the unemployment rate using various definitions of the employed and the unemployed. The market definition of employment includes only those individuals engaged in economic activity for the purposes of market exchange. The market definition excludes those engaged solely in subsistence work, i.e. production exclusively for the purpose of their own consumption. As an alternative to the market definition, we also discuss the extended definition of employment, which includes subsistence workers, i.e. those engaged in the production and processing of primary commodities for the purpose of their own household's consumption. The broad definition of

¹ See Assaad and Krafft (2013) for more information on the ELMPS.

² See Assaad (2014c) for more information on the JLMPS.

³ See [Citation for TLMPS working paper] for more information on the TLMPS.

the unemployed includes those who are not currently working but desire to work and available to start work within a specified period, typically two weeks.⁴ The standard, search required definition of the unemployed further restricts this group by imposing an active search requirement. Active search means having engaged in one of a number of search activities in a specified reference period.⁵ Thus, the denominator increases in going from market to extended employment and the numerator increases in going from the standard, search required to broad definitions of unemployment. The broad market definition has the largest numerator among the definitions used, and a smaller denominator than the two extended definitions (since it excludes subsistence workers from the labor force). It therefore produces the highest estimates of unemployment among the four definitions used. While we compare definitions initially, most of our analyses use the broad market definition of the unemployment rate for a number of reasons. First, it is hard to impose the active search criterion in retrospective data on unemployment. Since we quickly move to a combination of contemporaneous and retrospective data for our work on dynamics, we believe that the broad definition better reflects the essentially self-defined status individuals report in the retrospective data. Second, the retrospective data uses a market definition of the labor force, precluding the use of the extended definition. As we will show below, comparisons of estimates from contemporaneous data on unemployment using the broad and standard definitions produce very similar results. For men, the difference is usually one percentage point, except for Tunisia in 2014 where it climbs to 2 percentage points (a relative difference of 20% or less in all cases). For women, the difference is 2-5 percentage points (a relative difference of 10-20% in all cases).⁶

An additional set of outcomes we consider in relation to the unemployment rate is the duration of unemployment. We use information on the duration of unemployment to date for the currently unemployed in order to assess the unemployment rate under different durations, that is the share of the labor force that has been unemployed during the reference week, or for at least six months, one year, two years or more. Those who are currently unemployed but have been so for less than the duration in question are in the denominator of the various unemployment rates but not the numerator. We refer to those who are unemployed at least six months as the long-term unemployed and those unemployed at least two years as the very long-term unemployed. A number of our analyses further distinguish new entrants, that is those who have never worked before, from those who have previously worked.

To assess a number of dimensions of unemployment dynamics, we use the labor market histories obtained from retrospective questions in each survey to construct an annual vector of labor market statuses for a period of 10 years prior to each survey date. We categorize individuals into one of three labor market states in each year: out of the labor force, unemployed, or employed. We use only the 2012 round of the ELMPS for this purpose, not the 1998 or 2006 rounds, since patterns over a ten-year period can be assessed retrospectively from just one survey.⁷ Several points are important to keep in mind when considering the labor market history data from different surveys. First, while the JLMPS elicited the labor market

⁴ The restriction to being available within two weeks was only in the ELMPS 2012 and TLMPS 2014, other surveys only referred to being “ready” to work.

⁵ In Egypt in 2012, search is based on private activities in the past three months or registering in a government employment office in the past year. In Egypt in 2006 and 1998, search is based on private activities in the past three months or ever registering a government employment office. In Jordan, all the search activities are asked for the past four weeks. In Tunisia, all the search activities were asked for the past three months.

⁶ For women the use of the extended definition of the labor force instead of the market definition makes a larger difference because many more women than men are exclusively engaged in subsistence work, especially in Egypt.

⁷ See Assaad, Krafft and Yassin (2015) for an assessment of how the retrospective data from multiple waves of the ELMPS align with each other.

history by asking the questions in reverse chronological order, i.e. asking about current, previous, and pre-previous labor market statuses, the Egyptian and Tunisian surveys asked about the labor market history in chronological order starting from the first status, then moving to the second, third, and fourth statuses.⁸ As a result, not every labor market status was captured in either case, and different statuses are likely to be missing in Jordan (where the status at entry is more likely to be missed) than Egypt or Tunisia (where mid-career changes are more likely to be missed). The labor market history is supplemented by information on current statuses (start dates for current unemployment and current employment) in Egypt and Tunisia to improve accuracy.

Particularly when discussing unemployment, we know that short spells of unemployment will not be captured by the labor market history data since all statuses lasting less than six months are deliberately left out in that section. Typically, the statuses recorded lasted a year or longer,⁹ which works well for our creation of an annual vector of statuses. In addition to missing short spells of unemployment, we know that individuals tend to under-report unemployment in the retrospective data, especially when it occurred some time in the past (Assaad, Krafft, & Yassin, 2015). These details and challenges must be kept in mind when interpreting the results.

2.3 Covariates

When considering unemployment dynamics, a number of different individual characteristics are likely to affect unemployment experiences. One important consideration is age, which is closely linked to labor market entry and trajectories. When looking at current labor market statuses, we consider current age; in the retrospective data analyses, age is adjusted to the age in the year in question (e.g. a 25 year-old in 2012 is categorized as a 15 year-old in 2002).

Education also plays an important role in determining the labor market trajectories of individuals, but education systems and levels differ across countries. To allow for comparison we construct comparable educational categories across the three countries as follows. We differentiate between those who: (1) are illiterate, (2) can read and write but completed no educational certificate (3) completed a basic education degree (primary or preparatory in Egypt, primary or basic in Jordan and Tunisia) (4) completed an upper secondary education degree (5) completed a post-secondary (two-year) higher education degree (6) completed a four-year or higher university degree or post-graduate studies. Similar categorizations are employed for father's education, reported by the father if he is present in the household or recalled by the individual in question if the father is not present.

We also consider differences in labor market dynamics by place of residence. Specifically we compare urban versus rural areas as well as different regions within a country. We use the standard regional classification that each country uses for this purpose. To distinguish new entrants from those who have previously worked among those not currently working, we use a question in the surveys that inquires whether the individual has ever worked.

3. Methods

We begin the paper with descriptive statistics on unemployment rates and the distribution of the unemployed in the various rounds of the labor market panel surveys according to the

⁸ Additional questions were included in the surveys as to whether an individual's main job or labor market status in the three months preceding the survey was different from the month preceding the onset of the revolution of January 25, 2011 (for Egypt) or the revolution of January 11, 2011 (for Tunisia). However, the start dates of these different statuses were not provided, so they cannot be incorporated. Additionally, even if it were possible, it would not be appropriate to add what may have been short additional statuses specifically around the year of the revolution as this would destroy comparability.

⁹ On the rare occasions when there are two statuses within the same year, the latter of the two populates the annual vector.

different definitions of unemployment and various characteristics. The labor market histories for the past decade are then used to assess labor market dynamics. The unemployment rate as well as the probability of transition from one state to another are calculated over time. For instance, the probability of transitioning from unemployment to employment is measured. This value is assigned to the “destination” year, i.e. the probability of transitioning from employment in 2005 to unemployment in 2006 appears in the figures in 2006. These rates are estimated for the total population, the 15-24 year-old population, and those 25+ to distinguish new entrants from the prime-aged working population. All analyses are done for males and females separately, as well as for the total, and all estimates are performed separately by country.

Specifically, we estimate a number of different stocks and flows. Denote the following as stocks:

O=Out of Labor Force

U=Unemployed

E=Employed

The stocks can be subscripted with the year, t . With this notation, we estimate the unemployment rate as:

$$\text{Unemployment Rate in } t = \frac{U_t}{E_t + U_t}$$

There are a number of different flows that affect this rate:

$$O_{t-1} \rightarrow U_t$$

$$E_{t-1} \rightarrow U_t$$

$$U_{t-1} \rightarrow E_t$$

$$U_{t-1} \rightarrow O_t$$

The last flow, $U_{t-1} \rightarrow O_t$, is not observed for individuals who have never worked, as only individuals who have ever worked are asked the labor market history questions. For men, this is unlikely to exclude many individuals. However, we know that, at least in Egypt, many women who search for work never find it (Assaad & Krafft, 2014) and leave the labor force either, in discouragement, before marriage or because of lack of availability at marriage. So unemployment data for women and the $U_{t-1} \rightarrow O_t$ transition will be under-estimated. Two additional flows of interest are:

$$E_{t-1} \rightarrow O_t$$

particularly for women leaving the labor force, as this will affect the denominator of the unemployment rate, and:

$$O_{t-1} \rightarrow E_t$$

which is likely to capture entrants finding work without a period of unemployment, an important complement to our analyses.

We estimate all of these flows as rates, i.e. annual probabilities relative to the base stock in $t-1$. The combinations of flows and probabilities are displayed in Table 1.

To decompose the unemployment rate, we distinguish between the share of the unemployed in each year who entered from out of the labor force (OLF), who entered unemployment from employment, and who are continuing in the unemployment state from the previous year. We

also decompose the pool of the unemployed by how long they have been unemployed, to date, in each year.

An important aspect of the unemployment rate is how long individuals remain unemployed if they experience unemployment—the duration of unemployment. Using both the labor market histories and current unemployment data, we estimate survival analysis models of unemployment durations. Survival analysis models are required to account for right-censoring, i.e. those still unemployed at the time of the survey whose duration of unemployment is not yet complete. In addition to descriptive estimates with the Kaplan-Meier estimator, we rely on a discrete-time hazard model to assess how individual characteristics affect unemployment durations.¹⁰

Specifically, we estimate a complementary log-log model with gamma frailty on annual data for the probability of ending an unemployment spell in each year. This model is also known as the Prentice-Gloeckler-Meyer model (Meyer, 1990). Denote the event of interest, exiting unemployment, as T_i . This event can be described with the discrete time hazard function, h_{it} (Jenkins, 1995):

$$h_{it} = \Pr(T_i | T_i \geq t) \quad (1)$$

The complementary log-log model estimates the relationship between this hazard and covariates, X_{it} , as (Jenkins, 1995; Prentice & Gloeckler, 1978):

$$h_{it} = 1 - \exp\{-\exp[\theta(t) + \beta X_{it}]\} \quad (2)$$

or

$$\log[-\log(1 - h_{it})] = \theta(t) + \beta X_{it} \quad (3)$$

Gamma frailty is incorporated into the model to allow for what is essentially an individual random effect for the probability of exiting unemployment.¹¹

This specification is essentially a proportional hazards model that assumes that individual characteristics proportionately shift a baseline hazard for a reference individual. The results are therefore presented as hazard ratios. A hazard ratio greater than one means an individual with this characteristic is more likely to exit unemployment than a reference individual and thus has a shorter unemployment duration, while a hazard ratio less than one means an individual is less likely to exit unemployment and therefore has a longer unemployment duration. Standard errors can be used with the hazard ratios to evaluate their statistical significance in terms of deviations from one.

The baseline hazard for each year is modeled non-parametrically with a series of dummies for being in the first, second, third, or fourth and higher year of unemployment. To make the estimation tractable with a finite number of unemployed individuals, we had to variously aggregate some of the covariates described above (age, education, father's education, urban/rural and region). In addition to these aggregated covariates, the model includes covariates for the time period in which the unemployment spell began, specifically 2001-2004, 2005-2007, 2008-2010, and 2011-2013, which allows for the assessment of changes over time, especially during the global financial crisis and after the start of the Arab Spring uprisings.

¹⁰ We use discrete time rather than continuous time models to account for the fact that our durations are measured in years and our data is thus likely to be grouped at these discrete durations.

¹¹ Models are implemented with the STATA program `pgmhaz`.

4. Results

4.1 Unemployment rates

Although we rely primarily on the broad, market definition of the unemployment rate throughout the subsequent analyses, we start by presenting estimates of unemployment using the various definitions to give a sense of how much the definition used matters to the measurement of unemployment. Figure 1 shows estimates of the unemployment rates in the three countries by the different definitions of economic activity and unemployment. For males, there is little difference between the market and extended definitions as few men engage exclusively in subsistence work, leading to virtually identical estimates for the market and extended estimates of the labor force. The imposition of the search requirement in the standard definition of unemployment reduces the male unemployment rate by one percentage point in Egypt (1998, 2006 and 2012) and in Jordan (2010), but by two percentage points in Tunisia (2014). The implied relative reduction in the male unemployment rates resulting from moving from the broad to the standard market definitions is from as low as 6% in Jordan 2010 to 19% in Tunisia 2014.

For women, there are large differences between the unemployment rates using the market versus extended labor force definitions in Egypt, but less so in Jordan and Tunisia. The large differences in Egypt are due to a substantial number of women who are engaged in some subsistence work in agriculture, animal husbandry and the processing of dairy products but who are not engaged in market work. The use of the standard definition instead of the broad definition of unemployment results in a reduction in the female unemployment rates of between 2 and 5 percentage points. However, because female unemployment rates are higher than those of males, these absolute reductions also represent a similar range of relative changes as males, somewhere between 8% (Egypt 2012) and 19% (Tunisia 2014). The larger differences observed in Tunisia simply mean that there is more discouraged unemployment in that country for both males and females compared to Egypt and Jordan.

Figure 2 shows the unemployment rate using different minimum unemployment durations under the broad definition of unemployment and the market definition of the labor force. Individuals who are unemployed for less than the minimum for each definition are considered to be in the labor force but not unemployed. For males in Egypt, current (7-day) unemployment rates tend to be about double the very long-term (two-year) unemployment rates, meaning that about half the male unemployed in Egypt are very long-term unemployed. The decline in the unemployment rate from 1998 to 2012 for males in Egypt appears to have occurred irrespective of the minimum duration of unemployment used. For females in Egypt, most of those currently unemployed are very long-term unemployed. For instance, in 2012 the current unemployment rate for women was 26% and the very long-term unemployment rate was 20%, indicating that 77% of the female unemployed were very long term unemployed. Very long-term unemployment has become a more acute problem over time for women in Egypt, with the share of the very long-term unemployed increasing from 61% in 1998 to 67% in 2006 to 77% in 2012.

For both Jordan and Tunisia,¹² there is a very large difference in unemployment rates among men across the different durations of unemployment. The current unemployment rates are double the long-term (6-month) unemployment rates and triple the very long-term (2-year) rates, suggesting that most of the unemployed males in these two countries are unemployed for a relatively short period of time relative to their counterparts in Egypt. In both countries,

¹² Because of more missing data on duration of unemployment than unemployment rates in Tunisia, special weights were created to expand all of those who actually had data on unemployment durations to represent all of those who were unemployed for the 6-month, 1-year, and 2-year definitions.

women experience a substantial drop in unemployment rates between the 1-year and 2-year durations, suggesting that many women either find work or drop out of the labor force after one year. The share of the very long-term unemployed among the female unemployed in Jordan in 2010 was 36% and in Tunisia in 2014 was 45%, substantially lower than the shares in Egypt in 2012.

Although Egypt in 2012 had a lower current unemployment rate among men than either Jordan in 2010 or Tunisia in 2014, a larger fraction of that unemployment was very long-term unemployment, making the rates of very long-term unemployment similar in all three countries. For women, Egypt in 2012 had comparable current unemployment rates to those of Jordan in 2010 and Tunisia in 2014, but much higher very long-term unemployment rates, because of the very long durations of unemployment among Egyptian women.¹³ Based on previous work, we can safely presume that most of these long-term unemployed females are holding out for a government job, but have little desire or inclination to accept a job, especially an informal job, in the private sector, which is usually what is available to them (Assaad & Krafft, 2014). Essentially, their reservation wages and employment conditions fall below what the government would offer if it were hiring and above what it is possible for them to obtain in the private sector. If the possibility of public sector appointments were to completely disappear, most of these women would essentially be classified as out of the labor force.

Unemployment is primarily a new entrant phenomenon across Egypt, Jordan, and Tunisia. New entrants are a large percentage of the unemployed and make up an even higher proportion among the long-term unemployed. Figure 3 shows the breakdown of the unemployment rate by new entrant or unemployed with previous work experience for the different unemployment duration definitions. These shares add up to the unemployment rates shown in Figure 3. The unemployed with previous experience tend to be short-term unemployed. Especially for males, the share of the labor force that is unemployed and has worked before decreases rapidly as the reference duration of unemployment lengthens. This indicates that unemployment, especially prolonged unemployment, is a labor market insertion phenomenon with inexperienced young adults looking for their first jobs and likely searching for formal or public sector work and being less willing to settle for lower quality employment. This problem is particularly acute among women.

There are some interesting differences in the relationship between new entrants and unemployment across countries. Notably in Egypt the unemployed new entrants are making up a falling share of the labor force, while the unemployed who have worked before have constituted a relatively steady share. Egypt in 2012 looks more like Jordan in 2010 and Tunisia in 2014, where a higher share of those currently unemployed have worked before among men, but the long-term unemployed are disproportionately new entrants. For females, new entrants who have not worked before and may never work (Assaad & Krafft, 2014) are by far the most common form of unemployment.

We focus directly on the share of new entrants among the currently unemployed (7-day definition) in Figure 4. There we see the share of new entrants among the unemployed is higher among women, ranging from 71%-84% in the most recent year for each country. The share in Egypt has been decreasing over time, to 46% for males and 80% for females. Jordan and Tunisia have shares of new entrants among the unemployed similar to Egypt in 2012, 43% for Jordan and 52% for Tunisia for men and 80% for Jordan and 71% for Tunisia for women. Further analyses demonstrate that the educated unemployment is particularly a new entrant phenomenon, in part due to the rising education levels in all countries and the greater likelihood

¹³ It should be kept in mind that if a search requirement is imposed, the duration of unemployment could fall substantially as more women become discouraged and stop searching.

that educated workers would be seeking formal employment, which they must spend time searching for.

4.2 Who are the unemployed?

Having examined the unemployment rate under various definitions, above, in this section we examine the composition of those who are currently unemployed (7-day definition) under the broad definition of unemployment. We begin by examining the age composition of the unemployed. Figure 5 shows that current unemployment rates are generally highest for the 20- to 24-year old age group in Egypt and Tunisia. These are people who may be looking for work for the first time after completing university education. In Jordan, the 15 to 19 age group, who are also new entrants, has the highest current unemployment rates. Unemployment rates drop fairly sharply with age, starting with the 25-29 age group. For the age group 35+, unemployment rates tend to be low, very low for males in Egypt and in the 5-6% range for males in Jordan and Tunisia. Rates for women 35+ fall into the 7-10% range for the most recent years in all three countries, as women either get jobs or give up on seeking employment when they get married. Examining the composition of the unemployed by age groups (Table 5), the unemployed are highly concentrated among the 20 to 24 year olds—reflecting both higher unemployment rates and large youth populations. While this age group decreased in proportion among the male unemployed over time in Egypt, its share has increased among unemployed women. The 25-29 age group comprises the second largest group among the unemployed in Egypt and Tunisia. Jordan and Tunisia also have substantial shares of the older age groups, 30-34 and 35+ among the unemployed—both making up about 22% of these countries' unemployed. Additional analyses not shown here indicated that, particularly for men, older age groups were relatively more likely to be short-term unemployed, while the younger groups (new entrants) were more likely to be long-term unemployed.

Unemployment rates are highest among those who are highly-educated (Figure 6). Unemployment rates for men are highest among those who possess university education and above, except in Jordan, where peak unemployment rates occur among men with basic education. While in Egypt unemployment rates for less educated men are quite low (3% or below in 2012), unemployment rates are higher for less educated males in Jordan and Tunisia, in the 8% to 14% range. Table 9 demonstrates why unemployment rates may be higher for less educated males in Jordan and Tunisia. While in Egypt, in 2012 just 17% of basic educated males had public or private formal jobs (9% public), in Jordan 31% of basic educated males had public or private formal jobs (21% public) and in Tunisia 32% (9% public). The greater availability of formal public sector jobs for the less educated in Jordan and private sector jobs in Tunisia than in Egypt may lead to a greater tendency of less educated males in these two countries to remain unemployed as they seek these formal jobs.¹⁴

Among women, unemployment rates are highest among those with secondary education, except in Tunisia where peak unemployment is observed among those with post-secondary education. Evidence in Egypt suggests that secondary-educated women often seek employment, but since they are competing against largely even more educated women (since the less educated do not participate in the labor force in an appreciable way), they are often unable to obtain acceptable employment and many of them end up dropping out of the labor force after a while (Assaad & Krafft, 2014). Women appear unable to obtain public or private formal jobs unless they reach the secondary level of education at a minimum (Table 9).

