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Abstract:

We revisit fertility analysis in Tunisia by examining family interference in birth control through: woman's marriage age, post-marriage delay in the first use of contraception, past and current contraceptive use, and choice of the birth control methods.
Using data from the 2001 PAP-FAM Tunisian survey, we find that the significant effects of covariates arise and vanish across stage-specific equations as women progress in their lifecycle. In Tunisia, family links and socio-cultural environment appear to greatly shape fertility regulation in the direction of higher fertility. This calls for more intensive involvement of the extended families in family planning policies. This also suggests that the resurgence of traditionalist politico-religious movements, often associated with youth radicalization, may affect future fertility in Tunisia through an increase in family influences on birth control by married women.

Keywords: Fertility regulation, Age at marriage, Birth control, Family Interference, Contraception, Tunisia.

JEL Codes : J12, J13, C25, C41.

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1. Introduction

Research on fertility is now a well-established field, with some emphasis having been paid to investigating the factors explaining the desired or realized number of offspring.[2] Somewhat less attention has been devoted to fertility regulation decisions, although there is a long tradition of such studies, initiated by Bongaarts (1978). Moreover, these regulation decisions are generally treated separately.

In this paper, we show how some insight can be gained by considering the diverse regulation decisions made by a woman, her husband or their families, through an approximately sequential framework that may involve distinct motivations that often succeed one another sequentially over her reproductive span. We identify the effects of suggestive correlates in the sequence of regulation decisions and devote particular attention to family interference. Indeed, in Tunisia, the likelihood of new births not only depends on the mother's biological characteristics and her economic activity, but may also be affected by her family context and her social relationships within the extended families. These family networks may influence most dimensions in young couples' lives, whether when choosing a spouse, financing a wedding, or determining the number and education of offspring.

Family interference and family values are also important because, in the early XXIst century Tunisia, they are often associated with radicalized politico-religious movements that exert powerful influences to the youth. Radicalization and terrorism have been found alternatively to diminish fertility (Berrebi and Ostwald, 2015, across countries and over 1980-2007) and to increase it (Rotundi and Rocca, 2019, in Nigeria). However, these conflicting results may conceal varying correlations of influent family networks with traditionalist ideologies. Therefore, it is useful to know better how these networks affect contraception choices to understand if they could offer a channel for radicalized ideologies to influence fertility.

[2] See, for example, Cochrane and Guilkey (1995); Karsten and Kohler (2000); Klasen and Launov (2006); Kohler (1997); Link (2011); and Rindfuss et al. (2007).

Fertility regulation is often seen (e.g., in Easterlin 1975, 1978) as stemming from a woman's having increased labor participation, and the disadvantages of unwanted children are greater than their economic and psychological benefits. Moffit (1984) noted that couples may delay childbearing either because the opportunity cost of children's early education may exceed the value that the couple ascribes to having children or because the marginal utility of the mother's leisure is greater than the utility achieved by having a child. However, this viewpoint assumes that the regulation decision is made only by the woman; however, the husband or the two extended families of the couple may also be involved. In this paper, we track the encroachment of families in successive steps of birth control. To do this, we follow Bongaarts (1978, 1983) and Bongaarts and Potter (1983) who distinguish direct and indirect determinants of fertility. Direct determinants include exposure factors (such as the proportion of married people in the population), deliberate marital fertility control (e.g., contraception), and natural marital fertility factors. The indirect determinants refer to cultural, socio-economic and environmental factors. Among these many kinds of determinants, Bongaarts emphasizes four primary proximate factors that generate salient differences in fertility levels across societies. They are: marriage, notably the typical age at marriage, contraceptive habits, lactation and induced abortion. We follow Boongarts' approach by focusing on his first two factors.[3] However, our main difference from Bongaarts is the systematic attention we devote to family interference in the characterization of these factors.

All regulation decisions involve expectations, trial and errors. Moreover, their analysis may be further complicated by changes in individual preferences over time, and by changing tradeoffs between regulation motivations, along with the woman's lifecycle. Specifically, schooling prospects, labor force participation, family establishment, and old age health concerns may, in an almost successive fashion, occupy the minds of women as they age. Faced with this complexity, it is clear that estimating a complete structural fertility model, at least in the Tunisian case, is far beyond what is possible with the available cross-sectional data. In these conditions, our approach is instead to focus on observable birth

[3] Bongaarts' last two factors (abortion and lactational infecundability) are omitted because they are not measured in our data.

control decisions and their suggestive relationships with observed covariates, notably with family variables.

