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THE IMPACT OF EARLY MARRIAGE ON WOMEN'S EMPLOYMENT IN THE MIDDLE EAST AND NORTH AFRICA

Ragui Assaad, Caroline Krafft
and Irene Selwaness

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Send correspondence to:
Ragui Assaad
University of Minnesota and ERF
assaad@umn.edu

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Abstract

Marriage is a central stage in the transition to adulthood in the Middle East and North Africa (MENA). This paper builds on the existing literature on the effect of marriage on women's employment in MENA. Besides examining how different types of work are affected by early marriage (defined as marriage by the median age of marriage) in a multivariate setting, the contribution of this paper is to endogenize the marriage decision using an instrumental variable approach. We find that marriage by the median age reduces the probability of working for women by 47 percent in Jordan, 33 percent in Tunisia and 16 percent in Egypt. Much of the effect is due to a reduction in the probability of private wage work, which is reduced by 76 percent in Jordan, 57 percent in Tunisia and 40 percent in Egypt. Differences emerge across the three countries in the extent to which self-employment after marriage is available to women to compensate for the reduction in wage employment opportunities.

JEL Classifications: J12, J16, J21, J45, J46, N35

Keywords: Economics of marriage; labor markets; employment; age at marriage; gender; Middle East and North Africa

ملخص

الزواج هو مرحلة مركزية من مرحلة الانتقال إلى مرحلة البلوغ في الشـــرق الأوســـط وشـــمال أفريقيا. تســـتند هذه الورقة إلى الأدبيات الموجودة حول تأثير الزواج على توظيف المرأة في منطقة الشـرق الأوسـط وشـمال أفريقيا. بالإضـافة إلى دراسـة كيفية تأثر أنواع العمل المختلفة بالزواج المبكر (الذي يعرف بأنه الزواج بتوسـط عمر الزواج) في إطار متعدد المتغيرات، فإن مسـاهمة هذه الورقة هي إضـفاء الطابع الجنبي على قرار الزواج باسـتخدام نهج متغير فعال. ونجد أن الزواج حسـب العمر الوسـيط يقلل من احتمال العمل بالنسـبة للنسـاء بنسـبة 47 في المائة في الأردن، وبنسـبة 33 في المائة في تونس، وبنسـبة 16 في المائة في مصـر. ويرجع جزء كبير من هذا التأثير إلى انخفاض احتمالات العمل بأجر خاص، الذي يقل بنســبة 76 في المائة في الأردن و 57 في المائة في تونس و 40 في المائة في مصــر. وتظهر اختلافات بين البلدان الثلاثة في مدى إتاحة العمل للحساب الخاص بعد الزواج للمرأة للتعويض عن تخفيض فرص العمل بأجر.

1. Introduction

The gendered division of labor within the household is a well-established feature of Middle Eastern and North African societies. The normative role of the husband is that of the breadwinner, providing income for the family and assuming minimal responsibility within the home. The normative role of the wife is that of the homemaker, raising the children and assuming almost full responsibility for the domestic sphere (Hoodfar, 1997). For women, marriage often signifies a transition that adds a substantial domestic work burden, which can make it difficult for them to engage in market work (Assaad & El-Hamidi, 2001, 2009; Assaad, Ghazouani, & Krafft, 2017a, 2017b; Assaad, Hendy, & Yassine, 2014; Assaad & Krafft, 2014; Assaad & Zouari, 2003; Hendy, 2015; Hoodfar, 1997). Because adult roles—including independent living, socially sanctioned sexual relations, and childbearing—are limited to the confines of marriage, women in the Middle East and North Africa (MENA) region are expected to marry in order to complete their transition to adulthood. This expectation is even reflected in the language used to refer to women; a woman is referred to as a girl until she is married, and only after marriage is she referred to as a woman (Sadiqi, 2003; Singerman, 2007). With marriage as a virtual imperative, it is work that gives way when work is considered irreconcilable with marriage.

Difficulty in reconciling domestic responsibilities within marriage and the type of work readily available to women in MENA labor markets is undoubtedly one of the main contributors to the low rates of female labor force participation observed in the MENA region (World Bank, 2013). The challenges women face in reconciling work with their expected domestic roles are an obstacle to making full use of the region's human resources in a context where women's education is catching up with, if not surpassing, that of men (World Bank, 2008). Thus, a more nuanced understanding of the challenges women face in reconciling work outside the home with marriage is necessary to both enhance women's economic opportunities and to more fully utilize the region's human potential for development.

Previous research has established the challenges women face in working after marriage and how those challenges vary by the type of work women are engaged in. Specifically, public sector work and non-wage work in a family business or farm tend to be easier to reconcile with marriage than private sector wage work (Assaad, Ghazouani, & Krafft, 2017a; Assaad, Hendy, & Yassine, 2014; Assaad & Hendy, 2013; Hendy, 2015; Hoodfar, 1997). Although sector of work has been clearly identified as a factor mediating the effect of marriage on women's employment, little research has explored what characteristics of work are driving these differences or what policies might help women who might wish to work in the private sector after marriage to continue to do so.

The analysis of these issues to date has been largely descriptive, anthropological, or undertaken merely in a bivariate framework (Assaad & El-Hamidi, 2009; Assaad, Ghazouani, & Krafft, 2017a; Assaad, Hendy, & Yassine, 2014; Assaad & Krafft, 2014; Hendy, 2015; Hoodfar, 1997; Nassar, 2003). The multivariate literature tends to be limited in scope, for instance estimating the relationship between individual characteristics, type of work, and marital status or marriage timing, but not accounting for the potential endogeneity of marriage decisions (Assaad & El-Hamidi, 2001; Assaad & Hendy, 2013; Assaad & Zouari, 2003). Another strand of the multivariate literature is the single-issue approach, for instance looking at the role of geographic mobility in limiting women's work options (Assaad & Arntz, 2005). None of the literature to date has adequately accounted for the potential endogeneity of marriage in relation to women's work.

This paper, by not only taking a multivariate approach, but also working to account for the endogeneity of marriage timing, represents a substantial step forward in research on this important

issue in the region. In addition to comparing the various factors that affect women's participation in different types of work, this paper provides a comparative perspective across three MENA countries. Providing insight into the potential mechanisms that drive women's low labor force participation and exit from the labor force at marriage should be of great value in designing policies to facilitate women's economic participation.

This paper investigates the impact of marriage on women's employment and examines the employment characteristics and factors that may facilitate or hinder continued work after marriage. Specifically, the paper is organized around two main research questions, comparing Egypt, Jordan, and Tunisia:

1. What is the impact of marriage, particularly early marriage, on employment? How does this vary by the type of employment?
2. What factors facilitate continuing or entering work after marriage—both in terms of job characteristics that are more reconcilable with marriage and individual and household characteristics that allow women to remain at work after marriage?

Our empirical work is grounded in a strong theoretical understanding of individuals and families maximizing utility in the face of prescribed gender roles and other constraints. The economic bases (including specialization) that are linked with marriage (Becker, 1973, 1974, 1985; Shelton & John, 1996) are important in understanding the intersection of labor markets and domestic responsibilities.

The paper is organized as follows. Section 2 provides background on work and marriage for women in MENA. The data used and our methods for analyzing the relationship between marriage and work are discussed in section 3. The results on the relationship between marriage and work, and the factors that may constrain or enable work after marriage, are discussed in section 4. In section 5 we conclude with a discussion of the results and their implications for policies to facilitate women's continued employment after marriage.

2. Background

It is by now well established that female labor force participation rates in the MENA region are quite low by global standards (Assaad, 2014a, 2014b; Moghadam, 2005; Ross, 2008; Spierings, Smits, & Verloo, 2010). With women's high unemployment rates, employment rates in MENA are even lower than the comparatively low participation rates. In Egypt, as of 2012, just 18 percent of women ages 15-64 were employed. This represents a decrease in the percentage of women working from 2006, when 22 percent of women were employed (Assaad & Krafft, 2015a, 2015b). While educated women are much more likely to work, the chances of educated women participating in the labor force have been decreasing over time mostly due to dwindling employment opportunities in the public sector (Assaad, Hendy, Lassasi, & Yassine, 2016). Much of women's participation in Egypt is unemployment, with around 20 percent to 30 percent unemployment rates among secondary and higher education graduates in urban areas and rates in the 30 percent-50 percent range in rural areas (Assaad & Krafft, 2015b). Among the women who do work, half (52 percent) work in government, compared to 27 percent of men (Assaad & Krafft, 2015a). Women who obtain government jobs tend to stay in them until retirement, but women with other types of wage and salaried employment tend to exit work at marriage (Assaad & Krafft, 2015a). While youth, especially educated youth, express a preference for government employment, this preference is particularly strong among women (Barsoum, 2015).

In Jordan, as of 2010, the employment rate of women 15-64 was just 13 percent (Assaad, 2014b). As in Egypt, women are much more likely to participate in the labor force if they are educated, particularly if they had obtained a higher education (Assaad, Hendy, & Yassine, 2014; Mryyan, 2014). In contrast to Egypt, the labor force participation rate in 2010, of 16 percent, was an increase from the 13 percent rate recorded in 2005. Still, a large share of participation is unemployment; the unemployment rate among women 15-24 in Jordan is greater than 40 percent and remains high into the 25-35 age range. Among women who work, 43 percent work in the government sector, compared to 32 percent of men, and 30 percent work in the formal private sector, compared to 20 percent of men. Women are much less likely than men to work in informal employment or to be employers or self-employed (Assaad, Hendy, & Yassine, 2014; Mryyan, 2014).

Tunisia has only slightly higher female employment rates than Egypt or Jordan, with around 20 percent of women 15-64 employed in 2014 (Assaad, Ghazouani, & Krafft, 2017b). Women face an unemployment rate of around 25 percent, generating a female labor force participation rate of around 25 percent. As in the other two countries, the unemployment rate for young women reaches almost 40 percent and is also highest for educated, rural women who cannot easily find suitable jobs locally (Assaad, Ghazouani, & Krafft, 2017b).

3. Data and Methods

3.1 Surveys

In order to assess the relationship between marriage and work, data are needed on the timing of marriage and on labor market trajectories, as well as on numerous individual and family characteristics. Given the data requirements, the paper examines three MENA countries - Egypt, Jordan and Tunisia - for which comparable and rich labor market survey data are available. The study uses data from the 2012 wave of the Egypt Labor Market Panel Survey (ELMPS), the 2010 wave of the Jordan Labor Market Panel Survey (JLMPS), and the 2014 wave of the Tunisia Labor Market Panel Survey (TLMPS). These data sets are publicly available through the Economic Research Forum (OAMDI, 2013, 2014, 2016).[1] All three datasets include detailed labor market histories for those who ever worked as well as information on the timing of first marriages.

As well as data on the relationship between work and marriage, the LMPSs include important contextual information on the factors that may affect the relationship between work and marriage. In addition to presenting the results of our multivariate models we provide additional analysis on a number of these factors, which may also indicate potential policy levers for increasing women's employment. Specifically, we descriptively examine employment, type of work, domestic and market hours of work, maternity leave, child care, how women find their jobs, the percentage of women in workplaces, and commute times. We examine these factors descriptively using the complete relevant LMPS sample, for instance working mothers with children under 12 in the case of child care, without the restrictions for the multivariate models, discussed below.

3.2 Multivariate model outcomes

The outcomes we examine in our multivariate models are (1) whether women are engaged in market work (women who are engaged in subsistence work only are counted as not working), (2) whether women are engaged in wage work, (3) whether women are engaged in public sector wage work (4) whether women are engaged in private sector wage work and (5) whether women are

[1] For more information on the three data sets see Assaad (2014c), Assaad and Krafft (2013), and Assaad, Ghazouani, Krafft and Rolando (2016).

engaged in non-wage work (being an employer, self-employed, or unpaid family worker). Our multivariate models look at the first four of these outcomes for all the three countries. We only examine non-wage work explicitly in the cases of Egypt and Tunisia since the proportion of female non-wage workers in Jordan is quite low and does not permit detailed multivariate estimates (see Appendix Table 1). It should be kept in mind though that non-wage work is the net difference between the first two outcomes (market work and wage work) and that public and private sector wage work together comprise wage work.

3.3 Early marriage

In order to assess the impact of marriage, our multivariate models estimate the effect of getting married by a certain age (usually the median age) on employment. We refer to getting married by the median age as early marriage. Since we are interested in post-marital employment, for our multivariate models we set the lower age limit of our sample to the median age at marriage (or whatever the chosen cutoff is for sensitivity analyses). We set the upper age limit to 39 to capture the employment effects proximate to marriage and during the peak child-bearing years. Since most women eventually marry in all the three countries we study (Assaad & Krafft, 2015c; Salem, 2014, 2015), we opt to use the potentially endogenous variable "getting married by the median age" rather than simply "being currently married" as indicative of the timing of marriage and its potential effect on employment. We conduct sensitivity analyses on this age cutoff to examine how the choice of cutoff affects our results.

As shown in Figure 1, among women ages 22-39, the median age at marriage in Egypt in 2012 is 22. This results in a working sample of 7,394 women who are between the ages of 22 and 39. As for Jordan, the median age at marriage for women in 2010 was 22, which results in a sample of 3,453 women aged 22 to 39. The median age at marriage for women in Tunisia in 2014 was 27, which is substantially higher than in Egypt or Jordan. This results in a sample of 1,297 women between the ages of 27 and 39.[2] One possible explanation for this older age at marriage among Tunisian women is the higher proportion of nuclear family living arrangements at marriage, which require the accumulation of more savings prior to marriage (Assaad, Ghazouani, & Krafft, 2017a). Another possible reason is the bimodal unemployment duration distribution among Tunisian men, characterized by a high proportion of unemployed men waiting for up to 6 years in their transition to first employment and thus not being economically ready for marriage until an older age (Assaad & Krafft, 2016).

3.4 Control variables

As shown in Appendix Table 1, the set of control variables included in the models that are common to all countries are: age, age squared, educational attainment (categorically as no educational certificate (the reference), below secondary certificate, secondary certificate, and above secondary certificate),[3] father's and mother's educational attainment (categorically as no educational certificate (the reference), below secondary certificate, and secondary or above certificate), an interaction term between whether the father has a secondary or above education and whether the individual's own education level is above secondary, father's working status and sector (categorically as public wage worker (the reference), private wage worker, or otherwise (including

[2] Note that a few observations were lost due to missing data on the instruments, leading to a smaller working sample (described above) in the instrumental variables models. The non-IV models this have a slightly larger sample size than the IV models.

[3] These categories are slightly collapsed from those presented in the descriptive statistics to facilitate estimation given the smaller sample used in the multivariate models.

both non-wage workers and those not working)), a dummy variable to indicate whether the mother has ever worked, and the region of birth, distinguished by its urban/rural character (except for Jordan because data on the urban/rural aspect of the region of birth was not available). For Egypt, we also control for the ratio of international male migrants to the male population in the village/neighborhood of birth,[4] which is available from the 2006 population census, in case migration is driving the local sex ratios, which we use as one of our instruments. Such a variable is not available in Jordan and Tunisia.

3.5 Instrumental variables

In order to deal with the aforementioned possible endogeneity of marriage, we follow an instrumental variable (IV) approach, instrumenting for marriage by the median age. We use three sets of instruments: (1) sex ratios in the local area of birth, (2) the ratio of female siblings (including the woman) to all siblings in the individual's natal household, and (3) whether the woman is the eldest among her female siblings.

The first instrumental variable we use to instrument for marriage by the median age is the local sex ratio, calculated as the ratio of females in the woman's five-year birth cohort to males born in the preceding five-year birth cohort in the woman's location of birth. The reason we opted to shift the male cohort by five years is because this is approximately the average age gap between spouses in the three countries.[5] We hypothesize that a higher ratio of females to males, defined in this way, will delay women's marriage due to the shortage of potential marriage partners. This instrument has been shown in a global context to shape marriage markets and age at marriage (Angrist, 2002), and although selective migration is a concern, a focus on area of birth can help alleviate that concern along with our controls for migration (for Egypt).

We calculate these local sex ratios at the most detailed geographic level for which we can obtain data, using population census microdata for each country. For Egypt, this is the second level of administrative geography (the district level), for Jordan it is the third level (the sub-district level), and for Tunisia, it is the first level (the governorate), but in that case we calculate the ratios separately for the urban and rural portions of the governorate. To construct these sex ratios, we draw on census microdata from the IPUMS-International repository for Egypt (1996) and Jordan (2004) (Minnesota Population Center, 2015), and census data from the Tunisian National Institute of Statistics (INS) for the 2004 Tunisian census. We merge the sex ratios obtained from census data into our LMPS data, matching each woman to the sex ratio of her five-year age cohort in her locality of birth, this being either a district, sub-district or the urban/rural component of her governorate, depending on the country.[6]

The second set of instruments relates to the structure of the natal household. We use as instruments the ratio of female siblings (including the woman) to all siblings in the natal household and whether the individual is the eldest among her female siblings. Our hypothesis is that a higher ratio of female siblings to all siblings will delay marriage as younger siblings wait for the older siblings to marry. Previous research (Krafft & Assaad, 2017) has indicated that there is a significant association between at least number of sisters and age at marriage in Egypt . Our instrument is

[4] In the cases of villages where the proportion of male migrants to male population is unknown, we substitute its weighted average at the district level.