¹⁴ See Assaad (2014a) for a Harris-Todaro type explanation for why labor market dualism tends to result in a higher tendency to queue for the rationed sector (formal employment in this case), raising the unemployment rate.

Focusing on the distribution of the unemployed by education (Table 5) in Egypt, men and women show similar distributional patterns in that half or more of the unemployed in both sub-groups are secondary-educated. On the other hand, Jordan and Tunisia reflect contrasting patterns between males and females. The unemployed in both countries are mostly made up of basic-educated men and relatively higher-educated women, i.e., those with university degrees and above in Jordan, and basic through university educated women in Tunisia. Additional analyses indicated that less educated individuals who were unemployed were more likely to be only short-term rather than long-term unemployed.

Differences in unemployment rates across urban and rural areas do not show a consistent pattern (Figure 7). In Egypt in 2006 and 2012, male unemployment rates were higher in urban areas, nearly double those seen in rural areas, reversing the slightly higher rural unemployment rates observed in 1998. On the other hand, male unemployment rates in Jordan and Tunisia are slightly higher in rural areas. Among women, unemployment rates in the most recent year are higher in rural areas. The difference in unemployment rates between rural and urban areas is particularly notable in the case of rural Jordanian women whose unemployment rate (34%) is 15 percentage points higher than that of urban Jordanian women (19%). The higher unemployment rates among rural (mostly educated) females in all three countries are probably due to the fact that young rural women have a much more limited ability than their male counterparts to leave their communities of origin to seek jobs elsewhere. With few local jobs available for educated women in rural areas, their options are often limited to either remaining unemployed or simply withdrawing from the labor force altogether.

Unemployment rates also vary across regions within each country. We first examine unemployment rates by region in Egypt (Figure 8). The highest male unemployment rates are found in the entirely urban Alexandria and Suez Canal region, followed by urban Lower Egypt. Female unemployment rates are highest in rural Lower Egypt, followed by urban Lower Egypt. Overall, urban Lower Egypt, where unemployment rates for both men and women are high, has the highest current unemployment rate followed by rural Upper Egypt, where women's unemployment rates are highest. With regard to trends over time, male unemployment rates have remained fairly stable in the metropolitan areas of Greater Cairo and Alexandria and Suez Canal, but have decreased in the provincial regions of Lower and Upper Egypt, particularly so in the rural parts of these regions. In contrast, women's unemployment rates have decreased in the metropolitan regions of Greater Cairo and Alexandria and the Suez Canal, but have increased from their low in 2006 in rural areas in general and in urban Upper Egypt. Again, this reflects the increasing educated labor supply among rural women, the few employment outlets these women have in their communities and their relative lack of mobility.

In Jordan unemployment rates are higher in the South, followed by the North region for both men and women (Figure 9). Rates are lowest for the Middle (Central) region, which contains the Greater Amman area. There is also a noticeably wide difference in the unemployment rates of women from the more urban Middle region (14%) compared with those of women from the North (30%) and South (39%) regions of Jordan.

In Tunisia, the largely rural Center West region in the interior of the country, followed by the South East region, has the highest unemployment rates as seen in Table 10. Within these regions in particular, unemployment rates for women are more than double the rates for men. Men have their lowest unemployment rates in the South West while women's rate was lowest in the North region, which includes Greater Tunis.

4.3 Unemployment dynamics

The unemployment rate is driven by a number of important dynamics in terms of the stocks and flows of the unemployed in any given period. In this section we first examine the evolution

of the unemployment rate over the past decade and then decompose some of the driving forces and dynamics behind the trend in the unemployment rate. Using the annual panel of labor market statuses derived from the retrospective data, we estimate the annual unemployment rate for the decade preceding each survey by sex and comparing youth (15-24) to prime-aged individuals (25+) (Figure 11). Note that this is essentially measuring long-term unemployment since unemployment durations of less than 6 months are not captured in the retrospective data.

For males in Egypt, the unemployment rate has been flat, with youth experiencing a very slight decline and prime-aged males a very slight increase in their unemployment rates. In both Jordan and Tunisia the unemployment rate has increased slightly over time for males, especially prime-aged males, while the unemployment rate for youth has fluctuated. For women, in Egypt the unemployment rate has been flat and then fallen, with slight increases in unemployment rates among prime-aged women and fluctuations but overall decreases for younger women (who still have a much higher unemployment rate). In Jordan, unemployment rates for young women have steadily climbed, but merely fluctuated for older women, leading to a slight increase overall over the decade. In Tunisia, young women have seen fluctuating unemployment rates, as have older women, leading to a fairly flat or slightly increasing trend.

The relative stability of unemployment rates masks a number of changing dynamics behind unemployment. Figure 12 shows the annual probability of transitioning from OLF to unemployment, a phenomenon that reflects the propensity of youth to search for formal jobs upon entry. For older males to be OLF is very rare, so for males we focus on the patterns among youth, which drive the overall pattern. In Egypt, the annual probability of transition from OLF to unemployment has been declining over time for young males. This appears to be due, in part, to young men remaining in school longer (and thus experiencing lower rates of transition to either employment or unemployment). In Jordan and Tunisia there has been a rising probability of transition from OLF to unemployment for young males, likely an increasing trend in initial unemployment as part of the labor market entry process. Young women too have seen recent increases in their probability of transitioning from OLF to unemployment, particularly in Jordan and Tunisia. However, in part due to very low participation among women overall, probabilities are low, much lower than for males.

Turning to the annual probabilities of transitioning from OLF to employment (Figure 13), we see the other half of the dynamics of exiting non-participation. Again, the OLF males group at older ages is very atypical so we focus on the youth patterns. In Egypt, there has been a substantial decline in the annual probability of transition from OLF to employment for males, likely because males are remaining in school for longer and when exiting school, increasingly searching for formal jobs rather than making a more traditional transition into employment. In contrast, Jordan and Tunisia have experienced primarily fluctuations in transitions from OLF to employment. Since the probability of entering unemployment from OLF has risen, while entering employment remains flat, this suggests that males increasingly experience entry unemployment. For females, almost no women transition from OLF to employment; a period of unemployment is far more typical upon entry.

An important dimension of understanding the pattern in the unemployment rate is to understand the complementary processes of employment and non-participation. Figure 14 demonstrates an important aspect of labor market dynamics, particularly for women: the probability of transitioning from employment to OLF. The high rate of transition from employment to OLF for male youth in Egypt is likely to be driven by mandatory military service (which is captured as OLF in Egypt) and rates for prime aged males are low, although slightly increasing, as

retirement becomes more common.¹⁵ For women in Jordan and Egypt, and especially younger women in Egypt, there is a high probability of exiting employment, likely at marriage (Hendy, 2015). Jordan in particular has a high rate of exit. Tunisia has relatively lower probabilities of female transition from employment to OLF, which may indicate a greater ability for married women to reconcile work and domestic responsibilities within marriage.

Exiting employment for unemployment (either voluntarily or involuntarily) is an important part of unemployment dynamics. Figure 15 shows this transition probability appears to have been rising over time in all three countries. Some caution in interpretation is required here, as we know that there are reporting problems with retrospective unemployment spells (Assaad, Krafft, & Yassine, 2015). For males in all countries and females in Jordan and Tunisia there appears to be an uptick in the year or two preceding the surveys. This is likely to be driven by reporting problems, since the surveys occurred at different times and under different macroeconomic conditions. The longer-term trend also appears to be a slight increase in employment to unemployment transitions. Jordan in particular appears to have a higher rate of employment to unemployment transitions for both men and women than other countries. The more flexible private sector in Jordan, especially the increasing prevalence of temporary formal contracts (Assaad, 2014b), may contribute to this pattern. Although troubling from the perspective of those experiencing unemployment, this pattern may also be a symptom of increasing labor market dynamism, albeit still at low levels in all three countries. In the long run, particularly if the social harms of unemployment can be ameliorated, through some form of effective unemployment insurance, these increases in dynamics may lead to a more efficient allocation of human resources.

A very important aspect of unemployment dynamics is job-finding rates among those who are unemployed. Figure 16 shows this transition from unemployment to employment. For males in all three countries the rate of job finding has accelerated and is similar regardless of age group. Particularly in Egypt and Jordan, the annual probability of transitioning to employment has increased substantially for males to reach relatively high levels. Thus the pattern of increased employment to unemployment transitions in Jordan is likely to be offset in part by faster exit from the unemployment state. In Tunisia the unemployment to employment transition rate remains low and has increased more modestly. This suggests that in Tunisia those who are unemployed (for at least a year—note that this is different than the earlier figures on 7-day and six-month unemployment) tend to persist in this state. For females in all countries, there has also been an increase over time in the transition from unemployment to employment, although the trends are somewhat noisy.

The analysis of dynamics so far has focused on a number of important transitions. Particularly important for understanding the nature of labor market dynamics is whether these transitions are voluntary. Are individuals becoming unemployed because they were laid off or are they quitting a bad job to search for a better job? Figure 17 investigates these questions, specifically assessing the share of transitions from employment, including transitions into a different job, that were voluntary or involuntary, further comparing whether transitions were into another job (E), unemployment, or OLF. This information about the voluntariness of transitions was not available for Jordan. Nor can the data be broken down over time given the finite number of transitions being assessed.

The first important point to note is that in both Egypt and Tunisia, the majority of transitions out of a job are voluntary. In Egypt, 88% of transitions were voluntary and in Tunisia 75% were, indicating that involuntary job separations are more likely to occur in Tunisia than Egypt

¹⁵ Jordan and Tunisia have an all-volunteer army and count military service as employment.

when separations occur. Among those who experience involuntary job separations, most men (71% in both countries) transition to another job, but some (23% in Egypt, 26% in Tunisia) experience unemployment. Women also sometimes transition to another job (31% in Egypt, 48% in Tunisia), but are also likely to experience unemployment after an involuntary separation (33% in Egypt 23% in Tunisia) or to exit the labor force entirely (36% in Egypt, 29% in Tunisia). Turning to voluntary separations, the vast majority of men undertaking voluntary separations go to another job promptly (74% in Egypt and 76% in Tunisia). In both Egypt and Tunisia only 5-7% of all men experiencing separations voluntarily are entering unemployment. However, as a percentage of all separations, those entering unemployment voluntarily are slightly more common than those entering it involuntarily in Egypt and about the same in Tunisia. Women are more likely to transition voluntarily to unemployment, 14%-19% of all separations across the two countries. The remainder of women exit jobs to leave the labor force, likely to start families.

4.4 Decomposing the unemployment rate

While the various transition probabilities can help us understand the dynamics behind the unemployment rate, it is also possible to decompose the unemployment rate directly into the three components contributing to it. Specifically, in Figure 18, we look at the proportion of the unemployed in each year remaining unemployed from the previous year, the proportion who are entrants from OLF, and the proportion who become unemployed as a result of separations from jobs. Thus the flow into unemployment is decomposed into two parts and the flow out of unemployment is indicated by the proportion remaining unemployed from the previous year.¹⁶ Given the uptick in unemployment detected in the year preceding the surveys, we restrict the decomposition so exclude that year.

An important initial finding is that most of the unemployed are those who were unemployed the previous year, underscoring the long-term nature of unemployment in the three countries (keeping in mind that unemployment spells shorter than 6 months do not show up in this data at all). The second largest flow is the flow of new entrants into unemployment, although the share previously working appears to rise close to the survey year, probably due to a reporting issue. Particularly for women, the continuing unemployed and the new entrants are the vast majority of the unemployed. Notably in Egypt the share of new entrants among male unemployment has been declining. In Jordan and Tunisia the share of women continuing to be unemployed appears to be declining over time and the share of new entrants is increasing.

An additional decomposition can shed further light on the changes in the prevalence of short vs. long-term unemployment. Figure 19 shows the percentage of the unemployed who have been unemployed by various reference periods to date. For men in Egypt and Jordan, the most common duration is one year, but in Tunisia, the much longer (6+ years) are much more prevalent. For Tunisia, it is critical to keep in mind that the distribution of unemployment durations is very bimodal for men. Many experience short spells of unemployment that are not even included in the retrospective data and thus excluded from this analysis. Those who do experience longer-term unemployment tend to experience very long unemployment durations. Further analyses of measures such as school exit and first job start confirmed this pattern as well.

Unemployed women in Egypt tend to experience mostly very long (six or more years) of unemployment and this has been flat over time. In Jordan, however, the share of unemployed women with shorter durations has been rising over time, reflecting increasing dynamism or

¹⁶ It should be kept in mind that we are unable to capture those who transition from unemployment to OLF. This group is likely to be important for women, but not for men.

increasing incidence of unemployment upon entry. A similar shift may be starting for women in Tunisia as well.

4.5 Unemployment durations

In this section we first provide descriptive statistics on unemployment durations and then examine multivariate models of unemployment durations.

4.5.1 Distribution of durations

Figure 20 provides Kaplan-Meier survival functions that show the proportion remaining unemployed by the number of years since entering unemployment by age group (when the unemployment spell began). Notably, in Egypt, those few individuals who enter unemployment at older ages (both males and females) tend to persist for longer. Females, who are more likely to experience unemployment, also have a greater probability of finding work after a year than males. In Tunisia unemployment is more persistent among young men than in other countries; the median duration is three years compared to two years in Egypt and Jordan. Again, however it must be kept in mind that we are only capturing longer-term unemployment and thus Tunisia has an essentially bimodal distribution of unemployment, only one mode of which we can observe.

4.5.2 Predictors of durations

In order to assess the relationship between characteristics and duration of unemployment, we turn to the discrete time complementary log-log models incorporating gamma frailty to model duration in Table 3. Recall that hazard ratios greater than 1 indicate faster exit and shorter unemployment and those less than 1 indicate slower exit and longer unemployment, compared to the reference category. Also note that the data used here is going to only capture those who experienced unemployment of at least six months (more typically, at least a year) and those who ever worked. Further, there are known recall problems with reporting unemployment. The absence of unemployment to OLF transitions, especially for women, is likely to mean that the estimated hazards are greater than the true hazards, since individuals who give up on finding a job are likely to have remained unemployed for longer than those individuals who ever worked.

Another important point to keep in mind is that, because we are focusing on only those who experience unemployment, durations may be at odds with the unemployment rates discussed earlier since the sample is selected. For instance, we will see below that the less educated individuals often experience longer unemployment durations (have lower hazard ratios for exiting unemployment). However, the less educated who experience unemployment are a very atypical group. Table 2 models the probability of entering unemployment to help illustrate this selection into unemployment. Odds ratios from a logit model are presented for the probability of entering unemployment (from employment or OLF) each year.¹⁷

Turning to the duration of unemployment, we first discuss the results of the model and then present simulations for hazards for different profiles. In terms of our key variable age group, in Egypt, for both males and females, and in Jordan for males, there are statistically significantly lower hazard ratios (longer durations of unemployment) for older males who experience unemployment. This is, however, a very select and atypical group.

Compared to those with higher education, those unemployed individuals who are less educated have significantly lower chances of exiting unemployment. This applies to both males and females with no education and with only basic education in Egypt, and for males with no

¹⁷ Once individuals are in unemployment, they exit the sample until they return to employment or OLF. The hazard model in Table 3 captures persistence and duration in unemployment.

education in Jordan. However, with the exception of illiterate males in Jordan, all of these groups have a very low chance of experiencing unemployment and are thus very select. In terms of region in Egypt, compared to Greater Cairo, the only significant difference is for females in Lower Egypt exiting unemployment faster and males there exiting more slowly. In Jordan, men in the North region are significantly less likely to exit unemployment than men in the Middle region. In Tunisia, men in the South West region are significantly more likely to exit unemployment than those in the North. There are no statistically significant differences in unemployment durations by father's education.

Focusing on the patterns over time, it is likely that some of the results are spurious and related to recall and reporting problems. In Egypt, compared to those who started their unemployment spell in 2001-2004, both men and women who started in 2008-2010 were significantly more likely to exit, and men who started in 2005-2007 were also significantly more likely to exit. In Jordan, compared to those starting in 2001-2004, men and women starting in 2005-2007 and especially 2008-2009 experienced significantly more rapid exit from unemployment. There were no statistically significant differences over time in Tunisia.

To demonstrate how the probability of exiting unemployment evolves over the duration of unemployment, Figure 21 shows the baseline hazards for the reference individual. Recall that the reference individual is 15-24, university educated, and living in an urban area in the most developed region of his or her country, with an illiterate father and started his or her unemployment spell in the earliest period. Several key points emerge when considering the baseline hazard. Women have essentially U-shaped hazards. Specifically in Egypt and Tunisia, women have a high probability of exiting unemployment within a year. Their hazard then drops substantially, and remains low but increases slightly for year 4+, suggesting that women experience primarily one of two patterns: a short unemployment spell or a very long unemployment spell. While Jordan also has a somewhat U-shaped pattern for women, their initial hazard is the lowest of any group. For men, hazards are similar in Year 1 regardless of country, around 0.3-0.4. They then rise somewhat over time. Early hazards are highest in Egypt and then for Year 4+ highest in Tunisia (which initially had low hazards), consistent with the pattern of those experiencing long unemployment experiencing very long durations, as noted elsewhere.

Turning now to differences in the hazards by education (Figure 22), there is essentially a more educated (secondary and higher education) higher hazard pattern for males in Egypt, and a lower hazard for those with basic or no education, an atypical group. For women, those with no education have an extremely low hazard, below 0.1 after year 1. Those with basic education fall somewhere in between the uneducated and secondary and higher educated, who are again quite similar for women. For men in Jordan, there is a clear gradient of increasing hazards (and therefore shorter durations) with higher education, with the least educated having by far the lowest hazards. For women in Jordan, notably the least educated have by far the highest hazard and the rest are quite similar, but the least educated are a very atypical group. In Tunisia, as was the case in Egypt, the less educated men have low hazards and the more educated (secondary, university) have higher hazards. The least educated women in Tunisia have the lowest hazard, and all the rest are similar.

5. Summary and Conclusions

We began our analysis by examining the patterns of unemployment across the three countries, in terms of the duration of unemployment, the extent to which it involves new entrants versus individuals with prior work experience, and the educational and age pattern of unemployment and its geographical distribution. A comparison of these three countries is interesting for a number of reasons. First, there is comparable retrospective data on all three countries to allow

for a dynamic analysis of unemployment. Second, all three countries had until recently a social contract that traded jobs in the public sector for educated youth for the political quiescence of the middle class. These “authoritarian bargain” social contracts resulted in a dualistic labor market structure that encouraged educated workers to queue for public sector jobs even as these jobs were becoming scarcer under the influence of structural adjustment policies (Assaad, 2014a). Third, all three countries experienced pronounced youth bulges and rapid increases in educational attainment that made these social contracts increasingly unaffordable.

Despite this common legacy and the fact that the three countries had comparable overall unemployment rates in the 2010s, there were substantial differences among them in the nature of this unemployment. First, in terms of the duration of unemployment, Egypt appears to have a much longer unemployment spells than either Jordan or Tunisia. About half of unemployed Egyptian men and more than three quarters of unemployed Egyptian women in 2012 were very long-term unemployed, i.e., unemployed for more than two years. The shares of the very long-term unemployed were much lower in Jordan and Tunisia, at about one fourth to one third of males and about a third to one half of females. Further analysis indicates, however, that the distribution of unemployment durations in Tunisia is strongly bi-modal, with many short-term unemployed and a small group of very long-term unemployed, some of whom are unemployed six or more years.

It is apparent that in all three countries the very long-term unemployed are almost all new entrants to the labor force with no work experience. This underscores the nature of unemployment in the MENA region as primarily a labor market insertion phenomenon. Those who enter unemployment as a result of leaving or losing a job tend to be unemployed for a fairly short period of time.

The educational composition of the unemployed in the three countries also exhibits important contrasts. While 87% of the unemployed in Egypt in 2012 had a secondary education or higher, that share falls to 54% in Jordan in 2010 and 44% in Tunisia in 2014. We attribute these differences to the different functioning of the labor market in each of the three countries. In Egypt, individuals with less than secondary education have virtually no chance of obtaining formal jobs and therefore have little incentive to remain unemployed searching for such jobs. In contrast an individual with a basic education in Jordan and Tunisia has nearly twice the probability of getting either a public sector job or a formal private sector job than a similar individual in Egypt, giving them more reasons to remain unemployed for some time while seeking these jobs.

