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THE DYNAMICS OF FAMILY FORMATION AND
WOMEN'S WORK: WHAT FACILITATES
AND HINDERS FEMALE EMPLOYMENT IN
THE MIDDLE EAST AND NORTH AFRICA?

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Abstract

This paper investigates the dynamic relationship between family formation and women's employment, a previously unexplored aspect of female labor force participation in MENA region. The paper studies Egypt, Jordan and Tunisia, leveraging unique retrospective data on work, marriage, child bearing and child rearing. The time variation allows us to estimate discrete hazard models for the duration of different labor statuses. This paper examines three sets of outcomes: (1) duration in employment, (2) duration in non-employment, and (3) duration in different labor market states and specific types of work. Findings show that anticipating marriage and child-bearing are strongly associated with women's employment outcomes. Non-employment is an absorbing state, particularly after marriage.

ملخص

تبحث هذه الورقة في العلاقة الديناميكية بين تكوين الأسرة وعمالة النساء وهو جانب لم يسبق استكشافه في مشاركة المرأة في القوى العاملة في منطقة الشرق الأوسط. تتناول هذه الورقة البحثية مصر والأردن وتونس، مستفيدة من بيانات استرجاعية فريدة عن العمل والزواج والحمل وتربية الأطفال. يسمح لنا تباين الوقت بين حالات العمل المختلفة بتقدير نماذج المخاطر المتقطعة لمدة تلك الحالات في سوق العمل. تبحث هذه الورقة في ثلاث مجموعات من النتائج: (1) المدة في التوظيف، (2) المدة في عدم التوظيف، (3) المدة في حالات سوق العمل المختلفة وأنواع محددة من العمل. وتظهر النتائج أن توقع الزواج وإنجاب الاطفال مرتبطان ارتباطا وثيقا بنتائج توظيف المرأة. ويعتبر عدم التوظيف حالة امتصاص، خاصة بعد الزواج.

1. Introduction

Despite rising education for women, with women in most countries now becoming more educated then men, labor force participation for women in the Middle East and North Africa (MENA) has remained persistently low (Assaad, Hendy, Lassasi, & Yassine, 2016). Challenges in reconciling marriage and work have been identified as an important part of the low female labor force participation puzzle (Assaad, Hendy, & Yassine, 2014; Hendy, 2015; Assaad, Ghazouani, & Krafft, 2017a). This paper investigates a previously unexplored aspect of female labor force participation in the region: the dynamic relationship between family formation and women's work.

Previous research in MENA has shown, descriptively, that women tend to leave work, especially private wage work, at marriage (Hendy, 2015; Assaad, Ghazouani, & Krafft, 2017a; Assaad, Krafft, & Selwaness, 2017). Multivariate work has demonstrated that marrying by the median age negatively affects women's chances of currently working, especially in wage work and private wage work (Assaad, Krafft, & Selwaness, 2017). Countries with the heaviest domestic work burden had the largest decline in women's employment with marriage, particularly in the private wage work. This finding is consistent with previous studies that highlighted that some types of jobs attract or repel women based on how reconcilable these jobs are with domestic responsibilities (Hoodfar, 1997; Assaad & Hendy, 2013; Assaad, Hendy, & Yassine, 2014; Hendy, 2015). These domestic responsibilities increase substantially at marriage (Assaad, Krafft, & Selwaness, 2017).

This paper examines how and why family formation affects women's employment decisions, as well as what factors, such as child care responsibilities or commuting distances, facilitate or hinder work. The paper, unlike previous multivariate work on the relationship between women's work and marriage in MENA (Assaad, Krafft, & Selwaness, 2017), takes a dynamic approach. Some work has examined the dynamics of unemployment for women (Assaad & Krafft, 2016), or included marital status as a control in assessing labor market transitions for women (Yassin, 2016). However, no previous work has specifically examined how the dynamics of family formation, namely marriage, child bearing, and child rearing, affect work.

To understand the forces that link family formation and work, this paper examines two main questions, comparing Egypt, Jordan and Tunisia:

1) What are the distinct relationships between marriage, childbearing, and child rearing and women's work?

2) What factors might mediate the relationships between marriage, childbearing, and child rearing and work?

The comparison of these three countries also offers an important opportunity to understand some of the drivers of low female labor force participation in the region. Tunisia's female labor force participation rate of 25% is relatively high for the region (Assaad, Ghazouani, & Krafft, 2017b). Egypt falls slightly below with a female labor force participation rate of 23% (Assaad & Krafft, 2015a), and Jordan lower still at 16% (Mryyan, 2014). An important share of female labor force participation is unemployment, reaching 21% in Tunisia, 24% in Egypt, and 20% in Jordan (Mryyan, 2014; Assaad & Krafft, 2015b; Assaad, Ghazouani, & Krafft, 2017b). Only 19% of women in Tunisia, 18% in Egypt, and 13% in Jordan are employed (Assaad, 2014a; Assaad & Krafft, 2015a; Assaad, Ghazouani, & Krafft, 2017b).

A possible explanation for the variation in female labor force participation within MENA is offered by the "new home economics" framework. This theoretical school, founded by Becker (Becker, 1973), expanded rational choice economics to new realms such as marriage and family formation,

generating a substantial body of literature around work, marriage, and childbearing decisions (Schultz, 1973; Grossbard-Shechtman, 1986; Grossbard-Shechlman, 1995; Assaad & Krafft, 2015c). This framework assumes a utility maximizing household making decisions about marriage and work, and subsequently, once married, decisions about work and child bearing/rearing. There are clear tradeoffs between work and other roles, particularly for women, who are traditionally responsible for children and other domestic responsibilities (Hoodfar, 1997).

The opportunity cost of women's time links work and family formation decisions. Therefore, factors that shape the opportunity cost of women's time, such as child care (Assaad, Krafft, & Selwaness, 2017) or commute times (Assaad & Arntz, 2005), play an important role in work and family formation decisions. Within MENA, domestic work, the "second shift" for employed women, is highest for married women in Jordan (37 hours per week), followed by Egypt (31 hours per week) and then Tunisia (20 hours per week) (Assaad, Krafft, & Selwaness, 2017). The domestic work pattern is the exact opposite of the female labor force participation pattern, suggesting, at least descriptively, that this framework is applicable to the question at hand. This framework guides our empirical focus on the life course events and the forces, such as commute times or children's ages, that may shape women's opportunity costs of time.

2. Data
2.1 Surveys
In order to understand the interlinked life course decisions of women around marriage, children, and work, data are required on the timing of marriage, fertility, and labor market statuses. Detailed individual and family characteristics are also required. Given the data requirements, we are able to examine three MENA countries: Egypt, Jordan and Tunisia. We use the Egypt Labor Market Panel Survey (ELMPS) 2012, Jordan Labor Market Panel Survey (JLMPS) 2010 and Tunisia Labor Market Panel Survey (TLMPS) 2014 data.[3]

All of the datasets include detailed labor market histories for those who ever worked as well as information on the timing of first marriages and child bearing. This allows for the creation of data on individuals' labor market states, marital status, and childbearing/child rearing on an annual basis. The resulting data structure is an annualized retrospective panel, where an observation is a woman-year. The surveys also include data on a number of potential mediators, including geographic mobility, commute times, and other factors that could potentially facilitate or hinder women's engagement in work.

2.2 Sample
All of our analyses are based on a sample of women ages 15-59. We study a variety of different labor market outcomes for these women. All the outcomes start when women are 15 or when they exit school, whichever is later. Our analyses frequently distinguish between five different labor market states: (1) public sector wage work (2) private formal wage work (3) private informal wage work (4) non-wage work (being an employer, self-employed, or an unpaid family worker), and (5) not employed.[4] States (1) to (4) are considered forms of employment. We discuss how these outcomes are modeled as durations, below, in the methods section.

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[3] See Assaad and Krafft (Assaad & Krafft, 2013) for more information on the ELMPS, Assaad (2014b) for more information on the JLMPS, and Assaad, Krafft, and Rolando (2016) for more information on the TLMPS. Data are nationally representative when weighted. All descriptive statistics are weighted. Results are generally similar for regressions when weighted, but some models (for Tunisia, with the smallest sample) do not converge, so we consistently present regression results that are unweighted.
[4] Since we are relying on retrospective data, there are problems in retrospectively reporting unemployment (Assaad, Krafft, & Yassin, 2016) that preclude estimation of unemployment as a separate state.

2.3 Covariates

Our covariates are designed to capture the dynamic (time-varying) features of women's process of family formation. These covariates include a dummy for whether or not a woman has ever married during or prior to the year in question in the annualized panel. We also control specifically for the year of marriage. Together, these controls capture the impact of getting married on top of being married. Since searching for a spouse and engagement are a lengthy process in the region (Salem, 2014, 2015), it is possible for women's work dynamics to be affected by the search and engagement process. We therefore include a "year before wedding" variable to indicate whether marriage occurs in the next year, and a "two years before wedding" variable to indicate whether marriage occurs in two years. These last two variables are only used in specifications where the most recent calendar years are excluded to be able to fully capture the leads. Another critically important covariate is women's time varying labor market status, and how this interacts with marriage.

An unexplored aspect of the dynamics of family formation and women's work is the role of childbearing, as distinct from marriage. Thus, we include an indicator for whether a woman gives birth in a particular year, along with a lead, that is a "year before giving birth" variable to capture the effect of leaving work when pregnant or planning for a child. In order to distinguish childbearing and child rearing, we control for the number of kids in each of four age groups: 0-2, 3-5, 6-11, and 12-18.[5] The first two age groups represent kids that are not yet in school, but who may have varying child care needs and options, while the last two groups designate children who are primary-school age and then approximately lower or upper secondary aged, respectively. We also include two potential proxies for the supply of familial support or child care. First, we control for whether a woman moved from her place of birth or not, as distance from family supports may affect her ability to reconcile work and her own family formation. Second, we control for the number of female siblings living, as sisters may also represent potential supports. Since decisions may depend on women's own (time-varying) age as well, we control for age and its square.

Since women's opportunity cost of time is a key mediator for the work-marriage relationship, we incorporate women's (potential) commute times as a key control. Although we do not have time varying data on women's own commute times (and such data would only be available for working women), we do have commute time for those currently working at the time of the survey. These times are first averaged at the governorate and district levels, for Egypt and Jordan, and at the governorate level for Tunisia. Then, these averages are matched with the individual's yearly time-varying location of residence for Egypt and Tunisia.[6] For Jordan, data on geographical mobility had no dates. Thus, the average commute times are matched to the current place of residence.

We also control for static (time invariant) characteristics of women, including the woman's education level (categorically as illiterate or read and write (reference), below secondary, secondary, university and above), father's and mother's education (categorically as illiterate (reference), read and write, basic (including primary and preparatory), and secondary and above), father's employment status (categorically as public wage (reference), private wage, non-wage, and no job/don't know), father's occupation (categorically as white collar (reference), blue collar, or skilled agriculture). Country-specific birth regions are included as controls as well.

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[5] We tested, alternatively, using presence of children instead of number but the results were not substantively different. We also tested combining some of the age groups, but the results indicated that there were substantive differences that merited the disaggregation.

[6] The yearly time-varying location of residence in Egypt and Tunisia can be constructed from detailed questions on geographical mobility and the calendar time of changes in the place of residence.

