THE ROLE OF HOUSING MARKETS IN THE TIMING OF MARRIAGE IN EGYPT, JORDAN, AND TUNISIA

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Abstract

The transition to adulthood in the Middle East and North Africa (MENA) is increasingly characterized by young people's desire to form independent, nuclear households. Forming such households requires either buying or building a dwelling or obtaining a rental unit. Policies governing housing markets, such as rent control, and limited financing options have historically made access to housing for young couples particularly challenging. In this paper, we examine housing markets in Egypt, Jordan, and Tunisia and their impact on the timing of marriage. A particular focus of the paper is how housing policy reforms, such as the liberalization of rental markets in Egypt, have affected the timing of marriage. We find that Egypt's rental reforms accelerated marriages and led to a reversal in the trend of rising age at marriage. Jordan's healthy rental market has also likely facilitated marriage, while the sharply rising age at marriage in Tunisia may be due to an inadequate supply of rental housing.

ملخص

يتسم الانتقال إلى مرحلة البلوغ في منطقة الشرق الأوسط وشمال أفريقيا برغبة الشباب في تكوين أسر نائية مستقلة. ويتطلب تكوين مثل هذه الأسر شراء أو بناء مسكن أو الحصول على وحدة تأجير. وقد مكنت السياسات التي تحكم أسواق الإسكان، مثل مراقبة الإيجار، وخيارات التمويل المحدودة، من الحصول على السكن للأزواج الشباب بشكل خاص. في هذه الورقة، ندرس أسواق الإسكان في مصر والأردن وتونس وتأثيرها على توقيت الزواج. وتركز الورقة بشكل خاص على كيفية تأثير إصلاحات سياسة الإسكان، مثل تحرير أسواق الإيجار في مصر، على توقيت الزواج. ونجد أن إصلاحات الإيجارات في مصر قد عجلت بالزواج وأدت إلى عكس اتجاه ارتفاع سن الزواج. ومن المرجح أيضا أن يسهم سوق الإيجارات الصحي في الأردن في تسهيل الزواج، في حين أن ارتفاع سن الزواج بشكل حاد في تونس قد يعزى إلى عدم كفاية المعروض من المساكن المؤجرة.

1. Introduction

With increasing education, higher rates of urban living and a general decline in family-based production arrangements, young people in the Middle East and North Africa (MENA) increasingly expect to live independently at marriage (Singerman, 2007). In Egypt, for example, 77% of couples married during the 2007-2011 period formed a nuclear household at the start of their marriage, a substantial increase from 63% over the period from 2000 to 2005 (Salem, 2015). In Jordan, the share of newly married couples forming nuclear households has increased from around 40% for those married in the 1965-1969 period to 80% of those married in the 2005-2010 period (Salem, 2014). Rates of nuclear family living are even higher in Tunisia, where more than 80% of recently married women in the early 2010s were living in nuclear households (Assaad, Ghazouani, & Krafft, 2016a; Assaad & Krafft, 2015a).

Achieving independent living at marriage entails a substantial financial investment. Housing is estimated to constitute 38% of total marriage costs in Egypt, and furniture and appliances constitute an additional 30% of costs (Salem, 2015). In Jordan, where more rental housing is available, the initial costs of housing make up 14% of marriage costs and the cost of furniture and appliances an additional 35% (Salem 2014). In all three countries, as in the rest of the Middle East and North Africa, the acquisition of housing is primarily the responsibility of the groom and his family. If a groom had to cover the entire cost of marriage from his own savings, it would take an average of eight years of wages in Egypt to cover the costs of marriage. The initial housing costs are equivalent to approximately 3.0 years of the groom's wages and furniture and appliance costs an additional 2.4 years of wages (Assaad & Krafft, 2015a). Thus, securing housing is a crucial component of getting married, and housing is by far the greatest component of the cost of marriage.

Several features of the housing market in MENA countries make securing and affording independent living particularly burdensome for youth. These include the relatively high costs of housing, the lack of market-rate rental housing, often due to rent-control regulations, the dearth of affordable starter homes, and the virtual absence of financing options for housing (Dhillon, Dyer, & Yousef, 2009; Singerman, 2007). Tunisia and Morocco, for instance, have levels of formal housing credit, relative to housing investment, that are below the average for developing countries, and far below the average for the United States and OECD countries (Buckley, 1994).[1] This means that internal financing, mostly in the form of personal or familial savings, is required to obtain housing. The need to save for a long period in order to afford housing contributes to delays in the transition to marriage, which are compounded by protracted transitions to the kind of work that signals economic readiness for marriage for young men (Assaad, Binzel, & Gadallah, 2010; Assaad & Krafft, 2016). This delay in the transition to marriage also delays the transition to other adult roles, including independent living, socially sanctioned sexual relations, and child bearing, which are largely restricted to marriage according to prevailing norms in the region (Dhillon, Dyer, & Yousef, 2009; Egel & Salehi-Isfahani, 2010; El Feki, 2013; Hoodfar, 1997; Rashad, Osman, & Roudi-Fahimi, 2005; Salehi-Isfahani & Dhillon, 2008).

Housing policies, such as longstanding rent control laws in Egypt, have contributed to the difficulties in obtaining housing and thus contributed to delays in marriage (Assaad & Ramadan, 2008). Housing policy reforms, such as the liberalization of Egyptian rental laws in 1996, may have also alleviated, if not reversed, some of these delays in Egypt (Assaad & Krafft, 2015a; Assaad & Ramadan, 2008). Thus, the functioning of the housing market and policies associated with it play a crucial role in enabling or constraining the transition to adulthood.

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[1] Morocco and Tunisia are the only two MENA countries included in this particular study.

This paper examines how housing cost, availability and policy in Egypt, Jordan, and Tunisia have contributed to the timing of marriage. We focus on the timing of marriage for men, because marriage is most often constrained by the groom's ability to acquire acceptable housing. Admittedly, the availability of suitable housing also affects women's marriage timing, since women tend to wait for their chosen marriage partner to become ready for marriage. Being ready requires, among other things, securing housing arrangements that are deemed acceptable to the bride and her family. We begin by reviewing the primary features of the housing markets and their connections to marital arrangements, including the prevalence of renting as opposed to owning, and the initial costs of housing relative to prevailing wages and as a share of the total costs of marriage. We then present a set of multivariate analyses of the timing of marriage for men in all three countries as a function of the main features of the housing market, exploiting local variations in housing markets in each country. We control for other determinants of the timing of marriage, such as incidence and type of employment, in-school status, own education, father's and mother's education, father's employment status and occupation, and number and sex of siblings.

Because there was a specific change in housing laws in the period, covered by our data in Egypt, we are able to go further there in studying the effects of housing policies on the timing of marriage. We use a difference-in-difference methodology to examine the impact of liberalizing rent control regulations in the form of the "new rent" law of 1996 on the timing of marriage for men. We exploit the local variation in the availability of housing subject to "new rent" arrangements and the fact that the availability of such housing is likely to have a greater effect on cohorts of men coming of marriageable age after the passage of the 1996 law.

The paper is organized as follows. In Section 2, we review the literature on the economics of marriage and marriage and housing decisions in MENA. In Section 3, we describe the data used to analyze marriage and housing markets. In Section 4, we present the results of our analyses, first in descriptive terms, characterizing housing and marriage markets, and subsequently in a multivariate framework. Section 5 concludes with a discussion and focus on housing policy.

2. Overview of Existing Literature

Marriage is a critical social and economic transition for young people in MENA, a transition that typically heralds the formation of a new, independent, nuclear household. Achieving this transition is predicated upon a number of economic preconditions, one of which, for a growing majority of couples, is securing independent housing. This section reviews what is known about the social and economic forces that drive the transition to marriage, starting with the economics of marriage broadly. The section then details the important relationship between marriage and housing. In particular, it discusses the details of housing policy in the region, including particularly housing ownership and rental laws, as well as housing finance.

2.1 Economics of marriage in MENA

Marriage is the cornerstone of the transition to adulthood in MENA. Adult roles, including forming a household, engaging in socially-sanctioned sexual relations, and child bearing are all predicated on marriage under the region's norms (Dhillon, Dyer, & Yousef, 2009; El Feki, 2013). This transition is undertaken as, essentially, a contract between the families of the bride and the groom and represents the largest intergenerational transmission of assets that occurs in an individual's lifetime in MENA (Assaad & Krafft, 2015b). Given the asymmetric rights of husbands and wives within marriage under Islamic family law, the bride side's bargaining power is greatest up front (prior to marriage). It is therefore in the interest of the bride's side to secure agreement in advance about the economic terms of the marriage and include them in the marriage contract. The bride's side may be willing, for instance, to insist on terms that would secure better living arrangements at marriage even if that ends up delaying marriage because

the prospective groom is not yet economically ready to meet the terms (Assaad & Krafft, 2015b).