[5] It is nearly 7 years in Egypt (Assaad & Krafft, 2015c), six years in Jordan (Salem, 2014), and between 5 and 6 years in Tunisia (Assaad, Ghazouani, & Krafft, 2017a).

[6] In the few cases where the administrative geography has changed between the relevant population census and the LMPS survey, we substitute the sex ratio of the nearest geographic unit with the same urban/rural classification.

superior to number of siblings as it removes endogenous fertility aspects by looking at the ratio, rather than number, of females. We also hypothesize that being the eldest daughter will tend to speed up marriage, due to the demographic pressures of younger siblings. The ratio of female siblings to all siblings is available for all three countries while the birth order and thus the eldest daughter instrument is only available for Egypt and Tunisia. For these to be valid instruments, we must further assume that they are exogenous to both the marriage and employment decisions and that they only affect employment through the timing of marriage (the so-called exclusion restriction).

3.6 Models

Although we hypothesize that marriage is endogenous to work decisions, in order to both test for endogeneity and overcome it we estimate a variety of different models of the relationship between early marriage and work. First, we estimate simple probit models for the various binary employment outcomes, essentially (Wooldridge, 2010):

$$y = 1[y^* > 0]$$

or

$$y = 1[\boldsymbol{x\beta} + e > 0]$$

Where the observed binary employment outcome is y, which is determined by the indicator function $1[\cdot]$ and the underlying latent function $y^* = \boldsymbol{x\beta} + e$ based on covariates $\boldsymbol{x}$. Since, however, we are concerned about the endogeneity of one of our $\boldsymbol{x}$ variables, namely the binary regressor for early marriage, we also estimate a bivariate probit model (Wooldridge, 2010):

$$y_1 = 1[\boldsymbol{z_1\delta_1} + \alpha_1 y_2 + u_1 > 0]$$

$$y_2 = 1[\boldsymbol{z\delta_2} + v_2 > 0]$$

Here y_2 is our potentially endogenous early marriage regressor and we are concerned that the error terms are correlated, that is, $\rho = Corr(u_1, v_2) \neq 0$. We exclude from $\boldsymbol{z_1}$, which are the controls, and include in $\boldsymbol{z}$ our instruments. In this bivariate probit model, both the early marriage and employment equations are non-linear. While Wooldridge (2010) suggests a bivariate probit specification when the endogenous regressor is binary, this specification may violate the "forbidden regression" rule of Angrist and Pischke (2009), which states that non-linear first stages are not appropriate in IV estimation. Therefore, we also present an IV probit model, which estimates (Newey, 1987):

$$y_1 = 1[\boldsymbol{z_1\delta_1} + \alpha_1 y_2 + u_1 > 0]$$

$$y_2 = \boldsymbol{z\delta_2} + v_2$$

Essentially, the endogenous binary regressor is treated as continuous and IV probit estimates assume a linear first stage. The problem with this approach is that a linear first stage may be inconsistent when the endogenous regressor is a binary variable, as is the case here (Terza, Basu, & Rathouz, 2008; Wooldridge, 2015). Simulations using both two-stage least squares linear probability models and two-step probit models show the superiority of the bivariate probit model, particularly when the average probability of the dependent variable is close to zero (Bhattacharya, Goldman, & McCaffrey, 2006), as is the case with women's post-marital employment in MENA.

Given the potential problems with both bivariate probit and IV probit methods, we present both sets of estimates to ascertain whether our results are robust across them.[7] Models are estimated separately for each country, with comparable but country-specific characteristics. For our endogeneity corrected IV probit and bivariate probit estimates we report bootstrapped standard errors with 400 replications. Bootstrapped errors are strongly recommended in comparison to analytical standard errors in models such as the bivariate probit (Chiburis, Das, & Lokshin, 2012). All standard errors are clustered at the local level, i.e. the geographic level at which our instruments are computed, which differs by country.

4. Results

Our results are organized into three sections. First, we present descriptive results on marriage timing and the relationship between marriage and employment. Second, we present the results of our multivariate models for the impact of early marriage on work. Lastly, we present further descriptive results on a variety of contextual factors and potential policy levers that may affect women's decision to work after marriage.

4.1 Descriptive results

4.1.1 Age at marriage

As discussed earlier, the median age at marriage for the sample of women 22-39 in each of the surveys is 22 in Egypt and Jordan, and 27 in Tunisia. Figure 1 shows the proportion of women married at each age by country. Patterns of early marriage, including some teen marriage, are similar in Egypt and Jordan, whereas first marriage occurs later in Tunisia. Marriage is nearly universal in Egypt, but in Jordan only around 84 percent of the sample is married by age 39 and in Tunisia the share is around 78 percent, indicating variation in the universality of marriage.

4.1.2 Employment and marital status

While men are more likely to work when they are married, the opposite is true for women in all three countries. In Figure 2 we compare the employment rates of males and females by marital status across countries for non-students. Married men are more likely to be employed than unmarried men, for instance 87 percent of unmarried men compared to 98 percent of married men are employed in Egypt. Although employment rates for men are slightly lower in Jordan and Tunisia, ostensibly due to a mix of higher unemployment as well as earlier retirement (Al Hawarin, 2014; Assaad, Ghazouani, & Krafft, 2017b; Mryyan, 2014), they show the same pattern of employment rates being higher for married men. In all three countries, women are less likely to be employed if married, with the gap in employment rates between unmarried and married women being particularly large in Jordan, followed by Tunisia. Employment rates for married women are 27 percent lower than for unmarried women in Egypt (18 percent vs. 25 percent), 46 percent lower in Tunisia (18 percent vs. 34 percent) and 57 percent lower in Jordan (12 percent vs. 28 percent). As we will see below, these variations across the three countries reflect differential levels of access to forms of employment that are more compatible with marriage, such as public employment and self-employment, as well as different propensities to remain in private wage employment after marriage.

A number of individual characteristics relate to women's employment status and could mediate the relationship between marriage and work. Education is well-known to be closely related to labor

[7] Simulations comparing IV probit and especially biprobit found that they were generally robust to conditions that violate typical assumptions, such as heteroscedasticity (Bhattacharya, Goldman, & McCaffrey, 2006; Chiburis, Das, & Lokshin, 2012; Nichols, 2011).

force participation, unemployment, and employment in all three countries (Assaad, Ghazouani, & Krafft, 2017b; Assaad & Krafft, 2015b; Assaad, 2014b; Mryyan, 2014). In Figure 3 we show women's employment rates by marital status and education level. Notably, less educated women have quite low employment rates in Egypt and Jordan, particularly if they are married. This is not the case in Tunisia, where women with even basic education who are not yet married work at the same rate, approximately 40 percent, as more educated women. This suggests that less educated women in Tunisia have greater access to unskilled wage employment opportunities in the private sector than those in Egypt and Jordan, but that they often have to leave these jobs at marriage. As a result, married women in Tunisia show a similar gradient of employment with education as married women in the other countries, with the highest employment rates among the most educated. Among university and above educated women who are married, 41 percent (Egypt) to 58 percent (Tunisia) are employed. The ability of university-educated women to remain employed at relatively high rates after marriage in all three countries is presumably explained by the greater access these women have to public sector employment, which, as we will see below, is easier to reconcile with marital responsibilities.

4.1.3 Types of work and marriage

Past research has demonstrated an important relationship between the type of work and women's ability to work after marriage (Assaad & El-Hamidi, 2001; Assaad, Ghazouani, & Krafft, 2017a; Assaad & Zouari, 2003; Hendy, 2015). Figure 4 explores this issue by tracing the evolution of the proportion of women in different sectors of work relative to the year of marriage, spanning a period of ten years prior to ten years after marriage. Up until the year before marriage in Egypt, the share of women in the public sector is around 5 percent, comparable to the share in private sector wage work. However, at marriage, the share in private sector wage work drops substantially, while public sector work continues its rising trend and the trend in non-wage work shifts upward. Essentially, half of women working for wages in the private sector in Egypt leave at marriage, and their share never recovers to the levels seen prior to marriage. A similar pattern of reduced private sector wage work at marriage is observed in Jordan, although this kind of work is more prevalent there prior to marriage than in Egypt, reaching a peak of about 9 percent one year before marriage. Although the absolute decline at marriage is somewhat larger than in Egypt at about 3 percentage points, the relative decline is smaller because of the initially higher level. Similar to Egypt, in Jordan public sector work continues its rising trend after marriage, but non-wage employment does not appear to be much of an option for either unmarried or married women unlike in Egypt. It is also important to note that instead of remaining flat after marriage as in Egypt, the proportion of women working in private wage work keeps declining steadily in Jordan after marriage. In Tunisia, private sector wage work is even more prevalent than in Jordan prior to marriage, rising steadily with age until it reaches a peak of about 11 percent of women one year prior to marriage. While it drops at marriage, at two percentage points, the drop is smaller than in Egypt and Jordan in both absolute and in relative terms. Even more importantly, it appears to recover after this initial drop, returning to its pre-marriage level about eight years after marriage, suggesting that women in Tunisia exit the private sector to have children, but then are able to return after their children have reached school age.[8] As in Egypt, there is no comparable decline in public sector or non-wage work at marriage; both continue to rise. Given these important relationships between type of work

[8] Differences in fertility may also play an important role in the return to work. In Tunisia the fertility rate (TFR) is approximately 2.1 (Assaad, Ghazouani, & Krafft, 2017a), while in Egypt and Jordan it is 3.5 (Department of Statistics (Jordan) & ICF International, 2013; Krafft, 2016).

and persistence after marriage, we frame our multivariate model outcomes in terms of these types of work.

Appendix Table 1 shows the summary statistics of all the outcome variables, control variables and instrumental variables we use in our multivariate models. The sample covered by the table is women aged 22-39 in Egypt, 22-39 in Jordan and 27-39 in Tunisia. The table confirms that women married by the median age in all three countries are much less likely to be employed than those who are not and that the differential is larger for wage employment than for overall employment. With a nearly 4:1 ratio, Jordan has the largest relative differential in the proportion of women in wage employment between those who did not marry by the median age and those who did, followed by Egypt and then Tunisia. The ratio across the two groups of the proportion in private wage employment in Jordan is even larger at more than 5:1, nearly double the ratio in Egypt and Tunisia. It should be kept in mind, however that women who have not married by the median age have very different characteristics than those who have. For example, in Egypt, 40 percent of those not married by the median age have above secondary education compared to just 9 percent of those married by the median age. Similar differences in education can be seen in Jordan, but the differences in Tunisia are somewhat smaller. Similarly, women who marry later have more educated fathers and mothers in Egypt and Jordan, but the reverse is true in Tunisia. There may also be considerable differences in unobservable characteristics between those who marry early and those who marry late. Thus, it is necessary to correct for both observable characteristics and selection on unobservables before valid inferences can be made about the relationship between marrying early and employment, a challenge we tackle in the multivariate analysis below.

4.2 Multivariate model results

This section presents the multivariate results for models of how currently working in various employment statuses depends on early marriage (i.e. marriage prior to the country-specific median age). We consider each work outcome in turn (work, wage work, private wage work, public wage work, and non-wage work), treating them all as binary outcomes. Since being married by the median age is a potentially endogenous regressor, we present both endogeneity-corrected and uncorrected estimates. As explained in the methods section, we correct for endogeneity using an IV probit as well as a bivariate probit specification. The uncorrected estimates use a simple probit specification.

4.2.1 First stage results and tests

We begin by discussing the first-stage estimates of the probability of being married by the median age and the various tests of the validity of our instruments, since our subsequent results are predicated on them. The first-stage equation results are shown in Appendix Table 2, Appendix Table 3, and Appendix Table 4 for Egypt, Jordan, and Tunisia, respectively. As shown in Appendix Table 2, two of the instruments – being an eldest sister and the share of female sibling to total number of siblings in the natal household – are statistically significant at the 5 percent level for Egypt and have the expected sign. Only the sex ratio in the place of birth is not statistically significant. As shown in column (1) of Table 1, the F-statistic of joint significance of the instruments is 8.06 in the case of Egypt (p-value <0.001). The test is computed using clustered and heteroscedastic-robust standard errors on a two-stage least square specification of the model, which specifies both stages as linear probability models. The test statistic should be compared to the "rule of thumb" critical values provided by Stock and Yogo (2005) for each desired level of relative bias of IV to OLS estimates. According to Stock and Yogo (2005), IV estimates are always biased in the case of weak instruments, but they are less biased than OLS. A F-statistic of 8.06 is

lower than the threshold of 9.08 associated with a 10 percent maximal bias of IV relative to OLS, but exceeds 6.46, the threshold associated with a 20 percent relative bias. This suggests that the IV estimates for Egypt have potentially reduced the bias associated with OLS by somewhere between 80 to 90 percent.

The first stage results for Jordan, shown in Appendix Table 3, indicate that the two instruments – share of female siblings and sex ratio – are not statistically significant. Recall that the third instrument – eldest sister – is not available in the Jordan dataset. As shown in column (1) of Table 1, the F-statistic for Jordan is just 0.762 (p-value 0.473), which is well below the acceptable levels for bias reduction. The first stage results for Tunisia, shown in Appendix Table 4, indicate that two of the instruments – eldest sister and share of female siblings – are significant at the 5 percent level in some specifications, but not all, and sex ratio is never significant. The F-statistic, shown in Table 1, ranges from 2.10 to 2.27 (p-value 0.102 to 0.085) which is still below the 5.39 critical value associated with a 70 percent bias reduction relative to OLS. However, as we will see below, the results from the probit, IV probit and bivariate probit estimators are very close to each other in both magnitude, sign and statistical significance for all three countries, suggesting that any bias due to endogeneity should be fairly limited.

We also undertook a set of tests to ascertain whether our potentially endogenous regressor – being married by the median age – is indeed endogenous. The test we use is a version of Wooldridge's robust score test (Wooldridge 1995) that uses a clustered and heteroscedastic-robust covariance matrix.[9] The test aims to check whether the first stage estimated residuals are significant when included in the main outcome equation. A failure to reject the null hypothesis means that the exogeneity of the potentially endogenous regressor cannot be rejected. Like the weak instruments test, this test is conducted on a two-stage least squares version of the model. The test produces a chi-square statistic with one degree of freedom, which is shown in column (2) of Table 1. As shown in the table, we are only able to reject the null of exogeneity in the case of private wage work in Egypt. These results suggest that the endogeneity of early marriage must be considered a possibility at least in the case of private wage employment, whereas women's decisions on marriage timing could potentially be considered exogenous to public sector and non-wage employment. We should keep in mind however that these endogeneity tests are predicated on the validity of the instruments, which is in doubt in the case of Jordan and to a lesser extent in the case of Tunisia.

4.2.2 Effect of early marriage on work

We now move to a discussion of our main set of results on the effects of early marriage on various employment states. We report in Table 2, the results for different employment outcomes from our probit, IV probit, and bivariate probit models.[10] The table specifically presents the reference probability of each work status for a woman who is not married early and the average marginal

[9] This test is computed using the "ivreg2" command options in STATA. The ivreg2 routine reports a different variance-covariance matrix than the ivregress routine. The latter reports the standard (heteroscedastic) robust standard errors while ivreg2 reports the cluster-robust standard errors when requested in the model. Since our estimated standard errors are clustered at the local level, we opt for using the ivreg2 command to ensure reporting the correct variance covariance matrix. (see http://www.stata.com/statalist/archive/2009-11/msg00164.html for more details)

[10] For the bivariate probit model, we calculate the marginal effect as the difference between the conditional probability of working given the individual was married by the median age and that of working given that the individual was not married by the median age.

effect of early marriage for each model. The previously mentioned controls are included in all the models but not shown.

The first thing to note in Table 2 is that all the effects of early marriage on all employment outcomes, with the exception of non-wage work in Tunisia, are statistically significant, whether we use the probit, IV probit or bivariate probit estimators. The second thing to note is that the results are quite robust to estimation method. Both the magnitude and statistical significance of effects are similar across probit, IV probit and bivariate probit specifications, suggesting that the bias due to the potential endogeneity of our regressor of interest "married by the median age" is small. We will therefore focus in the subsequent discussion on the IV probit results, but will discuss any deviations from these results where relevant.