3. Methods

The first set of analyses focus on the duration (spells) of employment. For this set of analyses, we use a sub-sample of women who have ever worked at some point prior to the survey date and analyze the duration of their work, including how work and its duration are affected by marriage and child bearing. Women may have multiple spells of work. For instance, three years of employment followed by seven years of non-employment and then three years working again would be two three-year spells of work. A spell of work ends when a woman spends at least one year not working. These spells' duration may be right censored if a woman is still working at the time of the survey. These initial analyses only distinguish between market work and not working.

The second set of analyses are the complement to the first; they focus on durations of non-employment. Women may have multiple spells of non-employment. A spell of non-employment ends when someone enters an employment state for at least a year. Women may be right censored on their non-employment duration if they are currently not working.

For both the employment and non-employment duration analyses, we have a duration (spell) that can be modeled as a binary outcome. For employment spells, the binary outcome is exit to non-employment. For non-employment spells, the binary outcome is exit to employment. We therefore estimate discrete time hazard models for, first, duration of employment and second, duration of non-employment.

In the case of our binary state, working or not, consider t to be time working and T to be exiting work. We can then think of a discrete time hazard, h_{it}, as characterizing the probability of exiting work at a particular point in time (T_t) since school exit or age 15 (Jenkins, 1995):

$$h_{it} = Pr(T_t | T_t \geq t) \tag{1}$$

The same concept can be applied to the duration of non-employment, where t is time (years of non-employment) and T is the event of starting to work.

For each of these outcomes, the hazard is first characterized descriptively, in terms of a Kaplan-Meier survival function for duration of employment (or non-employment) for women. We then estimate multivariate models with a discrete time proportional hazards model, the logit model. With covariates X_{it}, this model is (Jenkins, 1995):

$$h_{it} = 1/(1 + \exp(\theta(t) + \beta X_{it})) \tag{2}$$

Or

$$\ln\left(\frac{h_{it}}{1 - h_{it}}\right) = \theta(t) + \beta X_{it} \tag{3}$$

The $\theta(t)$ characterizes the baseline hazard. Essentially, our models recognize that the chances of leaving or entering different employment states depend on not only individuals' characteristics, but also the duration of their state to date. After exponentiation, results can be interpreted as odds ratios, multiplying the odds of the hazard. Odds ratios greater than one mean that the covariate increases the probability of the event, whereas odds less than one mean the covariate decreases the probability of the event.

In subsequent analyses, we allow for multiple possible exits from a state. For instance, for women who are not employed, they may exit non-employment to a variety of different employment states.

Denote the possible states as *j* (e.g., non-wage work, public sector wage work, etc.). Then there are *j* hazard functions (Allison, 1982):

$$h_{itj} = \Pr(T_{tj}|T_t \geq t) \tag{4}$$

These hazard functions characterize the probability of a certain event (for example, exiting non-employment to non-wage work) at time *t* if exit for any cause has not happened prior to time *t*. In a multivariate context, it is possible to estimate (Allison, 1982):

$$h_{itj} = \{\exp[\theta_j(t) + \beta_j X_{it}]\} / \{1 + \sum_l exp[\theta_l(t) + \beta_l X_{it}]\} \tag{5}$$

This can be estimated as a multinomial logit model on the annualized data. The reference outcome of the multinomial logit is no event occurring, i.e. the spell (for instance, public sector work) continuing. Denoting the probability of no event as *j*=0, we can then estimate the log relative risk ratio from the multinomial logit as:

$$\ln\left(\frac{h_{itj}}{h_{it0}}\right) = \theta_j(t) + \beta_j X_{it} \tag{6}$$

By exponentiating this equation, the relative risk ratio here is the probability of event *j* relative to no event, the reference, similar to the odds ratio earlier. These models are estimated for a variety of different current states, so, for instance, we estimate the probability of different exits from private informal wage work, then non-wage work, and so on.

Models are all estimated separately for each country, with comparable but country-specific characteristics. The estimation of the underlying probability of exiting or entering work or different states also illustrates when and why women exit work. In most specifications, we include interactions between the baseline hazard and marital states to assess the relationship between state duration and the impact of marriage. Ultimately, these models can answer questions such as whether or not women exit work in the year preceding marriage, in anticipation of their changing roles, or the year they get married, or while expecting their first child.

It is important to note that, while we control for a host of characteristics, we are identifying only correlations or associations, not causation. Previous studies tackling the relationship between marriage timing and women's employment have focused on how labour market outcomes affect marriage timing (Assaad, Binzel, & Gadallah, 2010; Krafft & Assaad, 2017). Women's employment, in past studies, was demonstrated to be endogenous to the timing of marriage (Krafft & Assaad, 2017). Substantial caution is required in interpreting the relationships we observe.

4. Results
4.1 Descriptive dynamics of employment and marriage
We first examine the pattern of the duration in employment and how exits from employment to non-employment evolve over time. Figure 1 shows the Kaplan-Meier survival functions for the proportion of women still employed at each year in the employment spell, distinguishing by whether the spell starts before marrying or at or after marriage, for the three countries, Egypt, Jordan and Tunisia. It is important to note that although a spell may start before marriage, it may include getting married.[7] For the spells starting before marriage, the proportion of women who

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[7] The Kaplan-Meier estimator does not allow for time-varying covariates. We therefore code the distinction between spells starting before marriage and at or after marriage based on the status in the first year of the spell. The multivariate models, below, do allow for time-varying covariates.

persist in work declines steadily over time. In all three countries, around 58-63% remain after 10 years in employment. The proportion of women persisting in employment reaches as low as 35% after 20 years in Jordan, followed by 46% in Tunisia, and 57% in Egypt. The median employment spell in Jordan and Tunisia is around 15 years for those who started work prior to marrying.

For women who start working at or after marriage, employment spells are overall longer than those that start before marriage. This result suggests that, if married women start work, they have higher chances of continuing in employment, particularly in Egypt and Tunisia. In Jordan, spells after marriage exhibit almost the same pattern as spells before marriage. In Egypt and Tunisia, around 87% of women who started working at or after marriage still work after 10 years of employment, compared to around only 63% in Jordan. This result suggests that at least in Egypt and Tunisia, women who start work after marriage are highly persistent in work. However, because a lot of unmarried women quit at marriage, only a select group of women starts to work after marriage.

Figure 1. Survival (proportion still working) in employment spells by whether spell starts before or at/after marriage and country
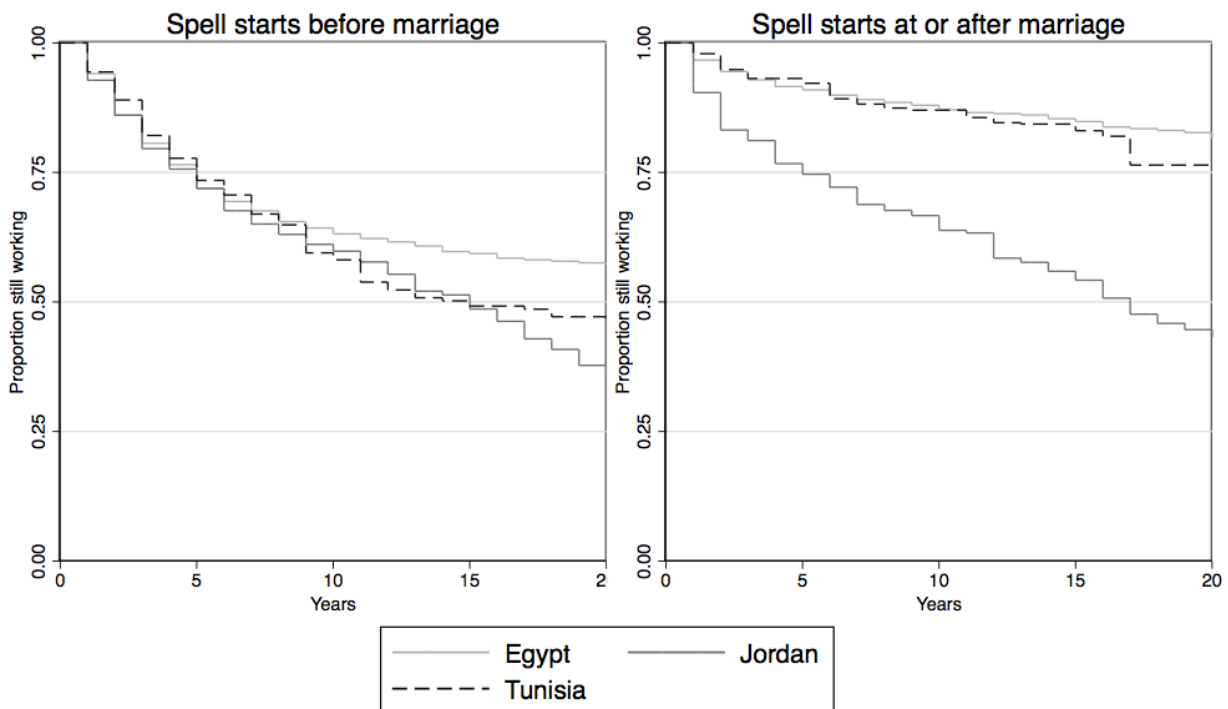
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

We now turn to the second aspect of the dynamics of women's work, which is the duration in non-employment spells. Figure 2 shows the Kaplan-Meier failure functions for the proportion of women who start working and exit non-employment at each year in the non-employment spell. In all three countries, non-employment spells that started before marriage are more likely to end (women are more likely to start work) than spells at or after marriage. Together, the figures show that women starting their state before marriage are more likely to change status than those starting at or after marriage, across both employment and non-employment. Women have more dynamic labor market patterns before than after marriage.

Figure 2. Failure (proportion started working) in non-employment spells by whether spell starts before or at/after marriage and country