First, exposure to unwanted birth may be controlled by delaying marriage. This is consistent with declines in nuptiality often taking place after a fall in child mortality, which reduces the need for additional children. However, marriage, even in Muslim countries, entails more than just having a child, and potential husbands have a say. Marriage has long been considered a proxy for exposure to the risk of fertility, on the grounds that premarital sexual intercourse is relatively uncommon among women.[4] Marriage timing may affect both the supply of and demand for children.[5] This is all the more relevant in Muslim countries, where marriage is the sole socially tolerated context for childbearing (Axinn and Yabiku 2001). In particular, in Tunisia, the primary reason for getting married is to have children. This is supported by the very rare incidence of out-of-wedlock pregnancies in Tunisia. The hypothesis that a major motivation for marriage is having children is consistent with the fact that access to birth control options, such as the pill, and abortion has been found to reduce marriage incidence (Choo and Siow 2006). Thus, marriage appears to partly be a substitute for contraceptive techniques.

However, there may be other motivations for delaying marriage, including risk aversion as in Schmidt (2008). A woman may choose low or zero fertility, for example, to preserve a comfortable and autonomous lifestyle. She may want to pursue personal projects incompatible with raising children, such as enrolment in higher education. She may want to establish her professional career without the hindrance of young children at home after a long workday, particularly if she cannot afford childcare. Finally, she may suffer from health problems that make birth hazardous. Interestingly, these motivations follow a consecutive pattern along the lifecycle, with schooling motives being more relevant for young women and health problems more frequent among middle-aged or older women. It seems safe to say that all these motivations may sometimes be mirrored by corresponding motivations of the close family.

[4] See Bongaarts (1983); Coale (1992); and Hirschman and Rindfuss (1980).
[5] See Bongaarts (2006); Bongaarts and Potter (1983); and Rosero-Bixby (1996).

A second regulation decision is the timing of the first contraceptive use after marriage. This first use may occur immediately after marriage if children are not immediately desired. Contraceptive use may take place episodically along the reproductive span—for example, to allow for birth spacing that helps the couple, and perhaps also the close family, to smooth economic and time burdens across years. The time gap between the wedding date and first birth control use may involve both anticipated and unanticipated decisions, which may reflect not only cost-benefit calculations but also subjective attitudes toward family planning. However, this gap can easily be observed, as opposed to the detailed birth control process, which justifies examining it in this paper.

A third unobserved stage of regulation is the full sequence of contraceptive use by the spouses over the reproductive span. However, what can generally be observed is whether the woman is currently using contraception or if she has used it in the past. Obviously, these 'synthetic' decisions must take place after (or at the time of) the first use of contraceptive techniques. It may be interesting to exploit information about them that differs from that of the first contraception choice and to relate this to the woman's lifecycle.

Fourth, the choice of the birth control method logically and generally follows the decision of whether to use contraception. Although this simplifying sequential perspective of regulation may exclude other cases, it will help us organize the data analysis. The choice of a regulation method may be influenced by its perceived efficiency, by private and social approval, and by its impact on health. It may also depend on the availability of regulation services and on cost-benefit calculations. However, given that contraception in Tunisia is free and easily available, we do not include cost or access as explanatory variables. The empirical literature on each of the estimated models is discussed when we report their respective estimation results.

Our focus is therefore on the most advanced family planning system in Muslim countries, where marriage is the exclusive context for sexual intercourse and childbearing, and for which a few studies

on fertility regulation are available.[6] Indeed, Tunisia established a national family planning policy as early as 1961, while such policies only started in 1965 in Turkey and in 1967 in Indonesia, for example. Tunisia was also at the forefront of Muslim countries when it legalized abortion in 1965 (Turkey did so in 1983). Furthermore, intensive public investment in local health centers and support staff, directed toward health care for mothers and children, took place in Tunisia, including in rural areas.[7]

In that sense, learning more about birth control in Tunisia may tell us something useful about where other Muslim countries are going. However, it seems fair to say that traditional Muslim mentalities and family habits related to nuptiality and children still characterize Tunisia.

The structure of this paper is as follows. In Section 2, we present the context and the data. In Section 3, we report and discuss our estimation results. Finally, we conclude in Section 4.