For all three countries, the impact of marriage by the median age on any market work, wage work, private, and public wage work is negative and statistically significant. In line with what was observed in the summary statistics, the most important effect of marriage is observed in Jordan where the probabilities of work and wage work decline by almost 13 percentage points (p.p.), followed by Tunisia, where the probability of work declines by 9-10 p.p., depending on the estimation method and that of wage work by 11 p.p. The smallest absolute effects of marrying by the median age are observed for Egypt, where the probability of work declines by about 3 p.p. and the probability of wage work by 5 p.p.

Given the differences in the reference probabilities of different kinds of work in the three countries, it is more informative to discuss relative declines in the probability of the various work statuses. These relative effects, based on estimates from the IV probit method, are shown in Figure 5. The figure confirms that the largest effects of marrying by the median age are observed for Jordan. Marrying by that age reduces the probability of work by 47 percent, that of wage work by 50 percent and that of private wage work by as much as 76 percent. The reduction in the probability of public sector employment at 28 percent is not only smaller relative to that of private wage employment, but is also smaller in Jordan than it is in Egypt (30 percent) and Tunisia (42 percent). These results are somewhat at odds with the descriptive trends shown in Figure 4 where public sector employment is scarcely affected by marriage. It appears that early marriage does in fact reduce the probability of public sector employment, but to a lesser extent than for private sector wage work.

The second largest relative effect of marrying by the median age is in Tunisia, but the effects there are measured with less precision than in Egypt and Jordan because of the smaller size of the Tunisian sample. The overall reduction in the probability of employment due to marrying by the median age in Tunisia is 33 percent, but the probability of wage work is reduced by 50 percent and that of private wage work by 57 percent. Interestingly, the difference in the effects of marrying by the median age on private and public sector wage work in Tunisia is not as large as it is in Jordan. Unlike Jordan, where self-employment does not appear to be much of an option for women, the probability of non-wage work in Tunisia rises by 57 percent if a woman marries by the median age, from about 5 percent to 8 percent. However, due to the imprecision of the estimates, the effects are statistically insignificant.

The impact of marrying by the median age on the overall probability of working is smallest in Egypt, with a reduction of only 16 percent. However, the impacts on wage work and private wage work are higher at 32 percent and 40 percent, respectively (See Figure 5). As in Tunisia, the effect of early marriage on overall employment in Egypt is considerably attenuated by the fact that the

probability of non-wage work increases sufficiently to counteract the reduction in wage employment. In Egypt, this probability increases for those married by the median age by 54 percent from about 4 percent to 6 percent.

The large effect of marrying by the median age on the probability of women's work in Jordan appears to be the result of two factors. First, Jordan exhibits the largest negative effect of early marriage on private wage work and, as we saw in Figure 4, private wage work is quite important in the employment mix in Jordan prior to marriage. Second, nonwage work does not appear to be much of an option for women in Jordan and therefore is unable to compensate for the reduction in wage work like it does in Egypt and Tunisia. Tunisia is in second place as to the relative importance of private sector wage work in the work mix for unmarried women and thus it has the second largest negative effect of marrying on work. In Egypt, the overall effect is attenuated by the fact that only a small proportion of working unmarried women work in the private sector and that non-wage work is a viable alternative for married women.

4.2.3 Sensitivity analyses

In order to check the robustness of the effects with regard to the timing of marriage, we run sensitivity analyses on different age cutoffs other than the median age, namely marriage by ages 24 and 26 for Jordan and Egypt and by ages 22 and 24 for Tunisia. The results of the sensitivity analyses are shown in Appendix Table 5 (for Egypt), Appendix Table 6 (for Jordan) and Appendix Table 7 (for Tunisia). The main result that marriage by a certain age cutoff negatively affects the probability of employment, wage employment, private and public wage employment holds. As before the probit, IV probit and bivariate probit results are similar in magnitude, sign, and statistical significance for all age cut-offs in all three countries.

The general pattern in Jordan is that as the age cutoff rises from 22 to 24 to 26, the absolute effect of marrying by that age on all five employment outcomes rises, but, as shown in Figure 6, the relative effects decline slightly, especially in the private sector. In Egypt, the size of the absolute effects exhibits an inverted U-shape with the cutoff age of marriage. The largest negative effects on the probability of overall employment, wage employment, private wage employment and public sector employment are observed for a cutoff age of 24. Only the positive effect on non-wage employment increases as we move from a cutoff of 24 to a cutoff of 26 in Egypt. In Tunisia, the effects remain fairly similar when moving from 27 to 24 but shift to larger effects, particularly for wage work (and for both public and private sector work) when we further decrease the age cutoff to 22. The ordering of the effects across the three countries is mostly maintained for each of the three age cutoffs, which suggests that it is not an artifact of the choice of cutoff. The only exception is that effect of marrying by the age cutoff on wage work and private wage work becomes larger in Tunisia than in Jordan when the age cutoff is equalized.

4.3 Factors mediating the work and marriage relationship

Having demonstrated that the negative effect of marriage on various types of women's work, particularly private sector wage work, holds even after accounting for individual characteristics and the potential endogeneity of marriage, we now turn to examining some of the contextual factors that mediate this relationship, which may in turn act as potential policy levers for increasing women's ability to engage in wage work after marriage. We examine first how women's domestic responsibilities may preclude working outside the home in terms of domestic work burdens, availability of maternity leave, and childcare. Secondly, we look at some of the aspects of obtaining

work and workplaces, such as how women find their jobs, the gender composition of workplaces, and commute times, which may act as barriers to employment outside the home.

4.3.1 Domestic responsibilities: Domestic work, maternity leave, and child care

Gender norms in MENA countries prescribe a clear gendered division of labor within marriage. Men are expected to act as breadwinners, providing income for the household, while women are expected to assume domestic responsibilities such as care work, including child and elder care, as well as domestic chores. Working outside the home is only considered appropriate if women can continue fulfilling their domestic responsibilities (Hoodfar, 1997). The burden of those domestic responsibilities on women's time is therefore of paramount importance in terms of their ability to work. To assess the time burden of domestic responsibilities, we compare in Figure 7 the hours of domestic and market work for women 15 to 64 by their employment and marital status.[11] Domestic work includes child and elder care as well as doing chores such as cooking and laundry. Across all three countries, domestic responsibilities do not appreciably decrease for women who are employed; this essentially means women have to work a second shift once married in order to work outside the home.

When women are unmarried, their domestic hours of work are moderate, from 9 hours for employed women in Tunisia to 17 hours for both employed and not employed unmarried women in Jordan. Such domestic responsibilities are relatively more easily reconciled with market work, which ranges from an average of 41 hours for unmarried women in Egypt to 45 hours in Tunisia. However, notably, even these hours of work for unmarried women are lower than is typically the case for men (Assaad & Krafft, 2015a). Market hours of work do drop somewhat for married women, being five hours shorter in Tunisia and Jordan, and four hours shorter in Egypt, suggesting that women are working less, both on the extensive and intensive margin, after marriage. Most notably, women who are engaged in market work still have large domestic workloads when married. In Tunisia, the overall workload is lowest, with married women working 24 hours on domestic work if not employed, and 20 hours if employed. In Egypt, the domestic workload is identical for married women, 31 hours, regardless of employment status. Likewise, in Jordan married women face a particularly high domestic workload that changes little by employment status; 37 hours, if employed, and 38 hours, if not. Comparing across countries, the relatively lower domestic workload in Tunisia compared to Egypt and especially Jordan may explain some of the differences we see in women's employment rates in these three countries, which decline in line with increasing domestic responsibilities. The substantial differences across countries suggest that it may be possible to reduce the amount of time devoted to domestic work in high workload countries such as Jordan and Egypt, whether through technological innovations that reduce women's work (such as washing machines, dish washers and other kitchen appliances), better access to services (such as water and sanitation), outsourcing services (such as child care, ready-made meals and pre-processed foods, laundry, and cleaning services), or increasing the role of men in these areas.

An important aspect of women's ability to reconcile work and marriage is whether they can combine childbearing with employment. Both maternity leave policies (and realities) and child care options play an important role in reconciling these aspects of women's lives. We examine paid maternity leave in Figure 8, among women who worked for a wage during their first pregnancy. It is important to note that women who never worked or quit work before becoming

[11] Married includes only the currently married; the divorced, separated, and widowed are included with unmarried.

pregnant are not represented in this sample, and are disproportionately likely to have *not* had maternity leaves. In Jordan, only 8 percent of women who worked during their first pregnancy had no paid maternity leave, while in Egypt the share was 18 percent and in Tunisia 19 percent. A leave of 2-6 weeks was most common in Tunisia (44 percent) but less common in Egypt (18 percent) and Jordan (6 percent). Longer maternity leaves were most common in Jordan, where 87 percent of women received 7 or more weeks of paid maternity leave, compared to 65 percent in Egypt and 37 percent in Tunisia. This disparity is probably because most women who are still working during the first pregnancy in Jordan are in fact working in the public sector. As we have seen above, the vast majority of women who work in the private sector prior to marriage in Jordan leave that work at marriage and therefore do not figure in these statistics on maternity leave. This is also the case to varying degrees in Egypt and Tunisia. Short maternity leaves may be one reason women in Tunisia leave private sector wage work but then later return to it.

Turning to unpaid maternity leave, in Figure 9, data are only available for Egypt and Tunisia. Unpaid maternity leave may allow women to take longer leaves before returning to work, although they miss the resources of paid leave. Unpaid leave is uncommon, as 61 percent of women in Egypt and 74 percent of women in Tunisia do not get any time for unpaid maternity leave. Those women who do get unpaid leaves typically get less than 3 months in Tunisia (16 percent) while in Egypt longer leaves are common, with 21 percent of women getting 3 months and even 11 percent getting seven or more months. The short durations of paid maternity leave and lack of unpaid leave in Egypt and Tunisia may be a constraint on women's ability to work after marriage.

Childcare is an important support for women's ability to work after marriage. For women working for a wage with children under age 12, Figure 10 presents the primary child care provider and Figure 11 presents the secondary child care provider (if any). Most women have only a single provider, but a substantial minority have multiple arrangements; 23 percent in Egypt, 22 percent in Jordan, and 19 percent in Tunisia. Having to organize multiple arrangements because one is not sufficient may further complicate working.

In Egypt, the most common primary caregiver is the woman's mother (27 percent), but this form of care is less common in Jordan (11 percent) and Tunisia (18 percent). Jordan (30 percent) and Tunisia (27 percent) have higher rates of nursery or nanny care than Egypt (19 percent). Children are also more often at school (23 percent) in Jordan, but less so in Egypt (14 percent) or Tunisia (5 percent). In all three countries mother-in-laws (15 percent-18 percent), relatives (8 percent-19 percent) and other arrangements (8 percent-16 percent) also play an important role. Notably few children are primarily with the father or husband (1 percent-2 percent), and this does not rise appreciably in terms of secondary caregiving, which is also primarily the responsibility of relatives, and in Jordan, schools. Essentially, caregiving is provided primarily by other female relatives, with a modest share of women using professional caregiving arrangements. Increasing the availability and affordability of non-relative care is likely to be important for women to reconcile work and childbearing.

4.3.1 Characteristics and conditions of work

In addition to their ability to reconcile work and domestic responsibilities, women's work may be affected by certain characteristics of work and workplaces, such as how to find jobs, the gender composition of workplaces, and commute time. Indeed, women's ability to work at all, as well as after marriage, is predicated on their ability to obtain employment. Figure 12 shows how working women obtained their jobs. In Egypt, 50 percent of working women obtained their main jobs via the government. Only 31 percent of women in Jordan found their jobs through the government,

and 27 percent in Tunisia. Tunisia has the highest percentage of women, 58 percent, obtaining their jobs via private search methods, followed by 40 percent in Jordan and 28 percent in Egypt. Finding a job via friends and relatives is most common in Jordan (29 percent) followed by Egypt (17 percent) and Tunisia (11 percent). It is notable that women in Tunisia are the least reliant on either government hiring or social networks to find work, which is likely to lead to greater opportunities for women, and is reflected in high private sector employment rates. Facilitating private search methods that are accessible to women, such as newspapers advertisements or online job postings, may help them find suitable work.

Concerns about reputation as well as the quality and safety of the work environment may limit where women are able to work. Women tend to have "reservation working conditions" as much as reservation wages (Dougherty, 2014; Groh, McKenzie, Shammout, & Vishwanath, 2014). Sexual harassment, in particular, is a major problem in countries in the region. Being the only woman or one of a few in a small business increases the risk of such problems, particularly in contrast to the relative safety of large government offices. Women therefore tend to work in large workplaces with substantial numbers of other women. Figure 13 shows, for working women, the (categorical) percentage of women in their workplace as a measure of the concentration of women. Women primarily work in workplaces where more than half of employees are women, 48 percent in Jordan, 47 percent in Tunisia and 36 percent in Egypt. The next most common setting was a workplace with a quarter to a half of its workforce made up of women, which, given that female employment rates are so low, is still an over-representation of women. Very few women work in places with no other women; just 1 percent in Jordan, 8 percent in Egypt, and 11 percent in Tunisia. Women clearly are concentrated in jobs that have more women, which substantially limits their employment options. Increasing work from home options, encouraging growth in firm sizes, and creating women-owned and women-only businesses may help address this constraint (Krafft & Assaad, 2015).

One factor that may particularly constrain women, who are already pressed for time by their work and domestic responsibilities, is the length of commutes to work. Assaad and Arntz (2005) argue that economic restructuring and other forces have necessitated increasingly longer commute times among men in Egypt. They interpret the fact that a similar lengthening of commute times was not seen for women as women being increasingly selected out of private wage employment by the need to commute longer distances to get to jobs.

Figure 14 shows average commute times by sex, urban versus rural, and country for working individuals (working outside the home). There are substantial disparities in Jordan and Egypt, but not in Tunisia, where commute times are shorter. For instance, men commute 41 minutes on average in urban Jordan and women 25 minutes each way, while in Tunisia men commute 19 minutes and women 21 in urban areas. There are also notably longer commute times for men in rural areas in both Egypt and Jordan than in urban areas. The mix of residential and industrial or commercial areas (in urban areas) and both agricultural and non-agricultural jobs (in rural areas), as well as traffic and transit options may be driving these patterns, and merits further investigation as a potential policy lever for improving women's participation.

5. Discussion and Conclusions

It is by now well established that women's labor force participation rates in MENA countries are the lowest in the world despite rapidly rising educational attainment among women in the region and the virtual closing, if not reversal, of the gender gap in education (Assaad, Hendy, Lassasi, & Yassine, 2016). While conservative gender norms, in general, and the primacy placed on women's

modesty, in particular, play an important role in these low participation rates, it is also clear that reconciling domestic and work responsibilities within marriage is an important factor. During the region's state-led development stage in the post-independence era, educated women, like their male counterparts, were able to access paid employment in large numbers through the public sector. Public sector employment, with its shorter hours, more generous maternity benefits and childcare provisions, was widely seen as reconcilable with women's domestic responsibilities within marriage. As MENA economies underwent restructuring in the 1980s and 1990s in response to fiscal crises and the inability to sustain the state-led model, employment opportunities in the public sector began to dry up for both men and women (Assaad, 2014a). While male new entrants increasingly found employment in the informal economy, primarily as informal wage workers, female new entrants found such work to be highly inhospitable and increasingly shied away from it, preferring instead to either remain unemployed or withdraw from the labor force altogether. If they entered such employment, it was often on a temporary basis, until they married.

Our objective in this paper was to examine the effect of marriage, and in particular marriage by a given age, on women's engagement in various types of employment. Our primary contribution is our attempt to address the potential endogeneity of the timing of marriage in relation to employment. While most women in the three countries we consider, Egypt, Jordan and Tunisia, eventually marry, the time at which they marry could well be either advanced or delayed by the fact that they are employed and by the type of employment they are engaged in. Gender role attitudes or other unobserved factors may also drive both work and marriage decisions. We addressed this potential endogeneity by attempting to identify instruments for the timing of marriage that would satisfy the necessary exogeneity and exclusion restrictions. The instruments we selected were sex ratios in the area of birth, the ratio of female to all siblings in the woman's natal household, and whether or not she is the eldest among her sisters. While our instruments were not as strong as we would have liked in the cases of Jordan and Tunisia, the fact that the results from the IV models were similar in sign, magnitude and statistical significance to those obtained using non-IV methods is reassuring. Even in the Egypt case, where the instruments appear to be of the requisite strength, the comparison of the two sets of results suggests that the bias due to endogeneity is limited.