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

Since women prefer certain types of employment, the pattern of their survival in different employment states differs greatly. Figure 3 shows the Kaplan-Meier survival functions for the proportion of women who are still in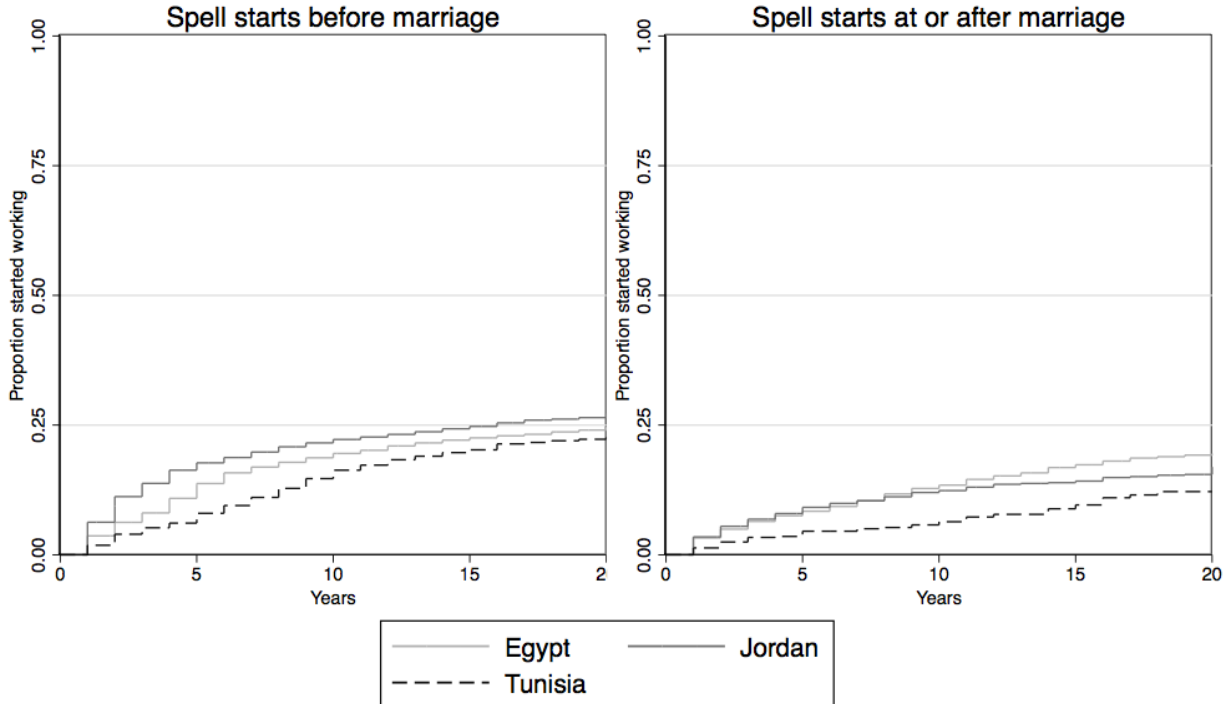 *same* labor market status (public, private formal wage, private informal wage, non-wage, or non-employed). As expected, in all three countries, the non-employed state is the most persistent. Non-employment exit rates are the lowest over time compared to all other (employment) statuses. Women who become non-employed at or after marrying are less likely to exit non-employment compared to those whose non-employment starts before marrying. This suggests that non-employment is an absorbing state, with higher proportions of women staying in non-employment among those who started it at or after marriage than among those who started it before marriage. The status that exhibits the second lowest exit rates, after non-employment, is the public sector with quite long employment spells. The proportion of women who stay in the public sector after 5 years ranges from around 84%-85% in Egypt and Jordan to 90% in Tunisia for those who started prior to marriage and 88% in Jordan to 92%-95% in Egypt and Tunisia for those starting after marriage.

Women who start their employment spells in private formal wage, private informal wage, or non-wage work experience interesting dynamics over the spells and across countries. Particularly in Egypt and Tunisia, the start timing of the spell (pre or post marriage) relates to the pattern of survival. For instance, relative to women who start at or after marriage, those who start private formal or informal wage work prior to marrying have much shorter spells. For women who start such work prior to marriage, the median is 6-7 years for private formal and 4 years for private informal in both Egypt and Jordan, and 9 years for private formal and 6 years for private informal in Tunisia. As for the selected group of women who start working in private wage jobs at or after marriage, they are relatively less likely to leave their jobs. In Egypt, there is a median private

formal wage spell of around 13 years and a median private informal wage spell of 16 years. In Tunisia, private formal and informal wage spells are even more persistent for married women than in Egypt, making the gap between those who start before marriage and those who start at or after marriage larger.

For the non-wage state, there are longer employment spells than for private formal or informal work for both start timings (pre or post marriage). Women who start non-wage work at or after marriage are less likely to leave compared to those who start before marriage in all three countries. Non-wage work may be a more long-term reconcilable option with marriage. Overall, and similarly to Figure 1 and Figure 2, women starting their states after marriage experience lower movement/exit rates from their initial states. These findings have to be cautiously interpreted due to important selection effects. Women who start at or after marriage represent a distinct group with different characteristics. However, for both groups of women, we see important differences in which states they persist in, particularly non-employment and the public sector, along with non-wage work for married women.

Figure 3. Survival (proportion still in same status) in labor market status spell by status, whether spell starts before or at or after marriage, and country

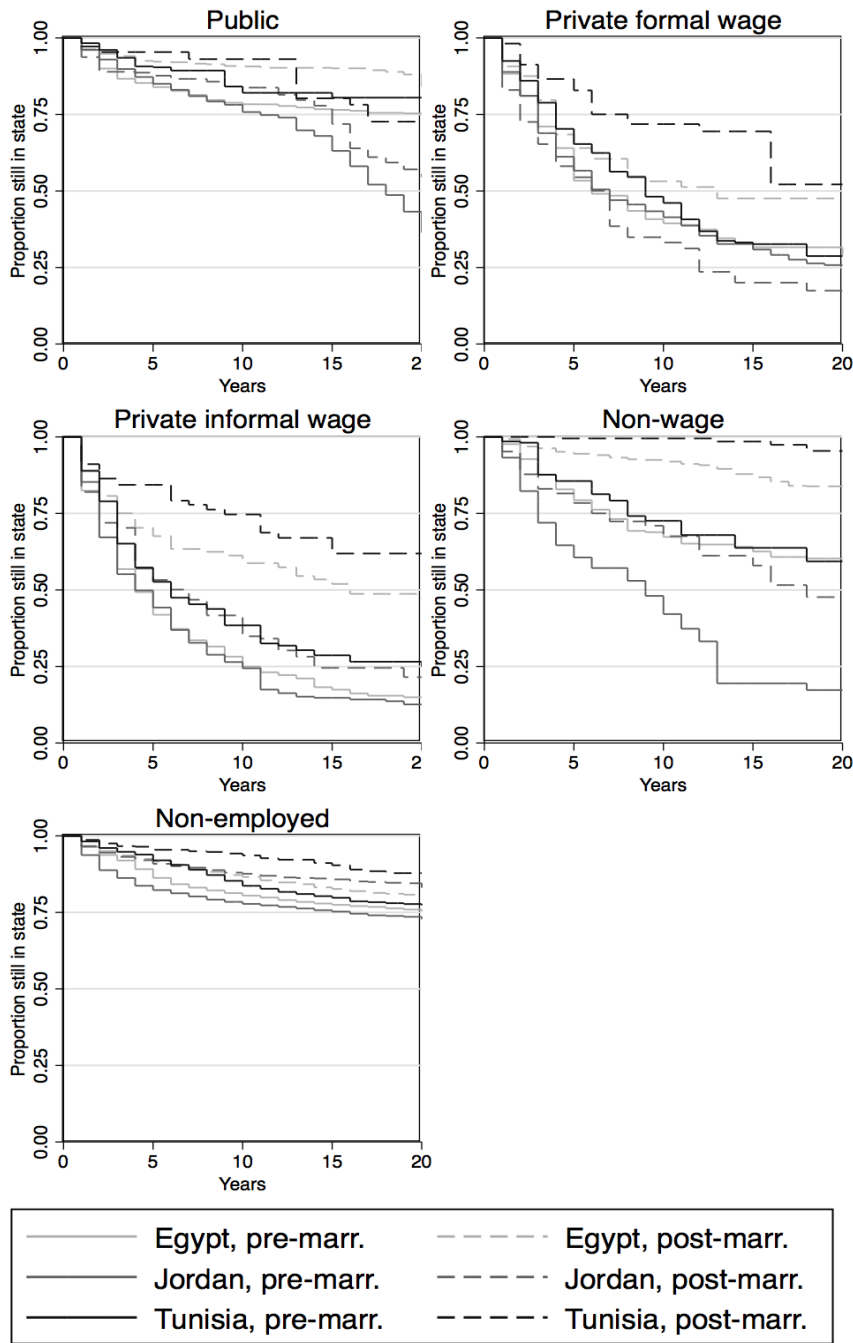Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

An important question that complements analyses of exits relates to the destination states of women who exit their current labor market states. Figure 4 shows the annual transition rates between labor market statuses by status. The first two panels of the graph are presented by marriage status (ever married versus unmarried) in order to see the overall effect of marriage on the transition between labor market statuses. The second pair of panels are presented by whether the labor market status starts at the year before marriage or at the wedding year, in order to specifically

capture the dynamics of transitions in anticipation of and at marriage. These figures show the transition rates to only *different* labor market states. The percentage remaining in a state (not shown) is 100 percent less the percentages shown transitioning.

In all three countries, the majority of unmarried women who leave private informal wage work become primarily non-employed (around 13% annually for Egypt, 10% in Jordan, and 8% in Tunisia). For married women, this pattern only persists for Jordan (around 10% annual transition rate to non-employment), whereas transitions rates in Egypt and Tunisia are quite low (around 3-5%). This pattern is mostly because separations happen at marriage or the year before marriage, as discussed below. A similar pattern holds for transitions from private formal wage work, although transition rates are generally lower.

Transition rates presented by whether the labor market status starts one year before marriage or at marriage reveal important patterns. The year of and the year before marriage, exit rates are much higher than while married or unmarried, but to varying degrees across statuses. Exit rates the year before the wedding from private informal wage work are the highest compared to all other labor market statuses, followed by transition rates from private formal wage work. Egypt experiences the highest transition rates out of these two employment statuses (60% from private informal wage and 47% from private formal wage), followed by Jordan (56% from informal and 39% from formal), then Tunisia (38% from informal and 26% from formal). The countries' ordering is reversed when we look at transition rates at the year of marriage, with Tunisia having the highest exit rates from both private informal (48%) and formal wage work (22%) followed by Jordan (18% informal and 16% formal), then Egypt (15% informal and 8% formal). This suggests than while Tunisian women are less likely to leave the private sector ahead of marriage, they end up leaving it at marriage. Overall and as expected, the main destination out of both the private informal and formal wage work, whether the year before or year of marriage, is non-employment. In the next section, more in-depth multivariate analysis is conducted for each of these outcomes, duration in employment and in non-employment, exit rates of different labor market states, and transitions between statuses.

Figure 4. Annual rates of transition between labor market statuses by status, marriage status, and whether spell starts one year before or at marriage and country

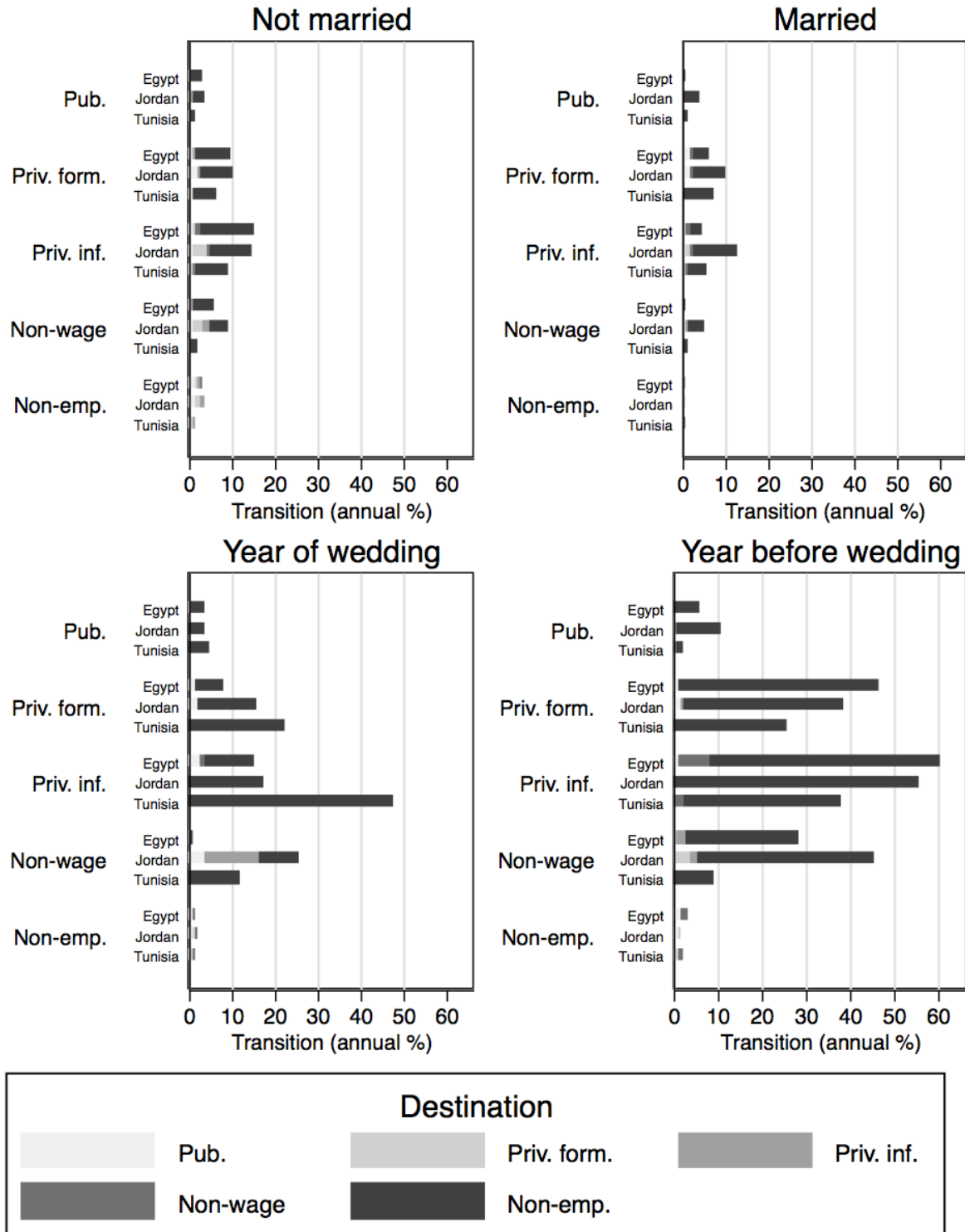Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