2. The Context and Data

2.1. Fertility Regulation in Tunisia

Fertility has plummeted in Tunisia over the last half century. The fertility rate, which was close to eight children per woman in the early 1960s, was nearly below the renewal threshold (2.05 children per woman) in 1999. Although a slight rise has been recorded since 2010, the fertility rate remains low at 2.4 children per woman in 2015. This decline comes from a steady reduction in the demand for children accompanied by women's use of birth control. Sandron and Gastineau (2002) and Bousnina (2013) provide detailed descriptions of the fertility transition in Tunisia.

These demographic changes have been fostered by laws and institutions that have enhanced the social and legal status of women and developed family planning, starting with the 1956 Code of Personal Status that promoted female emancipation. The Code regulated marriage and divorce, abolished polygamy, set a minimal legal age for marriage, and replaced repudiation with divorce. The minimal

[6] For example, see Ahmed (1985); Hanks (2006); and Yursteven (2015).
[7] Gastineau (2011), Gastineau and Sandron (2000).

legal age for marriage was set to 15 years for women and 18 years for men in 1956 and later further revised in 1964 to 17 and 20 years, respectively. As a consequence, women and men in 2014 were married on average at 28 and 34 years of age, respectively.[8] These changes have had direct consequences on fertility because out-of-wedlock births are negligible—approximately 0.5 % of births over the period 2000–2012.[9]

Through public campaigns, the Tunisian government incentivized families to limit their fertility. Family allowances were cut for households with more than four children and then with more than three children. Advertising and sales of contraceptive devices were legalized in 1961. In 1964, a new institution, the ONFP (National Board for Family and Population), was set up to assist in restricting and monitoring fertility. Abortion was legalized in 1973. Finally, modern contraceptive instruments, allowing couples to better control their progeny, were provided for free.

These policy measures contributed to the increase in the contraceptive prevalence rate from 31 percent in 1978 to 60 percent in 2007.[10] In the 2001 ONFP survey report, 84 percent of respondents stated that they had been using contraceptives (62 percent were currently using them), with no major differences across regions (75 percent for rural vs. 83 percent for urban women) or across education levels (75.9 percent for illiterate women and 81.6 percent for primary, 84.8 percent for secondary, and 83.4 percent for higher levels of education). Moreover, the average delay before the first birth control after marriage declined steadily between 1978 and 2001, from 6.56 years for women aged 45–49 years to 1.37 years for women aged 20–24-years, as shown in Table 1. As a consequence, the number of surviving children at the first birth control use fell. Younger women, aged 20–24 years, often start regulating their fertility after obtaining a single surviving child, which can be compared to the 2.91 surviving children for women aged 45–49 years. Overall, regulation is practiced once women have approximately two (1.93) surviving children (1.61 children in urban areas vs. 2.63 in rural areas). The most commonly used

[8] All quoted statistics are from the Tunisian Annual Statistics of the National Institution of Statistics (INS) from 1957 to 2014.
[9] Source: Tunisian Ministry of Women and Children: annual report on children 2000, 2012.
[10] These statistics have yet not been updated by the ONFP.

methods are IUD (intra-uterine device, 44.1 percent), the pill (17.4 percent), tying tubes (16.7 percent), and calendar (11.8 percent).

In Tunisia, as in other Muslim countries, family links are ubiquitous in all domains of couples' lives. Data from the 2001 PAP-FAM survey conducted by the ONFP shows that the family home remains the most likely location and is deemed to be the most appropriate for first meeting a future spouse (in 63.5 percent of cases). Family endogamy, from the father's as from the mother's side, remains frequent in some Tunisian regions. Within-family marriages still account for 42.3 percent of all marriages. Moreover, the cost of a wedding is often covered by the family network. For example, it is entirely covered by the husband's family for 13 percent of the surveyed women.

On the one hand, the vast majority (90 percent) of the 74 percent of households who live in an independent dwelling have regular contacts with the families of the two spouses (60 percent, regularly, and 30 percent, occasionally). On the other hand, the remaining 26 percent of households live within the same lodging as the husband's family (22 percent), or the wife's family (4 percent). Thanks to this proximity, the families intensively interfere in the couples' lives, including for fertility matters, as discussed in Frini (2014).

The links with extended and close relatives include family assistance and childcare services. One-fifth of grandparents are involved in their grandchildren's education and babysitting. Moreover, 48 percent of young couples benefit from financial assistance from their parents (30 percent from the husband's family and 18 percent from the wife's family).