Taking a life course perspective, marriage represents the final stage of the transition to adulthood, where first youth must navigate the education system and then (for men at least) transition into a job. Thus, even being able to start the transition to marriage by accumulating assets towards marriage is typically predicated upon finishing school and finding employment, preferably a "good job" that is both lucrative and socially prestigious (Assaad, Binzel, & Gadallah, 2010; Assaad & Krafft, 2014; Dhillon, Dyer, & Yousef, 2009; Egel & Salehi-Isfahani, 2010; Gebel & Heyne, 2016; Krafft & Assaad, 2016). Once they have secured a good job, men are both more attractive marriage partners and more financially able to accumulate the necessary resources to marry.

Over time, education in MENA has expanded rapidly and the gender gap in education has narrowed considerably if not reversed in many contexts (Assaad, Ghazouani, & Krafft, 2016b; Assaad & Krafft, 2015c; Assaad & Saleh, 2015; Campante & Chor, 2012). This has raised expectations for modern marriage attributes, including independent living arrangements, small family sizes, and middle class amenities. These rising expectations have clashed with a growing inability of young men to signal their economic readiness for marriage. With the growth in the educated labor supply, good jobs (which historically were provided by the public sector) have become increasingly unavailable in most MENA countries (Assaad, 2014a; Assaad & Krafft, 2015d; World Bank, 2014). This has led in part to the high rates of unemployment, especially educated youth unemployment, observed in recent years as well as to a rise in the informalization of employment among educated males (Assaad & Krafft, 2016). Together, these forces have contributed to a delay in the transition to adulthood, often referred to as wait adulthood, or "waithood" (Singerman 2007, Dhillon, Dyer, & Yousef, 2009).

2.2 Marriage and housing decisions

The challenges of an extended transition to adulthood resulting from more time spent in schooling and a protracted school-to-work transition are exacerbated by the challenges of securing housing prior to marriage. There are specific social norms in most MENA countries as to which assets the bride and her family as compared to the groom and his family must bring to the marriage. The groom's side is generally responsible for securing the couple's housing (Dhillon, Dyer, & Yousef, 2009). Among couples married in the latter half of the 2000s and early 2010s, in Egypt, Jordan, and Tunisia, approximately 80% of couples adopted a nuclear living arrangement at marriage, a higher rate than in previous generations (Assaad, Ghazouani, & Krafft, 2016a; Salem, 2014, 2015). Thus, the groom and his family have become increasingly responsible for acquiring the financial resources required for independent living. The difficulties of accumulating such resources further delay the transition to adulthood.

One of the reasons that housing contributes to waithood is the poor state of housing policy in the region. Evidence from a number of developing countries demonstrates that housing policy can majorly affect the housing market. In particular, substantial public ownership of land, poorly enforced property rights, rent control, and lack of financing are important issues globally. Over-regulation is particularly problematic in limiting supply (Buckley & Kalarickal, 2005; Malpezzi, 1999). Less progress on the supply side of housing markets, as compared to demand, has been made in recent years globally (Hammam, 2014). In part as the result of policy challenges, costs of homeownership are atypically high in the MENA region, and there are limited opportunities to acquire low-income housing or starter homes in the region. At the same time, credit in the form of a mortgage is not readily available, and the rental market does not typically provide an affordable alternative to homeownership (Dhillon, Dyer, & Yousef, 2009; World Bank, 2005). The housing loans available are typically provided by government agencies, and the private market for residential mortgages is generally quite limited (Hassler,

2011). Generally housing and mortgage finance, when available, is dominated by the public sector or state-owned banks (Erbaş & Nothaft, 2005).

Newly married couples can obtain independent housing either through renting or through outright ownership. Both tenure arrangements can be financially challenging or unavailable and may require large amounts of up-front cash to cover the cost of purchase or construction or to put up large down payments. Similarly, large upfront sums in the form of key money may be required to access rent-controlled apartments. Of the three countries we study, Egypt has the highest house price to annual income ratio, 7, compared to 5 in Tunisia and 3 in Jordan (Beidas-Strom, Lian, & Maseeh, 2009). Although price-to-income ratios are lower in Tunisia than in Egypt, housing prices there have been rising at 8% per year since the 1990s, a higher rate than either inflation or incomes (McVitty, 2013). Tunisia has the lowest share of rentals in its housing tenure mix, with just 8%, compared to 17% in Jordan and 33% in Egypt (Beidas-Strom, Lian, & Maseeh, 2009). Rental tenure has even been decreasing over time in Tunisia, and high rates of homeownership are a government goal there (McVitty, 2013). In addition to having high rates of ownership and low rates of rentals, Tunisia faces a major challenge in terms of housing affordability. Estimates in urban areas indicate that almost half of urban households cannot afford to purchase a modest unit even if they could obtain a housing loan (UN Habitat, 2011).

Housing supply and demand conditions vary somewhat in all three countries. While Tunisia does not technically have a housing shortage, Egypt and Jordan have been identified as countries with supply shortages (Beidas-Strom, Lian, & Maseeh, 2009; Erbaş & Nothaft, 2005). According to McVitty (2013), there is an over-supply of high-end properties in Tunisia, but a shortage of housing for youth and middle to low-income families. Additionally, there is unmet demand for rentals in Tunisia (Filali, 2012; McVitty, 2013). Likewise, Egypt faces a shortage of housing specifically for lower income households (Ministry of Housing Utilities and Urban Communities & UN-Habitat, 2012).

Until recently, both Egypt and Tunisia had heavily regulated rental markets (Beidas-Strom, Lian, & Maseeh, 2009). The regulation of the rental market played a larger role in Egypt, since the rental market is larger there. Rent control, which was introduced in Egypt in the early 1960s, led to fixed rents in nominal terms and gave substantial rights to tenants to retain their tenancy along the original contractual terms indefinitely, even through inheritance.[2] This rapidly reduced supply and led to large "key money" or "advance rent" payments to access rental contracts (Assaad & Ramadan, 2008). Rent control in Egypt, unsurprisingly, also increased the cost of non-controlled housing (Attia, 2016). The landscape substantially changed with Law No. 4 of 1996, which applied to new rental contracts, leaving existing rent control arrangements intact. The law, which has become known at the "new rent" law, allowed for definite duration rental contracts and the ability of the landlord to change the rent at the end of the contractual period (Assaad & Ramadan, 2008). This shift in policy has been shown in other work to have affected the timing of marriage for cohorts impacted by the law (Assaad & Krafft, 2015a; Assaad & Ramadan, 2008), which is one of the key hypotheses of this paper as well.

In Tunisia, the public sector and social (publicly provided) housing played a prominent role in early decades. Tunisia established a new housing strategy in 1988, shifting policy from public housing and replacement of slums to market-oriented strategies (McVitty, 2013). Egypt, Jordan, and Tunisia historically had substantial areas of informal settlement (slums) as the countries urbanized, but Tunisia and Jordan have made progress in upgrading such areas, while this remains a priority in Egypt (Feiler, 1992; World Bank, 2005).

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[2] A 2002 decision by the Supreme Constitutional Court limited the transfer of rent control contracts through inheritance to one generation (Assaad and Ramadan 2008).

Whereas rent control is the main policy measure affecting rental markets, for homeownership markets the key issue is housing affordability and especially housing finance. In MENA, large down payment requirements and short loan periods are also a challenge that exacerbates the unaffordability of mortgage finance (Erbaş & Nothaft, 2005). Empirically, in Jordan, new housing units are related to the supply of mortgages, more so than to housing price (Al-Hashimi & Ali, 2013). The public sector plays an outsized role in housing finance in MENA. In Tunisia, 80% of housing loans are from the public banking system (Beidas-Strom, Lian, & Maseeh, 2009). Tunisia has a particularly low loan-to-value ratio for the region, 65%, meaning that down payments are larger (Beidas-Strom, Lian, & Maseeh, 2009). Since even obtaining a loan from the Tunisian program targeting low-income households requires having a qualifying formal salary as well as a substantial down payment, finance is further out of reach for many low-income youth (McVitty, 2013).

Overall, the housing market can be a major obstacle to the transition to adulthood in MENA. The groom (and his family) must secure independent housing prior to marriage. Rental housing may offer a speedier alternative that does not require substantial capital upfront, but rental units are not necessarily available or affordable, particularly in Tunisia and in Egypt prior to the passage of the "new rent" law. Mortgage financing is under-developed, primarily driven by the public sector, and often unavailable to youth. Thus, youth often have to save large sums either for a down payment or for the outright purchase of a home. This can substantially delay the transition to marriage, as the savings required to obtain housing are 3-7 years' worth of income (Assaad & Krafft, 2015a; Beidas-Strom, Lian, & Maseeh, 2009).