4.2 Multivariate models of employment spells

Table 1 presents the discrete time logit models for employment spells. The results are presented in terms of odds ratios, i.e. relative changes in the hazard of exit from employment to non-employment. Odds ratios greater than one mean that a characteristic is associated with a higher probability of exit from employment. Odds ratios less than one mean that a characteristic is associated with a lower probability of exit from employment. Results are presented first with marriage and controls (Spec. 1) and then with child-bearing, child-rearing, and factors that affect access to work to examine the mediators of marriage effects (Spec. 2).

The baseline hazard illustrates how the chance of exit varies with duration. For instance, in Jordan it appears that the hazard decreases with time (and is significantly lower in years 5 and 7 than the omitted year 1). It is important to note that the baseline hazards are interacted with marriage. These interactions test whether and how the probability of exiting work is different for married women depending on the duration of work. In both Egypt and Jordan, and in line with Figure 1, the hazard appears to decrease (only sometimes significantly) more over time for married women than single women. This result is likely to be driven by selection: the married women who persist in employment are a more select group. The opposite is true in Tunisia, where the hazard appears to rise with time, sometimes significantly, for married women relative to unmarried women.

Keeping in mind the baseline hazard and marriage interactions, there are interesting differences in the main effect of being married. It is not significant in Egypt (but does insignificantly increase the hazard of exit). It is high and significant, with an odds ratio around 2.3 in Spec.1, more than doubling the odds, in Jordan, indicating that married women are more likely to leave work. In Tunisia the hazard decreases for married women, significantly so in specification 2.

Although there are mixed patterns with regards to *being* married, and a likely selection issue, the patterns around *getting* married are much more consistent. There are higher odds of exiting work in the year, year before, and two years before the wedding. This result is significant in almost every specification. An interesting contrast arises between Tunisia, where the odds ratio is highest for the year of the wedding, and Jordan and Egypt, where the odds ratio is highest the year before the wedding, similar to what was found in Figure 4. These differences in exit timing suggest that while women in all three countries exit both in anticipation of marriage and when they marry, Tunisian women are (relatively) more likely to work up to their marriages, whereas Egyptian and Jordanian women exit further in advance. In terms of child-bearing, there is also a strong anticipatory effect. Women exit work more (significantly so) the year before birth in both Egypt and Jordan. Pregnancy or anticipation of children, not childbirth, appears to be more difficult to reconcile with work. Child-rearing appears to play a smaller role, with no systematic patterns by the number of children of different ages, moving from the birth region, or the number of female siblings.

There are interesting—and contrasting—relationships between commuting and exit from work. When women are living in places with longer commutes, they are significantly more likely to exit work in Egypt, with no significant difference for married women. In Tunisia, women who face longer commutes are not significantly more likely to exit (average commute times are also shorter in Tunisia), but there is a significant interaction with marriage. Thus, travel to work is a barrier to all women in Egypt and married women in Tunisia. The insignificance of the result in Jordan may be due to the fact that commuting time is not time-varying.

The results of the controls are as expected. Highly educated women, who have a greater opportunity cost of time, are less likely to exit work. These women are also more likely to have jobs or have the support system that allows them to reconcile their jobs with marriage or child-

bearing/rearing. Exit is more common for women with middling education in Jordan and Tunisia. In Jordan and Tunisia, there are significant results by parents' education; the offspring of more educated mothers are more likely to exit work, all else equal. Father's employment status is not significant, but in Egypt and Jordan women with fathers in blue collar occupations are significantly more likely to exit work. This result may be because family networks play a key role in employment, but few women work in such occupations.

There are significant regional differences. In Egypt, compared to Greater Cairo, the capital, other regions tend to have lower odds of exit, often significantly so. Women from the South in Jordan are significantly less likely to exit than women in the Middle region. Compared to the North, women in the Center East of Tunisia, and in Spec. 1 the Center West, are significantly more likely to exit. The age profile suggests that the probability of exiting, controlling for other factors, first falls and then rises with age. This pattern likely represents women increasingly transitioning into the labor market at adulthood, then eventually exiting as they approach retirement.

Table 1. Discrete time logit models of employment spells (outcome is exit to non- employment) by country

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Married and wedding						
Married	1.315	1.065	2.261***	2.892**	0.567	0.113*
	(0.313)	(0.366)	(0.543)	(1.064)	(0.312)	(0.115)
Year of wedding	2.308***	2.022***	1.628*	1.318	10.046***	9.398***
	(0.430)	(0.401)	(0.309)	(0.294)	(2.886)	(3.174)
Year before wedding	13.846***	13.502***	10.712***	10.553***	8.589***	8.812***
	(1.546)	(1.539)	(1.672)	(1.665)	(1.909)	(1.987)
Two years before wedding	4.512***	4.476***	2.310***	2.242***	1.782	1.847
	(0.560)	(0.558)	(0.464)	(0.453)	(0.569)	(0.591)
Child-bearing						
Birth in year		1.017		0.831		1.484
		(0.224)		(0.143)		(0.539)
Year before birth		1.479**		1.508**		1.164
		(0.190)		(0.203)		(0.305)
Child-rearing						
No. kids ages 0-2		0.929		1.084		1.027
		(0.131)		(0.112)		(0.257)
No. kids ages 3-5		1.003		0.855		1.063
		(0.128)		(0.077)		(0.189)
No. kids ages 6-11		0.970		1.021		0.879
		(0.041)		(0.027)		(0.079)
No. kids ages 12-18		1.095*		1.005		0.866
		(0.046)		(0.028)		(0.078)
Moved from birth region		1.206		1.093		1.429
		(0.135)		(0.102)		(0.279)
Number of female siblings		1.018		0.963		1.023
		(0.023)		(0.019)		(0.044)
Local commuting						
Local commute (in min.)		1.018**		0.998		0.944
		(0.006)		(0.005)		(0.034)
Married # Local commute (in min.)		1.005		0.992		1.082
		(0.007)		(0.006)		(0.046)
Education (none omit.)						
Below Secondary	1.171	1.123	2.244***	2.330***	1.800***	1.748***
	(0.139)	(0.136)	(0.342)	(0.368)	(0.300)	(0.295)
Secondary	0.838	0.858	1.104	1.094	1.145	0.979
	(0.093)	(0.097)	(0.168)	(0.173)	(0.280)	(0.251)
University and Above	0.532***	0.543***	0.618**	0.595**	0.699	0.611
	(0.081)	(0.084)	(0.107)	(0.107)	(0.287)	(0.250)
Mother's education (none omit.)						

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Reads & Writes	0.808	0.814	1.267**	1.232*	0.811	0.838
	(0.104)	(0.104)	(0.116)	(0.116)	(0.353)	(0.369)
Basic	1.055	1.053	1.680	1.673	1.059	1.027
	(0.155)	(0.156)	(0.639)	(0.621)	(0.205)	(0.202)
Secondary+	1.261	1.253	1.394*	1.318	3.106*	3.296*
	(0.189)	(0.186)	(0.228)	(0.224)	(1.705)	(1.830)
Father's education (none omit.)						
Reads & Writes	1.137	1.111	1.044	1.050	0.900	0.934
	(0.109)	(0.108)	(0.115)	(0.116)	(0.348)	(0.376)
Basic	1.212	1.190	0.629	0.640	1.162	1.149
	(0.154)	(0.149)	(0.250)	(0.253)	(0.179)	(0.177)
Secondary+	1.150	1.184	1.316	1.330	1.134	1.171
	(0.170)	(0.174)	(0.195)	(0.199)	(0.342)	(0.371)
Father's emp. stat. (public omit.)						
Private wage	1.143	1.178	0.945	0.903	1.042	1.039
	(0.116)	(0.120)	(0.110)	(0.108)	(0.210)	(0.218)
Non-wage	0.895	0.929	1.142	1.117	0.779	0.805
	(0.099)	(0.104)	(0.114)	(0.113)	(0.168)	(0.175)
No job or DK	1.427	1.511	1.586	1.510	0.802	0.847
	(0.486)	(0.514)	(0.381)	(0.365)	(0.258)	(0.279)
Father's Occupation (White collar omit.)						
Blue Collar	1.365**	1.388**	1.283*	1.317*	1.302	1.355
	(0.140)	(0.143)	(0.136)	(0.143)	(0.262)	(0.283)
Skilled agricultural	0.852	0.868	0.764	0.786	1.375	1.377
	(0.103)	(0.105)	(0.108)	(0.113)	(0.312)	(0.317)
Egypt region of birth (Greater Cairo omit.)						
Alex and Canal cities	0.827	0.881				
	(0.124)	(0.129)				
Urban Lower Egypt	0.649**	0.701*				
	(0.091)	(0.099)				
Rural Lower Egypt	0.518***	0.587***				
	(0.076)	(0.086)				
Urban Upper Egypt	0.821	0.834				
	(0.096)	(0.094)				
Rural Upper Egypt	0.533***	0.549***				
	(0.078)	(0.081)				
Jordan region of birth (Middle omit.)						
North			0.968	1.083		
			(0.098)	(0.116)		
South			0.569***	0.620**		
			(0.085)	(0.101)		
Abroad			0.967	0.935		