The salience of family links is also attested by the increase in financial support for parents, especially on the husband's side (in 71 percent of the cases). In the period 1991-2001, after their marriage, 48 percent of these sons provided regular financial assistance to their own parents (38 percent in 1981-1990 and 37 percent in 1971-1980), while 23 percent did so only occasionally.

2.2. The Data

The data we use are taken from the 2001 PAP-FAM survey conducted by the ONFP (the Tunisian family planning office). A major innovation of this survey is its focus on intergenerational relationships, social culture, and fertility behavior. This survey also provides information on various household characteristics, including reproductive and sexual health, for 6702 visited households. We base our study on a sample of 3175 married women aged from 15 to 49 years (from an initial sample of 3496 women that included non-responses), a reasonable approximation of their fertile period. Clearly, in the Tunisian context that tolerate sexual intercourse only within wedlock, the main relevant population of interest when studying fertility regulation is that of married women. Note that an 'end-point' truncation occurs in that case because not all women marry. However, the proportion of never-married women is very small and we can neglect this source of bias. Indeed, the proportion of never married women is 3.9 per cent in 2001, at the time of the survey, 1.6 per cent in 1984 and 2.3 per cent in 1994 (ONFP, 2011). In 2001 (respectively, in 1984), 9.1 (1.6) per cent of the 45-49 aged women are not married, and 6.8 (1.5) percent for the 50-54 aged women, respectively (Recensement Général de la Population et de l'Habitat 2014, 2016). Another issue, specific to the marriage's age equation is that some unobserved women are not yet married, and therefore not surveyed in the PAP-FAM survey. We deal with this truncated data issue below, which turns out to have little influence on the results in this case.

Numerous variables are collected through a retrospective questionnaire filled out during a single interview. Some variables provide information on the age at marriage in years (*woman's age at marriage*) and *marriage duration before first birth control,* also in years. Two dummy variables describe the incidence of birth control. First, the respondents state whether they have or have not used contraception in the past (*contraceptive ever used*); second, they say whether they are using or not contraception at the time of the interview (*contraceptive currently used*). Finally, we also make use of data on which contraceptive methods have been used (the pill; IUD; calendar; the grouping of implant, injection, tying tubes, gel, coitus interruptus, condom, and others as one modality; and the jointly use of the pill, IUD, and calendar). Other traditional methods, such as extending the breast-feeding period

and post-partum delay of intercourse, are not included as they are neither efficient nor easy to measure, and little used anyway.[11]

Our selection of independent variables is mostly driven by the literature on the determinants of fertility, given the information available in our data, which we complete with original information on social family interactions. We also attempt to avoid the inclusion of regressors that would obviously be endogenous and maintain relatively similar sets of covariates for the successive decisions to facilitate comparison.

Concrete socioeconomic decisions, perceptions, and motivations are clearly relevant for fertility issues. It would also be useful to be able to distinguish among different sociological groups. All these features are unobserved in the survey; however, hints about who financed weddings and family interference may partly reflect these elements.

Table 2 reports descriptive statistics for the covariates used in the estimated models. One important independent variable is the number of desired children, which is common in the fertility literature.[12] In our data, this is recorded through a retrospective question that the women were asked ('if you think back in time before having your children, how many children would you have liked to have had?'). Obviously, a woman's age is a crucial covariate not only because of its correlation with fertility capacity but also because it is associated with numerous lifecycle factors. In this respect, the husband's age may also matter. We include a dummy variable for urban areas, as fertility behavior usually differs substantially between urban and rural areas. In addition, prices are known to vary with urbanization, which affects the cost of raising children. The other covariates can be categorized into measures of educational and career attainment and characteristics of family and social interactions.

Fertility theory has always included education and job variables related to the roles of human capital and the opportunity cost of women's time (Becker 1960, 1965, 1974). However, a few words of caution are in order. We do not operationalize education with attainment level variables in this work since they

[11] As discussed in Bhalotra and Van Soest (2008), Bongaarts (2006), and Bongaarts and Potter (1983).
[12] Michael and Willis (1975), Rosenzweig and Seiver (1982), Rosenzweig and Schultz (1987, 1989).

do not exhibit statistically significant effects, perhaps because they are not accurately measured, for women or men. Thus, we only account for schooling through two dummy variables (*woman never educated*) and (*husband educated*).