Our results suggest that marrying by the median age affects the probability of work negatively in all three contexts, but the biggest effect on overall employment is found for Jordan, followed by Tunisia and then by Egypt. It appears that the greater availability of non-wage employment opportunities in Egypt and Tunisia is providing an alternative for women to remain employed after marriage. Wage work is more affected by marriage by the median age than overall work, again more so in Jordan and Tunisia, followed by Egypt. In the case of Egypt, it is the greater prevalence of public sector work (or the lower prevalence of private sector work prior to marriage) that is proving somewhat protective of women's continued ability to work after marriage.

The ability to participate in private wage work is the most affected by marriage. Marrying by the median age reduces the probability of private wage work by three quarters in Jordan, by nearly sixty percent in Tunisia and by about 40 percent in Egypt. When the age cutoff is equalized at 24, the ordering of the effects is still the same across the three countries, but the differences are smaller. We note from the descriptive statistics on the relationship between the timing of marriage and employment that women in Jordan continue leaving private wage employment several years into their marriage, while, in Egypt, the departures occur at marriage and then the proportion in private wage employment stabilizes thereafter. In Tunisia, on the other hand, women return to private

wage employment after several years of marriage, with the proportion in such employment ten years after marriage reverting to where it was just prior to marriage.

In our exploration of the factors mediating the marriage-employment relationship in the three MENA countries, we found that women's domestic workload within marriage plays an important role. Not only are these workloads, as measured by number of hours of engagement in domestic responsibilities, much higher after marriage than before marriage, they also vary little by whether the woman is employed or not. There appears to be a rather limited scope for employed women to reduce their domestic work burdens by shifting some of the work to the market sphere (e.g. through hired help, paid child care, prepared meals, commercial laundry services) or by acquiring labor-saving technologies. It is no coincidence that the country with the heaviest workloads for married women, Jordan, is also the country with the biggest negative impact of marriage on women's employment. Married Tunisian women appear to have substantially lower domestic work burdens than their counterparts in either Jordan or Egypt. Tunisian women also have achieved much lower fertility than in either Egypt or Jordan, with an TFR of 2.1, essentially at replacement (Assaad, Ghazouani, & Krafft, 2017a), compared to 3.5 for both Egypt and Jordan (Department of Statistics (Jordan) & ICF International, 2013; Krafft, 2016). This lower fertility rate has undoubtedly contributed to Tunisian women's ability to return to private wage employment after their children have grown. Such a return to private sector employment does not occur in either Egypt or Jordan. In fact, as we have mentioned previously, participation in private wage work continues to fall well after marriage in Jordan.

Some of the policy implications emerging from our findings are as follows. Women need more publicly provided subsidized childcare, kindergartens or early childhood programs. Current policies that impose childcare requirements on employers that hire more than a certain number of women simply contribute to the reluctance of these employers to hire married women. Similarly, policies that force employers to provide generous paid maternity leaves raise the cost of female labor and discourage employers from hiring or retaining female employees after marriage. Jordan introduced in 2010 a policy change that shifts the cost of maternity leave to the social insurance system and away from employers (Brodmann, Jillson, & Hassan, 2014). Though the impact of this policy on the hiring of married women has not yet been evaluated, it is a step in the right direction in terms of eliminating gender-specific costs to employers. Another way to promote the continued employment of married women is to provide better and faster public transportation. Given the substantial "second shift" of domestic labor that we documented above for married women in MENA, they are extremely time constrained and can scarcely afford to spend several hours each way commuting to work. Even though it was not policy-driven, the introduction of cheap motorized rickshaws in the Egyptian countryside and on the outskirts of major cities has been particularly valuable for women. Any policy to restrict or combat these innovative modes of transport should consider the implication of such actions on women's work and mobility. In the same vein, policies that encourage employers to provide part-time work, opportunities for job-sharing and telecommuting could go a long way in allowing women to reconcile their household responsibilities with their employment. By the same token, policies that impose a fixed cost per worker, such as daily minimum wages, should be avoided. Finally, policies that expand markets and remove market obstacles for time-saving services such a prepared food, laundry services and childcare to reduce women's domestic burdens should be strongly promoted.

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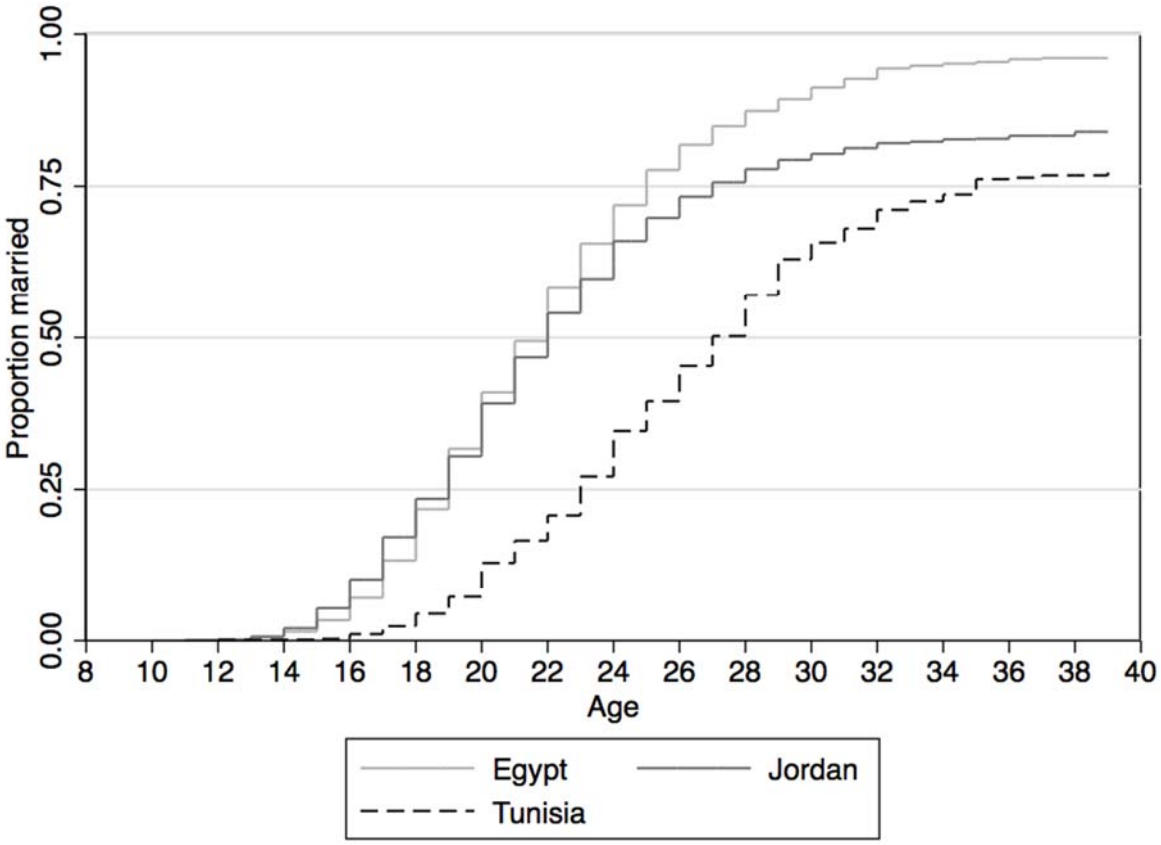
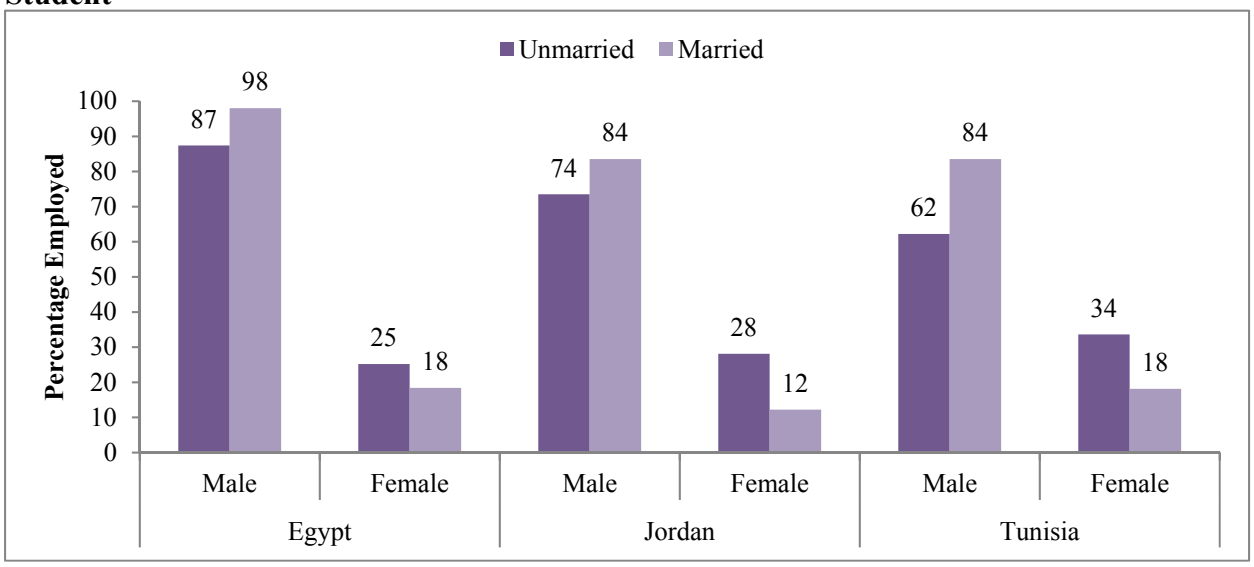
Figure 1: Proportion of Women Married at Each Age by Country, Ages 22-39



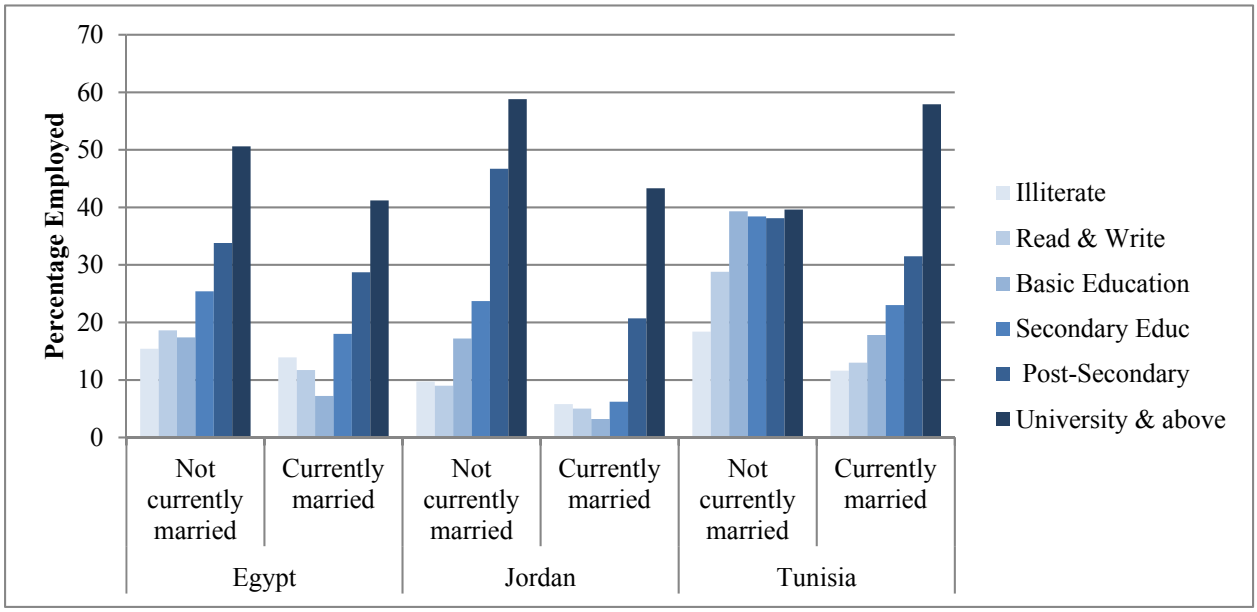
Note: Based on Kaplan-Meier failure functions calculated for females ages 22-39 in ELMPS 2012, JLMPS 2010, and TLMPS 2014.
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 2: Percentage Employed by Country, Sex, and Marital Status, Ages 15-64, Not a Student



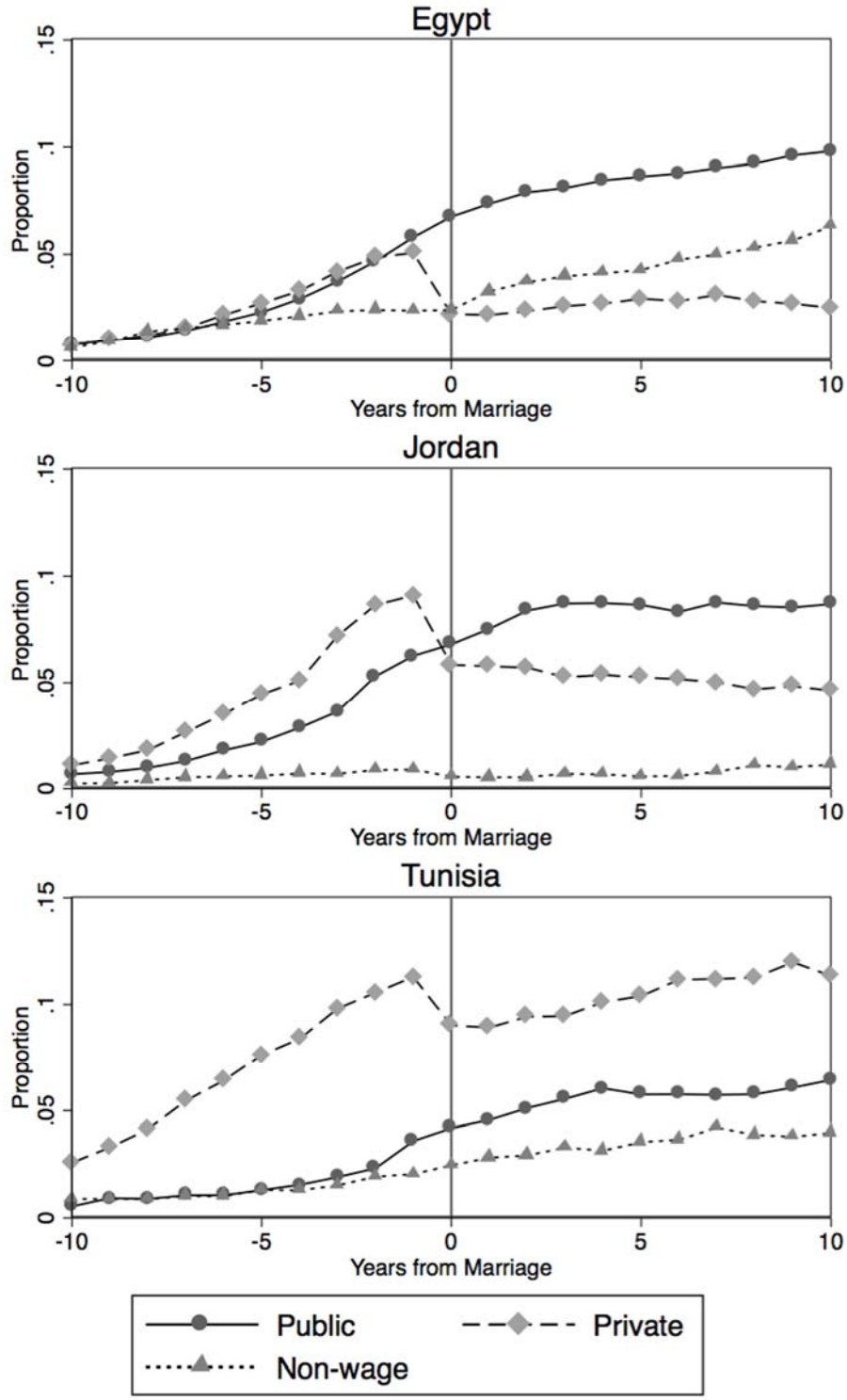
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 3: Percentage of Women Employed by Country, Marital Status and Education Level, Ages 15-64, Not a Student