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
			(0.102)	(0.101)		
Tunisia region of birth (North omit.)						
North West					0.666	0.658
					(0.188)	(0.202)
Center East					1.976***	2.022***
					(0.351)	(0.366)
Center West					1.628*	1.475
					(0.338)	(0.324)
South East					0.812	0.751
					(0.357)	(0.357)
South West					1.209	1.151
					(0.455)	(0.458)
Time varying age						
Age in year	0.901***	0.899**	0.906*	0.911*	0.947	0.967
	(0.028)	(0.030)	(0.037)	(0.040)	(0.053)	(0.053)
Age in year # Age in year	1.002***	1.002**	1.002**	1.002**	1.001	1.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Baseline (years)						
2	1.388*	1.393*	0.857	0.849	1.613	1.589
	(0.202)	(0.204)	(0.159)	(0.159)	(0.437)	(0.433)
3	1.182	1.200	1.054	1.050	0.908	0.900
	(0.175)	(0.177)	(0.197)	(0.196)	(0.265)	(0.261)
4	1.067	1.068	0.698	0.693	0.945	0.879
	(0.179)	(0.181)	(0.166)	(0.166)	(0.367)	(0.343)
5	1.042	1.040	0.586*	0.567*	1.225	1.162
	(0.207)	(0.205)	(0.157)	(0.153)	(0.423)	(0.399)
6	0.910	0.923	0.872	0.826	1.564	1.433
	(0.220)	(0.227)	(0.249)	(0.241)	(0.535)	(0.487)
7	0.829	0.846	0.467*	0.472*	0.711	0.652
	(0.205)	(0.209)	(0.165)	(0.167)	(0.299)	(0.275)
8	0.887	0.908	0.540	0.520	0.416	0.377
	(0.251)	(0.255)	(0.223)	(0.214)	(0.279)	(0.253)
9	1.323	1.363	0.552	0.527	1.100	0.982
	(0.425)	(0.440)	(0.236)	(0.231)	(0.672)	(0.597)
10+	0.921	0.966	0.647	0.622	1.030	0.919
	(0.217)	(0.229)	(0.167)	(0.167)	(0.384)	(0.338)
Baseline and married int.						
2 # Married	0.735	0.731	1.099	1.059	1.212	1.179
	(0.186)	(0.186)	(0.321)	(0.312)	(0.724)	(0.704)
3 # Married	0.636	0.625	0.372**	0.369**	3.171*	3.069*
	(0.186)	(0.185)	(0.119)	(0.118)	(1.826)	(1.756)
4 # Married	0.554	0.549*	0.750	0.723	0.671	0.711

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
	(0.169)	(0.168)	(0.254)	(0.247)	(0.513)	(0.545)
5 # Married	0.551	0.558	0.502	0.509	1.217	1.211
	(0.181)	(0.182)	(0.215)	(0.220)	(0.789)	(0.788)
6 # Married	0.638	0.643	0.548	0.566	1.562	1.714
	(0.224)	(0.228)	(0.202)	(0.212)	(1.010)	(1.102)
7 # Married	0.454	0.454	0.797	0.795	3.497	3.896*
	(0.183)	(0.183)	(0.353)	(0.352)	(2.332)	(2.553)
8 # Married	0.320*	0.321*	0.319	0.339	4.375	4.866
	(0.145)	(0.145)	(0.188)	(0.200)	(3.640)	(4.007)
9 # Married	0.201**	0.205**	0.613	0.659	1.969	2.273
	(0.100)	(0.103)	(0.312)	(0.342)	(1.616)	(1.844)
10+ # Married	0.322***	0.319***	0.852	0.888	1.296	1.614
	(0.097)	(0.097)	(0.245)	(0.263)	(0.723)	(0.882)
N	40522	40513	13007	12962	6832	6832

Notes: *p<0.05; **p<0.01; ***p<0.001
Cells are odds ratios
Standard errors in parentheses, clustered by PSU
Baseline hazard for durations of greater than 10 years coded together with 10 years to ensure adequate cell size.

4.3 Multivariate models of non-employment spells

We turn now to spells of non-employment in Table 2. Here the hazard of exit from non-employment decreases significantly with time in Egypt and Jordan, suggesting that non-employment is an absorbing state—with effects exacerbated at marriage. However, in Tunisia, there are no significant differences by duration nor by interactions with marriage, suggesting greater fluidity in leaving non-employment. As we saw in Figure 2, *being* married is always associated with lower odds of exiting non-employment (starting work), significantly so in Jordan and Egypt Spec. 1. Interestingly, there are some significant and positive effects on exiting non-employment the year of marriage, particularly in Jordan and Tunisia. The picture in anticipation of marriage is more mixed with higher odds of non-employment in Egypt and Tunisia but lower ones in Jordan. This suggests that *getting* married may bring new employment opportunities the year of marriage, as well as incentives to exit work.

Women are less likely to exit non-employment the year before a birth, significantly so in Egypt and Jordan. Child-rearing also appears important in exiting non-employment. In Egypt and Jordan, there are significant reductions in the odds of exiting non-employment and starting work for each additional child 0-2. We also observe significantly lower odds for number of children ages 3-5 in Jordan as well. These results highlight that limited provision of child care and other child support systems may prevent women from working. The same effects do not appear for older children; in fact, a higher probability of exiting non-employment is observed with an additional child 6-11 in Egypt. This suggests that children reaching school age, whether due to the implied child care or other factors, enables women to potentially return to work or start work. Potential child care supports from siblings have no significant effects. Moving from the birth region, however, has a significant effect, raising the hazard of exiting non-employment in Tunisia. This may mean that women in Tunisia can move to better employment opportunities. Commute time has an unexpected effect in Jordan; it reduces the hazard of exiting non-employment, but with a significant interaction

for married women in the opposite direction. Commute times appear to matter for unmarried but not married women in Jordan.

The effects of other characteristics are as expected; more educated women are significantly more likely to exit non-employment. There are a few significant associations for more educated mothers, none for fathers. In Egypt, compared to those with public wage fathers, those with private wage fathers are significantly less likely to exit non-employment. While there are no significant differences by region in Egypt, in Jordan, compared to the Middle region, women are significantly less likely to exit non-employment if from the North or born abroad. In Tunisia, compared to the North, women from the Center East are significantly more likely to exit non-employment, but those from the South East less so. The shape of the age profile is an increase in the odds of exiting non-employment with age, which then diminishes.

Table 2. Discrete time logit models of non-employment spells (outcome is exit to employment) by country

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Married and wedding						
Married	0.556**	0.700	0.188***	0.158***	0.527	0.375
	(0.099)	(0.165)	(0.038)	(0.044)	(0.206)	(0.236)
Year of wedding	1.217	1.236	1.708***	1.234	1.786*	1.691
	(0.132)	(0.147)	(0.272)	(0.214)	(0.481)	(0.498)
Year before wedding	1.177*	1.204*	0.391***	0.392***	1.645*	1.651*
	(0.098)	(0.100)	(0.062)	(0.063)	(0.378)	(0.378)
Two years before wedding	0.767**	0.766**	0.850	0.829	1.092	1.089
	(0.066)	(0.066)	(0.107)	(0.105)	(0.221)	(0.221)
Child-bearing						
Birth in year		1.009		0.917		0.902
		(0.107)		(0.131)		(0.233)
Year before birth		0.693***		0.792*		0.706
		(0.058)		(0.092)		(0.155)
Child-rearing						
No. kids ages 0-2		0.832*		0.723**		1.019
		(0.066)		(0.072)		(0.161)
No. kids ages 3-5		1.025		0.833*		0.747
		(0.064)		(0.072)		(0.113)
No. kids ages 6-11		1.063*		0.970		0.955
		(0.027)		(0.029)		(0.048)
No. kids ages 12-18		0.970		0.991		0.965
		(0.034)		(0.029)		(0.052)
Moved from birth region		1.111		1.075		1.480**
		(0.072)		(0.083)		(0.221)
Number of female siblings		1.023		1.022		0.983
		(0.014)		(0.016)		(0.022)
Local commuting						
Local commute (in min.)		1.006		0.989***		0.978
		(0.003)		(0.003)		(0.017)
Married # Local commute (in min.)		0.997		1.014**		1.023
		(0.006)		(0.004)		(0.029)
Education (none omit.)						
Below Secondary	0.894	0.895	1.523***	1.461**	3.148***	3.007***
	(0.086)	(0.086)	(0.189)	(0.180)	(0.368)	(0.347)
Secondary	2.291***	2.365***	3.115***	2.929***	3.967***	3.806***
	(0.154)	(0.164)	(0.408)	(0.381)	(0.485)	(0.465)
University and Above	4.284***	4.462***	7.494***	7.026***	4.503***	4.262***
	(0.355)	(0.377)	(1.244)	(1.181)	(0.666)	(0.628)
Mother's education (none omit.)						

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
Reads & Writes	1.068	1.064	0.984	0.975	1.712*	1.692*
	(0.078)	(0.078)	(0.074)	(0.074)	(0.360)	(0.362)
Basic	1.163	1.158	1.178	1.182	1.238	1.221
	(0.097)	(0.096)	(0.215)	(0.217)	(0.160)	(0.160)
Secondary+	1.162	1.169	1.280*	1.265	0.649	0.634
	(0.095)	(0.095)	(0.160)	(0.170)	(0.189)	(0.190)
Father's education (none omit.)						
Reads & Writes	1.029	1.023	0.977	0.969	1.294	1.291
	(0.066)	(0.066)	(0.078)	(0.078)	(0.241)	(0.235)
Basic	1.093	1.087	0.901	0.920	1.097	1.094
	(0.078)	(0.078)	(0.192)	(0.192)	(0.133)	(0.131)
Secondary+	0.978	0.979	0.920	0.884	1.009	1.004
	(0.085)	(0.085)	(0.099)	(0.096)	(0.210)	(0.207)
Father's emp. stat. (public omit.)						
Private wage	0.853*	0.862*	0.863	0.856	1.031	1.049
	(0.055)	(0.055)	(0.079)	(0.078)	(0.139)	(0.143)
Non-wage	0.924	0.931	0.967	0.955	0.936	0.964
	(0.055)	(0.055)	(0.083)	(0.083)	(0.150)	(0.157)
No job or DK	0.811	0.810	1.153	1.120	0.592*	0.603*
	(0.128)	(0.128)	(0.218)	(0.214)	(0.124)	(0.128)
Father's Occupation (White collar omit.)						
Blue Collar	1.039	1.046	1.066	1.057	1.068	1.072
	(0.060)	(0.060)	(0.085)	(0.083)	(0.128)	(0.129)
Skilled agricultural	0.976	0.978	0.802	0.814	1.009	1.011
	(0.074)	(0.074)	(0.095)	(0.097)	(0.156)	(0.156)
Egypt region of birth (Greater Cairo omit.)						
Alex and Canal cities	1.040	1.074				
	(0.095)	(0.100)				
Urban Lower Egypt	0.991	1.028				
	(0.082)	(0.085)				
Rural Lower Egypt	0.972	1.017				
	(0.086)	(0.094)				
Urban Upper Egypt	1.098	1.117				
	(0.085)	(0.087)				
Rural Upper Egypt	0.910	0.939				
	(0.091)	(0.093)				
Jordan region of birth (Middle omit.)						
North			0.808*	0.875		
			(0.069)	(0.078)		
South			0.908	0.966		
			(0.091)	(0.102)		
Abroad			0.768**	0.743**		