3. Data

In order to analyze the relationship between housing and marriage, we need data on the marital history of the individual, the patterns of residence just after marriage, the nature of the housing market in the individual's location of birth and current residence, and the timing of other key transitions in the individual's life course, such as schooling and employment. Given the data requirements, we limit this study to three MENA countries, Egypt, Jordan, and Tunisia, for which comparable data from similar surveys are available. The study primarily uses two of the waves of the Egypt Labor Market Panel Survey (ELMPS) carried out in 2006 and 2012,[3] the 2010 wave of the Jordan Labor Market Panel Survey (JLMPS),[4] and the 2014 wave of the Tunisia Labor Market Panel Survey (TLMPS).[5] These datasets also include information on the cost of housing as a component of marriage costs. Unfortunately, in the case of Tunisia, although collection of data on housing costs from all individuals who married in the 10 years preceding the survey was planned, problems arose in implementation, which prevented such data from being collected for the all the relevant individuals. Specifically, an erroneous skip pattern was incorporated into the survey, such that *only* individuals who did *not* live in a nuclear household at marriage were asked questions about costs of marriage. This is both quite a small sample and one that is obviously not representative of the true costs of marriage in Tunisia, where more than 80% of individuals married in the early 2010s had nuclear housing arrangements at marriage (Assaad, Ghazouani, & Krafft, 2016a; Assaad & Krafft, 2015a). We are therefore unable to analyze housing costs as a component of marriage costs in Tunisia, although we can investigate other aspects of the housing market and their impact on marriage. We use a rich set of characteristics at the family and individual level as controls for factors that might confound the relationship between housing and the timing of marriage. Our final working samples for the multivariate analyses contain 12,735 males between the ages of 15 and 54 for Egypt, 6,483 for Jordan and 2,250 for Tunisia.

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[3] See Assaad and Krafft (2013) for more information on the ELMPS.
[4] See Assaad (2014b) for more information on the JLMPS.
[5] See Assaad et al. (2016) for more information on the TLMPS.

We also draw on microdata from the 10% samples of the 2006 Egyptian Population and Housing Census and the 2010 Jordanian Population and Housing census, available through the Integrated Public Use Microdata Series (IPUMS) for information on local housing markets (Minnesota Population Center, 2015). The census in Egypt includes information on both the tenure of housing (i.e. rent or own) and the rental law under which the housing is rented. We summarize this information at the district level (which is the second level of administrative geography in Egypt). There are 250 districts in Egypt in 2006 for which we have summary housing data and survey data. The census in Jordan includes information on the type of housing, the date of construction, and the cost of rent, which we also summarize at the district level. There are 44 districts for which this housing information is available to us in Jordan in 2004 and for which we have survey data. For Tunisia, we use a 10% sample of the Tunisian Population and Housing census directly available from the Tunisian Department of Statistics (INS) web site (www.ins.nat.tn). This census includes information on the type of housing and the date of construction. The lowest level of geography identified in the Tunisian 2004 census public use microdata available from the INS is the governorate level, sub-divided in urban and rural components, so that is the level we use to identify local housing conditions in Tunisia. There are 24 governorates in Tunisia, and 46 governorate urban-rural subdivisions, because the Tunis and Monastir governorates do not have a rural component. All 46 subdivisions are represented in our survey data.

Information on local housing markets can help identify the effect of housing on the timing of marriage. Local housing market information is less likely to suffer from endogeneity problems than information about individual level housing choices, such as whether the individual him or herself lives in rental or owned housing. To avoid the potential endogeneity of migration decisions, and thus the choice of current place of residence, we use information from the individual's location of birth rather than the location of current residence.

In our multivariate models of the determinants of the timing of marriage discussed below, a number of variables are included as covariates. Most importantly, for Egypt, we include the proportion rental tenure overall in the district of birth from the 2006 census, as well as the proportion of "new rents" among rentals. Similarly, for Jordan, we include the proportion of rental tenure for the district of birth in 2004. For Jordan, we also include a measure of rental affordability: the local average rent relative to average individual wages.[6] For Tunisia, we include vacancy rates for housing overall, vacancy rates for rental housing, specifically, as well as the proportion of rental tenure, computed by for urban/rural components of the governorate of birth. All of these measures are calculated from the respective census data for the country (2006 census in Egypt and 2004 censuses in Jordan and Tunisia), except the Tunisia proportion of rental tenure, which is calculated from the TLMPS 2014 because it is not available in the public use census data. We standardize the housing market measures to have a mean of zero and standard deviation of one, in order to be able to discuss relationships in terms of standard deviations. Additionally, we control for labor market status, whether respondents are in school, own and parents' levels of education, father's employment status and occupation, number of siblings (brothers and sisters separately), age and region in our models.

4. Methods
We begin with descriptive analyses of the change in the median age at marriage across different birth cohorts in all three countries. We then move to an examination of the relationship between tenure arrangements and family structure at marriage, housing costs, both in relation to income and to total marriage costs, and other housing market characteristics, such as vacancy rates in Tunisia and the proportion of rentals under the "new rent" law in Egypt. We then proceed to a multivariate analysis of the determinants of marriage timing in all three countries. To do so we

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[6] Local wages are estimated using the 2003 Jordanian Establishment Survey.

construct an annualized panel data set for each individual over time using time-varying information on marital and employment status, obtained from retrospective data in the various surveys, and linking it to housing characteristics at the location of birth. Each individual is followed from age 15 until the time of first marriage or the time of the survey if the individual is still unmarried when interviewed.

We estimate discrete time hazard models since the age of marriage is recorded in years and there are a number of tied observations in each year. This method takes account of the right censoring of marriage (since many individuals are not yet married). We denote marrying at a particular age t as T_t. The outcome of interest is the probability of marrying at a particular age if one has not yet married. This can be characterized by the discrete-time hazard function, h_{it} (Jenkins, 1995):

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

Kaplan-Meier survival functions are used to estimate the median age at first marriage presented in our descriptive statistics. We use a discrete-time proportional hazards model, the complementary log-log model, for the multivariate analysis. Discrete-time survival analysis can be undertaken with complementary log-log or logit models (Jenkins, 1995). The complementary log-log model has the advantage in terms of ease of interpretation. Results can be presented as hazard ratios, similar to the Cox continuous time proportional hazards model. Additionally, survival analysis methods allow each individual to have time-varying (such as school enrollment) as well as time invariant characteristics (such as parental education), which can be related to marriage timing. We structure the data so that an observation is a combination of an individual and a year of age to enable our use of time varying covariates. All of our models include controls, as discussed above, for local housing markets and other characteristics. Incorporating covariates X_{it}, the complementary log-log model can be estimated as (Jenkins, 1995):

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

or

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

where $\theta(t)$ refers to a series of dummy variables identifying the time since age 15. The estimated coefficients, β, can be interpreted as hazard ratios when exponentiated. The hazard ratio then describes the relationship between a one-unit increase in a covariate and the hazard of getting married. The baseline hazard can be extracted from equation (1) and $\theta(t)$ to characterize the probability of getting married at each age for the reference case.

Furthermore, in an attempt to identify the impact of "new rent" law, we specify a difference-in-difference discrete time hazard model for Egypt in 2012. This difference-in-difference model is specified as follows:

$$\begin{aligned}\log(-\log(1 - h_{it})) \\ = \alpha_1 R_i + \alpha_2 N_i + \alpha_3 M_i + \alpha_4 R_i * M_i + \gamma\, N_i * M_i + \theta(t) + \beta X_{it}\end{aligned} \tag{3}$$

R_i represents the local percentage of rental units in all housing and N_i the local percentage of "new rent" housing in all rental housing.[7] M_i is a dummy for males born 1972 or later, the age group whose marriage timing is most likely to be affected by the new rent law passed in 1996. The impact of the "new rent" law is given by the coefficient γ on the interaction between local percentage of "new rent" housing and being born 1972 or later.

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[7] By local, we mean in the individual's district of birth. We use district of birth rather than district of current residence to allay any endogeneity concerns related to migration.