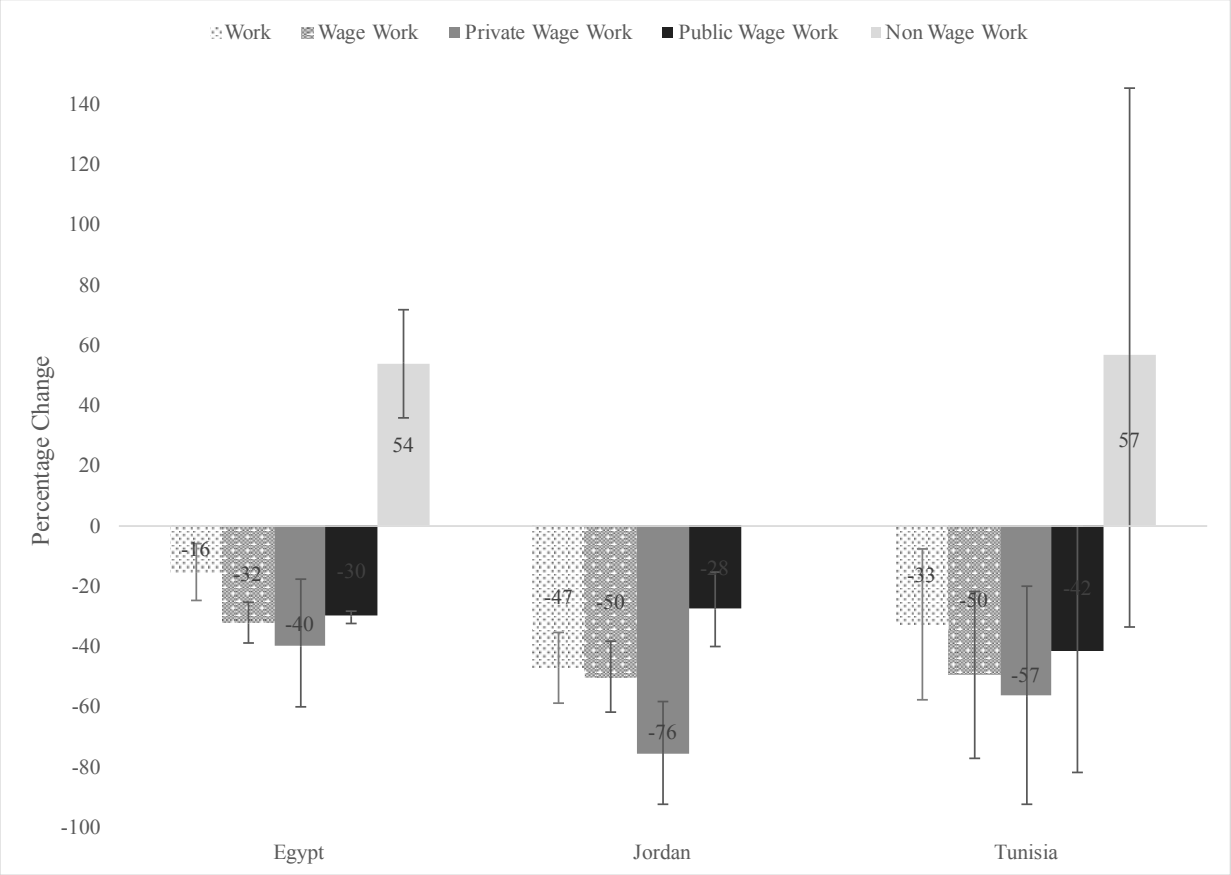
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 4: Proportion Employed in Different Types of Work by Years from Marriage and Country, Women who Married in the Ten Years Prior to Each Survey



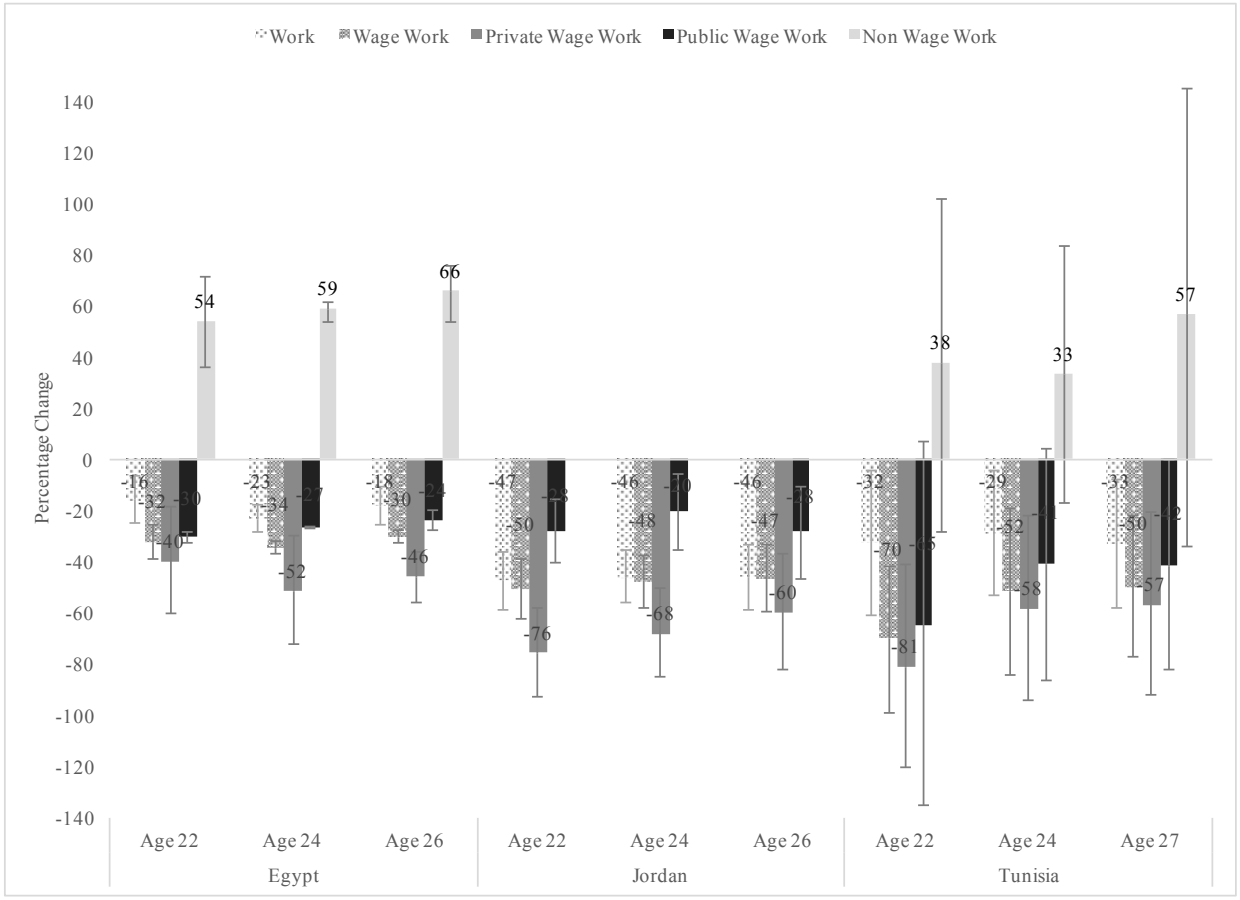
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 5: The Relative Change in the Probability of Different Employment Outcomes for Women Due to Marrying by the Median Age, by Country (Percentages)



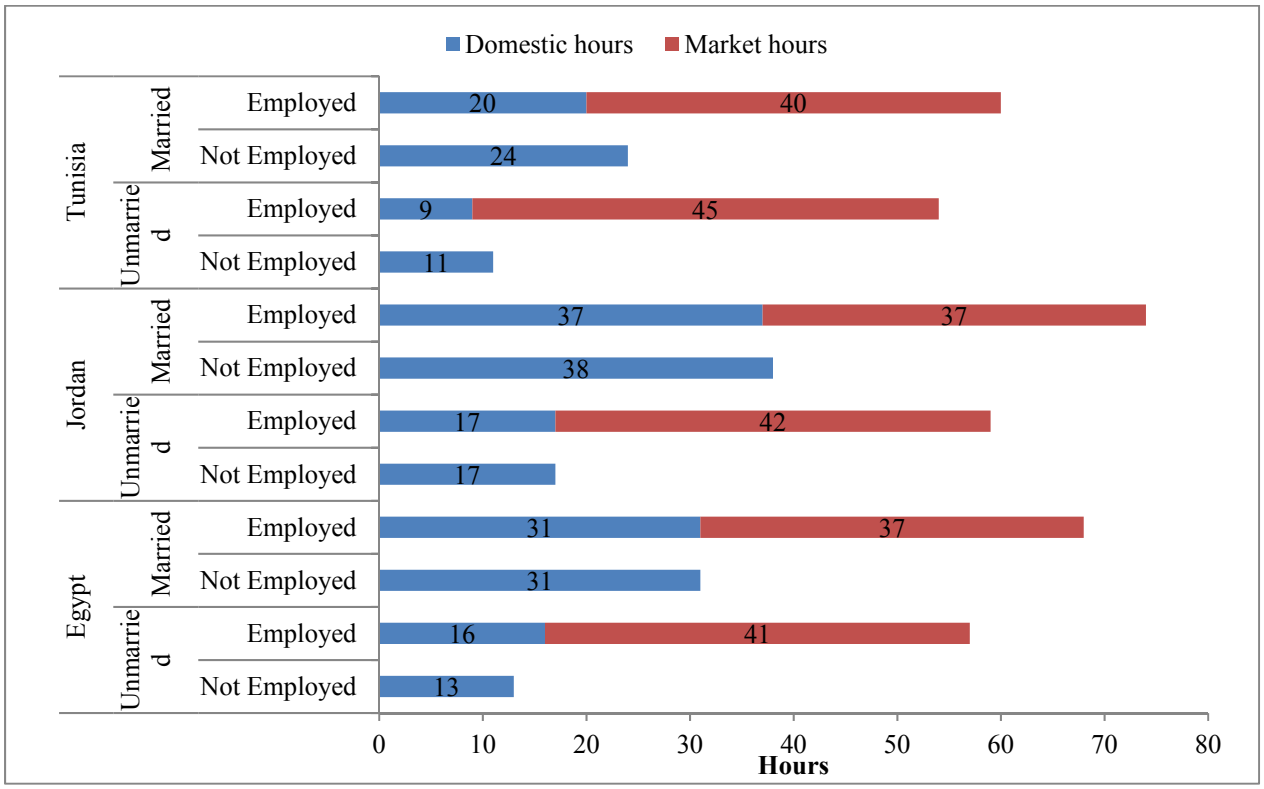
Source: Authors' calculations based on the IV probit estimates of marginal effects and reference probabilities shown in Table 2. Bars indicate 95 percent confidence intervals.

Figure 6: The Relative Change in the Probability of Different Employment Outcomes for Women Due to Marrying by Various Ages by Country (Percentages)



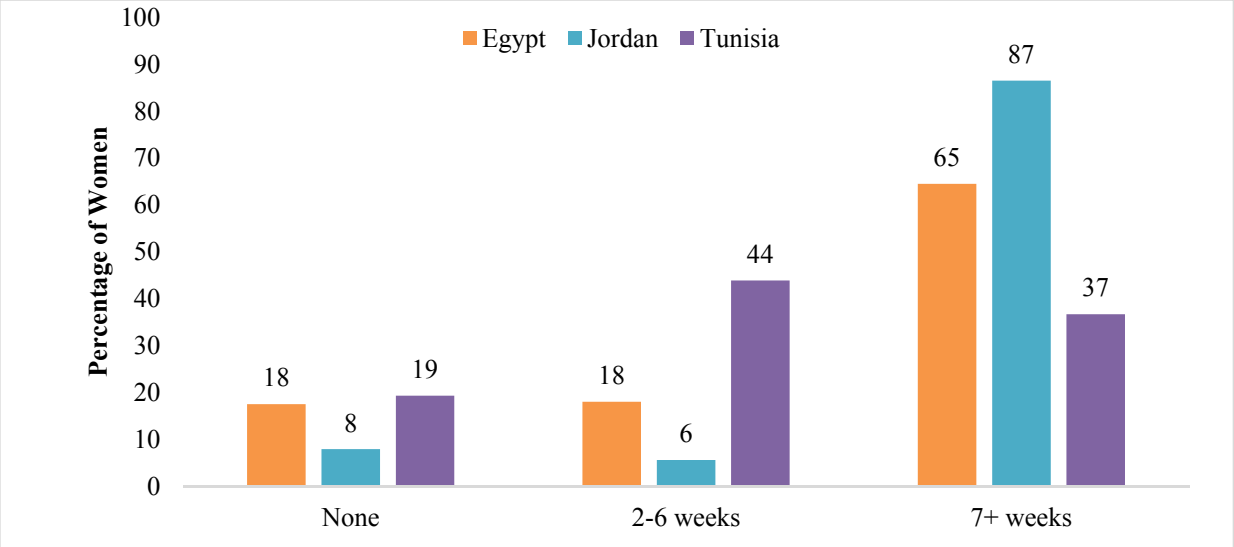
Source: Authors' calculations from IV probit estimates of marginal effects and reference probabilities shown in Appendix Table 5 (for Egypt), Appendix Table 6 (for Jordan) and Appendix Table 7 (for Tunisia). Bars indicate 95 percent confidence intervals.

Figure 7: Domestic and Market Hours per Week by Country, Marital Status, and Employment, Women 15-64



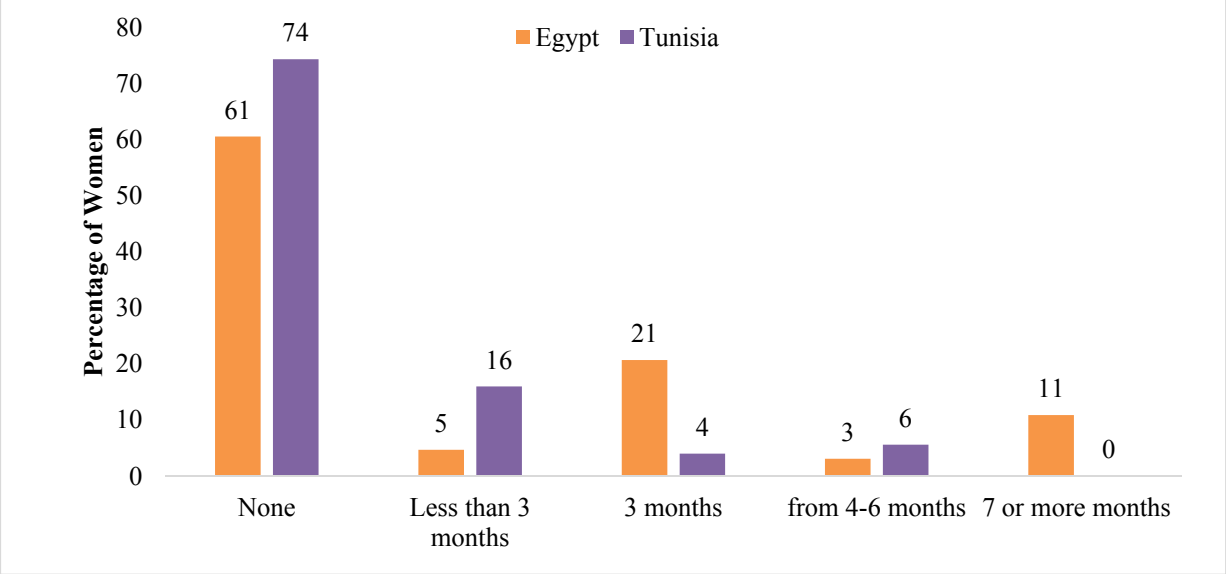
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 8: Length of Paid Maternity Leave by Country for Women who were Working for a Wage during First Pregnancy (Percentages)



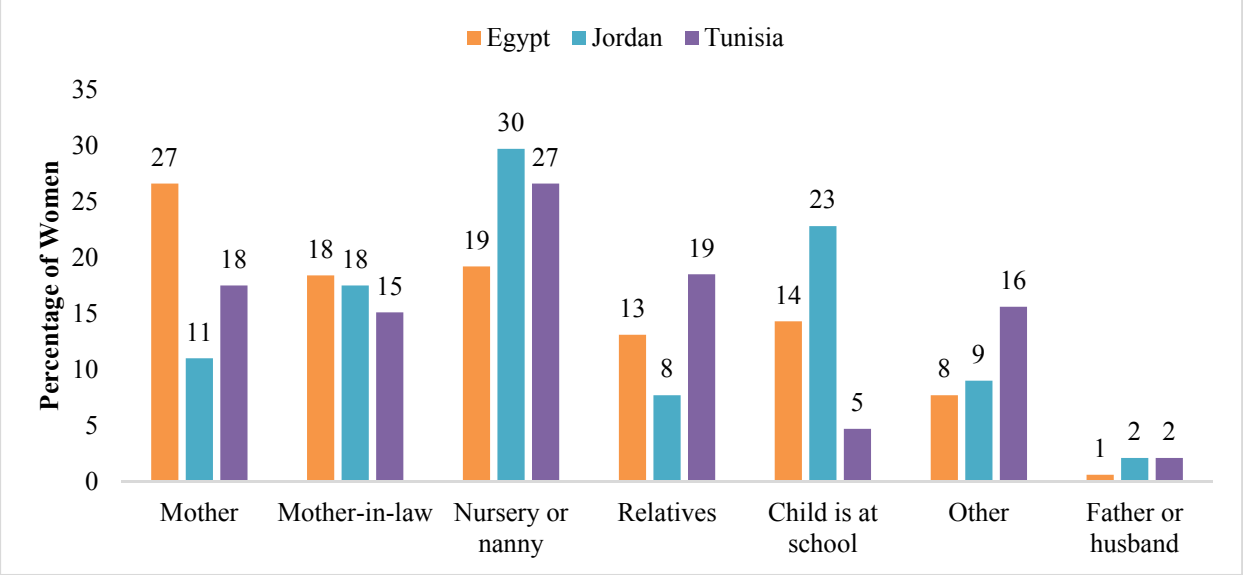
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 9: Length of Unpaid Maternity Leave by Country for Women who were Working for a Wage during First Pregnancy (Percentages)