With regards to unemployment dynamics, we noted a relative stability in the trend of the long-term unemployment rate in Egypt and Tunisia, and rising rates in Jordan at least through the mid-2000s, followed by a decline in the second half of the 2000s. The relative stability of the long-term unemployment rate in Egypt masks some changes in the underlying dynamics. Both the annual rates of transition from OLF to unemployment and to employment ($O \rightarrow U$ and $O \rightarrow E$) exhibit a downward trend for males in Egypt and relative stability for females. This suggests that Egyptian males are spending more time in the OLF state, probably because they are spending more time in school or in military service. In Jordan, the increasing unemployment rate is due to the fact the rate of transition from OLF to unemployment ($O \rightarrow U$) is increasing for both males and females but the rate of transitions from OLF to employment ($O \rightarrow E$) has remained flat. This suggests that new entrants in Jordan are increasingly spending time in the unemployment state prior to accepting their first job. A similar trend can be observed in Tunisia, although the $O \rightarrow U$ rates there are much lower than in Jordan.

We now turn to the rates of separation from employment, either to OLF or to unemployment. The trend in the $E \rightarrow O$ rates is of primary interest for young women who may leave employment

at marriage. Although the trend is quite volatile, it appears to be increasing in Egypt and Jordan, but flat in Tunisia and at much lower levels. This is probably due to the fact that young women are more likely to leave private sector jobs at marriage than public sector jobs and public sector jobs are becoming increasingly scarce in Egypt and Jordan. In Tunisia, on the other hand, it appears that even women in the private sector are able to continue working after marriage. The $E \rightarrow U$ separation rates appear to be quite low, but have increased substantially for men in Jordan. Combined with a rising $U \rightarrow E$ rate, this indicates that the Jordanian labor market is becoming more dynamic with rising separation and job-finding rates. In fact, job-finding rates for the unemployed have increased substantially for Egyptian men as well. Although this is clearly a positive sign, it could also be due to lowered expectations of finding a public sector job and thus a reduced willingness to queue for such jobs. Job-finding rates for unemployed women in all three countries have been increasing over time, especially in Jordan.

The Egyptian and Tunisian data sets allow us to examine the voluntariness of job separations. The first thing to note here is that, in both countries, the vast majority of job separations were voluntary in nature (88% for Egypt and 75% in Tunisia). Even among those who experience involuntary separations, more than two-thirds of men end up in another job rather than in unemployment.¹⁸ Among women experiencing involuntary separations in Egypt, about a third end up in another job, a third in unemployment and a third outside the labor force. A higher share ends up in employment in Tunisia. Thus we can see that entering unemployment as a result of involuntary separations from a job is a fairly rare phenomenon, confirming one more time that unemployment in the MENA region is essentially a labor market insertion problem for new entrants.

Finally we move to our findings about the determinants of employment durations for those who experience unemployment. Our first finding is that groups who have a low incidence of unemployment to start with paradoxically experience long durations of unemployment when they do experience it. This is true of older workers and less educated workers in both Egypt and Jordan. We also find that socio-economic background, as measured by father's education, may explain who can afford to be unemployed, but does not explain duration of unemployment once an individual becomes unemployed.

With regard to the time dependence of the probability of exit from unemployment, we find that for men the longer they spend in unemployment, the greater the probability that they will exit the state. Because men must eventually work, as they spend more time in unemployment, they must eventually adjust their reservation wages and employment conditions downward to adjust to the job offers they receive. In other contexts, where unemployment is essentially involuntary, duration dependence is typically negative, meaning that hazards of exit fall the longer a person remains in unemployment. This typically is an indication of scarring or skill atrophy as individuals become less employable the longer they remain unemployed. The fact that MENA exhibits positive duration dependence in the hazard of exit, at least for men, suggests that there is an element of voluntariness in the unemployment experience of MENA youth. The longer they are unemployed, the more time they have to adjust their wage and employment conditions downward, eventually accepting what jobs are available to them.

Women, however, have a third option, which many of them take and that is the option of withdrawing from the labor force altogether if they do not find a position that meets their reservation conditions. We thus find that women have a U-shaped time dependence. They have a high hazard of exiting unemployment in the first year if they find a job that meets their expectations, then a much lower hazard in year two and three, and then a slightly increased

¹⁸ At least if they end up in unemployment, their unemployment duration is less than six months and therefore not detected in our data.

hazard in years 4 and above. We should note however that our data only includes women who end up working and does not include women who searched for jobs, did not find any acceptable ones and then dropped out of the labor force altogether.

With respect to labor market dynamics, it appears that among the three countries studied Jordan has managed to achieve the greatest dynamism in its youth labor market. While unemployment rates were rising in Jordan in the first half of the 2000s, they declined thereafter. More importantly Jordan managed to achieve increasing rates of transition from unemployment to employment at the same time that its rates of transitions from employment to unemployment were increasing. In Egypt, the increasing U→E rate was achieved at the price of greater informalization of the labor market. In Jordan, on the other hand, it was achieved by making formal employment more flexible by means of temporary employment contracts (Assaad, 2014b). Tunisia fares better than either Jordan or Egypt in the retention of employed women in the labor force. Young women's rate of exit from employment in Tunisia is much lower, suggesting that employment in Tunisia is much more hospitable to women after marriage. Because of the decline in public sector employment in both Egypt and Jordan, many young women are essentially forced to exit at marriage.

In all three countries, there is a large number of educated young women who aspire to work and to make use of their educational credentials but lack the requisite mobility to move to where the jobs are. Mobility constraints are likely to be binding for both married and unmarried women in MENA, leading to low participation and high unemployment rates among women (Assaad & Arntz, 2005). Unmarried women potentially risk their reputations and marriageability if they take up employment that requires them to spend the night away from their parent's home and are therefore restricted to the possibly meager employment opportunities available in their immediate community. Married women's location decisions are conditioned by those of their husbands and even their ability to commute is likely to be severely constrained by the non-negotiable amount of time they must spend on domestic chores (Hendy, 2015). These mobility problems loom larger in provincial regions where the number of educated women may be rising just as fast as in metropolitan regions, but where there are few jobs to be had. Some recent innovations like the introduction of low-cost motorized rickshaws (known as *toktoks*) in some rural areas in Egypt may have contributed to reduced transport cost and somewhat greater access to jobs for women.

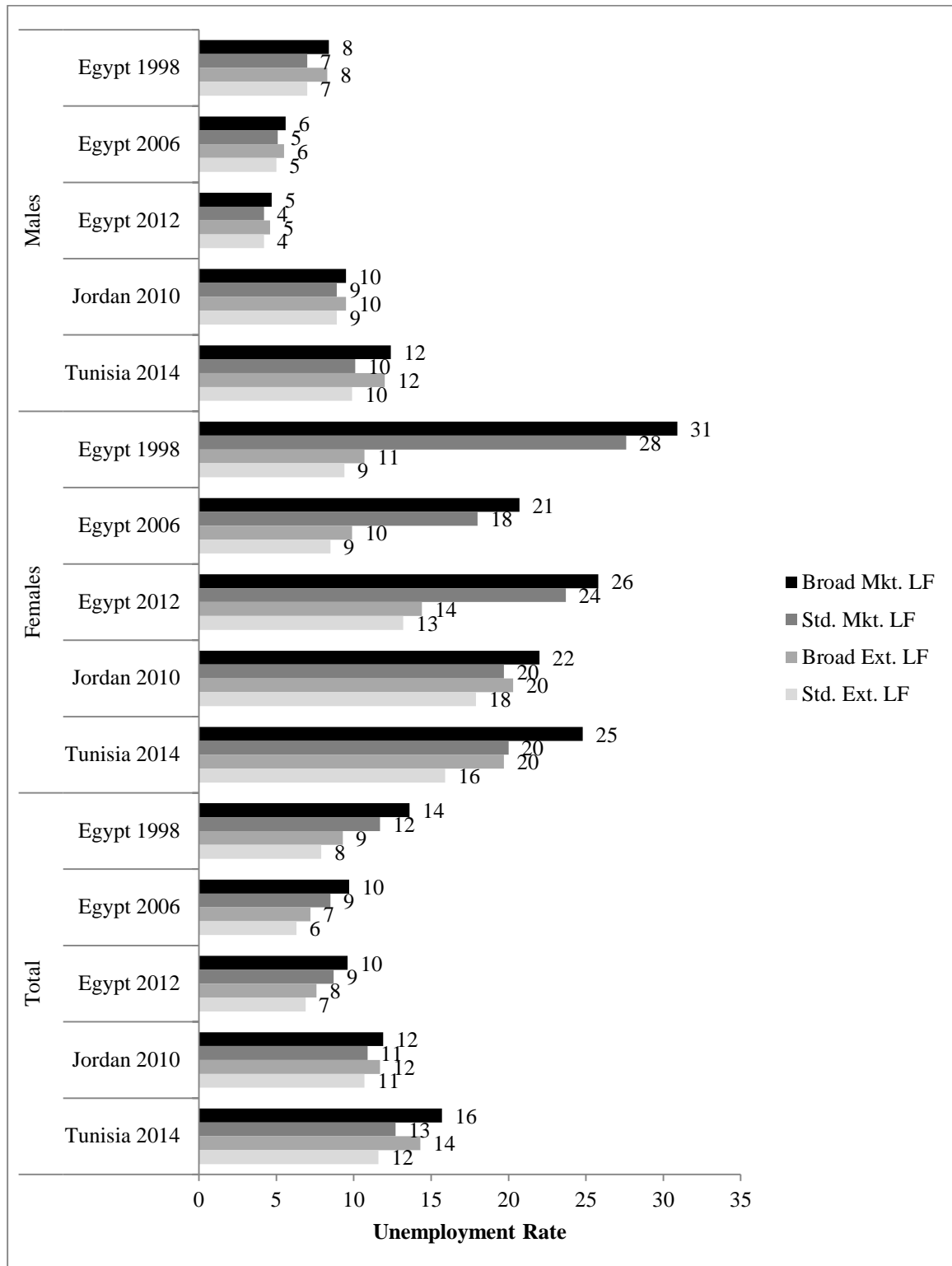
Another factor that is likely to contribute to high unemployment rates among both male and female youth in all three countries is the norm that unmarried individuals continue residing in their parents' households at least until marriage. This may make youth unemployment more affordable than in other contexts where young people often move out to establish their own independent households at a much earlier stage in their life course. The fact that unemployment is positively correlated with education levels and also with parental wealth (Krafft & Assaad, 2014) supports the voluntariness hypothesis. Those youth who become unemployed are the ones with some probability of obtaining formal jobs and who are able to afford to remain without work while looking for one. Less educated youth, who have no hope for formal jobs, rarely enter the unemployment state. More educated youth from lower social backgrounds, who are less able to afford joblessness while searching, either never enter the unemployment state or remain in it for a shorter duration than their more privileged counterparts (Assaad & Krafft, 2014).

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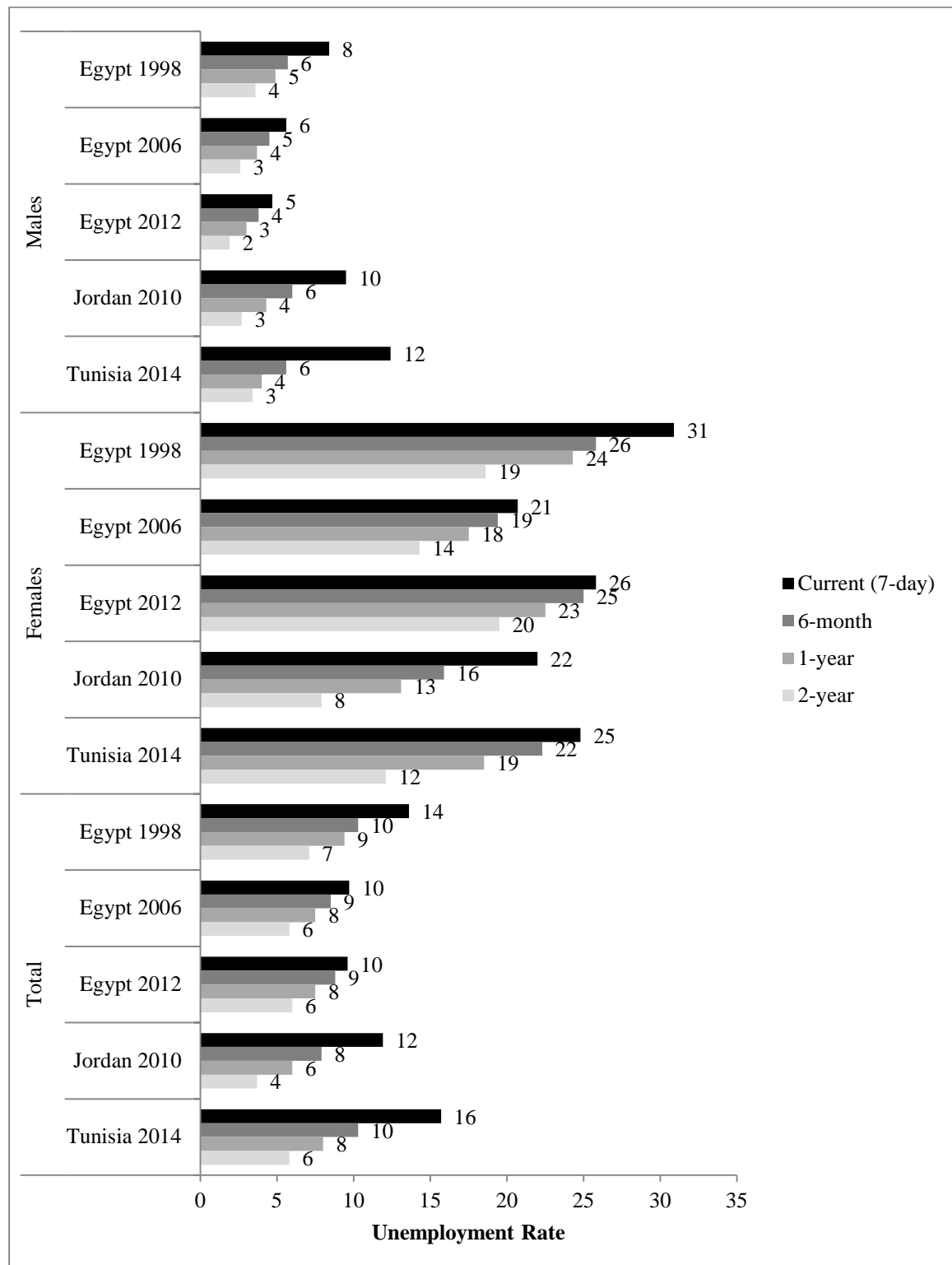
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Figure 1: Current (7-Day) Unemployment Rates Under Different Definitions, by Sex, Country, and Year (Percentages)



Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

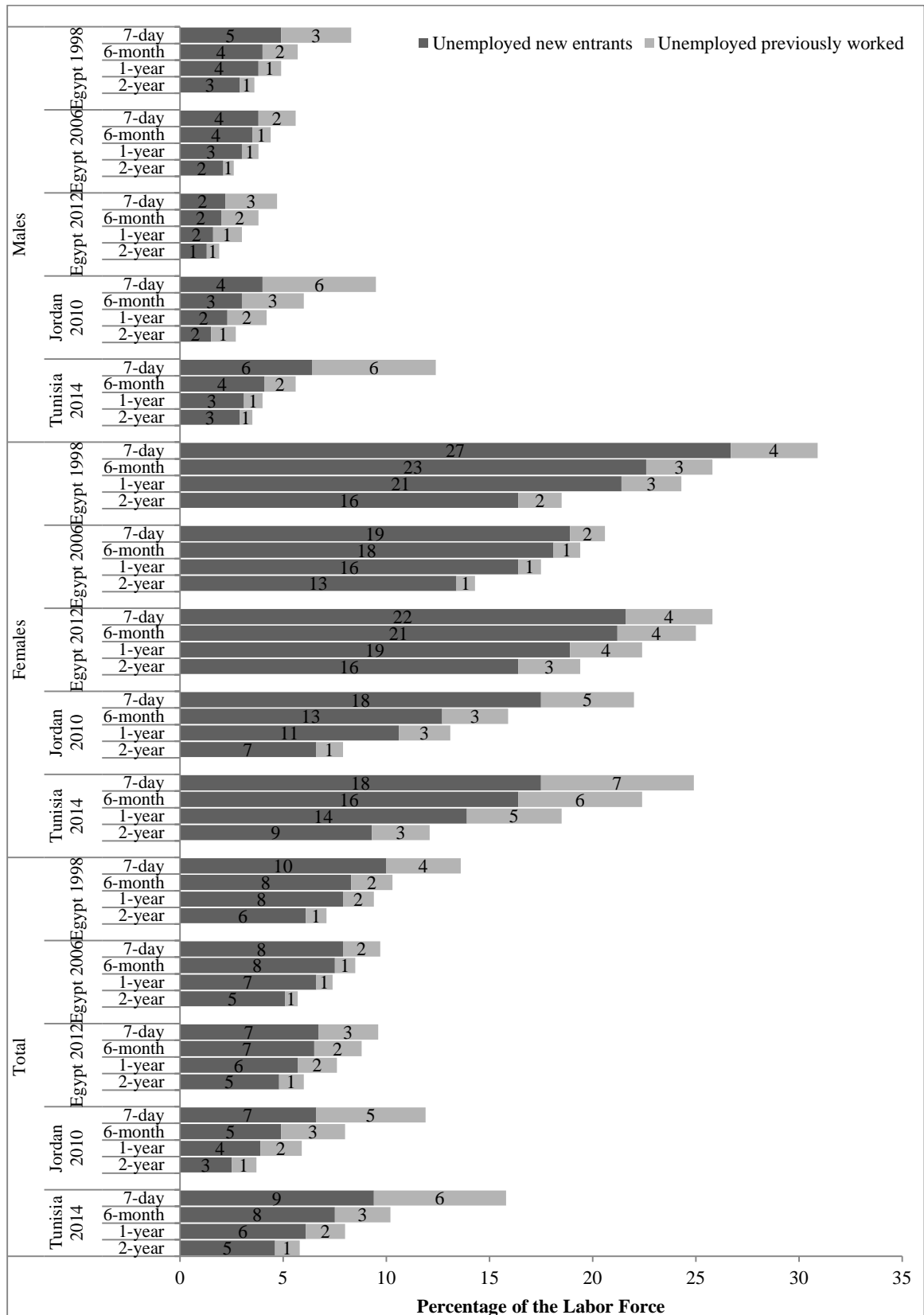
Figure 2: Unemployment Rates under Different Definitions of Unemployment Duration, by Sex, Country, and Year



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

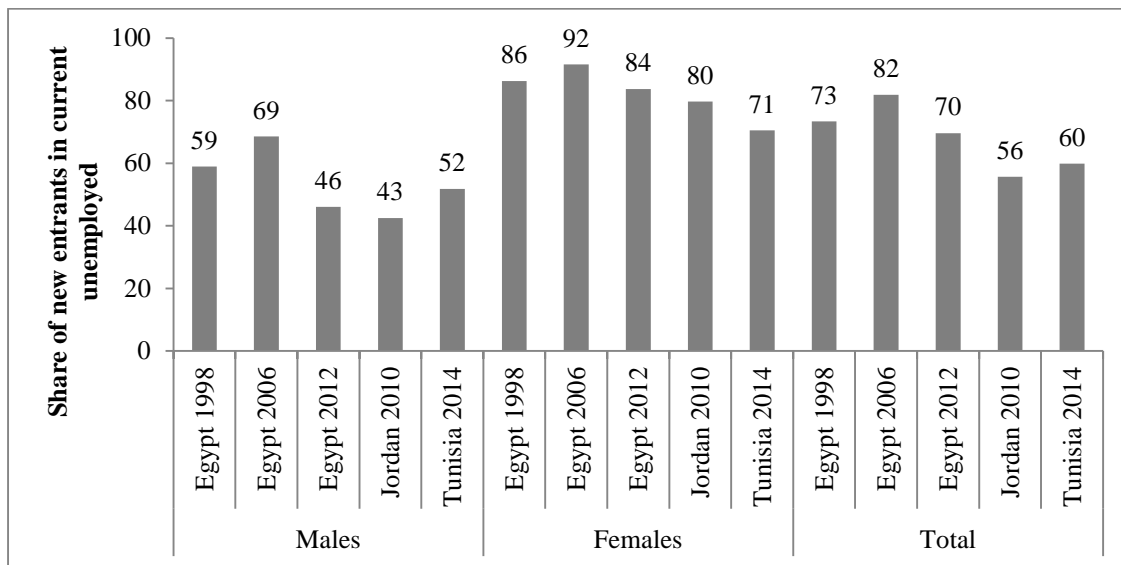
Figure 3: Shares of the Labor Force (Percentage) Under Different Definitions of Unemployment Length, by Sex, Country, and Year