5. Results

5.1 Descriptive analysis

5.1.1 Trends in median age at marriage

We begin our analysis by examining the trends in the median age at marriage in Egypt, Jordan and Tunisia by birth cohort. As shown in Figure 1, the median age at first marriage among Jordanian men exhibits a great deal of stability across the cohorts born from 1960 to 1980, rising from just under 26 to just over 26 over the twenty-year time span. There is a stronger upward trend among Jordanian women, where the median rose rapidly from 19 to nearly 21 for those born between 1960 and 1968, stabilized somewhat and then began to rise again among those born after 1970 to slightly exceed 22 for those born after 1980. In Tunisia, the trend has been one of a rapid and prolonged increase in the median age at first marriage among both men and women. Already quite high at 28 even for the 1960 birth cohort, the median age rose rapidly among Tunisian men to reach 32 by the 1975 birth cohort and then stabilized at that level, although it may have declined slightly thereafter. The median age also rose sharply among Tunisian women, from just over 22 for women born in 1960 to nearly 28 for women born in the early 1980s, again with some evidence of a decline for youngest cohorts. Egypt exhibits the most striking reversal in the rise of the median age at marriage. The median age there had been rising steadily for men, from about 27 for those born in 1960 to about 28 for those born in 1970, and then began declining steadily to reach just over 26 for those born in the mid-1980s. A similar but less pronounced pattern is noticeable for Egyptian women. They experienced a slight increase in the median age at marriage up to the cohort born around 1977 and a reversal thereafter.

One of the key hypotheses in this paper is that the reversal of the rising trend in the age at marriage for men in Egypt can be attributed to developments in the housing market, and in particular the enactment of the "new rent" law of 1996. Given that the law only applied at the margin to new rental contracts, we assume that it took some time for it to have an effect on rental markets, with the earliest effects probably being no earlier than 1998. Assuming that the average man was marrying at age 27 or 28, we would expect to see a noticeable impact of the housing law on the age at marriage for those born around 1970/71. This period is in fact the point at which we observed the reversal in the age of marriage in Figure 1. In our empirical tests below, we set the cutoff for those who would be affected by the law as those born in 1972 or later to make sure that enough time has passed to allow the law to have an effect on the ground. When the law was passed, the average women was marrying at the age of 21, so that the cohorts to be affected by the law would be the 1977 birth cohort and later. This is in fact the birth cohort where we see the reversal occur for women.

5.1.2 Descriptions of rental housing markets

With the spread of education and urbanization in the MENA region, young people are increasingly aspiring to more independent living arrangements at marriage and these aspirations are strongly linked to the evolution of housing markets. Table 1 shows that the majority of couples married in the ten years prior to each survey are adopting nuclear family living arrangements at marriage. In Egypt, where we have two data points, the proportion of recently married couples adopting nuclear family arrangements at marriage has increased from 53% in the 2006 wave of the ELMPS to 68% in the 2012 wave. Jordan and Tunisia have even higher proportions in nuclear family arrangements at 74% and 82%, respectively. In both Egypt and Tunisia, there is a very strong relationship between nuclear family arrangements and tenure patterns. In Egypt in 2012, recently married couples living in nuclear households are nearly five times as likely to live in a rented rather than an owned housing unit as compared to recently married couples living in extended households. At around thirteen to one, this ratio is even larger in Tunisia. In Jordan, where rental rates are higher than in either of the other two

countries, the difference in rental rates between nuclear and extended households is much smaller. These figures suggest that the availability of rental housing greatly facilitates the ability of young couples to set up independent households.

Table 2 shows how the prevalence of rental housing varies by region and urban/rural location based on population census data for Egypt and Jordan and based on the TLMPS 2014 for Tunisia, where available census data does not include this variable. Surprisingly, despite the passing of the "new rent" law, the proportion of renters in Egypt is declining over time from 27% in 1996 to 21% in 2006. The decline is confined to urban areas, where the proportion of rentals is much higher to start with. The decline was particularly noticeable in the Alexandria and Suez Canal regions. In rural areas, the proportion is much lower, but it is rising fairly rapidly over time. Jordan has the highest proportion of rentals among the three countries at 34%. Although rental rates are more than twice as high in urban than in rural areas in Jordan, the urban-rural gap there is much smaller than what it is in either Egypt where it is seven to one or Tunisia, where it is eight to one.

Using 2004 census data from Tunisia, we computed the percentage of housing units that are vacant and the percentage of housing units that are vacant and destined for rental (Table 3). The vacancy rate for all units is nearly 8%, with relatively small differences between urban and rural areas and by region. The percentage of units that are vacant and destined for rent is only 2.8%, but is much higher in urban than in rural areas (3.8% versus 0.6%). It is also higher in the more developed coastal regions (North, Center East and South East) than in the less developed inland regions (North West, Center West and South West).

5.1.3 Marriage costs and housing

We now move to an examination of housing affordability ratios and the share of initial housing costs in total marriage costs for newly married couples in Egypt (2006 and 2012) and Jordan (2010).[8] The affordability ratio is constructed by dividing the initial cost of housing at marriage by the current annual wages of the groom. Note that these are current annual wages, and thus likely to be higher than wages prior to marriage and lead to an underestimate of the affordability ratios. In both 2006 and 2012, Egyptian grooms had to devote around two full years of wages to cover their initial housing, costs, while Jordanians (in 2010) had to dedicate around half a year's earnings. This suggests that housing markets in Jordan allow grooms to spread out their housing costs over time rather than have to make large expenditures up-front. Not surprisingly, Greater Cairo had the least affordable housing costs among urban regions in Egypt in 2006, but, by 2012, the least affordable initial housing costs were in urban Lower Egypt. Rural Lower Egypt also had relatively high initial housing costs in 2006 and especially 2012. This suggests that the scarcity of rental housing in rural areas with less developed housing markets is driving up initial housing costs for newly married couples. Lower Egypt in particular, a densely-populated region in the Nile Delta with a scarcity of land for housing construction, has some of the highest housing to income ratios. In Jordan, urban areas in the North region, the region with the lowest proportion of rental housing (see Table 2), have the highest ratio of initial housing cost to income. In rural areas, the highest cost burden is in the Middle region, where housing costs are probably driven up by proximity to the Greater Amman agglomeration.

Moving now to the share of initial housing costs to the total costs of marriage shown in the second column of Table 4, we confirm that housing costs are a bigger obstacle to marriage in Egypt than in Jordan, and possibly increasingly so in Egypt. The share of housing costs in the marriage budget in Egypt in 2012 (28%) is three times as high as it is in Jordan in 2010 (9%). Again, couples in Greater Cairo must devote the largest share of their marriage budget to housing (about one third), but rural Lower Egypt is a close second in 2012, suggesting that

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[8] As mentioned earlier, we are unable to study this for Tunisia due to an error in the skip pattern in the TLMPS 2014.

housing costs in that region are high and increasing. Regional differences in Jordan reveal that housing costs are a greater share of marriage costs in rural areas. Among urban areas, the North region has the highest share of housing in marriage costs.

5.1.4 "New Rent" housing in Egypt

We employ data from the ELMPS 2012 to analyze the effects of the "new rent" law in Egypt. First, we calculate the mean cost of housing at marriage for males who identify as renters at the time of marriage and who were married in the preceding 10 years. We find that the average initial cost of housing at marriage for those renting under the old rent law is approximately £E 14,777 compared to approximately £E 10,772 for those renting under the "new rent" law.[9] We also calculate the median initial cost of housing at marriage under both rent laws, in case outliers were skewing the results. For those renting under the old law, the median is approximately £E 10,000, while it is £E 5,000 under the "new rent" law. Using both measures of central tendency, we find that it is highly likely that those who rent under the "new rent" law incur lower initial housing costs at marriage than those who rented under the old rent laws, which most likely involved putting down a large amount up-front in key money in order to obtain a rental contract.

To confirm that the "new rent" law is essentially affecting the housing choices of newly married couples, we examine the proportion of people renting under this law by age. As shown in Table 5, there is a declining proportion of those renting under the "new rent" law with age group. For all age groups, the proportion making use of the "new rent" law is substantially higher in urban areas than in rural areas. However, the proportion renting under the "new rent" laws remains fairly low even for the youngest age group in urban areas (16.4%).

5.1.5 Credit sources and reasons for borrowing

In an attempt to understand the financial burden that marriage and housing might impose on people living in MENA, we investigate the patterns of borrowing in Egypt (2012) and Tunisia (2014). We exclude Jordan in this analysis because the JLMPS 2010 data does not include information on borrowing. In Table 6 we show the percentage of individuals ages 15 and up either attempting to borrow or borrowing formally. Questions were asked specifically about borrowing in the 12 months preceding the survey. Among those seeking formal loans, we show their reasons, highlighting marriage and housing versus other reasons, and also the sources for their loans. Although questions were also asked about informal borrowing, which 3% (in Tunisia) and 4% (in Egypt) of individuals undertook, these informal loans were much smaller than formal loans and less likely to be for marriage or housing purposes. We therefore focus on formal loans.