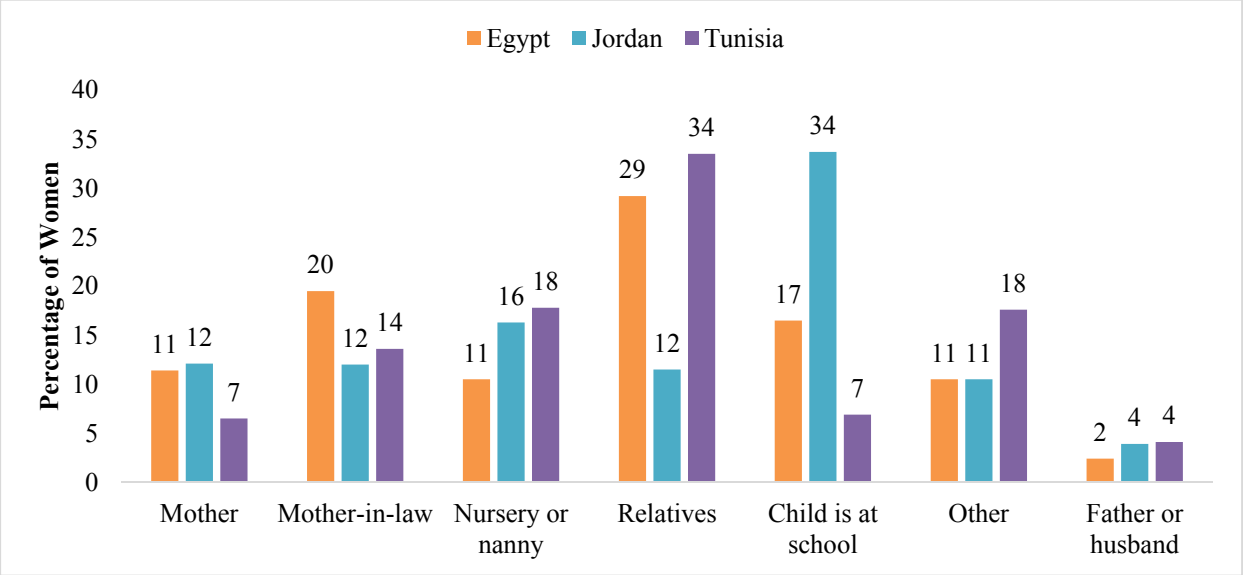
Source: Authors' calculations based on ELMPS 2012 and TLMPS 2014

Figure 10: Primary Child Care Providers by Country, Wage Working Women with Children under Age 12 (Percentages)



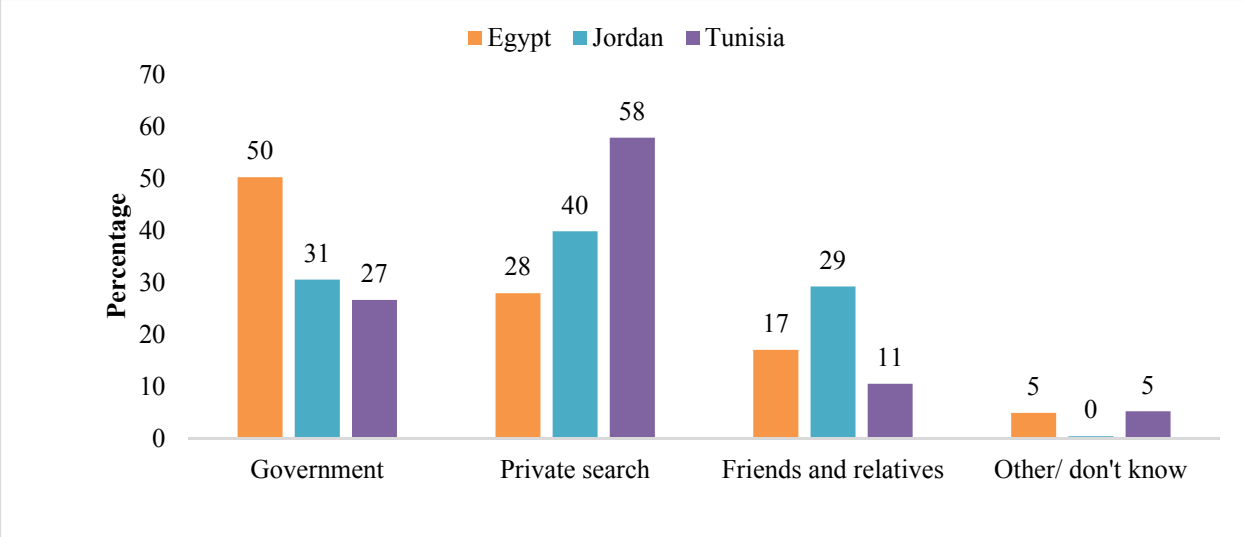
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 11: Secondary Child Care Providers by Country, Wage Working Women with Children under Age 12 and a Secondary Provider (Percentages)



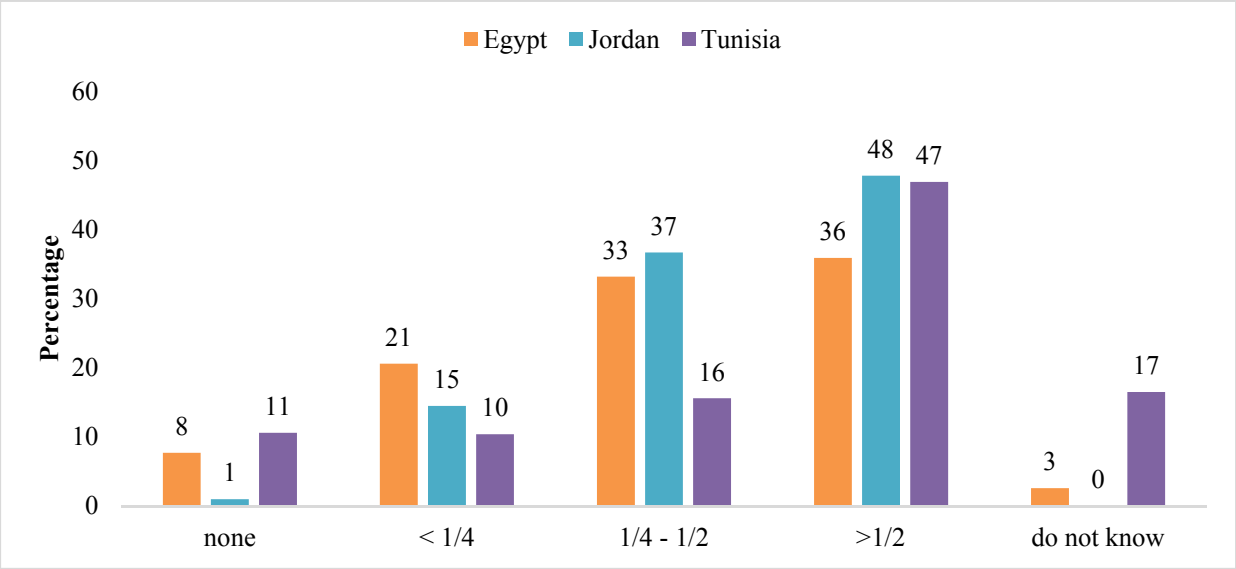
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 12: How Women Obtained their Jobs by Country, Working Women (Percentages)



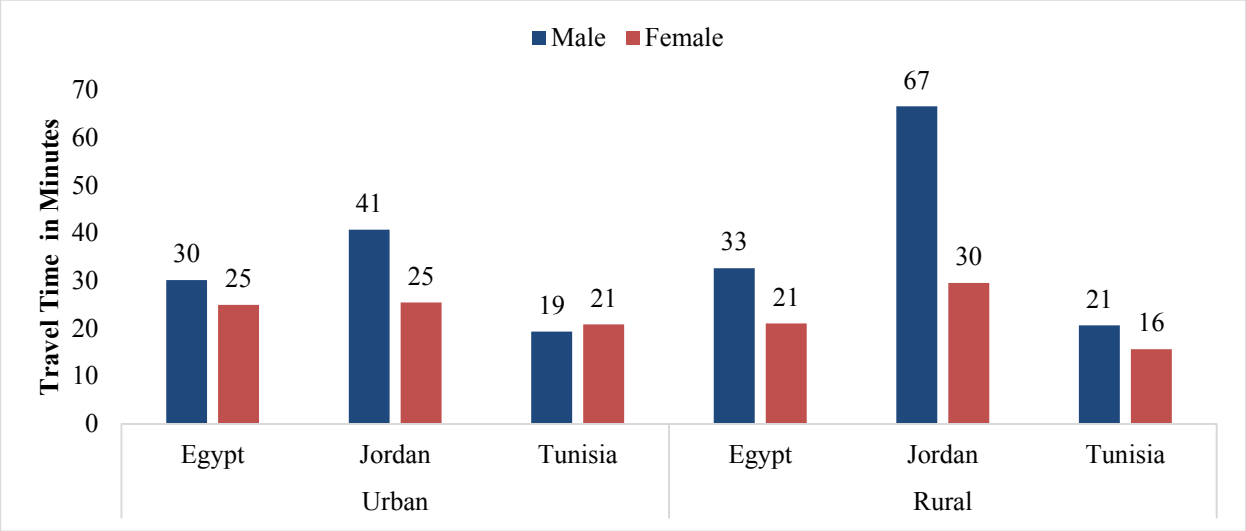
Source: Authors' calculations based on ELMPS 2012, JLMPS 2010, and TLMPS 2014

Figure 13: Percentage of Women in The Workplace by Country, Working Women 15-6



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

Figure 14: Mean Commute Time in Minutes, By Urban/Rural, Country and Sex, Working Individuals Aged 15-64



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

Table 1: Tests for (1) Strength of Instruments (F-test) and (2) Endogeneity (Chi-squared test)

Country	Outcomes	(1) Joint Significance F-test for strength of instruments	(2) Chi-squared test of endogeneity
Egypt	Work	8.056***	0.949
	Wage Work	8.056***	1.546
	Private Wage Work	8.056***	5.031*
	Public Wage Work	8.056***	0.212
	Non-Wage Work	8.056***	0.001
Jordan	Work	0.762	0.123
	Wage Work	0.762	0.131
	Private Wage Work	0.762	2.784
	Public Wage Work	0.762	1.555
Tunisia	Work	2.096	0.816
	Wage Work	2.156	0.114
	Private Wage Work	2.267	0.018
	Public Wage Work	2.267	0.163
	Non-Wage Work	2.156	1.842

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) For Egypt and Tunisia, the instruments are sex ratio by birth-cohort at the district level (Egypt) and at governorate level taking into account urban and rural division, birth order (eldest sibling) and ratio of female siblings to all siblings. For Jordan, the instruments are sex ratio by birth cohort at the sub-district level and ratio of female siblings to all siblings.

Table 2: Average Marginal Effect of Being Married by The Median Age on Employment Outcomes for Women

		Egypt (22-39)			Jordan (22-39)			Tunisia (27-39)		
Outcome Variable		**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**
Working	Probit	0.206	-0.033***	7356	0.271	-0.128***	3448	0.300	-0.102**	997
			(0.009)			(0.016)			(0.036)	
	IVprobit	0.205	-0.032**	7331	0.271	-0.128***	3433	0.299	-0.098*	982
			(0.010)			(0.016)			(0.038)	
	Biv. Probit	0.202	-0.030***	7331	0.269	-0.129***	3433	0.278	-0.086*	982
			(0.004)			(0.017)			(0.036)	
Wage Work	Probit	0.161	-0.053***	7356	0.258	-0.129***	3448	0.229	-0.113***	976
			(0.007)			(0.015)			(0.030)	
	IVprobit	0.161	-0.052***	7331	0.258	-0.130***	3433	0.230	-0.114***	961
			(0.006)			(0.015)			(0.032)	
	Biv. Probit	0.159	-0.052***	7331	0.257	-0.131***	3433	0.224	-0.113**	961
			(0.000)			(0.015)			(0.035)	
Private Wage Work	Probit	0.051	-0.021***	7356	0.135	-0.102***	3448	0.150	-0.086***	975
			(0.005)			(0.011)			(0.024)	
	IVprobit	0.050	-0.020***	7331	0.136	-0.103***	3433	0.150	-0.085**	960
			(0.004)			(0.014)			(0.032)	
	Biv. Probit	0.048	-0.021***	7331	0.135	-0.099***	3433	0.151	-0.089**	960
			(0.001)			(0.014)			(0.028)	
Public Wage Work	Probit	0.110	-0.033***	7356	0.123	-0.034***	3448	0.084	-0.034**	975
			(0.007)			(0.008)			(0.013)	
	IVprobit	0.110	-0.033***	7331	0.122	-0.034***	3433	0.084	-0.035*	960
			(0.001)			(0.008)			(0.017)	
	Biv. Probit	0.109	-0.032***	7331	0.122	-0.034***	3433	0.083	-0.020**	960
			(0.001)			(0.007)			(0.008)	
Non Wage Work	Probit	0.039	0.020**	7356				0.054	0.026	876
			(0.006)						(0.018)	
	IVprobit	0.039	0.021***	7331				0.053	0.030	864
			(0.004)						(0.024)	
	Biv. Probit	0.038	0.020***	7331				0.047	0.026	961
			(0.004)						(0.017)	

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate and district of birth (Egypt), the governorate, district and sub-district of birth (Jordan), and the governorate of birth distinguished by urban or rural (Tunisia). (iii) The reference woman in Egypt is not married by age 22. The reference woman in Jordan is not married by age 22. The reference woman in Tunisia is not married by age 27. (iv) Controls are age, age squared, education level, father's education level, father's employment status and sector, mother's education level, if mother has ever worked, whether the father has a secondary or above education interacted with whether the individual's own education level is above secondary, birth region by urban/rural, male migrants by district (only for Egypt). First-stage estimations include these controls in addition to the instruments (sex ratios in the area of birth, the ratio of female to all siblings in the woman's natal household, and whether or not she is the eldest among her sisters). The latter is not available for Jordan.
+ Bootstrapped clustered standard errors, with 400 replications are shown in parentheses