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
			(0.069)	(0.070)		
Tunisia region of birth (North omit.)						
North West					1.187	1.140
					(0.208)	(0.200)
Center East					2.054***	2.050***
					(0.281)	(0.284)
Center West					0.857	0.844
					(0.141)	(0.135)
South East					0.493***	0.488***
					(0.095)	(0.095)
South West					1.300	1.217
					(0.348)	(0.358)
Time varying age						
Age in year	1.364***	1.350***	1.550***	1.629***	1.130**	1.141**
	(0.044)	(0.044)	(0.075)	(0.083)	(0.050)	(0.050)
Age in year # Age in year	0.995***	0.996***	0.993***	0.992***	0.998**	0.998***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Baseline (years)						
2	0.681***	0.684***	0.888	0.882	1.179	1.175
	(0.061)	(0.061)	(0.087)	(0.087)	(0.220)	(0.219)
3	0.463***	0.469***	0.535***	0.526***	0.758	0.755
	(0.048)	(0.049)	(0.069)	(0.068)	(0.159)	(0.159)
4	0.823*	0.838	0.579***	0.566***	0.632	0.628
	(0.082)	(0.083)	(0.083)	(0.082)	(0.154)	(0.153)
5	0.851	0.873	0.380***	0.370***	0.937	0.925
	(0.086)	(0.088)	(0.067)	(0.066)	(0.212)	(0.209)
6	0.658***	0.680**	0.298***	0.289***	0.706	0.696
	(0.082)	(0.085)	(0.060)	(0.059)	(0.176)	(0.172)
7	0.402***	0.419***	0.277***	0.255***	0.746	0.730
	(0.063)	(0.066)	(0.064)	(0.060)	(0.187)	(0.183)
8	0.332***	0.348***	0.291***	0.278***	0.954	0.934
	(0.062)	(0.065)	(0.069)	(0.067)	(0.214)	(0.210)
9	0.313***	0.330***	0.167***	0.159***	1.302	1.270
	(0.070)	(0.074)	(0.052)	(0.049)	(0.313)	(0.303)
10+	0.156***	0.169***	0.125***	0.121***	0.787	0.774
	(0.028)	(0.030)	(0.028)	(0.028)	(0.179)	(0.175)
Baseline and married int.						
2 # Married	0.773	0.778	0.969	0.968	0.728	0.728
	(0.173)	(0.173)	(0.229)	(0.229)	(0.437)	(0.435)
3 # Married	1.266	1.291	1.032	1.024	1.541	1.549
	(0.274)	(0.279)	(0.270)	(0.272)	(0.829)	(0.830)
4 # Married	0.592*	0.613*	1.073	1.125	0.540	0.550

	Egypt		Jordan		Tunisia	
	Spec. 1	Spec. 2	Spec. 1	Spec. 2	Spec. 1	Spec. 2
	(0.124)	(0.129)	(0.299)	(0.312)	(0.376)	(0.380)
5 # Married	0.457***	0.472***	1.176	1.202	0.641	0.662
	(0.098)	(0.101)	(0.368)	(0.380)	(0.400)	(0.410)
6 # Married	0.677	0.695	0.747	0.812	0.651	0.684
	(0.150)	(0.154)	(0.278)	(0.301)	(0.364)	(0.383)
7 # Married	0.768	0.779	1.148	1.343	0.799	0.846
	(0.201)	(0.204)	(0.388)	(0.457)	(0.493)	(0.520)
8 # Married	0.922	0.913	1.009	1.146	0.610	0.653
	(0.248)	(0.247)	(0.376)	(0.429)	(0.358)	(0.381)
9 # Married	0.684	0.662	1.340	1.542	0.483	0.521
	(0.213)	(0.207)	(0.563)	(0.652)	(0.251)	(0.271)
10+ # Married	1.100	0.940	1.495	1.613	1.092	1.201
	(0.240)	(0.207)	(0.384)	(0.428)	(0.444)	(0.495)
N	172973	172884	82196	81942	58349	58343

Notes: *p<0.05; **p<0.01; ***p<0.001

Cells are odds ratios

Standard errors in parentheses, clustered by PSU

Baseline hazard for durations of greater than 10 years coded together with 10 years to ensure adequate cell size.

4.4 Multivariate models of spells of different labor market statuses

We now turn to models where we distinguish between different types of work and non-employment. In these models, exit is ending that type of labor market status. Transitions and destinations are explored further in later tables. Table 3 presents the results for Egypt. There are significantly lower odds of exit from non-employment once married. There are significantly higher odds of exit the year of the wedding for public sector, private informal, and non-wage work as well as non-employment. The year before the wedding is associated with significantly higher odds of exit from all states, but especially high odds ratios for private formal, private informal, and non-wage work, as above seen in Figure 4. This result confirms earlier work that it is particularly private sector work that is irreconcilable with marriage, and that women leave such work in advance of marriage (Assaad, Krafft, & Selwaness, 2017; Krafft & Assaad, 2017).

Women are significantly less likely to leave the public sector the year they give birth (likely due to legally guaranteed and generous maternity leaves) but are significantly more likely to leave both the public and private formal sectors the year before birth, with albeit higher odds in the private sector, as well as persist in non-employed states. The results with regards to number of children are broadly consistent with the results that aggregated employment and non-employment. Commute times appear to be particularly a factor in exiting private informal work. The hazard of exiting public sector and private informal work falls over time, significantly so, while non-wage work rises after the first year. Non-employment is clearly an absorbing state, with a falling hazard of exit over time. Age patterns in the earlier models appear to be driven by the public sector, where there is a falling and then rising chance of exit, and non-employment, where there is a rising and then falling chance of exit.

Table 3. Discrete time logit models of labor market spells (outcome is exit from that type) by type of employment, Egypt

	Egypt				
	Public	Private formal	Private informal	Non-wage	Non-employment
Married and wedding					
Married	0.442	3.270	1.073	0.428	0.539***
	(0.232)	(2.523)	(0.464)	(0.224)	(0.094)
Year of wedding	2.372**	0.833	2.639***	3.373*	1.269*
	(0.653)	(0.363)	(0.776)	(1.696)	(0.143)
Year before wedding	3.498***	18.824***	27.168***	35.191***	1.219*
	(0.811)	(5.394)	(5.021)	(10.767)	(0.100)
Two years before wedding	1.887*	4.401***	3.980***	7.763***	0.774**
	(0.502)	(1.338)	(0.639)	(2.605)	(0.066)
Child-bearing					
Birth in year	0.451*	1.047	1.700	0.607	1.011
	(0.169)	(0.442)	(0.602)	(0.275)	(0.108)
Year before birth	1.859**	2.547**	1.362	0.699	0.684***
	(0.404)	(0.849)	(0.321)	(0.201)	(0.057)
Child-rearing					
No. kids ages 0-2	1.465	1.077	0.788	1.462	0.814**
	(0.292)	(0.367)	(0.185)	(0.343)	(0.064)
No. kids ages 3-5	1.278	1.089	0.864	0.636*	1.026
	(0.256)	(0.331)	(0.164)	(0.143)	(0.063)
No. kids ages 6-11	0.914	0.951	0.993	1.036	1.072**
	(0.077)	(0.166)	(0.071)	(0.067)	(0.026)
No. kids ages 12-18	1.087	1.161	0.991	1.090	0.972
	(0.078)	(0.236)	(0.074)	(0.068)	(0.034)
Moved from birth region	1.122	1.456	1.203	1.608	1.111
	(0.195)	(0.330)	(0.219)	(0.495)	(0.072)
Number of Female Siblings	1.003	0.950	0.986	1.061	1.023
	(0.045)	(0.056)	(0.035)	(0.047)	(0.014)
Local commuting					
Local commute (in min.)	1.002	1.013	1.023***	1.016	1.006
	(0.011)	(0.012)	(0.006)	(0.013)	(0.003)
Married # Local commute (in min.)	1.016	0.993	1.000	1.006	0.998
	(0.015)	(0.021)	(0.013)	(0.015)	(0.006)
Baseline (years)					
2	1.218	0.590	0.918	3.406***	0.663***
	(0.240)	(0.188)	(0.165)	(1.180)	(0.054)
3	1.028	0.763	0.750	2.702**	0.513***
	(0.236)	(0.253)	(0.143)	(1.010)	(0.047)
4	0.635	0.985	0.663	2.118	0.763**
	(0.181)	(0.322)	(0.147)	(0.834)	(0.069)
5	0.504*	1.342	0.641	1.784	0.727***
	(0.168)	(0.422)	(0.165)	(0.814)	(0.064)
6	0.328**	0.938	0.707	2.931**	0.624***
	(0.135)	(0.395)	(0.183)	(1.109)	(0.063)
7	0.516	0.300	0.451**	2.329	0.403***
	(0.208)	(0.197)	(0.132)	(1.087)	(0.046)
8	0.525	1.028	0.382**	1.635	0.369***
	(0.229)	(0.453)	(0.139)	(0.783)	(0.047)
9	0.636	1.015	0.673	0.793	0.285***
	(0.295)	(0.604)	(0.249)	(0.564)	(0.042)
10+	0.448*	0.536	0.529*	2.395*	0.187***

	Egypt				
	Public	**Private formal**	**Private informal**	**Non-wage**	**Non-employment**
	(0.162)	(0.241)	(0.142)	(1.001)	(0.023)
Time varying age					
Age in year	0.774***	0.882	0.983	0.964	1.359***
	(0.048)	(0.094)	(0.062)	(0.066)	(0.043)
Age in year # Age in year	1.003***	1.001	1.001	1.001	0.995***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Controls Included	Yes	Yes	Yes	Yes	Yes
N	20336	1795	4811	13571	172884

Notes: *p<0.05; **p<0.01; ***p<0.001
Cells are odds ratios
Standard errors in parentheses, clustered by PSU
Baseline hazard for durations of greater than 10 years coded together with 10 years to ensure adequate cell size.

Turning to the results for Jordan in Table 4, married women are less likely to exit non-employment states. There are not significant differences the year of the wedding, while there are for the year before, with particularly high odds ratios of exit from private formal, private informal, and non-wage work. Just like Egypt, exits during the year before birth are common, with higher odds in the private sector. Patterns by child age are mixed. There are no significant commute differences. Women face falling odds of exit over time in both the public and private formal sectors, as well as being absorbed by non-employment.