The share of people borrowing (or trying to borrow) from formal sources is similar in Egypt and Tunisia at about 3% in each country. Among those seeking formal loans, a larger share was seeking money for marriage in Egypt (22%) than in Tunisia (14%). Conversely, more sought a loan to buy a house in Tunisia (23%) than in Egypt (11%). This indicates that housing costs are potentially less affordable in Tunisia than in Egypt, which might be associated with the "new rent" law allowing people access to affordable housing options in Egypt. In both countries housing and marriage together comprise around 33% (Egypt) to 37% (Tunisia) of the reasons for seeking a formal loan, indicating that this is a substantial motivator. In Egypt, the majority of people who seek formal loans do so from public bodies (75%), while in Tunisia half of formal loans are sought from private sources (50%). Overall, the picture that emerges is that formal borrowing is quite rare, and that individuals who do borrow often do so for reasons related to housing and marriage.

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[9] One US $ was equal to £E 6.1 in 2012 (World Bank, 2013).

5.2 Multivariate analysis: timing of marriage and housing markets

As explained above, we estimate a discrete-time proportional hazards model of age at marriage using a different set of regressors to describe housing markets in each country, depending on data availability. We have the most complete set of regressors for Egypt, which allow us to test for the effect of the enactment of the "new rent" law in 1996 on the timing of marriage. Given the prevailing age at marriage among Egyptian men at that time, we expect the law to affect the marriage prospects of the cohorts of men born in 1972 or later. We therefore argue, as described in the methods section, that the effect of the law is identified by the interaction terms between a dummy for being born in 1972 or later and the variable capturing the percentage of housing subject to the "new rent" law among rentals in the individual's district of birth in 2006. We also include the interaction between the birth cohort dummy and the percentage rental in all housing. The un-interacted form of these two variables captures the potential selection effect of being born in districts with high percentages of rental housing and high percentages of "new rent" housing in rental housing, including any time-invariant confounding variables that are associated with both a high prevalence of rentals and the timing of marriage.

For Jordan, the housing market variables we are able to include from the 2004 census are the average monthly rent relative to average wages and the percentage of rentals in all housing at the district of birth. Finally, for Tunisia we estimate a model that includes the percentage of rentals in all housing, the percentage of housing vacant and destined for rental and the percentage vacant among all housing all at the governorate urban/rural level. For ease of interpretation, all the housing variables in all three countries are expressed as standardized variables (in units of standard deviations from the mean).

Table 7 displays the results of these estimates in the form of hazard ratios, which are centered around one. A hazard ratio greater than one implies that the timing of marriage is accelerated by a one unit increase in the covariate, while marriage is delayed when the hazard ratio is smaller than one. Standard hypothesis testing applies to the underlying coefficients and can be approximated for the hazard ratios with the delta-method based standard errors. Significance can roughly be assessed by calculating the difference between the hazard ratio and one, then dividing by the standard errors (in parentheses) to obtain the z-statistic.

In Egypt, we find that a one standard deviation increase in the percentage of rentals under the "new rent" law increases the hazard of marriage by approximately 14% for males born in 1972 or later. This finding is perhaps the most important result of this paper. This result confirms that the reversal of the trend in the male age at marriage first noted by Assaad and Ramadan (2008) based on 2006 data has been sustained and can be attributed to the introduction of the "new rent" law, as they suggested. The increased availability of "new rent" housing over time potentially explains the sustained decline in the male age at marriage since the 1972 birth cohort observed in Figure 1. This happened despite adverse developments in the labor market that would have pushed the male age at marriage higher in the absence of these housing market developments. Furthermore, we find that one standard deviation increase in the percentage of rental tenure also increases the hazard of marriage by about 10% for males born in 1972 or later. Both of these results confirm that the new rental law contributed to reversing the earlier rising trend in the age at marriage. The hazard ratio associated with the un-interacted new rent percentage, indicating the pre-1972 effect, is barely above one and insignificantly different from one. The hazard ratio associated with the share of rent in all housing is also insignificant but below one, suggesting, if anything, that living in areas with high rental rates is generally associated with later marriage. Thus, if a selection effect does exist, it appears to be limited and going in the direction of later marriage in high rental areas. There is not a significant effect associated with the un-interacted dummy for being born in 1972 or later, suggesting that the observed reversal in the age of marriage only occurred for those born in areas with high shares of rentals and "new rent" units among rentals.

For Jordan, we find no significant effect for either the share of rentals in all housing or for the ratio of monthly rent to wages. This may be because housing costs are a lower proportion of total marriage costs in Jordan compared to Egypt. This suggests once more that access to housing is not a particularly constraining for the timing of marriage in Jordan. Alternatively, it could be that selection effects and causal effects are going in opposite directions, making it hard to discern an overall effect in Jordan.

In Tunisia, none of the results on housing variables is statistically significant. The percentage of rental units in all housing has a hazard ratio less than one. This result suggests that selection effects due to unobservable factors that are associated with a greater prevalence of rentals and a higher age at marriage predominate in Tunisia. For instance, these places are likely to be more urban, have a higher proportion of couples desiring nuclear family living arrangements, and generally have more modern norms, all of which are associated with higher ages at first marriage. This essentially confirms the difficulty of isolating the effect of housing market structure without some sort of natural experiment as we have in the case of Egypt. The share vacant has a hazard ratio that is also less than one. However, although it is insignificant, the percentage vacant and available for rent has a hazard ratio greater than one, suggesting that a looser rental market may accelerate marriage. Although insignificant, this is likely to be a better measure of housing supply, after controlling for the overall proportion of rentals and overall vacancies, variables that should pick up many of the unobservable locality characteristics.

The effects of other covariates are mostly in the expected direction. The effect of employment status on the timing of marriage for men is explored in more detail in Krafft and Assaad (2016). Suffice it to say here that, in all three countries, employment in the public sector tends to speed up marriage for men relative to informal private sector employment, as it is an effective signal that a man is economically ready for marriage.[10] Private formal employment does not have a significantly different effect from private informal wage employment in Egypt or Tunisia. In all three countries, as would be reasonably expected, unemployed men have a much lower hazard of marriage compared to those in employment. The hazard ratio for unemployed men is around 50% lower in all three countries, compared to a male employed in informal wage employment. Since men presumably have some choice as to whether to remain unemployed to search for a formal job or to take up an inferior job in the informal economy, there is some concern as to the potential endogeneity of unemployment. Men who are for some unobserved reasons keen to marry faster may also leave the unemployment state faster. Krafft and Assaad (2016) discuss the possible trade-offs with respect to the timing of marriage of remaining unemployed longer to increase the probability of obtaining a public-sector job versus entering into employment faster but in a lower quality job. Being out of the labor force delays marriage even more than being unemployed. Since we account for being in school with a separate time-varying covariate, this variable probably captures men with some kind of disability or other issue that might get in the way of marriage as well as employment.

As expected, being in school delays marriage considerably, but the effect of schooling goes beyond the effect of simply being in school. The hazard of marriage falls steadily with the level of education in both Egypt and Jordan. In Tunisia, it falls at the secondary level and then appears to rise again after that level. Controlling for own education, the hazard of marriage appears to have a more complex relationship with parental education, which is presumably a proxy for social class. Being from a higher social class could contribute to the family's ability to pay for the costs of marriage, but it could also raise expectations about the potential spouse and the quality of the marriage to be achieved (See Assaad & Krafft, 2015b). Our results suggest a non-linear relationship between social class and the timing of marriage in all three

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[10] After Krafft and Assaad (2016) account for the endogeneity of public sector work, this effect persists in Egypt and Jordan but not Tunisia.

countries. In Egypt and Jordan, the hazards of marriage are lowest for mothers with basic education and highest for mothers with no education.

5.3 Simulations

In order to further understand the relationship between housing and marriage, we use the results of our multivariate analysis to predict what happens to the age of marriage as we change the characteristics of the local housing markets. We specifically vary housing market characteristics by +/- one standard deviation around the mean and predict the proportion married at each age. The simulations are all conducted for a reference individual who is a secondary graduate, was in school until age 18, had both parents educated up to the secondary level, and a father who was self-employed when the individual was 15. The reference individual was born in Cairo for Egypt, Amman for Jordan, and Tunis for Tunisia. He has two brothers and two sisters and is 35 years old at the time of the survey. The figures below depict how the housing market variables affect the proportion of respondents married at each age, equivalent to a failure function in survival analysis terms.

For Egypt, we simulate the interaction between the share of "new rent" units in all rental units and the dummy indicating birth in 1972 or later (Figure 2). A shift of the failure curves to the left indicates faster transition to marriage. The most notable result is that increasing the proportion of "new rent" units among rentals by two standard deviations shifts the curve substantially to left, but only for males born since 1972. The median age of marriage for this group goes from 30 to 29 if their place of birth goes from one standard deviation below the mean in "new rent" housing to one standard deviation above. For those born prior to 1972, the change is much smaller and not statistically significant. We posit that the difference between these two effects can be attributed to the introduction of the 1996 housing law. These simulation results assume that the proportion of rentals in the place of birth remains constant. If we allow for the increase in the proportion of rentals as well, the effect of the law is even larger.