Appendix: Additional Tables

Appendix Table 1

Summary Statistics of Outcome, Control and Instrumental Variables

	Egypt (22-39)			Jordan (22-39)			Tunisia (27-39)		
	Not Married by Median Age	Married by Median Age	Total	Not Married by Median Age	Married by Median Age	Total	Not Married by Median Age	Married by Median Age	Total
Outcomes									
Work	0.263	0.136	0.189	0.347	0.098	0.213	0.331	0.178	0.248
Wage Work	0.234	0.070	0.138	0.332	0.086	0.199	0.302	0.130	0.208
Private Wage Work	0.073	0.026	0.045	0.185	0.034	0.104	0.212	0.075	0.137
Public Wage Work	0.161	0.044	0.093	0.146	0.052	0.095	0.090	0.055	0.071
Non Wage Work	0.030	0.067	0.051	0.015	0.012	0.014	0.029	0.049	0.040
Covariates									
Age	29.565	29.026	29.250	29.330	30.482	29.953	32.427	32.865	32.640
	(4.893)	(4.833)	(4.865)	(5.191)	(5.127)	(5.187)	(3.611)	(3.764)	(3.691)
Age Square	8.980	8.658	8.792	8.872	9.554	9.241	10.645	10.942	10.790
	(2.947)	(2.899)	(2.923)	(3.113)	(3.153)	(3.153)	(2.367)	(2.486)	(2.430)
Education Level									
Illiterate or read and write	0.153	0.303	0.241	0.063	0.093	0.079	0.282	0.303	0.293
Below Secondary	0.072	0.165	0.126	0.240	0.451	0.354	0.350	0.431	0.394
Secondary	0.376	0.447	0.417	0.329	0.351	0.341	0.216	0.166	0.189
Above Secondary	0.399	0.085	0.216	0.367	0.105	0.226	0.151	0.100	0.123
Father's Education									
Illiterate or Read & Write	0.528	0.775	0.672	0.599	0.753	0.682	0.610	0.514	0.558
Below Secondary	0.164	0.101	0.127	0.069	0.011	0.038	0.267	0.344	0.309
Secondary and Above	0.308	0.125	0.201	0.332	0.236	0.280	0.124	0.141	0.133
Mother's Education									
Illiterate or Read & Write	0.703	0.894	0.815	0.704	0.877	0.798	0.838	0.729	0.778
Below Secondary	0.102	0.053	0.073	0.070	0.014	0.040	0.125	0.205	0.169
Secondary and Above	0.194	0.053	0.112	0.225	0.108	0.162	0.037	0.066	0.053
Interaction Term: Father's education & own education level									
Above Secondary*Father Secondary or Above	0.229	0.043	0.121	0.197	0.060	0.123	0.056	0.040	0.048
Father's Employment Sector/Status									
Public	0.435	0.323	0.370	0.394	0.355	0.373	0.197	0.171	0.183
Private WW	0.246	0.327	0.293	0.279	0.287	0.283	0.432	0.489	0.463
Other	0.319	0.350	0.337	0.327	0.358	0.344	0.371	0.340	0.354
Mother ever worked	0.178	0.120	0.144	0.124	0.068	0.094	0.088	0.070	0.078
Region of Birth									
Egypt-Gr. Cairo	0.267	0.104	0.172						
Egypt-Alx, Sz C.	0.103	0.053	0.074						
Egypt-Urb. Lwr.	0.123	0.093	0.106						
Egypt-Urb. Upp.	0.093	0.069	0.079						
Egypt-Rur. Lwr.	0.242	0.367	0.315						
Egypt-Rur. Upp.	0.172	0.314	0.255						
Jordan-Middle				0.435	0.493	0.466			
Jordan-North				0.298	0.251	0.272			
Jordan-South				0.111	0.084	0.097			

	Egypt (22-39)			Jordan (22-39)			Tunisia (27-39)		
	Not Married by Median Age	Married by Median Age	Total	Not Married by Median Age	Married by Median Age	Total	Not Married by Median Age	Married by Median Age	Total
Jordan-ABroad				0.156	0.172	0.165			
Tunisia-Urb. North							0.352	0.291	0.319
Tunisia-Rur. North							0.060	0.085	0.074
Tunisia-Urb. North West							0.056	0.041	0.048
Tunisia-Rur. North West							0.059	0.095	0.079
Tunisia-Urb. Center East							0.082	0.153	0.121
Tunisia-Rur. Center East							0.060	0.066	0.063
Tunisia-Urb. Center West							0.020	0.037	0.029
Tunisia-Rur. Center West							0.118	0.083	0.099
Tunisia-Urb. South East							0.079	0.083	0.081
Tunisia-Rur. South East							0.034	0.023	0.028
Tunisia-Urb. South West							0.060	0.037	0.047
Tunisia-Rur. South West							0.021	0.006	0.013
Ratio of Male Migrants to Male population	1.291	1.557	1.446						
	(1.951)	(2.388)	(2.220)						
Instruments									
Eldest Sister	0.404	0.389	0.395				0.282	0.328	0.307
Sex Ratio (%)	108.923	109.547	109.287	109.329	110.380	109.897	119.254	119.156	119.206
	(16.75)	(15.80)	(16.20)	(13.33)	(14.14)	(13.78)	(17.80)	(17.15)	(17.48)
Ratio of Female Siblings to Siblings (%)	62.802	58.749	60.437	55.879	55.903	55.892	62.318	60.343	61.356
	(20.67)	(19.51)	(20.10)	(17.27)	(16.35)	(16.78)	(19.70)	(19.13)	(19.44)
Endogenous Regressor									
Married by median Age			0.584			0.541			0.545
N	3154	4240	7394	1622	1831	3453	590	707	1297

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

Appendix Table 2:

First-stage regression coefficients for the probability of being married by the median age, Egypt 2012 (22-39)

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work		Non-Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
Instruments										
Eldest Sister	0.044***	0.132***	0.040**	0.126***	0.042***	0.136***	0.044***	0.126***	0.046***	0.096**
	(0.012)	(0.033)	(0.013)	(0.034)	(0.011)	(0.033)	(0.012)	(0.036)	(0.012)	(0.037)
Share of female sib. to all sib.	-0.001*	-0.002*	-0.001**	-0.002**	-0.001**	-0.002**	-0.001*	-0.002*	-0.001	-0.003**
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Sex Ratio	0.001	0.001	0.000	0.001	0.001	0.001	0.000	0.000	0.000	-0.000
	(0.001)	(0.002)	(0.001)	(0.002)	(0.000)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Covariates										
Age	-0.082***	-0.237***	-0.080***	-0.238***	-0.082***	-0.236***	-0.076***	-0.229***	-0.078***	-0.217***
	(0.017)	(0.048)	(0.016)	(0.049)	(0.015)	(0.049)	(0.016)	(0.049)	(0.017)	(0.048)
Age Squared	0.121***	0.350***	0.119***	0.353***	0.122***	0.351***	0.113***	0.340***	0.115***	0.320***
	(0.026)	(0.076)	(0.025)	(0.077)	(0.024)	(0.077)	(0.025)	(0.077)	(0.027)	(0.076)
Education (illiterate/Read and Write omit.)										
Less than Secondary	0.052**	0.133*	0.052**	0.151*	0.052**	0.150*	0.052**	0.162**	0.052**	0.165**
	(0.019)	(0.060)	(0.019)	(0.060)	(0.019)	(0.059)	(0.019)	(0.060)	(0.019)	(0.061)
Secondary	-0.065***	-0.195***	-0.065***	-0.187***	-0.065***	-0.190***	-0.065***	-0.180***	-0.066***	-0.180***
	(0.016)	(0.047)	(0.016)	(0.046)	(0.016)	(0.046)	(0.016)	(0.046)	(0.016)	(0.046)
University and Above	-0.376***	-1.045***	-0.375***	-1.043***	-0.375***	-1.037***	-0.375***	-1.037***	-0.376***	-1.037***
	(0.022)	(0.067)	(0.022)	(0.067)	(0.022)	(0.067)	(0.022)	(0.068)	(0.022)	(0.067)
Father's education (illiterate/Read and Write omit.)										
Below Secondary	-0.072***	-0.208***	-0.072***	-0.207***	-0.072***	-0.207***	-0.072***	-0.206***	-0.072***	-0.204***
	(0.018)	(0.051)	(0.018)	(0.051)	(0.018)	(0.051)	(0.018)	(0.051)	(0.018)	(0.050)
Secondary and Above	-0.048*	-0.140*	-0.048*	-0.133*	-0.048*	-0.135*	-0.048*	-0.128*	-0.048*	-0.120
	(0.022)	(0.062)	(0.022)	(0.062)	(0.022)	(0.063)	(0.022)	(0.062)	(0.023)	(0.062)
Mother's education (illiterate/Read and Write omit.)										
Below Secondary	-0.061*	-0.176*	-0.061*	-0.175*	-0.061*	-0.171*	-0.061*	-0.175*	-0.061*	-0.162*
	(0.024)	(0.071)	(0.024)	(0.072)	(0.024)	(0.072)	(0.024)	(0.072)	(0.024)	(0.071)
Secondary and Above	-0.055*	-0.167*	-0.054*	-0.166*	-0.055*	-0.161*	-0.056*	-0.174*	-0.056*	-0.179*
	(0.023)	(0.071)	(0.023)	(0.072)	(0.023)	(0.074)	(0.023)	(0.072)	(0.023)	(0.072)
Above Secondary*Father's Sec.+	-0.001	-0.020	-0.001	-0.027	-0.001	-0.036	-0.001	-0.030	-0.002	-0.033
	(0.030)	(0.090)	(0.030)	(0.091)	(0.030)	(0.093)	(0.030)	(0.092)	(0.030)	(0.091)
Father's emp. stat./sector (private WW omit.)										
Public	0.010	0.038	0.010	0.032	0.010	0.035	0.011	0.031	0.011	0.031
	(0.017)	(0.050)	(0.017)	(0.049)	(0.017)	(0.049)	(0.017)	(0.050)	(0.017)	(0.049)
Other	-0.019	-0.048	-0.020	-0.059	-0.019	-0.063	-0.019	-0.058	-0.019	-0.061
	(0.014)	(0.041)	(0.014)	(0.041)	(0.014)	(0.040)	(0.014)	(0.041)	(0.014)	(0.041)
Mother ever worked	0.036	0.113	0.036	0.108	0.036	0.107	0.035	0.111	0.035	0.115
	(0.020)	(0.063)	(0.020)	(0.061)	(0.020)	(0.062)	(0.020)	(0.062)	(0.020)	(0.061)
Region of Birth (Cairo omit.)										
Alex & Sz C.	0.007	0.025	0.008	0.034	0.007	0.020	0.009	0.036	0.008	0.049
	(0.032)	(0.098)	(0.032)	(0.100)	(0.032)	(0.097)	(0.032)	(0.100)	(0.032)	(0.099)
Urban Lower Egypt	0.123***	0.374***	0.123***	0.382***	0.122***	0.373***	0.125***	0.377***	0.125***	0.393***
	(0.032)	(0.093)	(0.032)	(0.094)	(0.032)	(0.092)	(0.032)	(0.094)	(0.032)	(0.093)
Urban Upper Egypt	0.090**	0.276**	0.090**	0.281**	0.089**	0.266**	0.093**	0.280**	0.092**	0.294***

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work		Non-Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
	(0.030)	(0.086)	(0.030)	(0.088)	(0.029)	(0.086)	(0.030)	(0.089)	(0.030)	(0.089)
Rural Lower Egypt	0.215***	0.624***	0.215***	0.636***	0.214***	0.624***	0.217***	0.634***	0.217***	0.645***
	(0.025)	(0.074)	(0.025)	(0.075)	(0.025)	(0.074)	(0.025)	(0.076)	(0.025)	(0.076)
Rural Upper Egypt	0.179***	0.527***	0.179***	0.527***	0.178***	0.520***	0.182***	0.528***	0.181***	0.540***
	(0.028)	(0.083)	(0.028)	(0.084)	(0.028)	(0.083)	(0.029)	(0.084)	(0.028)	(0.084)
Male Migrants to Pop	0.000	0.000	0.000	0.000	0.000	-0.001	0.000	0.001	0.000	0.001
	(0.003)	(0.009)	(0.003)	(0.009)	(0.003)	(0.009)	(0.003)	(0.009)	(0.003)	(0.009)
Constant	1.864***	3.937***	1.859***	4.004***	1.872***	3.965***	1.812***	3.909***	1.822***	3.791***
	(0.222)	(0.668)	(0.218)	(0.675)	(0.211)	(0.677)	(0.221)	(0.674)	(0.222)	(0.662)
N	7331	7331	7331	7331	7331	7331	7331	7331	7331	7331

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate and district of birth

Appendix Table 3:

First-stage regression coefficients for the probability of being married by the median age, Jordan 2010 (22-39)

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
Instruments								
Share of female sib. to all sib.	0.000	0.001	0.000	0.001	0.001	0.001	0.000	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Sex Ratio	-0.000	0.002	-0.000	0.002	-0.000	0.001	0.001	0.002
	(0.002)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)
Covariates								
Age	0.000	0.012	0.000	0.014	0.000	0.012	-0.001	0.011
	(0.021)	(0.057)	(0.022)	(0.057)	(0.021)	(0.056)	(0.021)	(0.057)
Age Squared	0.006	-0.003	0.006	-0.008	0.006	-0.004	0.007	-0.003
	(0.034)	(0.095)	(0.036)	(0.094)	(0.034)	(0.093)	(0.034)	(0.094)
Education (illiterate/Read and Write omit.)								
Less than Secondary	0.059	0.165	0.058	0.169*	0.059	0.172*	0.062	0.171
	(0.033)	(0.086)	(0.032)	(0.086)	(0.032)	(0.087)	(0.032)	(0.089)
Secondary	-0.072*	-0.191*	-0.073*	-0.186	-0.072*	-0.181	-0.069	-0.187
	(0.035)	(0.096)	(0.036)	(0.096)	(0.036)	(0.097)	(0.036)	(0.096)
University and Above	-0.287***	-0.817***	-0.287***	-0.814***	-0.286***	-0.788***	-0.284***	-0.811***
	(0.038)	(0.112)	(0.039)	(0.112)	(0.039)	(0.110)	(0.039)	(0.112)
Father's education (illiterate/Read and Write omit.)								
Below Secondary	-0.272***	-0.965***	-0.273***	-0.958***	-0.272***	-0.915***	-0.271***	-0.935***
	(0.034)	(0.156)	(0.034)	(0.157)	(0.034)	(0.153)	(0.034)	(0.159)
Secondary and Above	0.036	0.112	0.036	0.112	0.036	0.110	0.037	0.106
	(0.039)	(0.108)	(0.039)	(0.108)	(0.037)	(0.110)	(0.037)	(0.106)
Mother's education (illiterate/Read and Write omit.)								
Below Secondary	-0.294***	-0.958***	-0.294***	-0.972***	-0.294***	-0.976***	-0.293***	-0.976***
	(0.051)	(0.195)	(0.050)	(0.197)	(0.051)	(0.194)	(0.051)	(0.194)
Secondary and Above	-0.087**	-0.239**	-0.087**	-0.242**	-0.087**	-0.244**	-0.087**	-0.248**
	(0.032)	(0.092)	(0.033)	(0.092)	(0.033)	(0.091)	(0.033)	(0.092)
Above Secondary*Father's Sec.+	-0.031	-0.038	-0.031	-0.041	-0.031	-0.060	-0.032	-0.046
	(0.053)	(0.156)	(0.054)	(0.158)	(0.053)	(0.159)	(0.053)	(0.163)
Father's emp. stat./sector (private WW omit.)								
Public	0.016	0.051	0.016	0.049	0.016	0.046	0.015	0.048
	(0.020)	(0.058)	(0.021)	(0.059)	(0.020)	(0.059)	(0.020)	(0.057)
Other	0.020	0.053	0.020	0.053	0.020	0.054	0.019	0.054
	(0.016)	(0.046)	(0.016)	(0.046)	(0.016)	(0.047)	(0.016)	(0.046)
Mother ever worked	-0.035	-0.124	-0.035	-0.116	-0.035	-0.104	-0.034	-0.099
	(0.039)	(0.123)	(0.039)	(0.120)	(0.038)	(0.121)	(0.039)	(0.112)
Region of Birth (Middle omit.)								
North	-0.056	-0.168*	-0.055	-0.168*	-0.056	-0.163	-0.060	-0.168
	(0.030)	(0.085)	(0.031)	(0.085)	(0.030)	(0.086)	(0.030)	(0.086)
South	-0.093**	-0.268**	-0.093**	-0.266**	-0.093**	-0.260**	-0.097**	-0.272**
	(0.034)	(0.091)	(0.032)	(0.091)	(0.032)	(0.090)	(0.032)	(0.094)
Abroad	0.038	0.104	0.039	0.103	0.038	0.105	0.037	0.103
	(0.036)	(0.097)	(0.035)	(0.097)	(0.035)	(0.098)	(0.034)	(0.096)
Constant	0.558	-0.202	0.581	-0.232	0.555	-0.179	0.517	-0.196

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
	(0.431)	(0.845)	(0.371)	(0.840)	(0.309)	(0.836)	(0.310)	(0.845)
N	3433	3433	3433	3433	3433	3433	3433	3433

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate, district and sub-district of birth

Appendix Table 4

First-stage regression coefficients for the probability of being married by the median age, Tunisia 2014 (27-39)