Table 4. Discrete time logit models of labor market spells (outcome is exit from that type) by type of employment, Jordan

	Jordan				
	Public	Private formal	Private informal	Non-wage	Non-employment
Married and wedding					
Married	1.690	1.671	2.039	0.551	0.165***
	(0.990)	(0.736)	(1.406)	(0.647)	(0.036)
Year of wedding	0.929	1.223	0.894	2.629	1.193
	(0.378)	(0.362)	(0.448)	(2.069)	(0.205)
Year before wedding	4.085***	10.476***	11.542***	17.752***	0.440***
	(1.261)	(2.316)	(3.311)	(9.075)	(0.071)
Two years before wedding	0.570	2.606***	2.469**	1.867	0.933
	(0.351)	(0.648)	(0.690)	(1.249)	(0.118)
Child-bearing					
Birth in year	0.707	0.777	1.317	2.070	0.968
	(0.162)	(0.233)	(0.510)	(1.027)	(0.134)
Year before birth	1.526*	1.807**	2.531**	2.115	0.887
	(0.297)	(0.359)	(0.750)	(0.878)	(0.102)
Child-rearing					
No. kids ages 0-2	1.465**	0.775	1.117	0.733	0.729**
	(0.195)	(0.147)	(0.242)	(0.207)	(0.072)
No. kids ages 3-5	0.911	0.964	0.720	0.473**	0.879
	(0.110)	(0.158)	(0.167)	(0.124)	(0.072)
No. kids ages 6-11	1.044	1.060	1.088	1.050	0.995
	(0.038)	(0.053)	(0.051)	(0.088)	(0.027)
No. kids ages 12-18	1.024	1.054	0.956	1.086	1.018
	(0.037)	(0.061)	(0.063)	(0.105)	(0.029)
Moved from birth region	1.486*	1.275	0.965	0.500*	1.114
	(0.235)	(0.180)	(0.186)	(0.176)	(0.083)
Number of Female Siblings	0.983	1.014	0.953	0.982	1.021
	(0.032)	(0.032)	(0.032)	(0.060)	(0.016)
Local commuting					
Local commute (in min.)	0.988	1.000	1.005	1.003	0.987***
	(0.010)	(0.008)	(0.012)	(0.020)	(0.003)
Married # Local commute (in min.)	0.991	1.004	0.988	1.009	1.015***
	(0.012)	(0.010)	(0.015)	(0.024)	(0.004)
Baseline (years)					
2	0.686	0.697	1.205	1.789	0.794*
	(0.186)	(0.151)	(0.271)	(0.786)	(0.072)
3	0.295***	0.914	0.955	1.752	0.493***
	(0.109)	(0.190)	(0.238)	(0.757)	(0.056)
4	0.310**	0.678	0.707	1.368	0.532***
	(0.123)	(0.169)	(0.197)	(0.750)	(0.065)
5	0.196***	0.442**	0.643	1.377	0.360***
	(0.090)	(0.128)	(0.224)	(0.773)	(0.052)
6	0.280**	0.696	0.955	1.129	0.256***
	(0.121)	(0.210)	(0.306)	(0.823)	(0.043)
7	0.243**	0.685	0.826	0.772	0.284***
	(0.119)	(0.218)	(0.300)	(0.631)	(0.049)
8	0.167**	0.345*	0.899	0.301	0.274***
	(0.096)	(0.146)	(0.360)	(0.288)	(0.049)

| | Jordan | | | | |
	Public	Private formal	Private informal	Non-wage	Non-employment
9	0.225**	0.341*	0.755	1.876	0.197***
	(0.115)	(0.160)	(0.329)	(1.322)	(0.041)
10+	0.672	0.547*	1.170	2.334	0.151***
	(0.197)	(0.142)	(0.345)	(1.051)	(0.023)
Time varying age					
Age in year	0.800**	1.146	1.213*	1.089	1.584***
	(0.064)	(0.092)	(0.099)	(0.119)	(0.075)
Age in year # Age in year	1.004***	0.998	0.996*	0.998	0.993***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Controls Included	Yes	Yes	Yes	Yes	Yes
N	7898	3666	1956	1332	91494

Notes: *p<0.05; **p<0.01; ***p<0.001
Cells are odds ratios
Standard errors in parentheses, clustered by PSU
Baseline hazard for durations of greater than 10 years coded together with 10 years to ensure adequate cell size.

Table 5 presents the results for Tunisia, where some caution is required given small sample sizes. The effects of marriage are insignificant, but there is substantial exit, highest for the public sector followed by private formal and non-wage, the year of and the year prior to the wedding. There are no clear patterns by child age, commuting time, or in terms of the baseline hazard.

Table 5. Discrete time logit models of labor market spells (outcome is exit from that type) by type of employment, Tunisia

	Tunisia				
	Public	Private formal	Private informal	Non-wage	Non-employment
Married and wedding					
Married	0.113	0.185	2.062	1.642	0.342
	(0.396)	(0.337)	(3.981)	(4.179)	(0.218)
Year of wedding	19.037*	15.804***	3.196	15.024**	1.469
	(25.790)	(9.051)	(2.216)	(14.779)	(0.482)
Year before wedding	9.318***	14.455***	8.951***	15.905***	1.990**
	(6.005)	(5.439)	(4.487)	(11.093)	(0.471)
Two years before wedding	3.644	2.949*	2.454		1.082
	(4.383)	(1.299)	(1.482)		(0.236)
Child-bearing					
Birth in year	1.42e+07***	1.103	1.847	9.875	1.044
	(2.01e+07)	(0.493)	(1.834)	(25.811)	(0.286)
Year before birth	1.279	1.076	2.302	7.486	0.728
	(1.844)	(0.464)	(1.079)	(9.447)	(0.185)
Child-rearing					
No. kids ages 0-2	0.000***	2.379**	0.748	0.277	0.988
	(0.000)	(0.738)	(0.327)	(0.458)	(0.180)
No. kids ages 3-5	0.642	2.454**	0.840	0.796	0.733
	(0.520)	(0.717)	(0.346)	(0.456)	(0.127)
No. kids ages 6-11	0.880	1.025	0.902	0.845	1.026
	(0.275)	(0.147)	(0.213)	(0.212)	(0.050)
No. kids ages 12-18	0.636	1.008	0.910	1.349	0.962
	(0.224)	(0.219)	(0.166)	(0.216)	(0.060)
Moved from birth region	13.535***	1.182	1.722	0.078	1.602**
	(9.001)	(0.422)	(0.753)	(0.102)	(0.240)
Number of Female Siblings	1.149	1.009	0.941	1.279	0.968
	(0.207)	(0.068)	(0.068)	(0.189)	(0.025)
Local commuting					
Local commute (in min.)	0.776	0.937	0.886	0.968	0.980
	(0.109)	(0.056)	(0.083)	(0.136)	(0.018)
Married # Local commute (in min.)	1.101	1.084	0.994	0.923	1.025
	(0.186)	(0.097)	(0.096)	(0.137)	(0.034)
Baseline (years)					
2	0.296	1.984	1.901	0.030*	1.064
	(0.275)	(0.918)	(0.676)	(0.049)	(0.200)
3	0.381	1.558	1.038	0.612	0.769
	(0.308)	(0.611)	(0.443)	(0.581)	(0.148)
4	0.410	1.543	0.842	0.225	0.510**
	(0.441)	(0.791)	(0.466)	(0.260)	(0.131)
5	0.245	2.050	0.625		0.821
	(0.289)	(1.076)	(0.332)		(0.176)
6	0.396	2.539	1.136	1.021	0.591*
	(0.479)	(1.267)	(0.664)	(0.940)	(0.147)
7	0.406	2.040	1.284	0.530	0.541*
	(0.570)	(1.202)	(0.762)	(0.542)	(0.133)
8		1.108	0.484	1.010	0.806
		(0.726)	(0.399)	(0.911)	(0.180)
9	0.478	1.825	1.901		0.939
	(0.630)	(1.129)	(1.370)		(0.225)
10+	0.654	1.470	1.123		0.806

	Public	Private formal	Private informal	Non-wage	Non-employment
			Tunisia		
	(0.598)	(0.850)	(0.557)		(0.154)
Time varying age					
Age in year	0.912	0.780	1.057	0.749	1.161**
	(0.286)	(0.112)	(0.136)	(0.234)	(0.060)
Age in year # Age in year	1.002	1.004	0.998	1.004	0.997**
	(0.005)	(0.002)	(0.002)	(0.005)	(0.001)
Controls Included	Yes	Yes	Yes	Yes	Yes
N	1122	1564	1098	1361	52376

Notes: *p<0.05; **p<0.01; ***p<0.001
Cells are odds ratios
Standard errors in parentheses, clustered by PSU
Baseline hazard for durations of greater than 10 years coded together with 10 years to ensure adequate cell size.
Cells are blank when perfect predictors

4.5 Multivariate models of transition probabilities between statuses

In order to assess the relationship between different types of transition and marriage, we now turn to the multinomial logit discrete time competing risk models. Here, relative risk ratios are presented. Small cell sizes for transitions must be kept in mind. Given the typical functional form of falling hazards, we use log-time as a control because the sample size does not support a discrete baseline hazard. We only control for being married, the year of marriage, and the year before marriage. The omitted category for the destination is the one that is the same as the origin category. For easy comparison of results across countries, Table 6 presents a summary for the main effects of marriage control variable on the transition between labor market statuses by type of employment for Egypt, Jordan and Tunisia. Appendix Table 1 presents the results for Egypt, Appendix Table 2 for Jordan and Appendix Table 3 for Tunisia.

In Egypt, as expected, for those in the public sector, there is a lower risk of exit to other states over time. If married, women are significantly less likely to switch to private formal wage (and a similar coefficient pertains for informal), but marriage may even (insignificantly) increase transitions to non-wage work. The year of the wedding and before, women are more likely to transit to non-employed states. Turning to private formal work, switches to the public sector are significantly more likely for married women, whereas switches to informal or non-wage are less likely the year of marriage. Women who are in private informal work are significantly less likely to switch to public sector work if married, but more likely to switch during the year of the wedding. Married women in private informal work are more likely to switch to non-wage work. This result goes in line with earlier research finding that women's non-wage work significantly increases after marriage (Assaad, Krafft, & Selwaness, 2017). Married women in non-wage work are significantly less likely to switch to private informal work, although do switch the year before marriage. Non-employed women are significantly less likely to leave for any other state except non-wage or public when married or the year before marriage.

Turning now to Jordan, we see similar patterns of married women persisting in public sector work or switching to non-employment. Private formal and informal sector workers are significantly more likely to non-employed the year of or before the wedding and once married. Non-wage patterns are not clear, however, women are less likely to transition out of non-employment. Women who are non-employed and married are significantly less likely to make all transitions except to non-wage.

For Tunisia, particular care is required given small sample sizes. Focusing primarily on non-employment, the largest origin, transitions to public sector decrease once married, along with

private sector wage work, but not non-wage work. This result is similar to elsewhere, where non-wage work was more interchangeable with non-employment for married women.

Table 6. Summary of marriage associations with transitions between labor market statuses, based on the discrete time competing risk models for Egypt, Jordan and Tunisia

Origin:	Public			Private formal			Private informal			Non-wage			Non-employed		
Destination	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
Public															
Married				+		-	-						-	-	-
Year of wedd.							+	-	-	-	+		+	+	
Year before wedd.						-	-	-	-	-					
Private formal wage															
Married	-	-	-				-	-	-	-	-				-
Year of wedd.		-					-	-	-			+			+
Year before wedd.	-		-				-	-		-	-		-		-
Private informal wage															
Married			+			-				-	-		-	-	-
Year of wedd.		-	-	-	-						+	-			
Year before wedd.	-	-	-	-		-				+	-		-	-	
Non wage															
Married			-				+						+		
Year of wedd.				-	-			-	-						
Year before wedd.	-				-		+	-	+				+		-
Non-employed															
Married	-	+			+		-	+		-		-			
Year of wedd.	+		+	+	+	+	+		+			+			
Year before wedd.	+	+		+	+	+	+	+	+	+	+	+			

Notes: Based on the discrete time multinomial logit competing risk models for Egypt (Appendix Table 1), Jordan (Appendix Table 2), and Tunisia (Appendix Table 3).
Cells with a positive sign (+) denote a positive association between marriage control variables and the type of transition, i.e. a relative risk of transition induced by the control variable that is greater than 1.
Cells with a negative sign (-) show a negative association between marriage control variables and the type of transition, i.e. relative risk of transition lower than 1.
All cells are based on a 5% significance level.

5. Discussion and Conclusions

Low rates of female labor force participation have long been a challenge for MENA economies. Some key stylized facts about female labor force participation have been identified in previous research, including the drop in participation at marriage and substantial domestic responsibilities married women face (Assaad, Hendy, & Yassine, 2014; Hendy, 2015; Assaad, Ghazouani, & Krafft, 2017a, 2017b). However, there has been limited research on the mechanisms that might facilitate increased female labor force participation. This research investigates associations that can shed light on key mechanisms as well to pinpoint key policy levers for increasing female labor force participation and reducing barriers to women's employment. To that end, the paper examines whether *getting* married, *being* married, expecting children, having children, or having young children is the greatest constraint on participation.