In the absence of a natural policy experiment like the one in Egypt, for Jordan we simulate the variation in marriage timing for individuals born in places with different shares of rental housing, keeping in mind that the multivariate results showed no significant effects. As shown in Figure 3, the simulations confirm the absence of an effect as the proportion of rental housing changes from minus one standard deviation to plus one standard deviation around the mean.

For the Tunisian case, we simulate the effect of varying the share of housing vacant and available for rent in the place of birth (Figure 4). Although this variable proved statistically insignificant in our multivariate results, possibly because of the small sample size in the Tunisia data, we detect an effect of about a one year reduction in the median age at marriage as the share of housing vacant and available for rent increases from minus one to plus one standard deviations around the mean.

6. Conclusion and Policy Implications

Housing plays an increasingly important role in enabling young people in the Middle East and North Africa to marry, a crucial stage in their transition to adulthood, in a context where independent living at marriage is increasingly becoming the norm. Although the region shares with other parts of the world a trend toward later marriages for young women, it has had the distinction of substantial increases in the age of marriage among young men as well, and, therefore, fairly persistent spousal age gaps (Mensch, 2005). While demographers and policymakers generally applaud delaying marriage for young women and reducing the rates of teen marriages, there is considerably more social and policy anxiety when men's ages at marriage rise as well. This phenomenon is widely attributed to men's growing inability to signal economic readiness for marriage in a cultural milieu where men and their families are still expected to shoulder the bulk of the economic burden, including the provision of the marital dwelling. In such a context, housing policies and the functioning of housing markets

play a critical role in facilitating the transition to marriage. When the acquisition of housing requires the accumulation of large sums of money up-front, the economic burden on men increases and marriage will likely be delayed. If, on the other hand, it is possible to acquire rental housing fairly easily or finance purchases with long-term loans, the initial costs of housing will not loom as large among the various costs of marriage.

By comparing the experience of three MENA countries, Egypt, Jordan, and Tunisia, we are able to gain useful insights into the timing of marriage and the functioning of housing markets. Among the three countries, Jordan appears to have the most flexible housing market with a relatively high proportion of rentals in the tenure mix, relatively low ratios of initial housing costs to income, and low shares of initial housing costs in total costs of marriage. Jordan is also the context in which male median age of marriage has increased the least, remaining fairly stable about 26 for cohorts born in 1960 through 1980.

Tunisia appears to be at the other extreme in terms of the operation of housing markets. Tunisia has by far the lowest share of rentals among the three countries. Tunisia removed rent controls in the 1970s, but continues to have relatively low rates of rental due to strong tenancy rights making eviction difficult (Hammam, 2014). It also appears to have easier access to land and housing finance for homeownership, but since most of the finance is from public sector banks and is subject to interest rate subsidies, the supply of finance appears to be rationed at levels far below what is required. Although we have limited data on housing affordability in Tunisia, it appears that housing costs to income ratios are fairly high there (Beidas-Strom, Lian, & Maseeh, 2009). Although our results on housing availability are insignificant in Tunisia, they suggest that high shares of rental vacancies may accelerate marriage. Therefore, even though we cannot establish a direct connection between the performance of housing markets and age at marriage in Tunisia given our data limitations, the rigidities we do observe in housing markets in Tunisia are in line with the sharply increasing trend in the age at marriage observed among Tunisian men since the 1960 birth cohort.

We are able to draw our strongest conclusions in the case of Egypt, where the timing of housing policy changes provides us with a useful natural experiment to study the effect of housing availability on the timing of marriage. We first noted the dramatic reversal in the trend of the age at marriage among Egyptian young men, with a fairly sharp rising trend reversing itself for young men born around 1971 and then continuing to decline since then. We then noted, as Assaad and Ramadan (2009) had before us, that the cohorts experiencing this reversal are exactly the same as would have been affected by the "new rent" law passed in 1996 that made it easier to acquire market-rate rental housing. We formally test the effect of the law on the timing of marriage using a difference-in-difference setup. This approach allows us to distinguish between the effects of the law and the effect of time-invariant unobservables that may be correlated with both increased availability of rental and "new rent" rentals and with the timing of marriage. We find that the introduction of the "new rent" law did in fact increase the hazard of marriage for young men born after 1971. Everyone standard deviation increase in the share of "new rent" units in rental housing in a young man's district of birth increases the hazard of marriage by 14% for men born after 1971 compared to those born earlier. The main effect of this variable is small and not significant, suggesting that selection on unobservables is not a major concern. Similarly, a one standard deviation increase in the overall share of rental units in all housing raises the hazard of marrying for men born since 1971 by 10% relative to those born earlier. In contrast, the main effect of this variable, which probably captures the effect of selection, is a statistically insignificant reduction of 9% in the hazard of marrying. We find a similar reduction associated with this variable in Tunisia. This suggests that places with relatively high availability of rentals are associated with other attributes (e.g. urban living, more modern marriage aspirations) that raise the age of marriage. It is thus necessary to correct for

such selection to detect the effect of a greater availability of rentals on the timing of marriage, which is precisely what we do for Egypt.

Our results suggest that policies that were meant to reduce the housing cost burden in Egypt through rent control in fact contributed to the marriage crisis. Rent controls dried up the supply of rental housing or made it contingent on young couples coming up with large sums up-front for "key money" or multiple years of "advance rent." Forced to raise large amounts of capital for housing acquisition at marriage, it simply took men a lot longer to become ready. Once the policy changed to allow for market-rate rentals and thus substantially reduced the need for up-front resources, the age at marriage began falling again. Even if they have to pay more rent on an ongoing basis, young people are at least able to get an earlier start on their marital lives. Another set of policies that could have similar effects is to substantially increase the availability of housing finance (Erbaş & Nothaft, 2005). However, developing a comprehensive and inclusive housing finance system in conjunction with appropriate government regulation is a long-term task (Okpala, 1994; Renaud, 1984). In the meantime, more flexible rental housing regulations can go a long way in resolving the housing shortages faced by prospective couples.

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Figure 1: Evolution of the Median Age of First Marriage by Birth Cohort, Males and Females, Egypt, Jordan and Tunisia
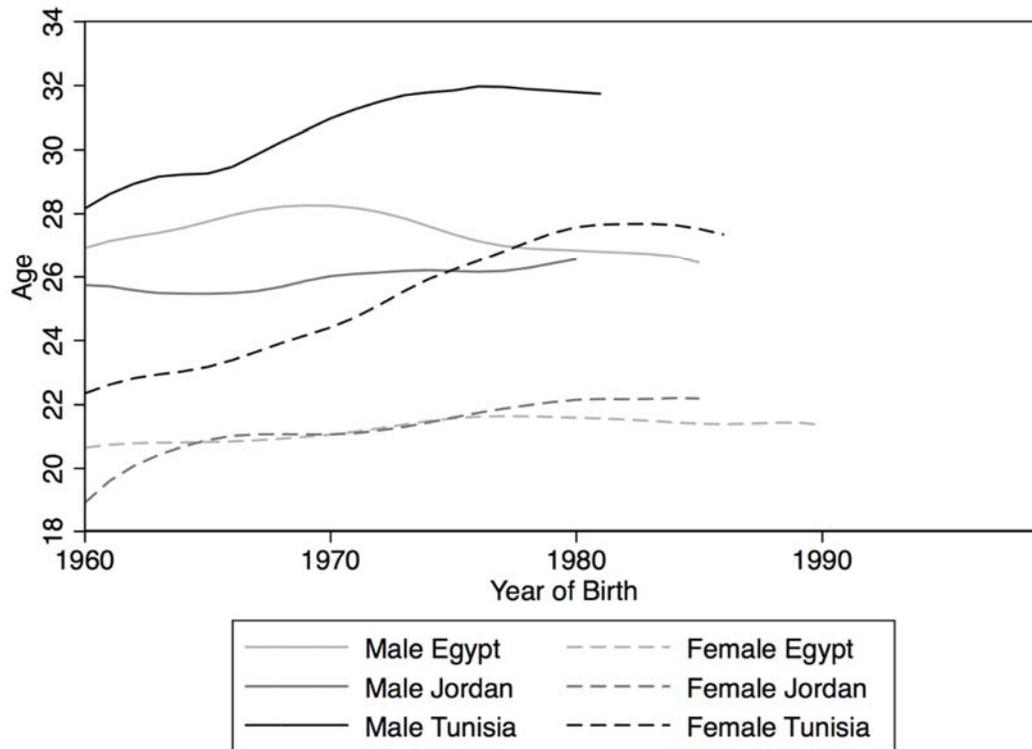
Notes: Locally weighted regression (lowess) smoother with bandwidth 0.6. Based on survival functions. Only cohorts for whom 50% of individuals or more have experienced a first marriage are included.
Source: Krafft & Assaad (2016).