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work		Non Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
Instruments										
Eldest Sister	-0.007	-0.019	0.026	0.075*	0.027	0.090	0.029	0.083	-0.006	0.061
	(0.042)	(0.051)	(0.049)	(0.038)	(0.041)	(0.108)	(0.033)	(0.080)	(0.021)	(0.084)
Share of female sib. to all sib.	-0.002	-0.002	-0.002*	-0.001	-0.002*	-0.005	-0.002*	-0.004	-0.002	-0.006*
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.002)
Sex Ratio	0.002	0.002	0.001	-0.002	0.000	-0.000	0.000	0.000	0.001	0.002
	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)	(0.006)	(0.001)	(0.003)	(0.001)	(0.003)
Covariates										
Age	-0.055	-0.196	-0.043	-0.118	-0.044	-0.117	-0.043	-0.117	-0.039	-0.140
	(0.089)	(0.264)	(0.095)	(0.264)	(0.093)	(0.257)	(0.092)	(0.252)	(0.099)	(0.260)
Age Squared	0.080	0.298	0.064	0.183	0.065	0.177	0.065	0.177	0.056	0.207
	(0.137)	(0.406)	(0.144)	(0.403)	(0.142)	(0.393)	(0.142)	(0.387)	(0.151)	(0.400)
Education (illiterate/Read and Write omit.)										
Less than Secondary	-0.019	-0.107	-0.009	-0.074	-0.008	-0.030	-0.008	-0.029	-0.011	-0.031
	(0.038)	(0.102)	(0.034)	(0.088)	(0.035)	(0.095)	(0.035)	(0.093)	(0.037)	(0.095)
Secondary	-0.185***	-0.515***	-0.176***	-0.507***	-0.177***	-0.496***	-0.178***	-0.474***	-0.201***	-0.491***
	(0.046)	(0.129)	(0.047)	(0.127)	(0.047)	(0.140)	(0.047)	(0.121)	(0.050)	(0.134)
University and Above	-0.204**	-0.602**	-0.201**	-0.529**	-0.202**	-0.537**	-0.202**	-0.537**	-0.167**	-0.541**
	(0.064)	(0.184)	(0.063)	(0.186)	(0.063)	(0.191)	(0.063)	(0.174)	(0.065)	(0.182)
Father's education (illiterate/Read and Write omit.)										
Below Secondary	0.062	0.138	0.057	0.136	0.059	0.160	0.059	0.168	0.064	0.142
	(0.049)	(0.105)	(0.051)	(0.123)	(0.050)	(0.134)	(0.050)	(0.134)	(0.051)	(0.133)
Secondary and Above	0.170*	0.310	0.153	0.473	0.154	0.450	0.154	0.450	0.162	0.424
	(0.084)	(0.207)	(0.084)	(0.244)	(0.084)	(0.259)	(0.084)	(0.246)	(0.101)	(0.255)
Mother's education (illiterate/Read and Write omit.)										
Below Secondary	0.157**	0.497***	0.152**	0.470**	0.149**	0.416*	0.149**	0.410*	0.176**	0.435**
	(0.058)	(0.145)	(0.058)	(0.149)	(0.058)	(0.164)	(0.058)	(0.168)	(0.058)	(0.167)
Secondary and Above	0.343***	0.982***	0.332***	0.991*	0.329***	1.058**	0.329***	1.018***	0.000	1.052***
	(0.073)	(0.216)	(0.074)	(0.401)	(0.074)	(0.332)	(0.075)	(0.283)	(.)	(0.296)
Above Secondary*Father's Sec.+	-0.171	-0.255	-0.160	-0.550	-0.158	-0.523	-0.158	-0.485	0.000	-0.501
	(0.129)	(0.353)	(0.127)	(0.438)	(0.126)	(0.424)	(0.126)	(0.390)	(.)	(0.405)
Father's emp. stat./sector (private WW omit.)										
Public	-0.091	-0.261	-0.088	-0.251	-0.087	-0.241	-0.087	-0.248	-0.105	-0.245
	(0.051)	(0.137)	(0.051)	(0.129)	(0.050)	(0.146)	(0.050)	(0.139)	(0.055)	(0.143)
Other	-0.051	-0.110	-0.041	-0.083	-0.038	-0.103	-0.038	-0.105	-0.048	-0.116
	(0.036)	(0.091)	(0.036)	(0.098)	(0.036)	(0.097)	(0.036)	(0.099)	(0.038)	(0.099)
Mother ever worked	-0.073	-0.193	-0.072	-0.114	-0.073	-0.187	-0.073	-0.197	-0.074	-0.183
	(0.045)	(0.129)	(0.047)	(0.119)	(0.047)	(0.152)	(0.047)	(0.131)	(0.050)	(0.123)
Region of Birth (North Urban omit.)										
Tunisia-North Rural	0.113*	0.375*	0.108*	0.425***	0.105*	0.292*	0.105**	0.342***	0.100*	0.283**
	(0.047)	(0.161)	(0.043)	(0.098)	(0.042)	(0.124)	(0.040)	(0.098)	(0.045)	(0.109)
Tunisia-North West Urban	0.086*	0.360***	0.085	0.312*	0.082*	0.246*	0.083*	0.259*	0.000	0.237*
	(0.042)	(0.090)	(0.044)	(0.130)	(0.041)	(0.113)	(0.038)	(0.105)	(.)	(0.100)
Tunisia-North West Rural	0.115**	0.527***	0.118	0.486***	0.115*	0.331*	0.117**	0.349***	0.099**	0.299**

Variables/Outcomes	Work		Wage work		Private wage work		Public Wage Work		Non Wage Work	
	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate	IV	Bivariate
	(0.041)	(0.096)	(0.068)	(0.091)	(0.051)	(0.150)	(0.036)	(0.091)	(0.033)	(0.092)
Tunisia-Center East Urban	0.181**	0.646***	0.178**	0.575***	0.175**	0.517*	0.175**	0.503**	0.148*	0.542***
	(0.064)	(0.141)	(0.060)	(0.166)	(0.060)	(0.207)	(0.058)	(0.184)	(0.063)	(0.158)
Tunisia-Center East Rural	0.024	0.187*	0.050	0.290**	0.047	0.160	0.050	0.164	0.021	0.113
	(0.051)	(0.090)	(0.079)	(0.090)	(0.057)	(0.147)	(0.040)	(0.091)	(0.037)	(0.102)
Tunisia-Center West Urban	0.218**	0.513**	0.228*	0.985***	0.225**	0.675*	0.227***	0.719***	0.000	0.620***
	(0.070)	(0.158)	(0.090)	(0.142)	(0.076)	(0.293)	(0.066)	(0.174)	(.)	(0.186)
Tunisia-Center West Rural	-0.026	0.068	-0.003	0.185*	-0.005	0.028	-0.002	0.036	-0.029	-0.026
	(0.052)	(0.092)	(0.097)	(0.090)	(0.071)	(0.190)	(0.049)	(0.116)	(0.041)	(0.123)
Tunisia-South East Urban	-0.009	0.131	0.012	0.283**	0.009	0.057	0.011	0.084	0.007	0.008
	(0.059)	(0.155)	(0.063)	(0.088)	(0.053)	(0.205)	(0.044)	(0.105)	(0.032)	(0.120)
Tunisia-South East Rural	-0.223**	-0.394**	-0.173	-0.103	-0.175	-0.366	-0.168*	-0.371*	-0.239***	-0.471*
	(0.079)	(0.134)	(0.164)	(0.127)	(0.113)	(0.325)	(0.076)	(0.180)	(0.064)	(0.185)
Tunisia-South Urban	0.008	0.225	0.024	0.139	0.021	0.096	0.024	0.036	-0.016	0.044
	(0.083)	(0.194)	(0.104)	(0.135)	(0.088)	(0.242)	(0.080)	(0.216)	(0.095)	(0.207)
Tunisia-South Rural	-0.174*	-0.346*	-0.171	-0.346*	-0.173*	-0.461	-0.169**	-0.466*	-0.197**	-0.487*
	(0.069)	(0.154)	(0.106)	(0.176)	(0.086)	(0.252)	(0.064)	(0.197)	(0.062)	(0.208)
Constant	1.386	3.070	1.296	2.148	1.325	2.281	1.322	2.148	1.150	2.510
	(1.396)	(4.207)	(1.472)	(4.244)	(1.474)	(4.081)	(1.473)	(4.060)	(1.582)	(4.162)
N	982	982	961	961	960	960	960	960	864	961

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate of birth by urban/rural.

Appendix Table 5

The effect of being married by different ages (22/24/26) on employment outcomes for females (22/24/26-39), Egypt 2012

		Egypt (22-39)			Egypt (24-39)			Egypt (26-39)		
Outcome Variable		**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**
Working	Probit	0.206	-0.033*** (0.009)	7356	0.243	-0.057*** (0.011)	6240	0.248	-0.047*** (0.012)	5040
	IVprobit	0.205	-0.032** (0.010)	7331	0.241	-0.056*** (0.007)	6219	0.246	-0.045*** (0.009)	5021
	Biv. Probit	0.202	-0.030*** (0.004)	7331	0.231	-0.051*** (0.006)	6219	0.234	-0.038*** (0.009)	5021
Wage Work	Probit	0.161	-0.053*** (0.007)	7356	0.193	-0.066*** (0.009)	6240	0.196	-0.060*** (0.009)	5040
	IVprobit	0.161	-0.052*** (0.006)	7331	0.192	-0.066*** (0.003)	6219	0.195	-0.059*** (0.003)	5021
	Biv. Probit	0.159	-0.052*** (0.000)	7331	0.189	-0.069*** (0.003)	6219	0.192	-0.060*** (0.002)	5021
Private Wage Work	Probit	0.051	-0.021*** (0.005)	7356	0.066	-0.034*** (0.005)	6240	0.062	-0.029*** (0.006)	5040
	IVprobit	0.050	-0.020*** (0.004)	7331	0.064	-0.033*** (0.007)	6219	0.061	-0.028*** (0.003)	5021
	Biv. Probit	0.048	-0.021*** (0.001)	7331	0.057	-0.032*** (0.000)	6219	0.053	-0.026*** (0.002)	5021
Public Wage Work	Probit	0.110	-0.033*** (0.007)	7356	0.127	-0.034*** (0.008)	6240	0.134	-0.032*** (0.008)	5040
	IVprobit	0.110	-0.033*** (0.001)	7331	0.127	-0.034*** (0.000)	6219	0.134	-0.032*** (0.003)	5021
	Biv. Probit	0.109	-0.032*** (0.001)	7331	0.127	-0.035*** (0.002)	6219	0.134	-0.033*** (0.004)	5021
Non Wage Work	Probit	0.039	0.020** (0.006)	7356	0.039	0.022** (0.007)	6240	0.042	0.025** (0.008)	5040
	IVprobit	0.039	0.021*** (0.004)	7331	0.039	0.023*** (0.001)	6219	0.041	0.027*** (0.002)	5021
	Biv. Probit	0.038	0.020*** (0.004)	7331	0.038	0.022*** (0.003)	6219	0.039	0.025*** (0.005)	5021

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate and district of birth. (iii) Reference probabilities are calculated for women who were not married by the respective reference age used in each set of estimations at the observed level of all other covariates. (iv) Controls are age, age squared, education level, father's education level, father's employment status and sector, mother's education level, if mother has ever worked, whether the father has a secondary or above education interacted with whether the individual's own education level is above secondary, birth region by urban/rural, and male migrants by district. First-stage estimations include these controls in addition to the instruments (sex ratios in the area of birth, the ratio of female to all siblings in the woman's natal household, and whether or not she is the eldest among her sisters).

+ Bootstrapped clustered standard errors, with 400 replications for Egypt.

Appendix Table 6

The effect of being married by different ages on employment outcomes for females (22/24/26-39), Jordan 2012

		Jordan (22-39)			Jordan (24-39)			Jordan (26-39)		
Outcome Variable		**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**
Working	Probit	0.271	-0.128*** (0.016)	3448	0.315	-0.144*** (0.016)	2986	0.347	-0.159*** (0.022)	2579
	IVprobit	0.271	-0.128*** (0.016)	3433	0.315	-0.145*** (0.017)	2973	0.348	-0.160*** (0.023)	2567
	Biv. Probit	0.269	-0.129*** (0.017)	3433	0.315	-0.160*** (0.020)	2973	0.349	-0.185*** (0.030)	2567
Wage Work	Probit	0.258	-0.129*** (0.015)	3448	0.301	-0.143*** (0.015)	2986	0.328	-0.153*** (0.021)	2579
	IVprobit	0.258	-0.130*** (0.015)	3433	0.301	-0.143*** (0.016)	2973	0.328	-0.153*** (0.022)	2567
	Biv. Probit	0.257	-0.131*** (0.015)	3433	0.301	-0.159*** (0.019)	2973	0.329	-0.178*** (0.028)	2567
Private Wage Work	Probit	0.135	-0.102*** (0.011)	3448	0.171	-0.116*** (0.012)	2986	0.176	-0.105*** (0.017)	2579
	IVprobit	0.136	-0.103*** (0.014)	3433	0.172	-0.117*** (0.015)	2973	0.176	-0.105*** (0.020)	2567
	Biv. Probit	0.135	-0.099*** (0.014)	3433	0.172	-0.135*** (0.020)	2973	0.177	-0.133*** (0.029)	2567
Public Wage Work	Probit	0.123	-0.034*** (0.008)	3448	0.132	-0.026** (0.010)	2986	0.153	-0.042** (0.013)	2579
	IVprobit	0.122	-0.034*** (0.008)	3433	0.131	-0.026** (0.010)	2973	0.153	-0.043** (0.014)	2567
	Biv. Probit	0.122	-0.034*** (0.007)	3433	0.132	-0.027** (0.010)	2973	0.153	-0.047** (0.016)	2567

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the governorate and district of birth. (iii). Reference probabilities are calculated for women who were not married by the respective reference age used in each set of estimations, at the observed level of all other covariates. (iv) Controls are age, age squared, education level, father's education level, father's employment status and sector, mother's education level, if mother has ever worked, whether the father has a secondary or above education interacted with whether the individual's own education level is above secondary, and birth region. First-stage estimations include these controls in addition to the instruments (sex ratios in the area of birth and the ratio of female to all siblings in the woman's natal household) + Bootstrapped clustered standard errors, with 400 replications.

Appendix Table 7

The effect of being married by different ages on employment outcomes for females (22/24/27-39), Tunisia 2014

		Tunisia (22-39)			Tunisia (24-39)			Tunisia (27-39)		
Outcome Variable		**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**	**Reference Probability**	**Marginal Effects+**	**N**
Working	Probit	0.248	-0.079* (0.035)	1363	0.263	-0.077* (0.032)	1194	0.300	-0.102** (0.036)	997
	IVprobit	0.249	-0.080* (0.036)	1341	0.264	-0.076* (0.033)	1174	0.299	-0.098* (0.038)	982
	Biv. Probit	0.248	-0.115** (0.037)	1341	0.258	-0.101** (0.033)	1174	0.278	-0.086* (0.036)	982
Wage Work	Probit	0.183	-0.123*** (0.025)	1337	0.195	-0.098*** (0.028)	1169	0.229	-0.113*** (0.030)	976
	IVprobit	0.183	-0.128*** (0.027)	1315	0.194	-0.100** (0.032)	1149	0.230	-0.114*** (0.032)	961
	Biv. Probit	0.176	-0.055* (0.025)	1315	0.191	-0.106*** (0.028)	1149	0.224	-0.113** (0.035)	961
Private Wage Work	Probit	0.127	-0.099*** (0.021)	1336	0.129	-0.074*** (0.020)	1168	0.150	-0.086*** (0.024)	975
	IVprobit	0.127	-0.103*** (0.026)	1314	0.129	-0.075** (0.024)	1148	0.150	-0.085** (0.032)	960
	Biv. Probit	0.128	-0.090*** (0.018)	1314	0.128	-0.073*** (0.020)	1148	0.151	-0.089** (0.028)	960
Public Wage Work	Probit	0.057	-0.036* (0.017)	1336	0.066	-0.027* (0.013)	1168	0.084	-0.034** (0.013)	975
	IVprobit	0.057	-0.037 (0.021)	1314	0.066	-0.027 (0.015)	1148	0.084	-0.035* (0.017)	960
	Biv. Probit	0.057	-0.028 (0.014)	1314	0.066	-0.024 (0.013)	1148	0.083	-0.020** (0.008)	960
Non Wage Work	Probit	0.053	0.017 (0.013)	1263	0.054	0.016 (0.011)	1106	0.054	0.026 (0.018)	876
	IVprobit	0.053	0.020 (0.018)	1243	0.054	0.018 (0.014)	1088	0.053	0.030 (0.024)	864
	Biv. Probit	0.051	0.021 (0.025)	1315	0.052	0.018 (0.012)	1149	0.047	0.026 (0.017)	961

Notes: (i) Statistical significance is given by * at 5 percent, ** at 1 percent and *** at 0.1 percent. (ii) Standard errors in parentheses are clustered by the urban or rural parts of the governorate of birth. (iii). Reference probabilities are calculated for women who were not married by the respective reference age used in each set of estimations at the observed level of all other covariates. (iv) Controls are age, age squared, education level, father's education level, father's employment status and sector, mother's education level, if mother has ever worked, whether the father has a secondary or above education interacted with whether the individual's own education level is above secondary, and birth region by urban/rural. First-stage estimations include these controls in addition to the instruments (sex ratios in the area of birth, the ratio of female to all siblings in the woman's natal household, and whether or not she is the eldest among her sisters).

+ Bootstrapped clustered standard errors with 400 replications.