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

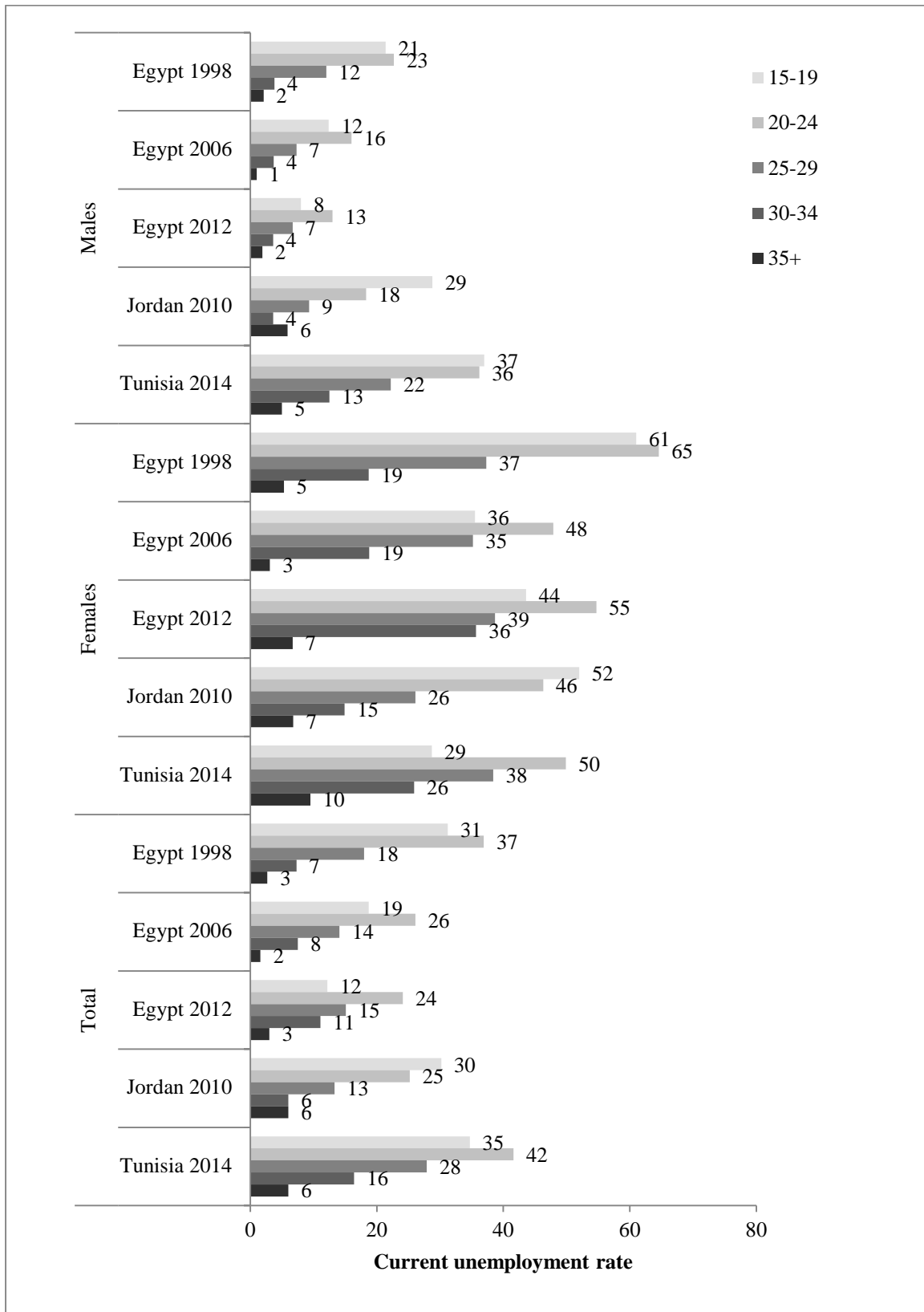
Figure 4: Share of New Entrants in Current (7-Day) Unemployed by Sex, Country, and Round (Percentage)



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014. See Table 6.

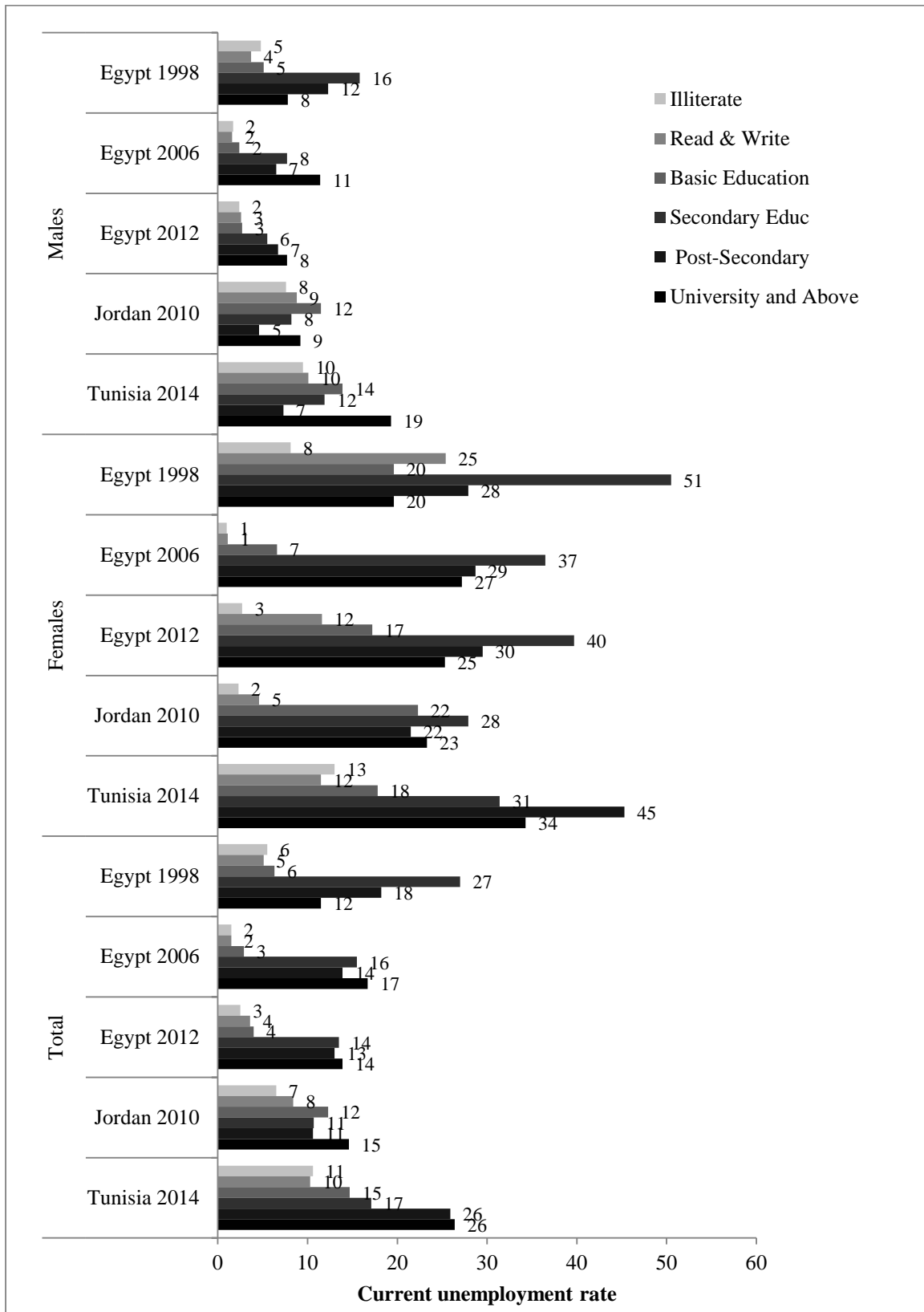
Figure 5: Current (7-day) Unemployment Rates by Sex, Country, Round, and Age Group



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014. See Table 4.

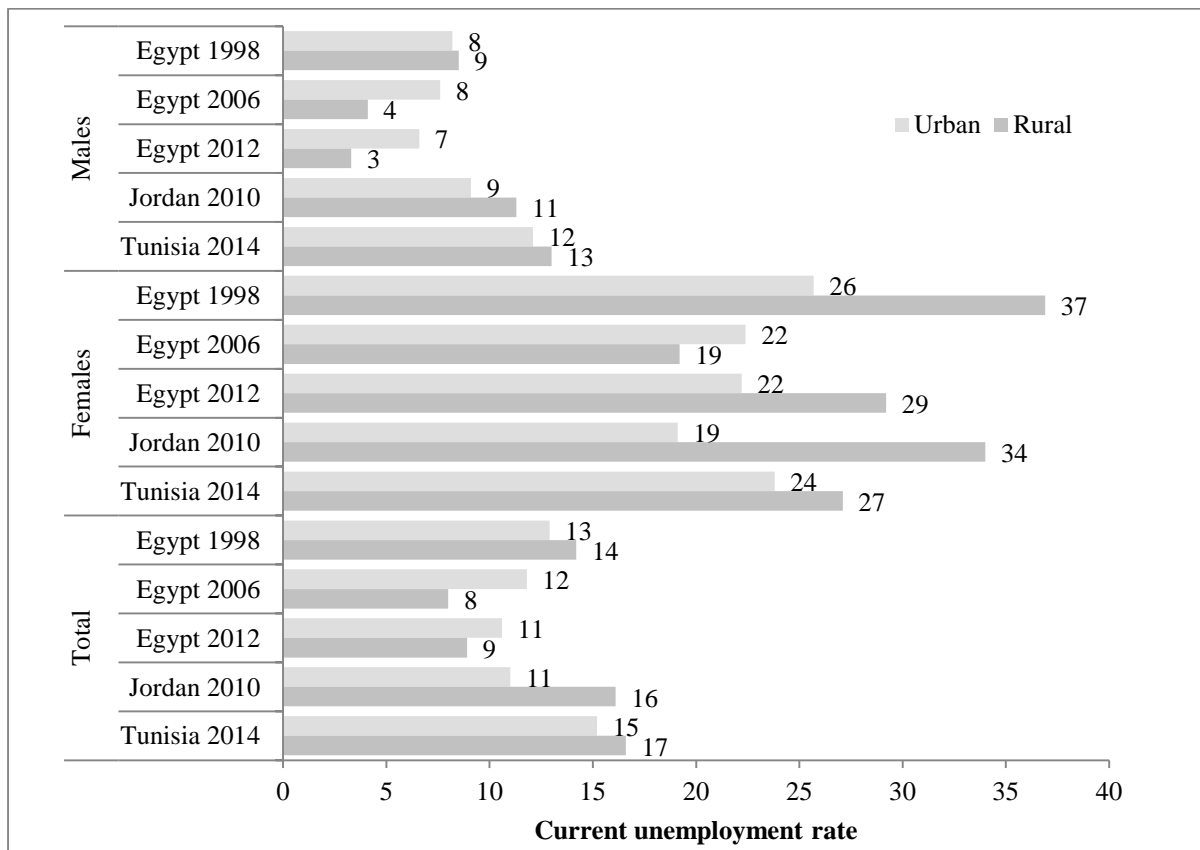
Figure 6: Current (7-day) Unemployment Rates by Sex, Country, Round, and Education Level



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014. See Table 4.

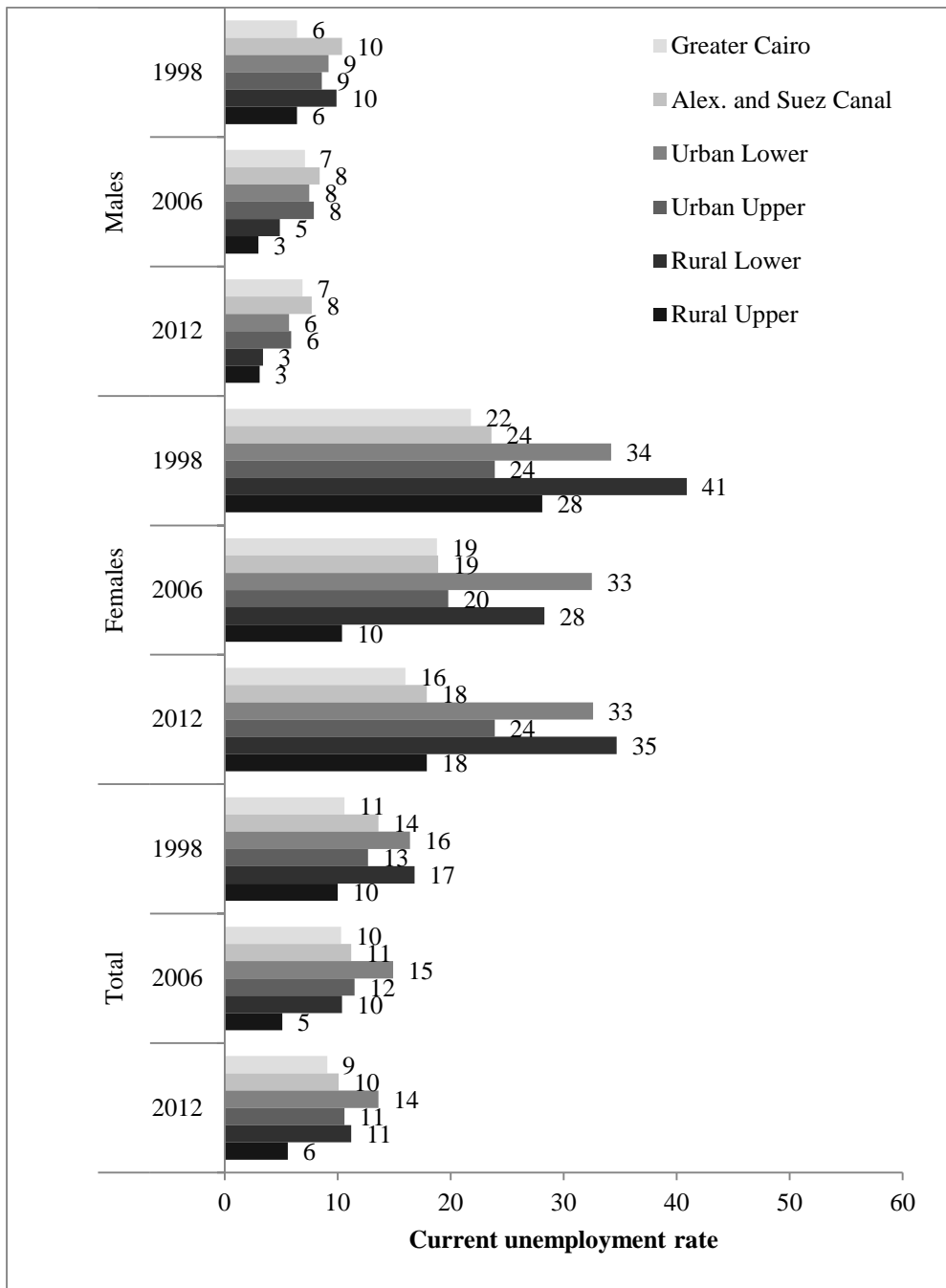
Figure 7: Current (7-day) Unemployment Rates by Sex, Country, Round, and Urban/Rural Location



Notes: Broad market definition of unemployment rate

Source: Authors' calculations based on ELMPs 1998, ELMPs 2006, ELMPs 2012, JLMPS 2010, and TLMPS 2014. See Table 4.

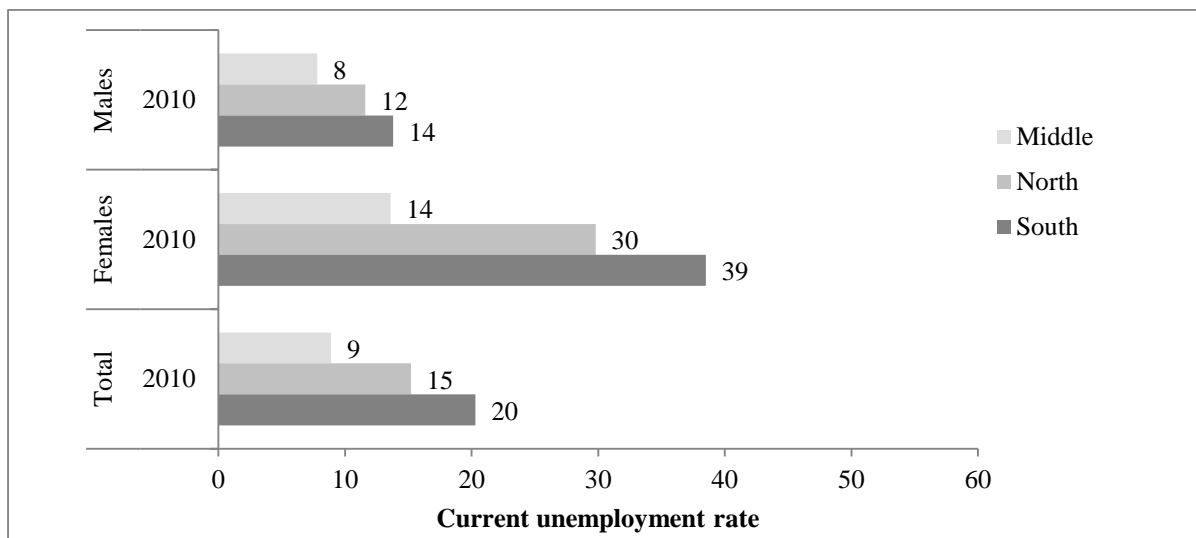
Figure 8: Current (7-day) Unemployment Rates by Sex, Round, and Region, Egypt



Notes: Broad market definition of unemployment rate

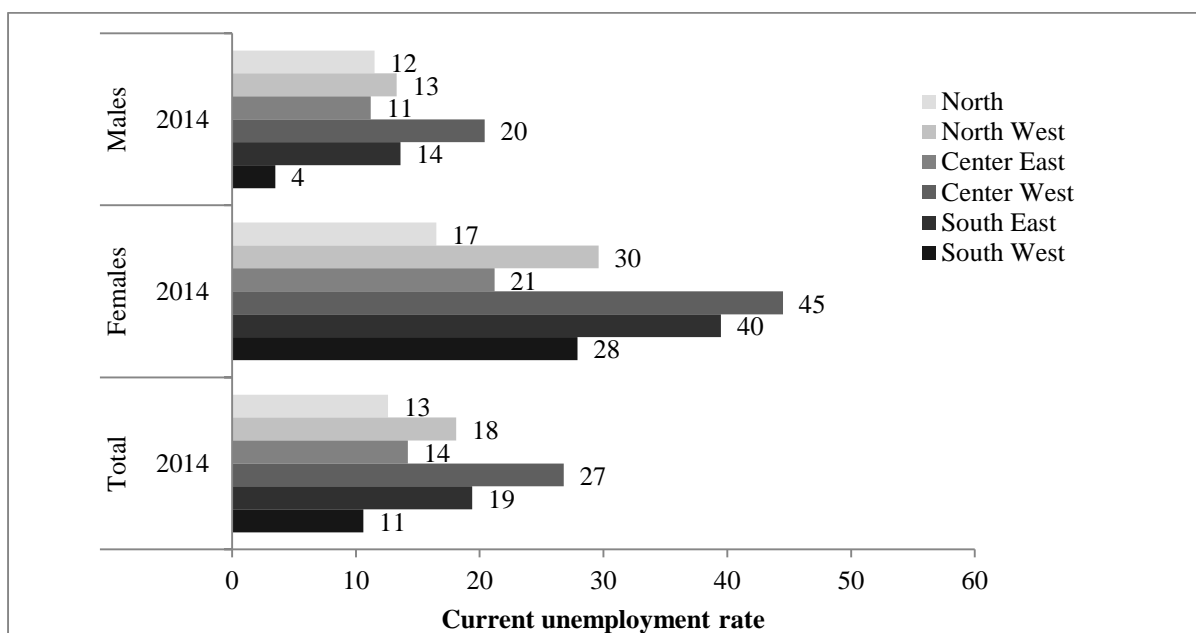
Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, and ELMPS 2012. See Table 4.