Figure 2: Proportion Married at Each Age Simulating Variation in The Share of "New Rent" Units in Rental Housing for Those Born before 1972 and 1972 and Later, Egypt
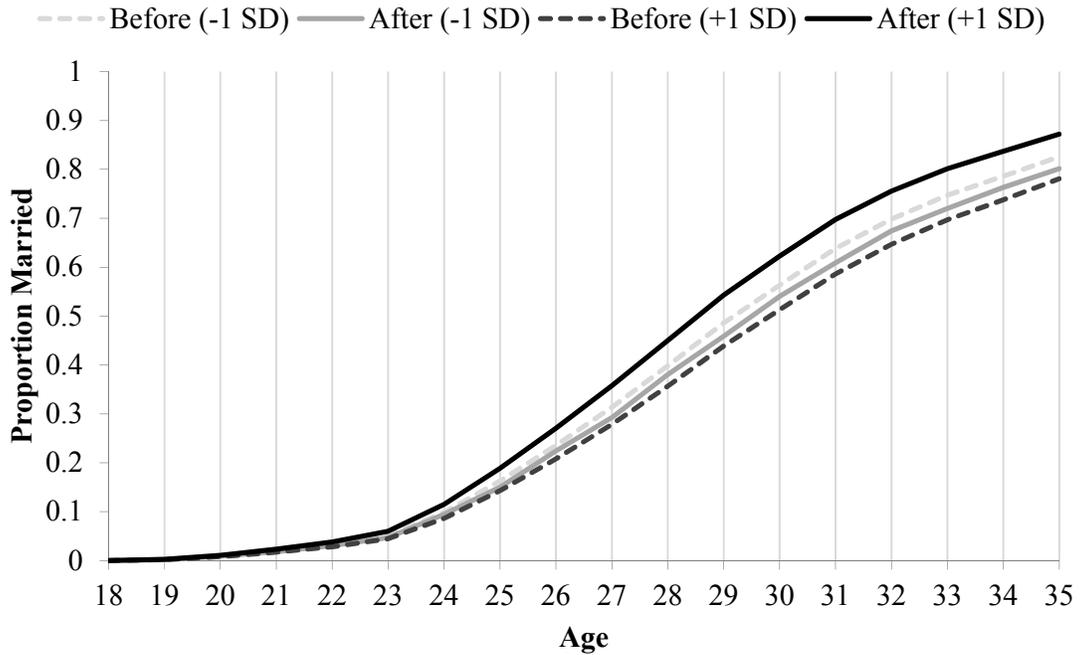
Source: Based on models presented in Table 7

Figure 3: Proportion Married at Each Age Simulating Variation in the Share of Rental Housing, Jordan
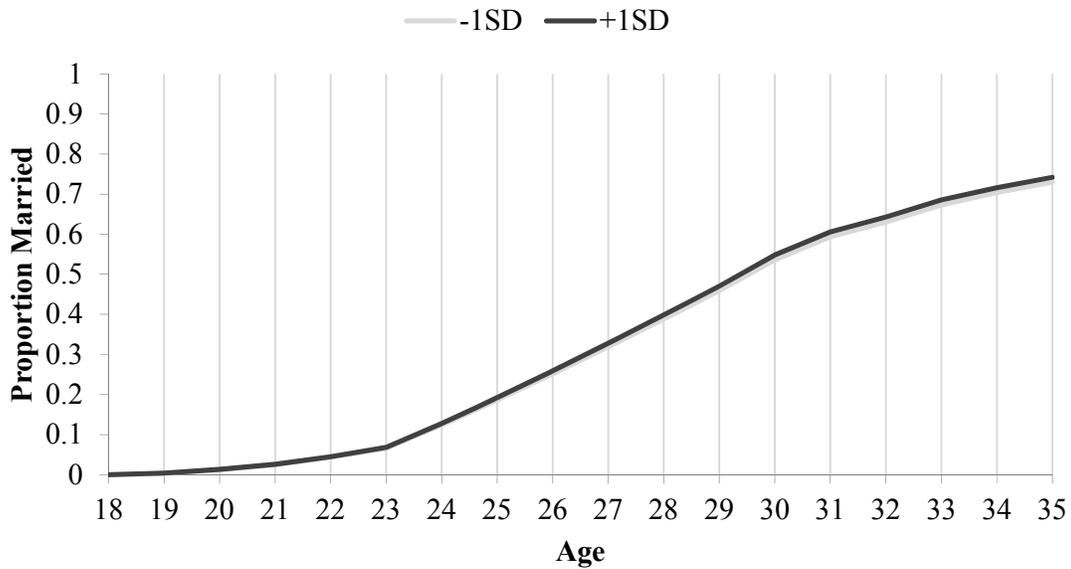
Source: Based on models presented in Table 7

Figure 4: Proportion Married at Each Age Simulating the Effect of Varying the Proportion of Units Vacant and Available for Rent, Tunisia
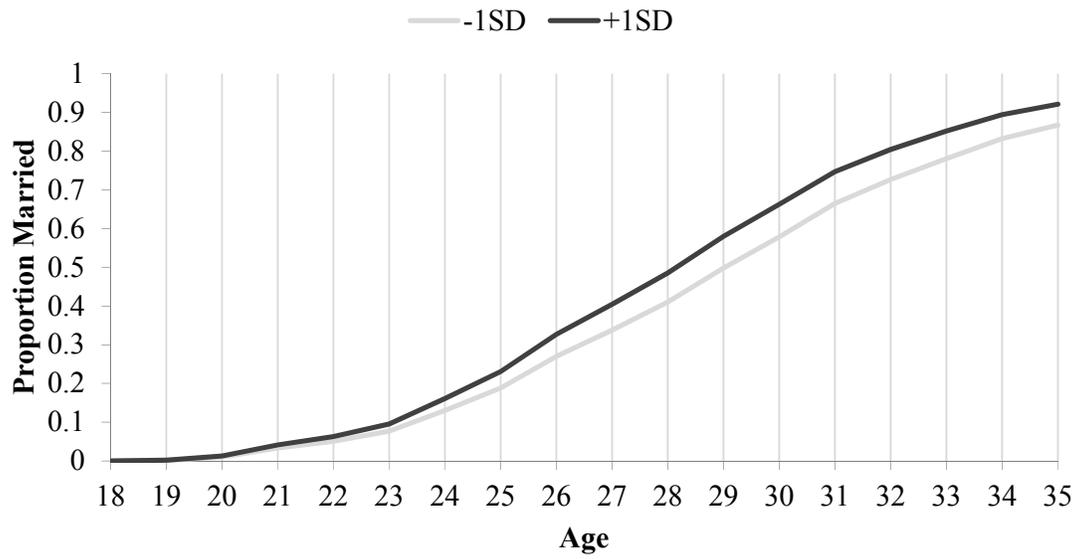
Source: Based on models presented in Table 7

Table 1: Percentage of Households Living in Nuclear Arrangements at Marriage and Percentage Renting at Marriage by Living Arrangements at Marriage

	Egypt 2006	Egypt 2012	Jordan 2010	Tunisia 2014
% Renting at marriage				
Total	16.6	18.6	33.7	23.5
Nuclear family	24.1	24.9	35.9	28.0
Extended family	8.2	5.3	27.8	2.1
% Nuclear	53.2	68.2	73.7	82.4
N	3,280	9,235	1,750	1,448

Notes: Married in the 10 years preceding the survey. Egypt 2006 is proportion renting at time of data collection.
Source: Authors' calculations using ELMPS 2006, 2012, JLMPS 2010, and TLMPS 2014.