To answer this question, we focused on several aspects of women's employment and their relationships with the dynamics of family formation. We first examined duration in employment and in non-employment and duration of different labor market states. We then turned to transition rates between statuses. Our main findings suggested that women have more dynamic labor market patterns before than after marriage, with women who start their states at or after marriage experiencing lower movement from than their peers who start before marriage. Those women who work after marriage are a very select group, as women tend to exit work with marriage.

Moreover, women anticipate marriage and child bearing to varying degrees across countries. While women in all three countries exit work both in anticipation of marriage and when they marry, Tunisian women are (relatively) more likely to work up to their marriages, whereas Egyptian and Jordanian women exit further in advance. Women expecting children in both Egypt and Jordan are more likely to leave work, unlike Tunisia. Moreover, women are less likely to start work and exit non-employment for each additional child ages 0-2 in Egypt and Jordan. We also observe significantly lower odds of exiting non-employment for each additional child ages 3-5 in Jordan as well. Women may be more able to work once their children are school aged, a pattern that we see in Egypt with significant exit from non-employment with more primary aged children and no effect of primary aged children on exiting non-employment in Jordan and Tunisia. This result emphasizes the importance of the availability of child care and other child support systems that may help women to return to work or start working.

Commuting times are another element of women's ability to work. We found that travel to work is a barrier, but primarily for unmarried women. Thus zoning and transit reforms as well streets/transports safety might improve female labor force participation but do not seem to be a driver for patterns related to marriage.

As for women's mobility across different labor market states, both our descriptive figures and multivariate analyses highlight the fact that non-employment is an absorbing state in all three countries. It is increasingly hard to exit this status with marriage and over time. Moreover, women are more likely to transit to non-employed states from private formal and informal work at or ahead of marriage. The other statuses that show high persistence are the public sector and non-wage work, with women being relatively less likely to leave such employment with marriage or anticipating marriage compared to private sector work. Further, non-wage work is an important destination status for women exiting private informal wage work in Egypt and Tunisia, transitioning at or in anticipation of marriage, and for non-employed married women in Egypt. Public sector or non-wage work can be considered as more long-term reconcilable options with marriage and all the domestic work burden it involves. This situation will persist unless solutions

were offered to make the private sector a more hospitable work environment to women. Such solutions can involve introducing part-time work provisions and flexible hours, as private sector work tends to involve a greater number of hours (Assaad & Krafft, 2015b).

Adopting an economic strategy that is favorable to women's employment is essential. For instance, in Egypt, falling exchange rates were induced by the Egyptian pound devaluation in November 2016. This theoretically will lead to higher competitiveness of Egyptian exports, and encourage investment in tradable goods. Tradable goods, such as textiles and garments, are industries that women are relatively more likely to work in. Leveraging such opportunities could generate positive effects on both women's employment and exports.

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Appendix Table 1. Discrete time competing risk multinomial logit models of labor market spells by type of employment, Egypt

			Egypt		
Origin:	Public	Private formal	Private informal	Non-wage	Non-employed
Destination					
Public					
Ln(t)		0.460***	0.800	0.572	0.674***
		(0.089)	(0.170)	(0.175)	(0.024)
Married		4.589**	0.369*	0.482	0.358***
		(2.432)	(0.179)	(0.300)	(0.035)
Year of wedding		1.027	5.992**	0.000***	1.825***
		(0.814)	(3.976)	(0.000)	(0.262)
Year before wedding		4.009	1.400	0.000***	0.980
		(3.069)	(1.040)	(0.000)	(0.100)
Private formal wage					
Ln(t)	0.435***		0.460*	0.410	0.832*
	(0.088)		(0.148)	(0.356)	(0.063)
Married	0.291**		0.389	0.000***	0.142***
	(0.111)		(0.250)	(0.000)	(0.030)
Year of wedding	1.561		0.000***	0.280	1.598
	(1.744)		(0.000)	(0.275)	(0.680)
Year before wedding	0.000***		1.304	8.394	0.269**
	(0.000)		(1.378)	(11.252)	(0.109)
Private informal wage					
Ln(t)	0.417***	0.807		1.405	0.662***
	(0.099)	(0.220)		(0.450)	(0.036)
Married	0.318	0.721		0.110***	0.277***
	(0.236)	(0.557)		(0.072)	(0.039)
Year of wedding	2.260	0.000***		7.609	0.843
	(2.623)	(0.000)		(9.740)	(0.230)
Year before wedding	0.000***	0.000***		6.496**	0.306***
	(0.000)	(0.000)		(3.978)	(0.072)
Non wage					
Ln(t)	0.427	0.574	0.844		0.817***
	(0.205)	(0.292)	(0.132)		(0.047)
Married	2.717	1.858	3.678**		2.449***
	(2.997)	(2.005)	(1.631)		(0.398)
Year of wedding	3.688	0.000***	2.179		1.195
	(3.482)	(0.000)	(1.299)		(0.230)
Year before wedding	0.000***	13.316	48.405***		11.081***
	(0.000)	(18.150)	(22.810)		(1.659)
Non-employed					
Ln(t)	0.602***	0.754*	0.720***	1.312**	
	(0.052)	(0.100)	(0.053)	(0.132)	
Married	0.522**	1.052	0.479***	0.282***	
	(0.113)	(0.322)	(0.084)	(0.072)	
Year of wedding	3.782***	2.708*	3.674***	2.618	
	(1.001)	(1.130)	(1.141)	(1.337)	
Year before wedding	3.978***	15.787***	17.123***	17.456***	
	(0.790)	(4.396)	(2.721)	(4.350)	
N	20323	1803	4769	13561	172986

Notes: *p<0.05; **p<0.01; ***p<0.001

Cells are relative risk ratios. Standard errors in parentheses, clustered by PSU

Appendix Table 1. Discrete time competing risk multinomial logit models of labor market spells by type of employment, Jordan

			Jordan		
Origin:	Public	Private formal	Private informal	Non-wage	Non-employed
Destination					
Public					
Ln(t)		0.732*	0.493**	1.037	0.478***
		(0.105)	(0.129)	(0.391)	(0.027)
Married		1.621	1.007	0.307	0.443***
		(0.510)	(0.596)	(0.259)	(0.062)
Year of wedding		0.911	0.000***	13.332*	1.554*
		(0.580)	(0.000)	(14.243)	(0.308)
Year before wedding		1.925	0.000***	0.000***	0.695
		(1.037)	(0.000)	(0.000)	(0.142)
Private formal wage					
Ln(t)	0.779		0.802	0.517	0.494***
	(0.213)		(0.168)	(0.189)	(0.029)
Married	0.375*		0.489	0.000***	0.208***
	(0.185)		(0.243)	(0.000)	(0.032)
Year of wedding	0.000***		0.000***	0.558	1.317
	(0.000)		(0.000)	(0.193)	(0.380)
Year before wedding	1.937		0.000***	2.289	0.271***
	(1.291)		(0.000)	(2.558)	(0.077)
Private informal wage					
Ln(t)	0.156	0.719		1.259	0.694***
	(0.153)	(0.187)		(0.324)	(0.051)
Married	0.595	0.669		0.153**	0.203***
	(0.861)	(0.319)		(0.090)	(0.034)
Year of wedding	0.000***	0.000***		12.109*	0.912
	(0.000)	(0.000)		(15.343)	(0.385)
Year before wedding	0.000***	1.137		2.318	0.179***
	(0.000)	(1.212)		(2.623)	(0.082)
Non wage					
Ln(t)		0.680	1.444		0.749**
		(0.468)	(0.517)		(0.078)
Married		4.578	1.199		0.951
		(6.926)	(0.706)		(0.224)
Year of wedding		0.000***	0.000***		0.704
		(0.000)	(0.000)		(0.374)
Year before wedding		0.000***	0.000***		0.975
		(0.000)	(0.000)		(0.474)
Non-employed					
Ln(t)	1.331*	0.781**	0.743***	1.007	
	(0.156)	(0.068)	(0.063)	(0.153)	
Married	1.985**	1.701**	1.675**	2.190	
	(0.430)	(0.307)	(0.320)	(1.079)	
Year of wedding	1.058	1.872*	1.624	2.222	
	(0.369)	(0.506)	(0.672)	(1.704)	
Year before wedding	5.804***	11.492***	14.955***	41.423***	
	(1.813)	(2.526)	(4.169)	(23.952)	
N	6945	3143	1733	1186	82196

Notes: *p<0.05; **p<0.01; ***p<0.001
Cells are relative risk ratios. Standard errors in parentheses, clustered by PSU

Appendix Table 2. Discrete time competing risk multinomial logit models of labor market spells by type of employment, Tunisia

Origin:	Public	Private formal	Tunisia Private informal	Non-wage	Non-employed
Destination					
Public					
Ln(t)		0.990	0.539		0.913
		(0.251)	(0.282)		(0.098)
Married		0.000***	0.432		0.482**
		(0.000)	(0.484)		(0.115)
Year of wedding		1.135	0.000***		2.118
		(0.191)	(0.000)		(1.020)
Year before wedding		0.000***	0.000***		1.625
		(0.000)	(0.000)		(0.639)
Private formal wage					
Ln(t)	1.031		0.429	17.229***	0.731***
	(0.135)		(0.201)	(11.866)	(0.048)
Married	0.000***		1.419	0.000***	0.235***
	(0.000)		(1.173)	(0.000)	(0.050)
Year of wedding	1.056		0.000***	31.774***	3.131*
	(0.181)		(0.000)	(22.765)	(1.477)
Year before wedding	0.000***		0.000***	0.000***	0.308*
	(0.000)		(0.000)	(0.000)	(0.179)
Private informal wage					
Ln(t)	2.659***	1.172		1.112	0.787**
	(0.404)	(0.427)		(0.982)	(0.061)
Married	2.67e+06***	0.000***		0.313	0.432***
	(2.82e+06)	(0.000)		(0.656)	(0.084)
Year of wedding	0.000***	1.213		0.000***	1.811
	(0.000)	(0.254)		(0.000)	(0.840)
Year before wedding	1.263	0.000***		0.000***	0.308
	(0.492)	(0.000)		(0.000)	(0.218)
Non wage					
Ln(t)	1.900		0.572		0.841
	(1.551)		(0.224)		(0.082)
Married	0.000***		0.674		1.115
	(0.000)		(0.574)		(0.254)
Year of wedding	1.763		0.000***		1.022
	(1.229)		(0.000)		(0.593)
Year before wedding	14.246		9.932**		10.144***
	(25.224)		(8.630)		(2.891)
Non-employed					
Ln(t)	0.731	0.964	0.874	2.028***	
	(0.166)	(0.105)	(0.105)	(0.429)	
Married	0.537	1.332	0.654	0.331*	
	(0.267)	(0.277)	(0.179)	(0.185)	
Year of wedding	6.065*	6.977***	16.125***	51.982***	
	(4.521)	(2.344)	(8.827)	(35.039)	
Year before wedding	2.088	9.882***	8.623***	12.793***	
	(1.645)	(2.833)	(3.182)	(8.719)	
N	1588	1940	1330	2144	65165

Notes: *p<0.05; **p<0.01; ***p<0.001

Cells are relative risk ratios. Standard errors in parentheses, clustered by PSU. Cells are blank when perfect predictors