Figure 9: Current (7-day) Unemployment Rates by Sex and Region, Jordan



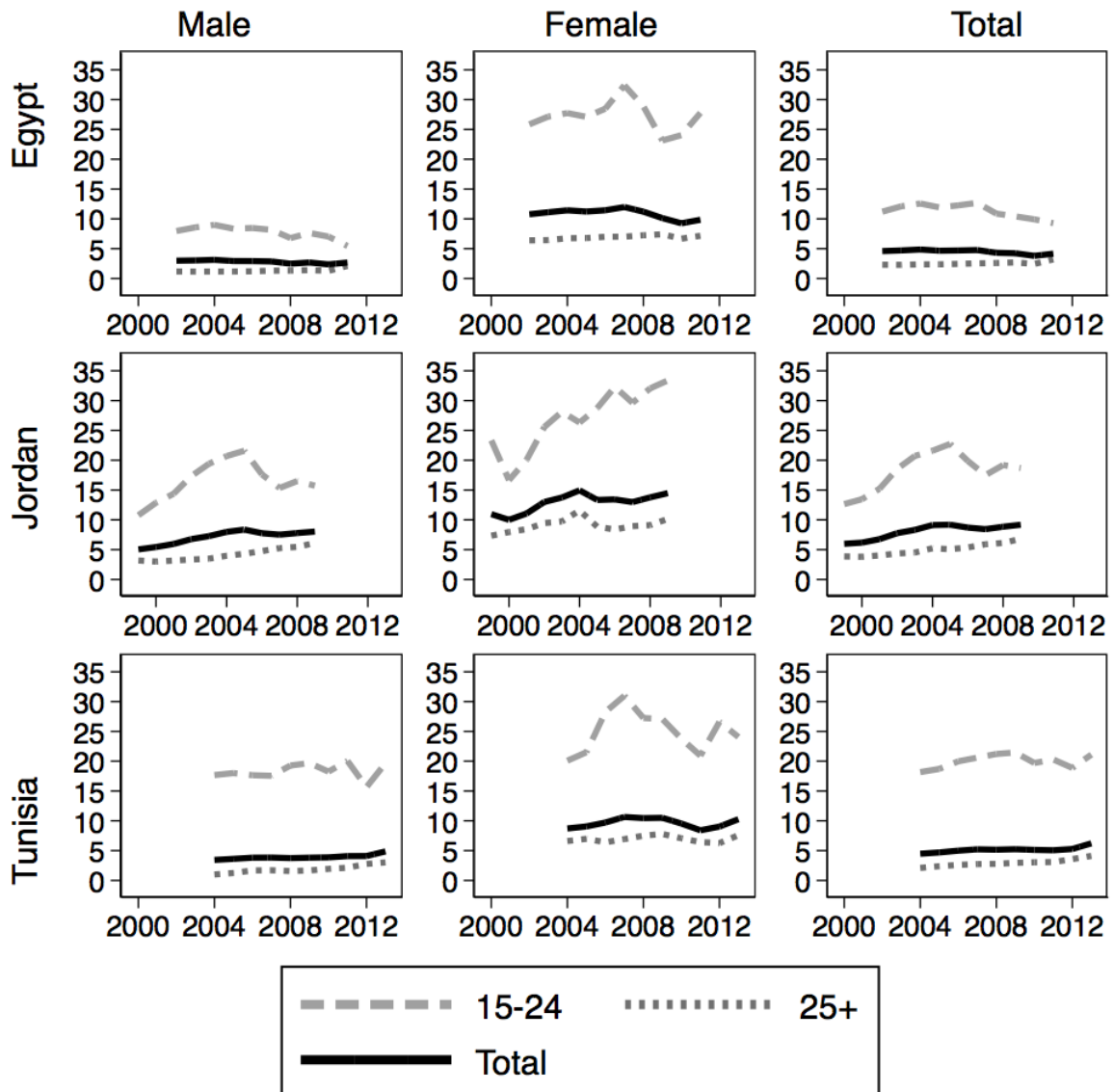
Notes: Broad market definition of unemployment rate
 Source: Authors' calculations based on JLMPS 2010. See Table 4.

Figure 10: Current (7-day) Unemployment Rates by Sex and Region, Tunisia



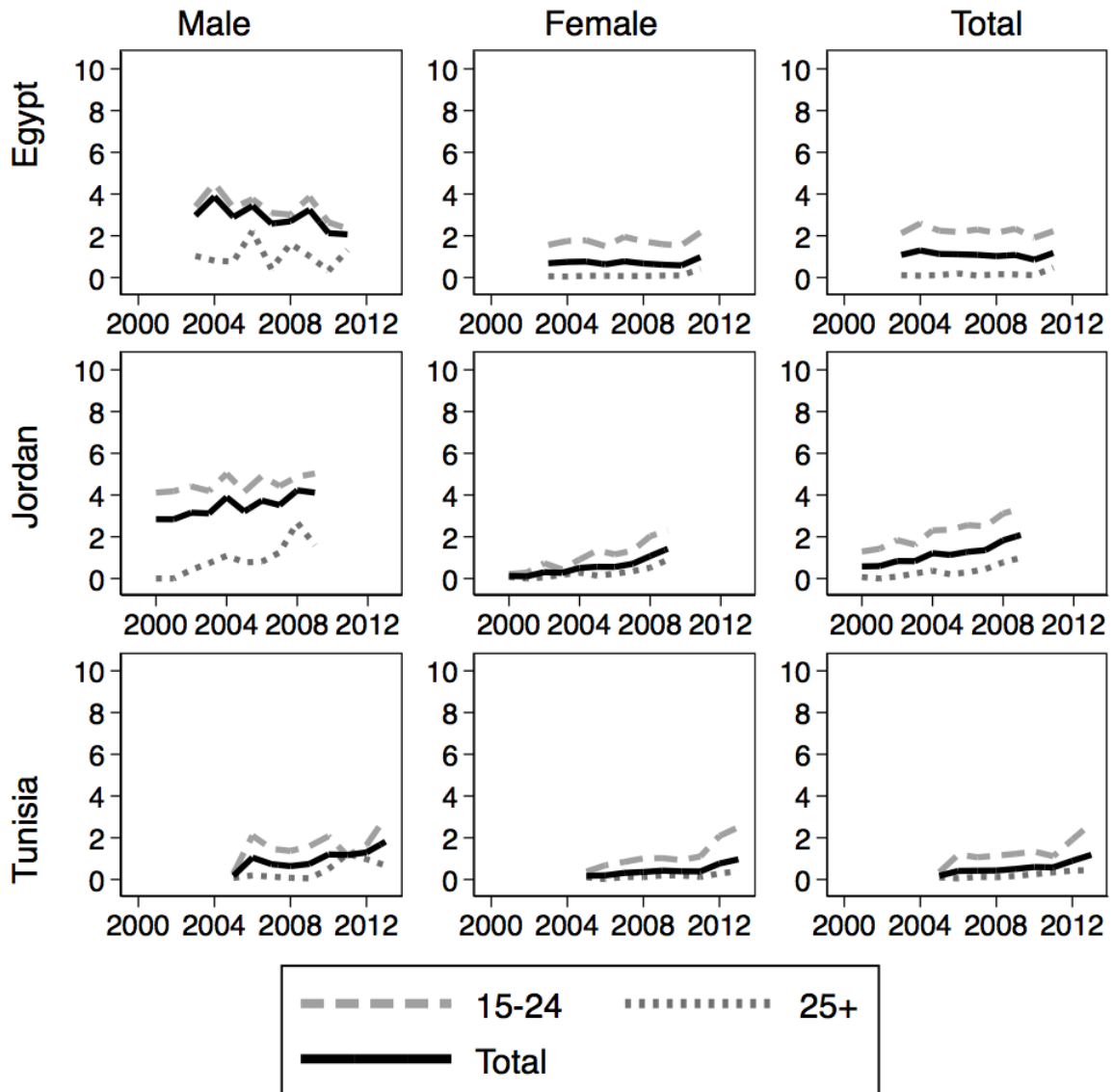
Notes: Broad market definition of unemployment rate
 Source: Authors' calculations based on TLMPS 2014. See Table 4.

Figure 11: Annual Unemployment Rate (Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

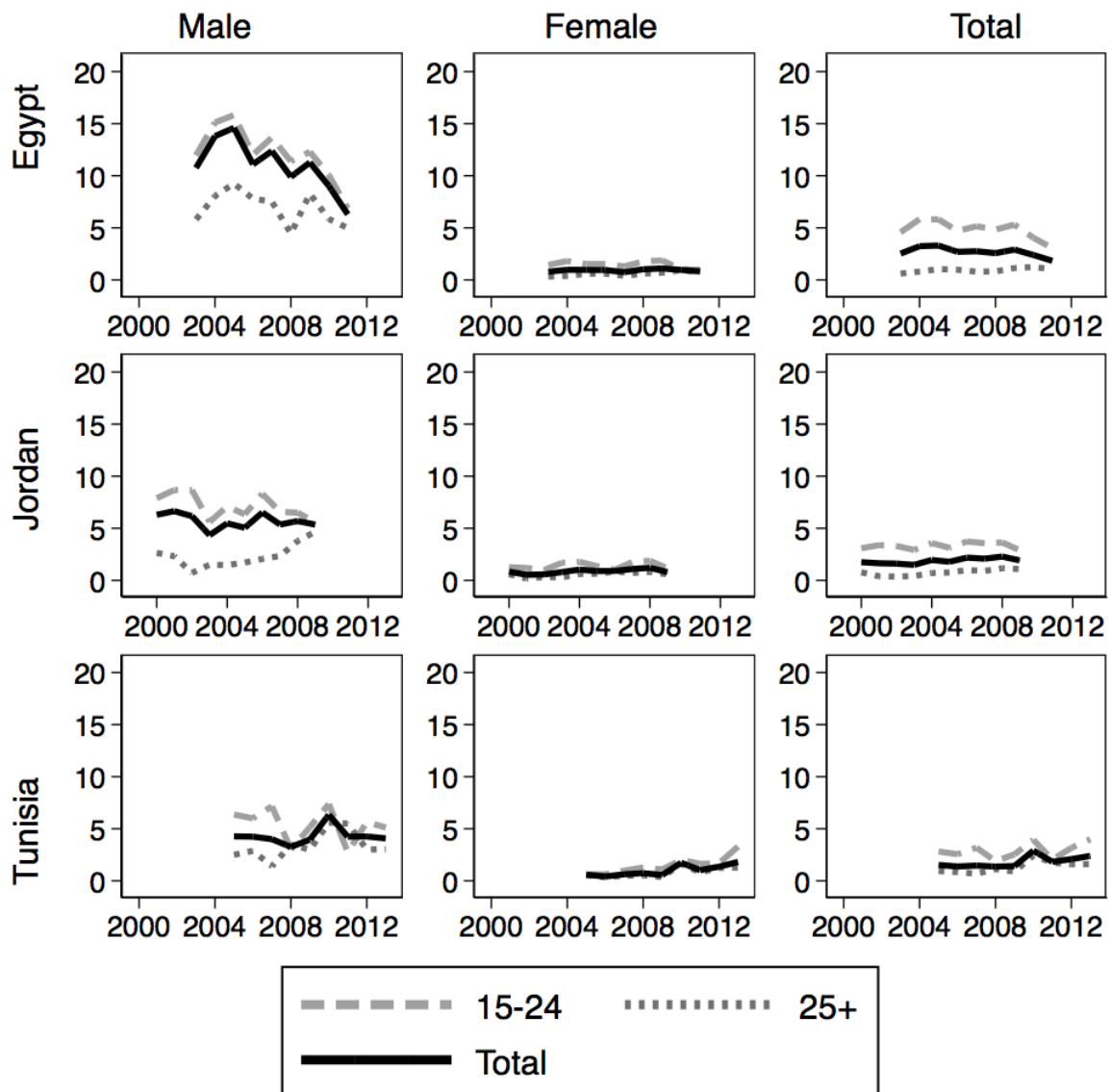
Figure 12: Annual Probability of Transition from OLF to Unemployment (O→U Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3

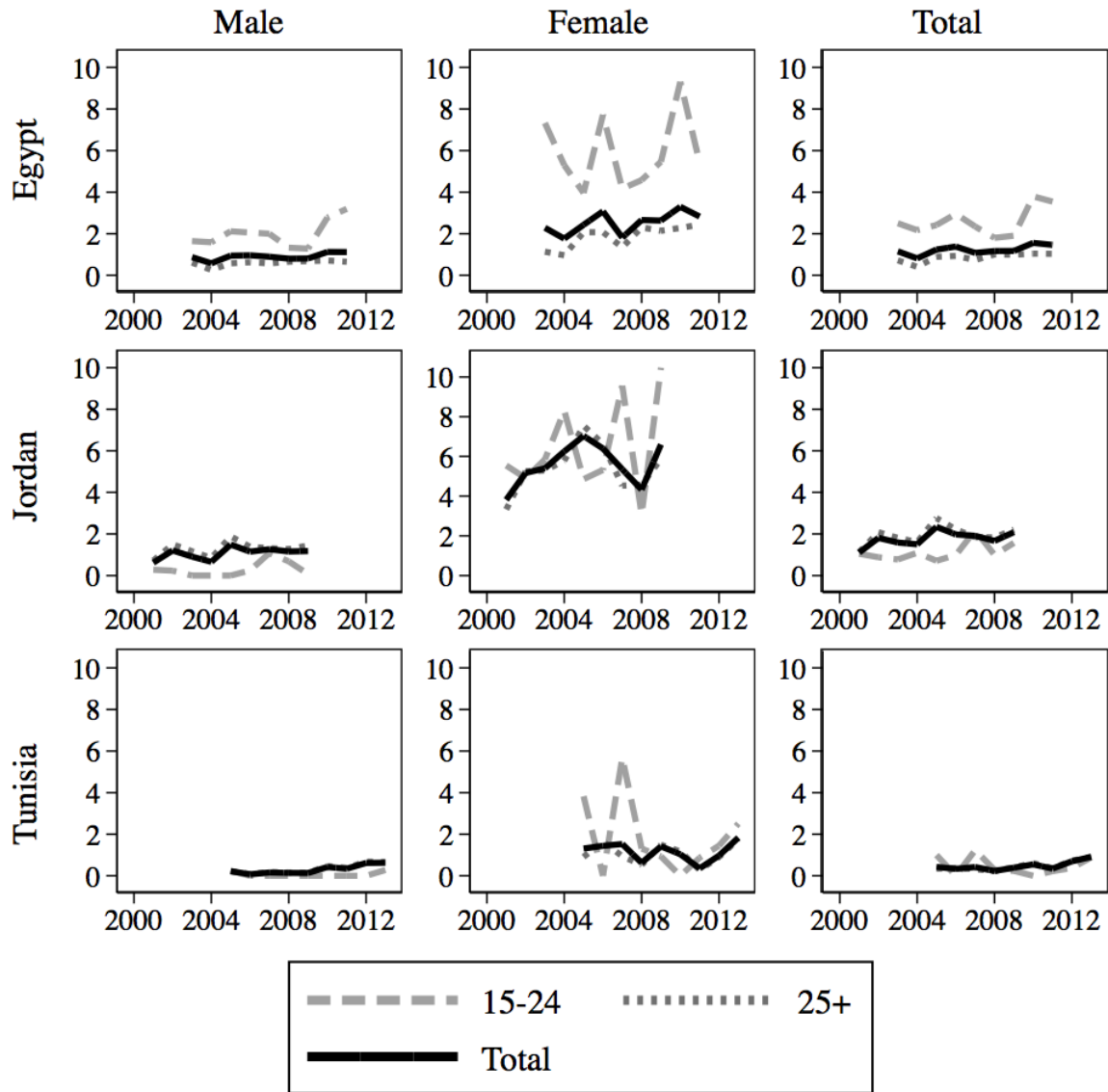
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 13: Annual Probability of Transition from OLF to Employment (O→E Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



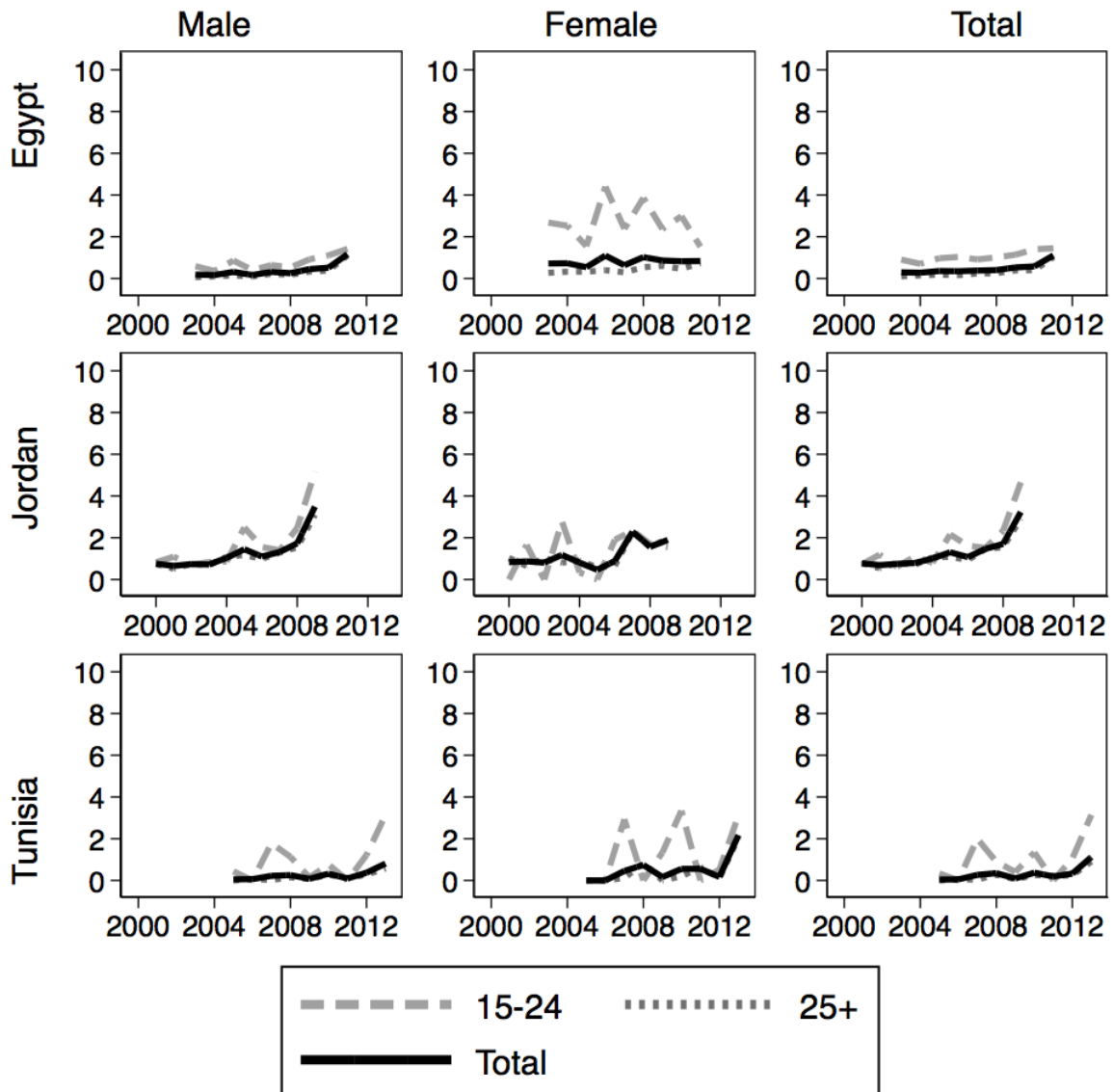
Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 14: Annual Probability of Transition From Employment to OLF (E→O Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