Table 2: Percentage of Households Who Are Renters by Region and Location

	Egypt 1996	Egypt 2006	Jordan 2004	Tunisia 2014
Total	27.2	21.4	34.4	10.1
Region (Urban area)				
Total Urban	52.2	38.9	38.4	13.6
Egypt - Greater Cairo	66.9	52.0	.	.
Egypt - Alx, Suez Canal	62.9	37.5	.	.
Egypt - Urb. Lwr.	32.6	26.5	.	.
Egypt - Urb. Upp.	26.9	23.5	.	.
Jordan - Middle	.	.	40.8	.
Jordan - North	.	.	27.4	.
Jordan- South	.	.	50.0	.
Region (Rural area)				
Total Rural	4.6	6.0	17.9	1.8
Egypt - Rural Lwr.	5.8	6.5	.	.
Egypt - Rural Upp.	3.0	5.1	.	.
Jordan - Middle	.	.	24.0	.
Jordan - North	.	.	12.0	.
Jordan- South	.	.	20.5	.
Tunisia				
Tunisia - North	.	.	.	13.1
Tunisia - North West	.	.	.	4.2
Tunisia - Center East	.	.	.	11.8
Tunisia - Center West	.	.	.	5.5
Tunisia - South East	.	.	.	7.2
Tunisia - South West	.	.	.	6.7
N	1,728,996	1,270,787	96,271	4,506

Note: Household level data. Tunisia data comes from TLMPS 2014.
Source: Authors' calculations from IPUMS International Census data and TLMPS 2014

Table 3: Housing Vacancy (Tunisia 2004)

	% Vacant	% Vacant - For rent
Total	8.4	2.8
Urban	8.9	3.8
Rural	7.2	0.6
Region		
North	7.9	3.1
North West	6.6	1.5
Center East	9.0	3.3
Center West	8.5	1.9
South East	10.7	3.1
South West	8.9	2.7
N	541,927	-

Source: Authors' calculations from 2004 Tunisia Population and Housing Census

Table 4: Housing and Marriage Cost Ratios for Men

	Initial housing cost/Yearly wage (In years of wage)	Housing costs/Total cost of marriage (Percentage)
Total		
Egypt 2006	1.8	23.9
Egypt 2012	2.1	28.5
Jordan 2010	0.5	9.3
Egypt 2006 (Urban residence)		
Total	2.0	29.9
Greater Cairo	2.4	36.1
Alx, Suez Canal	1.8	27.8
Urb. Lwr.	2.0	25.6
Urb. Upp.	1.2	21.1
Egypt 2006 (Rural residence)		
Total	1.7	20.2
Rural Lwr.	2.2	24.2
Rural Upp.	0.9	16.2
Egypt 2012 (Urban residence)		
Total	2.0	29.0
Greater Cairo	1.9	32.0
Alx, Suez Canal	1.7	25.0
Urb. Lwr.	2.4	27.0
Urb. Upp.	2.1	28.0
Egypt 2012 (Rural residence)		
Total	2.5	28.0
Rural Lwr.	3.1	30.0
Rural Upp.	1.7	26.0
Jordan 2010 (Urban residence)		
Total	0.4	8.4
Middle	0.3	7.5
North	0.7	11.5
South	0.1	6.1
Jordan 2010 (Rural residence)		
Total	0.9	13.6
Middle	1.2	14.3
North	0.7	14.1
South	0.9	11.5
N		
Egypt 2006	2,989	-
Egypt 2012	4,591	-
Jordan 2010	1,663	-

Notes: Restricted to men married in the preceding ten years. Spouse reports of marriage costs used for 2006 and 2010 as men were not asked directly in these two surveys.
Source: Authors' calculations using ELMPS 2006, 2012, and JLMPS 2010.

Table 5: Percentage of Households Who Are Living in "New Rent" Housing by Age of Head (Egypt 2012)

	% Renting under "New Rent"
Total	5.6
Urban	9.8
Rural	2.2
Age 30-39	
Total	9.3
Urban	16.4
Rural	3.6
Age 40-49	
Total	4.2
Urban	7.9
Rural	1.4
Age 50-59	
Total	2.9
Urban	5.6
Rural	0.3
N	9,889

Notes: Restricted to male heads of household.
Source: Authors' calculations using ELMPS 2012.

Table 6: Percentage of Adults (Ages 15+) Seeing Formal Loans in The Past 12 Months, Reasons for Loans Among Loan-Seekers, and Sources of Loans Among Loan-Seekers (Percentages)

	Egypt 2012	Tunisia 2014
Seeking formal loan in the past 12 months	3.0	3.2
Reason for loan among those seeking formal loans		
Formal loans for marriage	21.7	13.9
Formal loans to buy a house	11.4	22.6
Other reasons	66.9	63.5
Total	100.0	100.0
Sources for loan among those seeking formal loans		
Public Sources	75.4	35.9
Private Sources	15.0	49.8
NGOs/Charitable Org.	9.6	6.0
Other	-	8.3
Total	100.0	100.0
N	32,626	10,819

Source: Authors' calculations using ELMPS 2012 and TLMPS 2014.

Table 7: Discrete Time Proportional Hazard Models of Age at Marriage, Males Ages 15-54, by Country

	Egypt	Jordan	Tunisia
M born 1972+	1.078		
	(0.060)		
Percentage of rent in all housing and M born 1972(SD)	1.104*		
	(0.055)		
Percentage of new in rent and M born 1972(SD)	1.139**		
	(0.048)		
Percentage of new in rent (SD)	1.020		
	(0.037)		
Percentage of rent in all housing (SD)	0.914	1.017	0.883
	(0.046)	(0.027)	(0.069)
Ratio of monthly rent to wages (SD)		1.020	
		(0.027)	
Percentage vacant for rent in all housing (SD)			1.122
			(0.094)
Percentage vacant in all housing (SD)			0.956
			(0.038)
Labor market status (private informal omit.)			
Public	1.365***	1.298***	1.315*
	(0.051)	(0.070)	(0.149)
Private formal wage	1.192***	0.975	1.147
	(0.050)	(0.063)	(0.119)
Non-wage	1.107*	1.126	1.130
	(0.045)	(0.078)	(0.095)
Unemployed	0.513***	0.512***	0.495*
	(0.050)	(0.067)	(0.136)
OLF	0.305***	0.289***	0.482***
	(0.020)	(0.037)	(0.059)
In school	0.685***	0.616***	0.850
	(0.050)	(0.058)	(0.072)
Education (none omit.)			
Read & Write	0.879	0.934	1.076
	(0.062)	(0.121)	(0.129)
Basic Education	0.825***	0.892	1.029
	(0.041)	(0.108)	(0.094)
Secondary Educ	0.722***	0.791	0.751*
	(0.033)	(0.101)	(0.088)
Post-Secondary	0.721***	0.844	0.883
	(0.046)	(0.109)	(0.150)
University	0.620***	0.666**	0.842
	(0.031)	(0.086)	(0.128)
Post-Graduate	0.675***	0.998	1.119
	(0.079)	(0.161)	(0.367)
Mother's education (none omit.)			
Reads and writes	0.930	1.070	0.165**
	(0.050)	(0.055)	(0.102)
Basic	0.814**	0.218***	1.282
	(0.052)	(0.059)	(0.191)
Secondary	0.927	0.715**	1.398
	(0.070)	(0.088)	(0.329)
Higher education	1.035	0.712	1.493
	(0.115)	(0.142)	(0.826)
Father's education (none omit.)			
Reads and writes	0.928*	0.955	0.277**
	(0.034)	(0.046)	(0.116)
Basic	0.751***	0.201***	1.086
	(0.036)	(0.055)	(0.098)
Secondary	0.877	0.964	1.299
	(0.062)	(0.097)	(0.213)
Higher education	0.804**	1.022	1.105
	(0.067)	(0.126)	(0.473)
Father's emp. stat. (public omit.)			
Private wage work	0.948	1.005	1.315*
	(0.046)	(0.070)	(0.159)
Employer	0.985	1.240*	1.277
	(0.055)	(0.116)	(0.224)
Unpaid Family Worker	0.794**	0.830	0.969
	(0.059)	(0.172)	(0.261)
Missing/Do not know	1.091	0.863	1.751**
	(0.278)	(0.230)	(0.338)
Father's occup. (Manager omit.)			
Armed Forces	1.048		
	(0.167)		

	Egypt	Jordan	Tunisia
Professionals	0.898	0.687	1.059
	(0.080)	(0.153)	(0.300)
Technicians and associate professionals	0.973	0.886	0.965
	(0.073)	(0.213)	(0.313)
Clerical support workers	0.995	0.640*	0.786
	(0.105)	(0.131)	(0.296)
Service and sales workers	0.930	0.814	0.808
	(0.077)	(0.169)	(0.216)
Skilled agricultural workers	0.967	0.754	0.811
	(0.058)	(0.162)	(0.212)
Craft and related trades workers	0.943	0.736	0.743
	(0.072)	(0.160)	(0.201)
Plant and machine operators	0.951	0.845	0.953
	(0.068)	(0.181)	(0.287)
Elementary occupations	0.922	0.777	0.760
	(0.069)	(0.181)	(0.201)
No. brothers (living and dead)	0.997	1.003	1.018
	(0.007)	(0.009)	(0.016)
No. sisters (living and dead)	1.034***	1.037***	1.046*
	(0.009)	(0.009)	(0.021)
64-Age	0.955**	1.079***	0.992
	(0.014)	(0.023)	(0.032)
Square of 64-Age / 100	1.132***	0.828***	0.953
	(0.027)	(0.032)	(0.065)
Age in year included	Yes	Yes	Yes
Rural residency and region dummies included	Yes	Yes	Yes
N	12,704	6,026	2,236

Notes: *p<0.05; **p<0.01 ***p<0.001. Standard errors (in parentheses) are clustered at the PSU level.