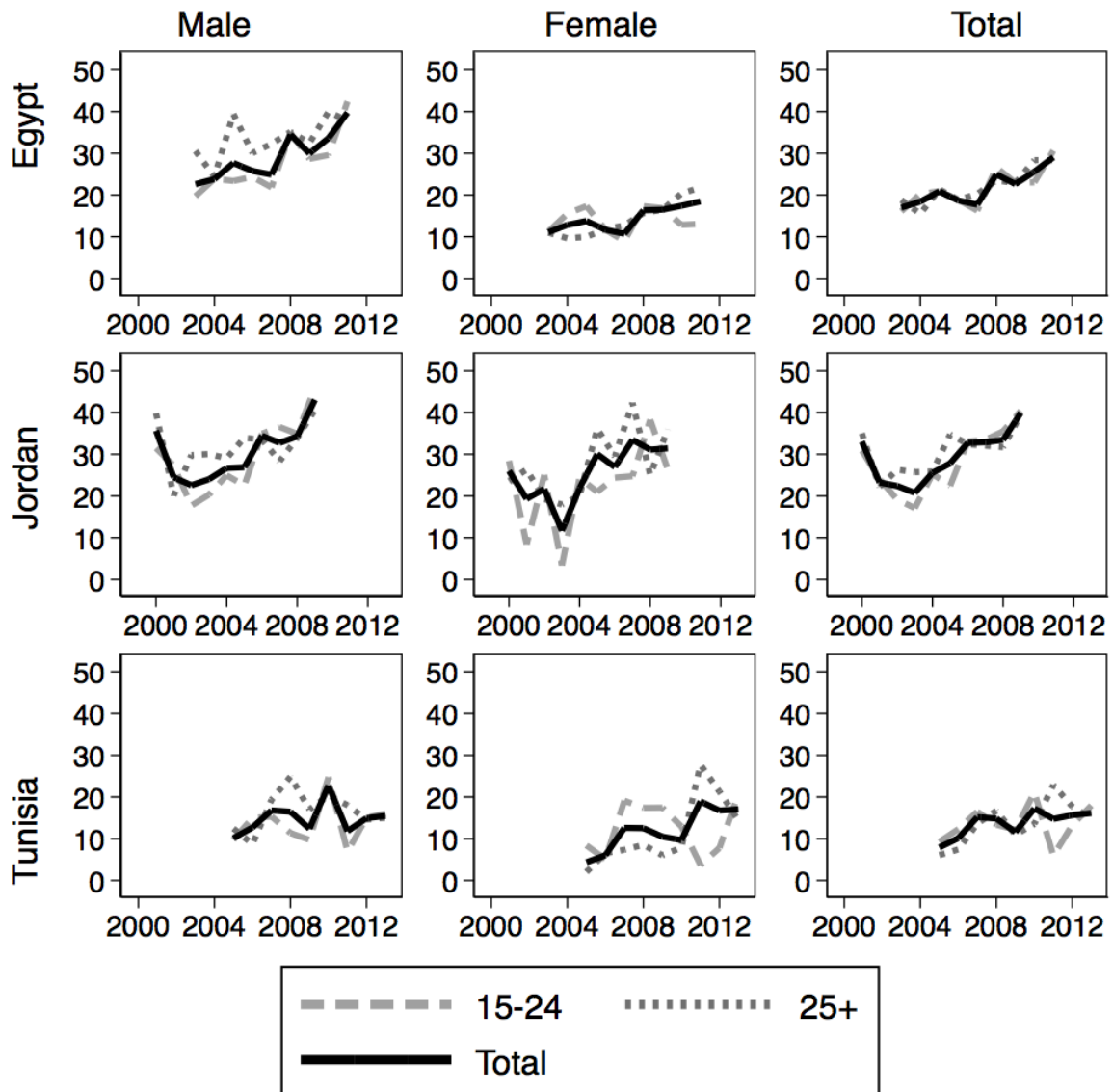
Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 15: Annual Probability of Transition from Employment to Unemployment (E→U Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

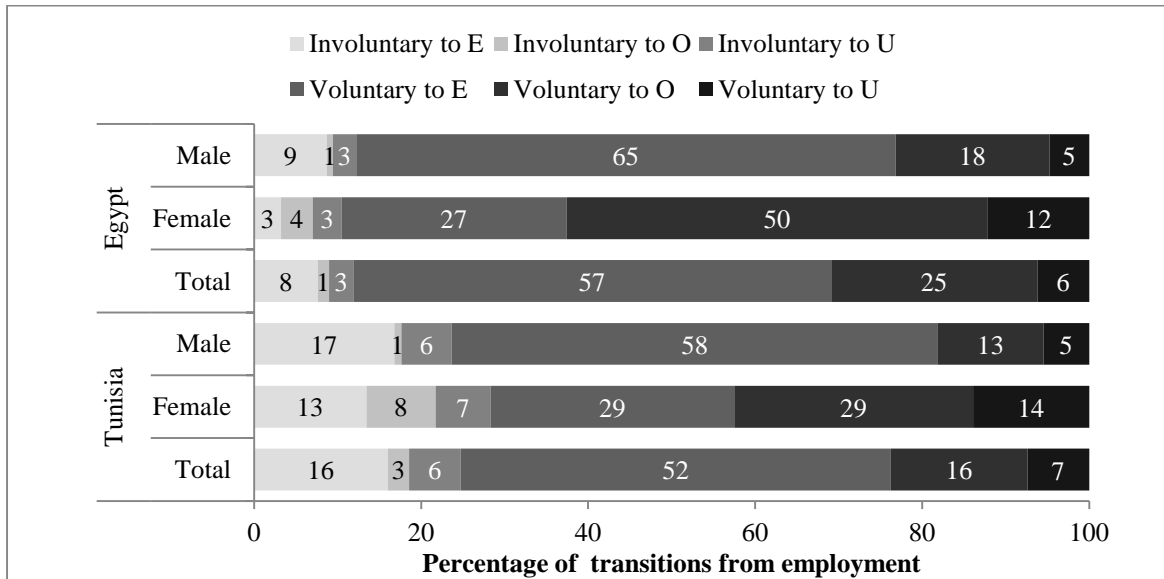
Figure 16: Annual Probability of Transition from Unemployment to Employment (U→E Percentage) by Sex and Country, Decade Preceding Survey, Ages 15-64



Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates. Lowess smoothed, bandwidth 0.3

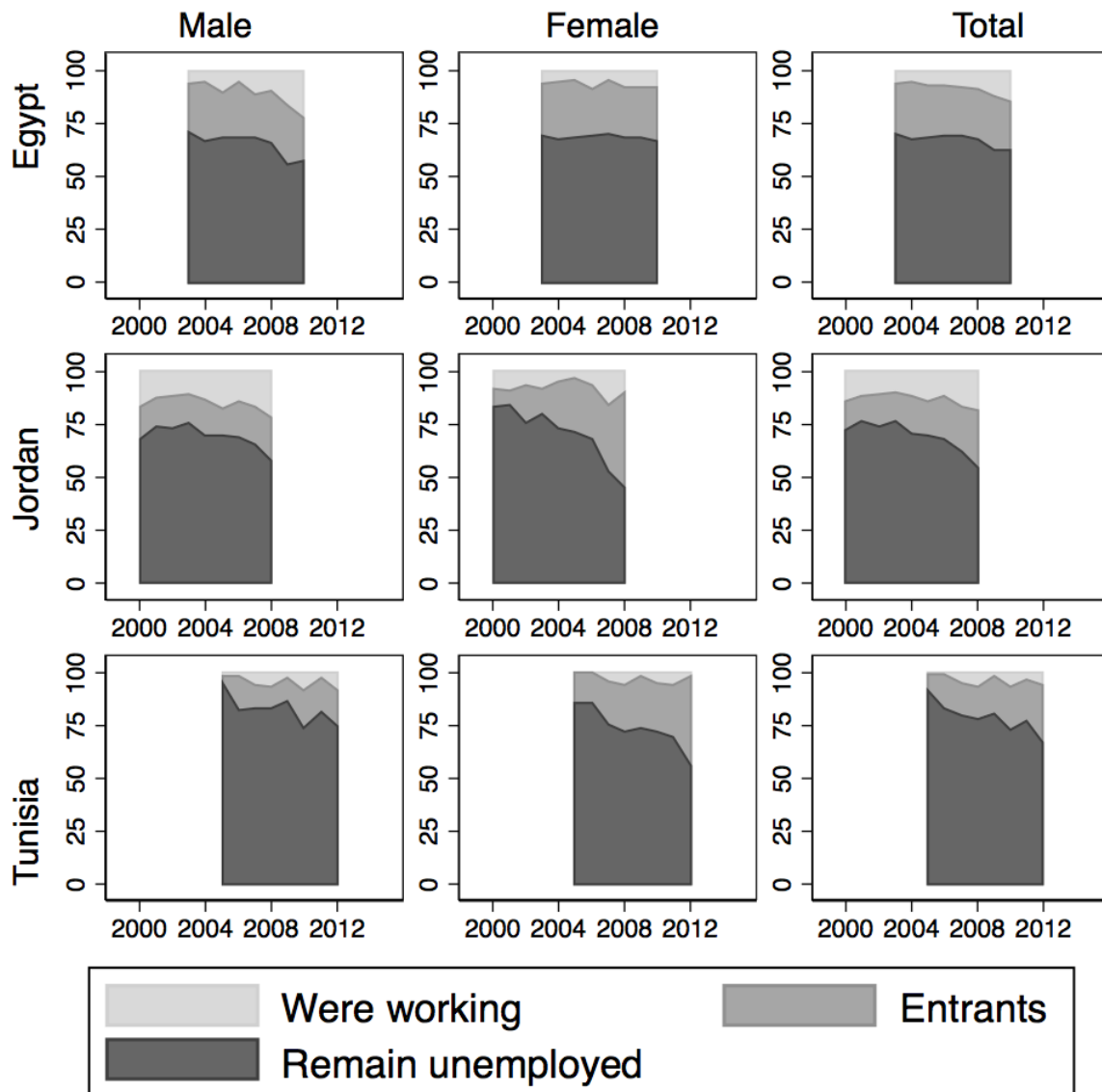
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 17: Transitions from Employment to Other Statuses (Including A Different Job) by Whether the Transition Was Voluntary (Percentages of Those with A Transition from Employment), by Sex and Country, Decade Preceding Survey, Ages 15-64



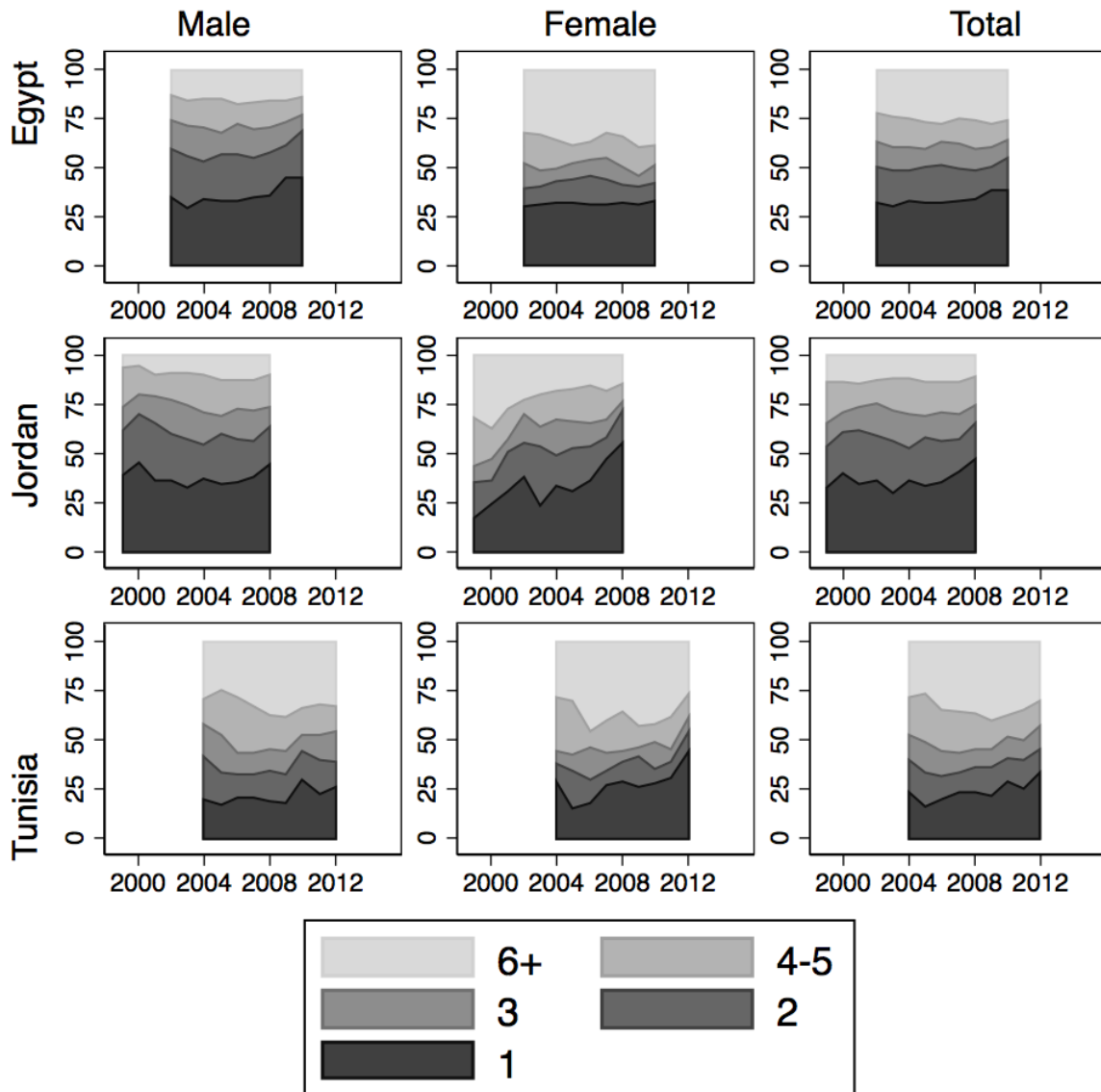
Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates.
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 18: Percentage of Unemployed in Each Year Remaining Unemployed from the Previous Year, Entrants from OLF, or Previously Working by Sex and Country, Decade Preceding Survey, Ages 15-64



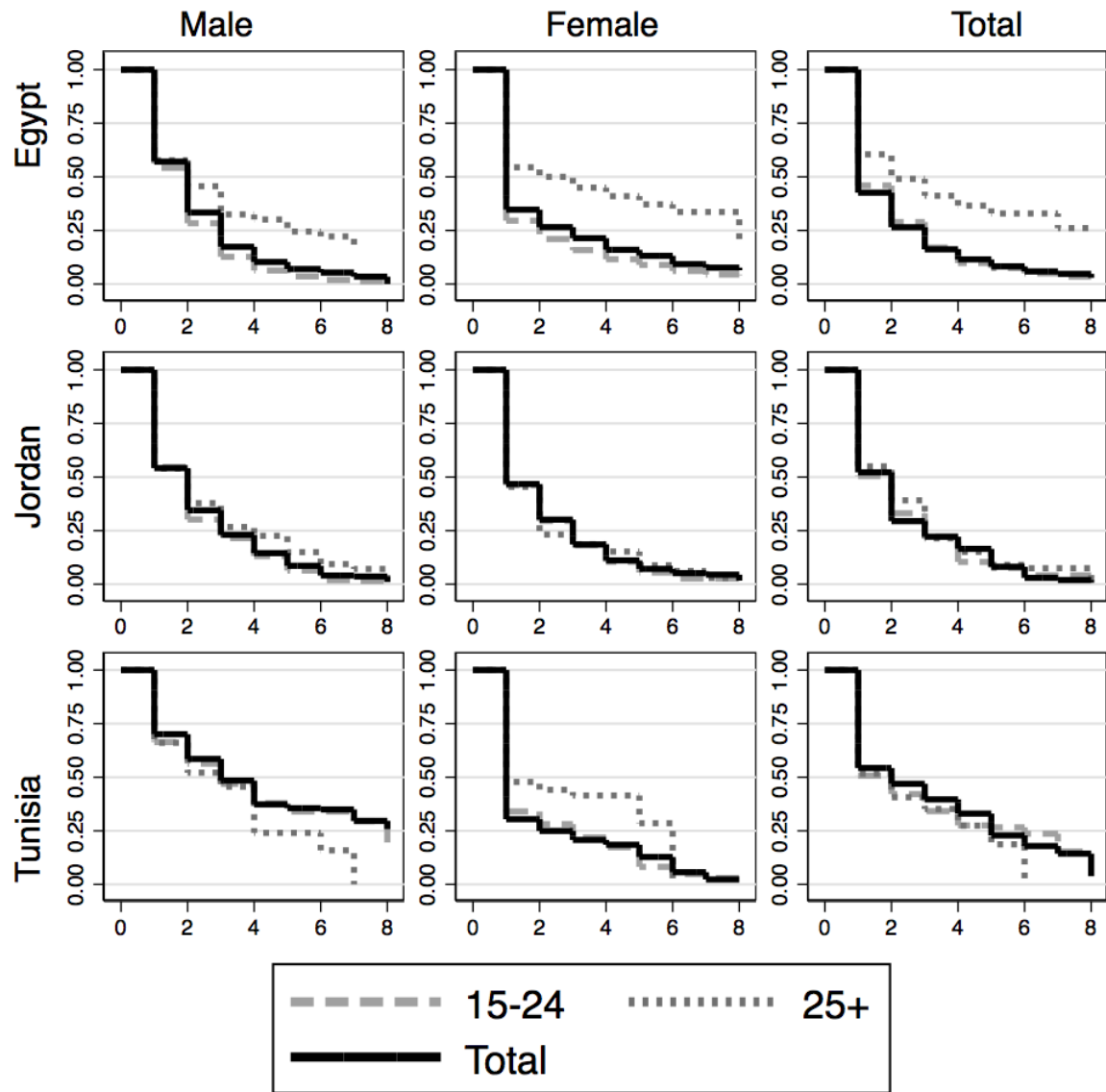
Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates.
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 19: Percentage of Unemployed in Each Year By Duration of Unemployment, Sex and Country, Decade Preceding Survey, Ages 15-64



Notes: Annual statuses based on retrospective labor market history and current employment and current unemployment start dates.
 Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

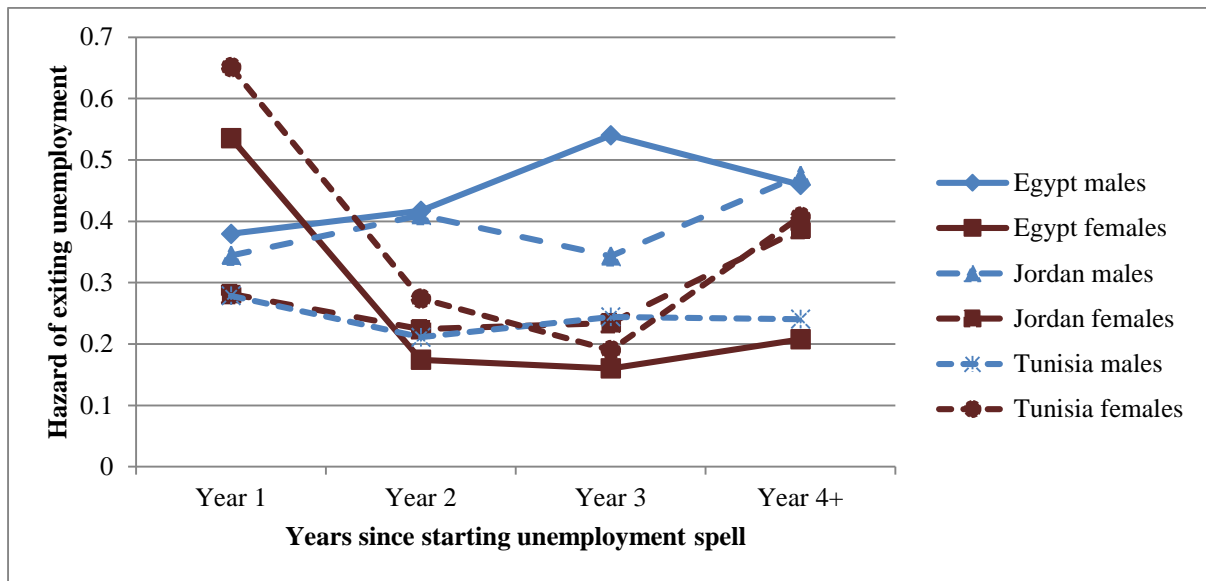
Figure 20: Kaplan-Meier Survival Function (Proportion Remaining Unemployed) by Years Since Entering Unemployment and Age Group at Start of Unemployment



Notes: Unemployment durations based on retrospective labor market history and current unemployment start dates. Lowess smoothed, bandwidth 0.3

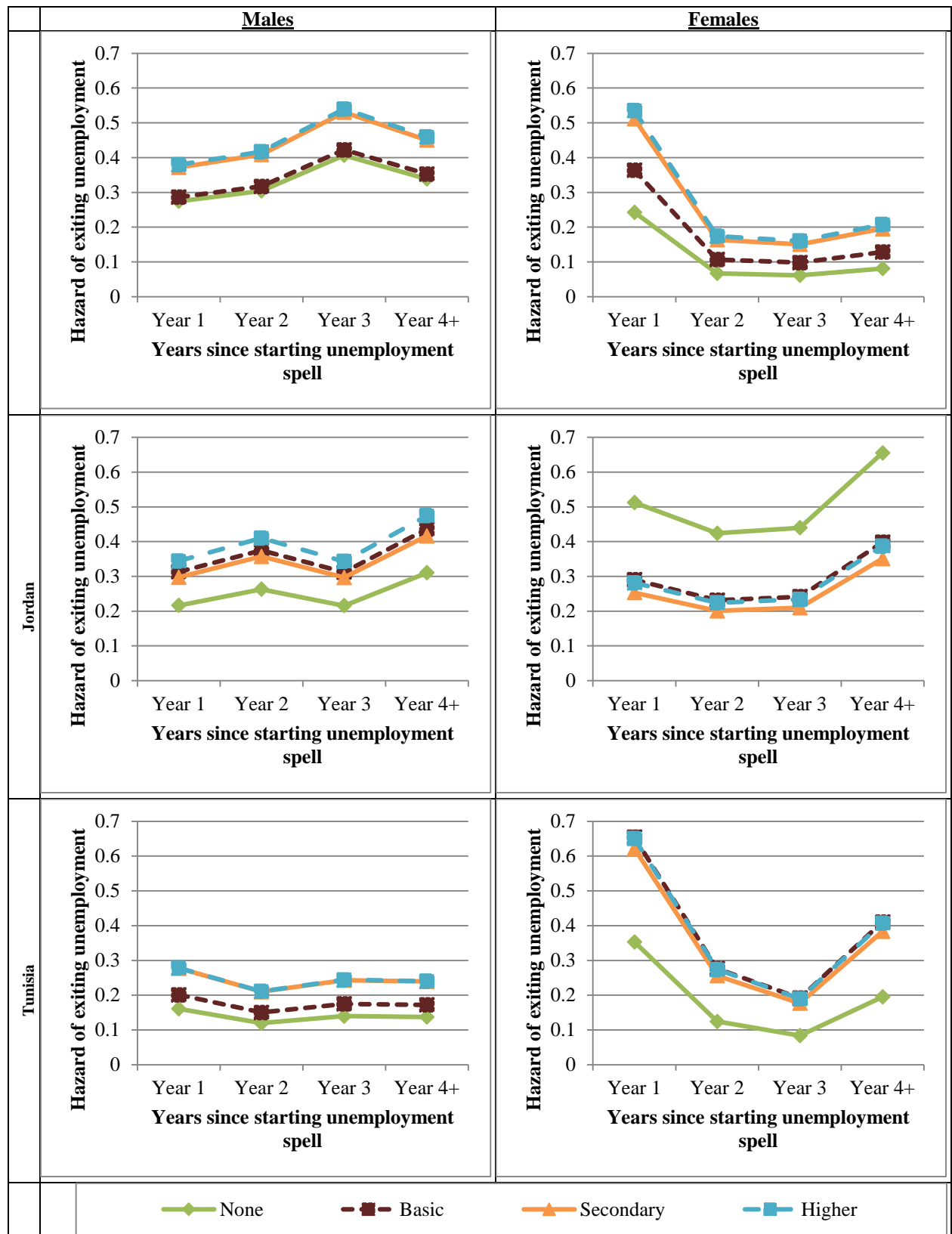
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010 and TLMPS 2014

Figure 21: Simulated Baseline Hazards by Country and Sex



Source: Authors' simulations based on models in Table 3.

Figure 22: Simulated Hazards by Education, Country, and Sex



Source: Authors' simulations based on models in Table 3.

Table 1: Flows and Probabilities of Labor Market Transitions

Flow	Probability
$E_{t-1} \rightarrow O_t$	$\frac{E_{t-1} \rightarrow O_t}{E_{t-1}}$
$E_{t-1} \rightarrow U_t$	$\frac{E_{t-1} \rightarrow U_t}{E_{t-1}}$
$O_{t-1} \rightarrow E_t$	$\frac{O_{t-1} \rightarrow E_t}{O_{t-1}}$
$O_{t-1} \rightarrow U_t$	$\frac{O_{t-1} \rightarrow U_t}{O_{t-1}}$
$U_{t-1} \rightarrow E_t$	$\frac{U_{t-1} \rightarrow E_t}{U_{t-1}}$
$U_{t-1} \rightarrow O_t$	$\frac{U_{t-1} \rightarrow O_t}{U_{t-1}}$

Table 2: Logit Model (Odds Ratios) for Probability of Entering Unemployment

	Egypt Males	Egypt Females	Jordan Males	Jordan Females	Tunisia Males	Tunisia Females
Reference probability						
Age group (15-24 omit.)						
25+	0.131*** (0.012)	0.134*** (0.014)	0.281*** (0.020)	0.373*** (0.041)	0.125*** (0.026)	0.528** (0.107)
Education (higher ed. omit.)						
No education	0.227*** (0.035)	0.058*** (0.012)	0.754* (0.095)	0.037*** (0.014)	0.280*** (0.087)	0.022*** (0.009)
Basic education	0.260*** (0.032)	0.066*** (0.014)	1.139 (0.092)	0.191*** (0.025)	0.578* (0.132)	0.156*** (0.036)
Secondary education	0.433*** (0.035)	0.402*** (0.031)	0.640*** (0.066)	0.175*** (0.028)	0.417** (0.119)	0.367*** (0.088)
Egypt regions (Gr. Cairo omit.)						
Alex. & Sz C.	1.364* (0.190)	0.976 (0.152)				
Urban Lower	1.272 (0.158)	1.493** (0.187)				
Urban Upper	1.030 (0.128)	0.854 (0.113)				
Rural (urban omit.)						
Rural	0.839* (0.071)	1.072 (0.090)	1.009 (0.071)	1.313* (0.144)	1.225 (0.221)	1.718** (0.328)
Jordan regions (Middle omit.)						
North			1.102 (0.077)	1.144 (0.139)		
South			1.321** (0.115)	2.217*** (0.280)		
Tunisia regions (North omit.)						
North West					1.192 (0.376)	2.043* (0.699)
Center East					2.262*** (0.540)	4.066*** (1.102)
Center West					0.984 (0.339)	1.590 (0.617)
South East					3.131*** (0.780)	2.384** (0.744)
South West					1.176 (0.475)	2.416* (0.956)
Father's education (illit. omit.)						
Reads and writes	1.119 (0.127)	1.274* (0.136)	1.119 (0.086)	1.050 (0.145)	0.858 (0.198)	1.346 (0.349)
Basic	1.610*** (0.169)	1.409** (0.155)	1.072 (0.126)	1.018 (0.229)	0.965 (0.209)	1.066 (0.231)
Secondary +	1.301** (0.126)	1.096 (0.106)	0.713** (0.074)	0.881 (0.139)	0.527 (0.196)	0.543 (0.192)
Year (2001-2004 omit. Egypt and Jordan & 2005-2007 omit. Tunisia)						
2005-2007	1.941*** (0.177)	2.238*** (0.210)	1.101 (0.076)	1.767*** (0.208)		
2008-2010	2.382*** (0.215)	2.482*** (0.236)	0.637*** (0.057)	1.675*** (0.226)	1.668** (0.329)	2.015** (0.457)
2011-2013					1.092 (0.235)	1.594* (0.379)
N (person-years)	127714	135270	54202	58096	31466	40506

Notes: *p<0.05; **p<0.01; ***p<0.001. Standard errors in parentheses. Probability of entering unemployment for those who were employed or out of the labor force in the preceding year.

Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014.

Table 3: Complementary Log-Log Discrete Time Proportional Hazard Model of Unemployment Exit with Gamma Frailty, Individuals Experiencing Unemployment, Ages 15-64 During Spell

Coefficients are hazard ratios

	Egypt Males	Egypt Females	Jordan Males	Jordan Females	Tunisia Males	Tunisia Females
Age group (15-24 omit.)						
25+	0.507*** (0.057)	0.489*** (0.064)	0.664*** (0.057)	0.810 (0.096)	1.060 (0.312)	0.778 (0.222)
Year of unemployment						
First	0.477*** (0.079)	0.767 (0.136)	0.422*** (0.056)	0.331*** (0.066)	0.326* (0.149)	1.053 (0.442)
Second	0.540*** (0.094)	0.191*** (0.041)	0.528*** (0.072)	0.254*** (0.055)	0.237** (0.116)	0.320* (0.165)
Third	0.777 (0.142)	0.175*** (0.041)	0.420*** (0.065)	0.266*** (0.065)	0.280* (0.139)	0.211* (0.135)
Fourth and longer	0.615* (0.119)	0.233*** (0.048)	0.643** (0.091)	0.490** (0.110)	0.275** (0.128)	0.523 (0.247)
Education (higher ed. omit.)						
None	0.672* (0.123)	0.363*** (0.111)	0.578*** (0.093)	2.174 (0.908)	0.537 (0.209)	0.414 (0.227)
Basic education	0.707* (0.101)	0.590* (0.156)	0.890 (0.078)	1.036 (0.147)	0.687 (0.200)	1.010 (0.296)
Secondary education	0.974 (0.085)	0.935 (0.083)	0.837 (0.095)	0.883 (0.158)	0.995 (0.371)	0.924 (0.329)
Egypt regions (Gr. Cairo omit.)						
Alex. & Sz C.	0.967 (0.150)	1.155 (0.203)				
Lower	0.757* (0.104)	1.378* (0.197)				
Upper	0.821 (0.114)	1.289 (0.192)				
Rural (urban omit.)						
Rural	1.087 (0.099)	0.996 (0.094)	0.927 (0.071)	1.043 (0.130)	0.996 (0.239)	0.899 (0.203)
Jordan regions (Middle omit.)						
North			0.833* (0.064)	0.929 (0.126)		
South			0.925 (0.088)	1.164 (0.167)		
Tunisia regions (North omit.)						
North West					1.903 (0.793)	0.438 (0.189)
Center East					1.558 (0.497)	0.875 (0.289)
Center West					2.093 (1.024)	2.843 (1.574)
South East					0.848 (0.291)	0.578 (0.233)
South West					3.419* (1.659)	0.715 (0.356)
Father's education (illit. omit.)						
Reads and writes	0.946 (0.121)	1.026 (0.125)	1.118 (0.097)	1.219 (0.184)	0.696 (0.220)	1.349 (0.420)
Basic	0.938 (0.106)	0.917 (0.114)	1.060 (0.135)	1.161 (0.286)	0.908 (0.253)	0.967 (0.259)
Secondary +	0.980 (0.104)	1.017 (0.113)	1.072 (0.121)	1.118 (0.192)	0.363 (0.191)	0.546 (0.256)
Start year (2001-2004 omit. Egypt and Jordan & 2005-2007 omit. Tunisia)						
2005-2007	1.425*** (0.138)	1.224 (0.127)	1.695*** (0.134)	2.211*** (0.307)		
2008-2010	2.411*** (0.262)	1.717*** (0.195)	3.819*** (0.466)	4.615*** (0.846)	1.187 (0.310)	1.129 (0.327)
2011-2013					1.509 (0.541)	1.770 (0.551)
N (person-years)	1735	1555	2380	798	394	260

Notes: *p<0.05; **p<0.01; ***p<0.001. Standard errors in parentheses. . Unemployment durations based on retrospective labor market history and current unemployment start dates.

Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014.

Table 4: Current (7-day) Unemployment Rates by Sex, Country, Round and Characteristics

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Education															
Illiterate	4.8	1.7	2.4	7.6	9.5	8.1	1.0	2.7	2.3	13.0	5.5	1.5	2.5	6.5	10.6
Read & Write	3.7	1.6	2.6	8.8	10.1	25.4	1.1	11.6	4.6	11.5	5.1	1.5	3.6	8.4	10.3
Basic Education	5.1	2.4	2.7	11.5	13.9	19.6	6.6	17.2	22.3	17.8	6.3	2.9	4.0	12.3	14.7
Secondary Educ	15.8	7.7	5.5	8.2	11.9	50.5	36.5	39.7	27.9	31.4	27.0	15.5	13.5	10.7	17.1
Post-Secondary	12.3	6.5	6.7	4.6	7.3	27.9	28.7	29.5	21.5	45.3	18.2	13.9	13.0	10.6	25.9
University and Above	7.8	11.4	7.7	9.2	19.3	19.6	27.2	25.3	23.3	34.3	11.5	16.7	13.9	14.6	26.4
Urban/Rural															
Urban	8.2	7.6	6.6	9.1	12.1	25.7	22.4	22.2	19.1	23.8	12.9	11.8	10.6	11.0	15.2
Rural	8.5	4.1	3.3	11.3	13.0	36.9	19.2	29.2	34.0	27.1	14.2	8.0	8.9	16.1	16.6
Region															
Jordan-Middle				7.8					13.6					8.9	
Jordan-North				11.6					29.8					15.2	
Jordan-South				13.8					38.5					20.3	
Tunisia-North					11.5					16.5					12.6
Tunisia-North West					13.3					29.6					18.1
Tunisia-Center East					11.2					21.2					14.2
Tunisia-Center West					20.4					44.5					26.8
Tunisia-South East					13.6					39.5					19.4
Tunisia-South West					3.5					27.9					10.6
Egypt-Gr. Cairo	6.4	7.1	6.9			21.8	18.8	16.0			10.6	10.3	9.1		
Egypt-Alx, Sz C.	10.4	8.4	7.7			23.6	18.9	17.9			13.6	11.2	10.1		
Egypt-Urb. Lwr.	9.2	7.5	5.7			34.2	32.5	32.6			16.4	14.9	13.6		
Egypt-Urb. Upp.	8.6	7.9	5.9			23.9	19.8	23.9			12.7	11.5	10.6		
Egypt-Rur. Lwr.	9.9	4.9	3.4			40.9	28.3	34.7			16.8	10.4	11.2		
Egypt-Rur. Upp.	6.4	3.0	3.1			28.1	10.4	17.9			10.0	5.1	5.6		
Father's education															
Illiterate	6.9	3.2	2.6	8.0	9.5	30.2	15.1	19.9	17.8	19.5	11.0	6.0	5.9	9.4	11.8
Reads and writes	7.0	5.0	3.5	9.1	37.0	28.7	21.3	30.6	21.9	43.4	12.5	9.6	10.1	11.5	38.4
Basic	17.8	8.9	7.5	16.5	11.3	46.5	24.4	31.5	32.7	26.7	24.5	13.4	13.9	19.7	16.0
Secondary	13.6	16.1	12.3	11.5	12.4	32.9	35.4	35.8	22.4	29.1	21.0	22.6	19.6	14.2	18.2
Post-secondary	15.3	14.9	12.2	10.2	(-)	29.3	39.5	28.1	17.2	(-)	20.0	23.9	17.2	11.9	15.2
University and above	9.1	13.2	11.7	9.4	(-)	26.5	27.1	22.2	25.7	(-)	16.2	18.4	15.7	15.1	7.4
Age group															
15-19	21.4	12.4	8.0	28.8	37.0	61.0	35.5	43.6	52.0	28.7	31.2	18.7	12.2	30.2	34.7
20-24	22.7	16.0	13.0	18.3	36.2	64.6	47.9	54.7	46.3	49.9	36.9	26.1	24.1	25.2	41.6
25-29	12.0	7.3	6.7	9.3	22.2	37.3	35.2	38.7	26.1	38.4	18.0	14.1	15.1	13.3	27.9
30-34	3.8	3.7	3.6	3.6	12.5	18.7	18.8	35.7	14.9	25.9	7.3	7.5	11.1	6.0	16.4
35+	2.1	1.0	1.9	5.9	5.0	5.3	3.1	6.7	6.8	9.5	2.7	1.6	3.0	6.0	6.0
Total	8.4	5.6	4.7	9.5	12.4	30.9	20.7	25.8	22.0	24.8	13.6	9.7	9.6	11.9	15.7
N (Obs.)	5,420	9,226	11,820	5,313	3,139	1,783	3,330	3,599	1,331	1,199	7,203	12,556	15,419	6,644	4,400

Notes: (-) indicates a cell size less than 20 observations

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

Table 5: Current (7-day) Unemployed Distributions over Characteristics by Sex, Country, and Round (Percentages)

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Education															
Illiterate	13.7	6.4	9.2	2.4	8.8	5.1	1.5	1.9	0.3	8.3	9.2	3.5	4.6	1.7	8.6
Read & Write	5.3	2.2	2.8	7.8	16.8	2.2	0.1	0.9	0.7	4.1	3.7	1.0	1.6	5.3	11.4
Basic Education	11.8	7.4	10.8	52.1	46.9	3.6	2.0	4.0	14.6	23.2	7.5	4.3	6.6	38.8	36.6
Secondary Educ	47.9	45.0	41.7	15.7	14.3	65.6	58.3	55.1	14.3	18.3	57.2	52.7	50.0	15.2	16.1
Post-Secondary	8.4	5.4	5.5	4.7	2.8	10.3	8.8	5.6	21.8	22.0	9.4	7.4	5.5	10.8	11.1
University and Above	12.8	33.5	30.1	17.4	10.4	13.2	29.3	32.6	48.3	24.1	13.0	31.1	31.6	28.4	16.3
Urban/Rural															
Urban	43.1	58.5	60.4	79.0	66.6	44.6	49.8	41.7	69.7	68.3	43.9	53.4	48.7	75.7	67.1
Rural	56.9	41.5	39.6	21.0	33.4	55.4	50.2	58.3	30.3	31.7	56.1	46.6	51.3	24.3	32.9
Region															
Jordan-Middle				51.2					34.8					45.4	
Jordan-North				34.4					39.5					36.2	
Jordan-South				14.3					25.7					18.4	
Tunisia-North					36.4					24.6					31.3
Tunisia-North West					11.5					14.5					12.8
Tunisia-Center East					20.7					22.4					21.5
Tunisia-Center West					18.3					18.8					18.6
Tunisia-South East					11.5					12.5					11.9
Tunisia-South West					1.6					7.2					4.0
Egypt-Gr. Cairo	13.7	22.4	26.3			15.3	16.4	11.7			14.5	18.9	17.1		
Egypt-Alx, Sz C.	10.0	12.0	13.2			6.5	7.2	5.6			8.1	9.2	8.5		
Egypt-Urb. Lwr.	11.7	13.6	11.8			15.8	17.9	16.7			13.8	16.1	14.9		
Egypt-Urb. Upp.	7.8	10.5	9.1			7.0	8.2	7.7			7.4	9.2	8.2		
Egypt-Rur. Lwr.	39.4	28.5	23.3			42.0	36.4	46.7			40.8	33.1	37.9		
Egypt-Rur. Upp.	17.5	13.0	16.3			13.5	13.8	11.6			15.4	13.5	13.3		
Father's education															
Illiterate	43.0	31.2	30.4	26.7	45.4	36.2	34.0	32.5	17.4	40.2	39.4	32.8	31.7	23.4	43.2
Reads and writes	25.2	19.7	13.1	41.9	27.3	30.8	24.5	22.8	40.9	19.2	28.2	22.5	19.2	41.5	23.8
Basic	16.8	18.0	20.0	10.5	19.9	12.0	14.5	18.1	9.3	28.5	14.3	16.0	18.8	10.1	23.6
Secondary	9.8	17.4	19.6	10.7	6.1	13.3	14.3	15.2	12.2	10.2	11.7	15.6	16.9	11.2	7.8
Post-secondary	1.8	2.9	3.8	4.3	0.4	1.6	3.3	2.4	4.4	1.3	1.7	3.1	2.9	4.4	0.8
University and above	3.3	10.7	13.1	5.9	0.8	6.1	9.4	9.0	15.8	0.6	4.8	9.9	10.5	9.5	0.7
Age group															
15-19	26.4	17.4	8.5	18.5	13.1	22.2	13.4	3.8	3.8	4.2	24.2	15.1	5.5	13.2	9.4
20-24	35.5	42.9	34.2	30.4	26.7	46.3	43.2	31.4	45.4	34.2	41.2	43.1	32.4	35.7	29.9
25-29	19.4	22.4	25.3	17.8	21.6	16.9	25.8	30.6	27.8	27.9	18.1	24.4	28.6	21.3	24.4
30-34	5.8	8.6	12.5	5.8	13.7	7.9	10.7	22.2	12.1	15.9	6.9	9.8	18.6	8.1	14.8
35+	12.9	8.7	19.6	27.6	24.8	6.7	6.9	12.0	11.0	17.8	9.6	7.6	14.9	21.7	21.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N (Obs.)	466	511	538	552	401	511	713	970	345	312	977	1,224	1,508	897	716

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

Table 6. Share of new entrants in current (7-day) unemployed over characteristics by sex, country, and round (percentages)

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Education															
Illiterate	26.0	7.2	29.2	(-)	30.5	57.3	(-)	(-)	(-)	55.8	35.2	20.4	40.2	(-)	41.1
Read & Write	16.8	(-)	(-)	18.3	29.8	(-)	(-)	(-)	(-)	(-)	36.7	(-)	31.0	22.1	30.6
Basic Education	32.6	23.9	19.7	45.0	48.5	65.0	(-)	64.4	82.8	64.0	40.8	33.9	36.8	50.0	53.0
Secondary Educ	72.0	75.9	47.3	30.1	75.7	90.9	92.2	84.3	76.9	78.1	83.4	86.4	72.7	45.8	76.5
Post-Secondary	70.8	77.0	34.6	43.9	(-)	88.1	92.4	82.2	73.5	76.5	80.8	87.7	64.5	65.2	73.6
University and Above	79.0	83.2	62.6	61.6	90.0	79.7	93.8	87.3	82.0	75.2	79.4	89.0	78.5	74.0	80.5
Urban/Rural															
Urban	53.8	68.2	40.9	39.9	56.6	80.3	89.8	81.0	75.3	71.7	68.0	79.9	62.4	51.5	63.3
Rural	62.7	69.0	53.9	52.3	42.2	91.1	93.4	85.6	89.9	68.0	77.5	84.2	76.4	69.0	53.0
Region															
Jordan-Middle				35.9					67.2					44.4	
Jordan-North				47.6					82.3					61.1	
Jordan-South				54.0					92.7					73.2	
Tunisia-North					72.6					82.7					76.2
Tunisia-North West					40.6					68.2					54.2
Tunisia-Center East					25.5					56.7					39.6
Tunisia-Center West					55.3					76.8					64.4
Tunisia-South East					38.8					71.9					54.0
Tunisia-South West					(-)					(-)					56.7
Egypt-Gr. Cairo	49.8	63.4	27.9			71.5	91.2	71.8			61.8	77.3	46.6		
Egypt-Alx, Sz C.	49.0	57.4	44.9			80.1	73.7	72.8			62.1	64.8	56.4		
Egypt-Urb. Lwr.	60.7	76.8	57.2			87.1	95.0	85.9			76.6	88.5	77.4		
Egypt-Urb. Upp.	56.8	79.9	51.3			84.4	89.7	90.3			70.7	85.0	74.2		
Egypt-Rur. Lwr.	62.0	80.7	59.3			92.4	95.0	85.1			78.5	89.8	79.2		
Egypt-Rur. Upp.	64.3	43.4	46.0			87.0	89.1	87.6			74.8	70.6	68.6		
Father's education															
Illiterate	54.4	55.6	36.3	32.1	37.7	87.3	90.7	83.9	71.3	68.3	70.4	76.7	66.9	42.5	49.9
Reads and writes	52.6	68.2	32.1	34.4	65.7	89.7	91.1	82.1	79.7	83.5	74.1	82.7	69.2	50.3	71.6
Basic	67.7	61.8	48.7	72.5	58.3	83.0	91.6	76.5	86.1	59.2	74.5	77.5	65.4	77.0	58.8
Secondary	80.4	83.8	53.2	39.2	(-)	85.3	97.6	92.7	87.0	86.7	83.4	91.1	75.5	57.7	82.0
Post-secondary	(-)	(-)	(-)	96.4	(-)	(-)	75.8	93.5	(-)	(-)	68.2	80.4	80.2	88.7	(-)
University and above	(-)	88.6	61.7	59.8	(-)	74.5	92.5	83.4	81.0	(-)	66.7	90.8	73.3	72.4	(-)
Age group															
15-19	75.5	85.3	77.3	86.0	68.1	98.0	99.3	96.1	(-)	(-)	86.4	92.5	85.3	87.4	72.0
20-24	65.8	82.4	72.0	66.0	63.3	87.6	93.4	90.6	89.4	81.4	78.7	88.8	83.3	76.6	72.3
25-29	68.2	65.2	48.6	33.3	64.8	79.8	92.4	83.0	72.6	79.0	74.0	81.9	71.6	51.5	71.6
30-34	31.9	41.7	12.5	10.5	45.6	79.4	80.1	76.8	74.9	56.9	60.6	66.0	60.6	45.0	50.5
35+	4.0	2.1	5.0	0.2	22.9	63.0	80.1	76.2	56.2	45.0	25.7	42.7	41.0	10.3	30.8
Total	58.9	68.6	46.0	42.5	51.8	86.3	91.6	83.7	79.7	70.5	73.4	81.9	69.6	55.7	59.9
N (Obs.)	466	511	538	552	401	511	713	970	345	312	977	1,224	1,508	897	716

Notes: (-) indicates a cell size less than 20 observations

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

Table 7: Share of Long-Term (6-Month) Unemployed in Current (7-day) Unemployed over Characteristics by Sex, Country, and Round (percentages)

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Education															
Illiterate	54.1	27.8	63.9	(-)	14.6	81.3	(-)	(-)	(-)	49.2	61.8	30.2	70.0	(-)	26.0
Read & Write	36.3	(-)	(-)	60.4	35.7	(-)	(-)	(-)	(-)	(-)	53.1	(-)	68.8	60.7	37.5
Basic Education	56.8	50.1	66.0	69.0	46.8	93.8	(-)	88.8	69.2	80.7	65.9	55.5	74.7	69.0	59.2
Secondary Educ	76.8	86.3	82.9	46.6	64.8	85.8	96.3	97.9	69.4	92.5	82.2	92.7	93.2	54.2	79.4
Post-Secondary	83.5	89.6	91.8	71.1	(-)	80.5	91.1	97.6	72.9	94.8	81.7	90.7	95.4	72.4	94.6
University and Above	66.8	89.1	87.8	63.7	84.1	74.9	94.1	96.9	73.9	82.8	71.1	91.8	93.6	69.9	83.2
Urban/Rural															
Urban	69.3	83.2	82.8	61.4	50.2	83.1	92.1	96.1	70.9	82.0	76.7	88.0	89.9	64.5	67.0
Rural	67.7	75.1	77.8	72.7	47.1	84.9	95.5	97.3	75.9	87.5	76.7	87.9	91.6	74.1	62.2
Region															
Jordan-Middle				57.6					64.3					59.4	
Jordan-North				64.5					71.1					67.1	
Jordan-South				83.9					85.4					84.7	
Tunisia-North					65.3					89.9					76.0
Tunisia-North West					33.1					65.1					45.3
Tunisia-Center East					34.8					91.5					60.7
Tunisia-Center West					45.0					75.0					61.6
Tunisia-South East					64.6					92.4					78.9
Tunisia-South West					(-)					(-)					63.7
Egypt-Gr. Cairo	66.2	83.9	87.3			75.5	86.5	93.6			71.4	85.2	89.9		
Egypt-Alx, Sz C.	71.4	74.4	72.5			84.5	92.1	96.3			76.9	82.4	82.3		
Egypt-Urb. Lwr.	73.9	87.6	82.1			88.5	96.2	98.7			82.6	93.1	93.8		
Egypt-Urb. Upp.	65.2	86.0	85.6			87.1	94.5	94.3			76.2	90.4	90.7		
Egypt-Rur. Lwr.	66.9	85.7	83.2			88.6	96.4	97.9			78.7	92.5	94.5		
Egypt-Rur. Upp.	69.4	51.9	70.0			73.6	93.1	94.9			71.4	76.4	83.5		
Father's education															
Illiterate	62.2	71.6	73.3	66.3	38.1	84.8	92.8	95.0	79.8	78.1	73.1	84.3	87.2	69.9	52.5
Reads and writes	75.8	73.2	74.7	63.0	58.4	84.2	94.6	96.1	78.1	94.2	80.6	86.7	90.6	68.3	76.5
Basic	73.9	77.7	81.8	68.1	66.8	88.1	92.5	99.6	69.4	83.1	80.3	85.5	92.5	68.6	76.4
Secondary	67.9	90.9	91.3	51.6	(-)	78.3	94.8	98.0	45.7	82.3	74.2	92.9	95.1	49.3	62.7
Post-secondary	(-)	(-)	(-)	51.8	(-)	(-)	100.0	93.5	(-)	(-)	72.5	100.0	85.0	60.0	(-)
University and above	(-)	96.0	88.4	80.4	(-)	84.9	94.3	98.4	71.3	(-)	78.2	95.1	93.7	75.0	(-)
Age group															
15-19	60.1	81.6	79.4	64.2	58.2	58.9	90.1	90.6	(-)	(-)	59.5	86.0	84.1	63.4	67.1
20-24	79.0	83.1	86.9	65.3	64.2	89.3	92.7	97.2	69.3	77.2	85.1	88.7	93.1	67.1	71.7
25-29	78.5	88.8	84.6	68.5	73.3	96.4	98.3	97.0	72.0	91.5	87.4	94.6	92.9	70.1	83.2
30-34	50.1	61.0	73.5	43.5	43.9	98.7	94.3	96.8	85.7	84.8	79.4	82.1	90.9	66.1	63.9
35+	48.6	55.3	70.5	62.9	19.9	85.7	90.6	97.2	77.3	83.1	61.7	73.7	84.0	65.5	39.4
Worked before															
Never worked	82.3	92.0	92.6	74.5	82.4	85.6	95.4	98.0	72.4	86.5	84.4	94.2	96.7	73.4	84.9
Ever worked	48.4	53.3	70.7	55.8	23.2	74.8	76.3	90.7	72.6	76.2	55.6	59.5	77.4	58.5	40.2

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Total	68.4	79.8	80.8	63.8	49.0	84.1	93.8	96.8	72.4	83.4	76.7	87.9	90.8	66.8	65.5
N (Obs.)	466	511	538	552	401	511	713	970	345	312	977	1,224	1,508	897	716

Notes: (-) indicates a cell size less than 20 observations

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

Table 8: Share of Very Long-Term (2-year) Unemployed in Current (7-day) Unemployed Over Characteristics by Sex, Country, and Round (percentages)

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Education															
Illiterate	31.6	15.9	39.5	(-)	8.2	62.8	(-)	(-)	(-)	14.6	40.4	21.2	50.0	(-)	10.3
Read & Write	22.5	(-)	(-)	29.8	20.3	(-)	(-)	(-)	(-)	(-)	32.0	(-)	32.6	31.5	23.9
Basic Education	38.6	25.7	37.9	31.1	27.7	76.7	(-)	82.4	48.4	59.9	48.0	31.9	54.9	33.4	39.5
Secondary Educ	48.6	51.4	41.0	21.3	40.6	65.6	75.8	82.5	41.4	42.8	58.9	67.0	69.5	28.1	41.4
Post-Secondary	62.5	43.2	32.0	36.3	(-)	59.8	54.7	78.1	38.3	54.5	60.9	51.1	61.0	37.7	49.2
University	38.6	53.3	43.8	24.1	67.9	31.3	63.1	62.4	29.1	36.5	34.7	58.6	55.7	27.2	46.4
Urban/Rural															
Urban	44.5	43.4	44.7	36.9	26.5	60.0	66.4	70.4	30.1	42.8	51.7	58.3	55.1	27.2	37.9
Rural	0.0	0.0	0.0	0.0	0.0	61.1	71.9	79.0	49.2	52.2	53.2	61.2	69.0	42.3	36.2
Region															
Jordan-Middle				29.5					24.4					21.9	
Jordan-North				50.5					29.3					29.4	
Jordan-South				0.0					61.4					55.9	
Tunisia-North					11.6					61.0					49.5
Tunisia-North West					20.1					29.6					18.5
Tunisia-Center East					31.9					40.2					29.3
Tunisia-Center West					53.6					42.8					37.7
Tunisia-South East					19.3					37.3					45.3
Tunisia-South West					(-)					(-)					40.8
Egypt-Gr. Cairo	42.9	44.6	42.9			45.7	54.7	60.3			41.6	48.2	42.6		
Egypt-Alx, Sz C.	54.3	59.5	41.1			69.0	67.7	71.3			53.9	55.1	54.7		
Egypt-Urb. Lwr.	33.2	55.3	47.5			67.8	73.3	78.7			62.4	68.4	67.5		
Egypt-Urb. Upp.	44.5	51.5	51.6			66.3	73.4	66.9			49.9	64.7	58.9		
Egypt-Rur. Lwr.	44.5	25.6	34.8			67.5	75.1	79.5			57.0	66.6	73.0		
Egypt-Rur. Upp.	0.0	0.0	0.0			41.3	63.2	77.1			43.0	47.9	57.8		
Father's education															
Illiterate	46.3	40.1	34.5	27.0	40.1	64.2	71.2	78.3	38.1	43.8	52.4	61.7	62.9	36.7	28.8
Reads and writes	41.5	44.2	46.3	34.3	43.0	65.3	75.0	79.4	46.2	48.6	57.2	62.1	67.9	33.7	44.2
Basic	55.6	49.1	41.4	12.4	35.1	59.4	58.6	71.8	28.5	41.3	49.6	51.8	61.6	32.4	42.0
Secondary	28.2	65.3	49.2	9.6	(-)	58.1	64.0	74.1	24.8	54.4	57.1	57.0	59.8	17.2	46.4
Post-secondary	(-)	(-)	(-)	30.6	(-)	(-)	79.4	70.2	(-)	(-)	39.2	73.8	60.0	15.5	(-)
University and above	(-)	0.0	0.0	0.0	(-)	27.0	66.8	65.5	22.3	(-)	26.8	59.9	55.6	25.6	(-)
Age group															
15-19	52.7	45.6	41.9	30.2	28.2	13.7	22.8	34.2	(-)	(-)	19.2	20.1	35.6	20.3	32.0
20-24	67.0	68.4	50.2	32.6	64.6	69.3	62.1	55.7	28.7	29.8	62.6	55.2	50.3	29.5	29.1
25-29	33.1	53.5	32.7	23.1	29.0	82.4	93.7	86.3	43.9	56.7	74.6	83.9	74.3	37.9	59.6
30-34	26.8	47.4	31.1	27.7	11.8	89.0	85.9	87.9	54.0	73.6	66.8	74.0	74.0	39.6	51.2
35+	0.0	0.0	0.0	0.0	0.0	71.2	85.3	89.0	37.1	40.5	42.5	67.1	60.4	29.3	20.7
Worked before															
Never worked	19.3	30.0	24.0	21.4	9.1	62.3	70.7	76.1	37.5	49.0	61.6	64.9	71.9	37.3	52.3
Ever worked	43.5	46.6	40.3	28.1	30.2	50.4	52.0	72.0	29.4	36.2	27.8	35.9	40.0	22.7	17.8

	Males					Females					Total				
	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Total	43.5	46.6	40.3	28.1	30.2	60.6	69.1	75.4	35.8	45.3	52.5	59.7	62.2	30.9	37.3
N (Obs.)	466	511	538	552	401	511	713	970	345	312	977	1,224	1,508	897	716

Notes: (-) indicates a cell size less than 20 observations

Source: Authors' calculations based on ELMPS 1998, ELMPS 2006, ELMPS 2012, JLMPS 2010, and TLMPS 2014

Table 9: Percentage of Working Age Adults (Ages 15-64) with Public Sector and Private Formal Work by Education

		Males					Females					Total				
		Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014	Egypt 1998	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
Public	Illiterate	9.5	9.1	8.2	8.6	11.3	0.5	0.4	0.3	1.3	1.0	3.3	3.2	3.0	3.6	3.7
	Read & Write	25.9	18.1	16.5	10.6	12.7	1.0	1.6	3.4	0.9	2.2	15.9	12.0	11.3	5.7	7.9
	Basic	13.5	12.0	8.6	21.2	9.3	1.5	0.7	0.9	1.2	2.1	8.4	7.0	5.1	12.1	5.8
	Secondary	25.3	19.0	19.5	19.9	24.2	17.4	12.2	10.8	2.0	9.4	21.9	15.9	15.4	10.9	17.2
	Post-Secondary	49.4	41.2	35.9	33.8	25.9	45.2	30.5	22.8	12.7	12.1	47.5	36.3	29.9	21.4	18.0
	University	54.7	44.1	40.7	34.8	27.7	50.1	36.5	35.0	27.1	22.2	53.1	40.9	38.0	31.2	25.1
	Total	23.1	19.9	18.8	22.0	14.8	8.8	8.4	9.0	5.9	5.0	16.0	14.1	13.8	14.0	9.5
Private Formal	Illiterate	8.0	8.4	6.7	5.1	12.9	0.1	0.4	0.2	0.4	0.9	2.6	3.0	2.4	1.9	4.2
	Read & Write	16.3	18.0	12.2	5.3	23.5	0.9	0.3	0.5	0.7	3.8	10.1	11.5	7.5	3.0	14.6
	Basic	8.7	9.9	8.6	10.2	22.4	0.5	1.0	0.4	1.6	8.9	5.3	6.0	4.9	6.3	16.0
	Secondary	10.4	11.4	13.0	10.3	16.9	1.2	1.3	1.4	2.2	4.1	6.5	6.8	7.5	6.2	10.7
	Post-Secondary	13.6	16.6	19.7	19.3	25.2	3.3	1.9	2.3	9.2	8.0	9.0	9.8	11.7	13.4	15.2
	University	19.9	21.0	22.8	24.9	21.7	7.6	7.5	6.0	15.4	10.2	15.5	15.4	15.0	20.4	15.4
	Total	11.2	12.5	12.6	12.2	20.3	1.1	1.5	1.5	4.1	5.3	6.1	6.9	6.9	8.2	12.3
Public + Private Formal	Illiterate	17.5	17.5	14.9	13.7	24.2	0.6	0.8	0.5	1.7	1.9	5.9	6.2	5.4	5.5	7.9
	Read & Write	42.2	36.1	28.7	15.9	36.2	1.9	1.9	3.9	1.6	6.0	26.0	23.5	18.8	8.7	22.5
	Basic	22.2	21.9	17.2	31.4	31.7	2.0	1.7	1.3	2.8	11.0	13.7	13.0	10.0	18.4	21.8
	Secondary	35.7	30.4	32.5	30.2	41.1	18.6	13.5	12.2	4.2	13.5	28.4	22.7	22.9	17.1	27.9
	Post-Secondary	63.0	57.8	55.6	53.1	51.1	48.5	32.4	25.1	21.9	20.1	56.5	46.1	41.6	34.8	33.2
	University	74.6	65.1	63.5	59.7	49.4	57.7	44.0	41.0	42.5	32.4	68.6	56.3	53.0	51.6	40.5
	Total	34.3	32.4	31.4	34.2	35.1	9.9	9.9	10.5	10.0	10.3	22.1	21.0	20.7	22.2	21.8

Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014