Furthermore, given the lack of detailed information on women's professional status, we can only employ a binary variable indicating whether the woman has been employed in the past. In addition, we use a dummy variable on a woman's employment situation before marriage (*woman employed before marriage*) to attenuate a potential endogeneity issue in fertility decisions. Female labor force participation before marriage should generally appear before the fertility decision is made, as having children is tolerated only among married couples in Tunisia. Therefore, this variable can be viewed as less correlated with fertility decisions than contemporary or recent labor participation.

We consider the woman's view of her ability to succeed in two simultaneous roles as worker and mother by including a dummy variable for women who believe that they are able to accomplish both tasks (*job and housekeeping compatibility)*. The husband's socio-professional position is described by two dummy variables for '*husband unskilled worker'* or '*husband skilled worker'* that were constructed by aggregating job-specific information.

Household incomes, along with the costs and financial benefits of children, are not observed. We attempt to capture some information on household income through two dummy variables indicating the source of wedding funding. Because weddings in Tunisia are traditionally financed by the husband, if one observes that the couple has financed it jointly (*couple finances marriage*), this suggests that the husband has experienced financial difficulties. Alternatively, the woman may finance her marriage (*woman finances marriage*). This is often perceived as a specific indicator of a wealthy wife or a relatively destitute husband.

Turning now to social and familial characteristics, the few authors who incorporate such factors influencing fertility regulation confine their attention to paternal characteristics (education, profession, area), as in Wong (2005), among others. We innovate by including covariates directly related to the

family network, such as a dummy variable for husbands and wives who first met in the family home (*family meeting place partner)* and a dummy variable for the husband being a close relative of their wife (*intra-family marriage*). These variables depict couples with a traditional orientation that belong to closely knit families. In Tunisia, marriage within the family is widespread (42.3 percent), while 63.5 percent of respondent women first met their future husband in the extended family's home. Family endogamy (in paternal or maternal lineages) remains common despite exogamy becoming increasingly frequent in all regions. Obviously, this kind of strong family ties makes family interference in the couple's fertility regulation decisions more likely and reinforces interactions among family members in general.

Similarly, we investigate the relationship between the availability of family childcare and fertility regulation decisions. However, including a variable for parental childcare poses a simultaneity issue, as childcare may be spurred by a new birth, which could itself follow some relaxation of birth control. Thus, in an equation in which the dependent variable is the birth control decision, the childcare variable may be correlated with unobservables that may partly cause both former and current birth control status. Therefore, we instead use a proxy binary variable that reports whether either a woman's family or her family-in-law intervenes in nuclear family decisions (*family interference)*. That is, we assume that when the family interferes in a couple's life, this may involve childcare support, and such general interference was probably already taking place before any new birth. Mahfoudh-Draoui (2000, p. 139) reports substantial roles of families in childcare: only 8 percent of households in rural areas and 4.5 percent in urban areas have child carers from outside the family for children under 6 years of age. Similarly, we consider parents' financial support by using a binary variable (*descending financial transfers*) that indicates whether the couple benefits from financial assistance from parents and parents-in-law: 30 percent (18 percent) of the married couples consistently receive financial assistance from the husband's relatives (the wife's relatives). Furthermore, 71 percent of husbands (48 percent, permanently, and 23 percent, occasionally) continue to support elderly members after establishing their own family (the corresponding figure for wives is 5 percent).

In addition, we construct a variable (*discussion*) indicating whether the woman regularly speaks with her husband about his job, financial difficulties, housekeeping problems, or social issues. This variable approximates the degree of understanding and agreement between spouses. We also attempt to capture female autonomy by including a dummy variable for whether the woman must have a relative accompany her when she visits a health center (*companion to health center*).[13] We interpret this variable as a proxy for the woman's submission to traditions.

Traditional values are potential determinants of attitudes towards fertility in Tunisia. Accordingly, we define a dummy variable that identifies women who state that children come from God (*God gives baby*), thereby deterring contraception. Finally, we include a dummy variable for lost pregnancies five years before the survey (*lost pregnancies*) as a proxy for the woman having poor reproductive health status, potentially a medical reason to limit sexual intercourse. We are now prepared to turn to the estimation results.

3. Results

We now discuss the estimation results following the sequence of decisions as previously detailed. Due to missing values for the dependent and independent variables, the sample size in these estimations ranges from 3132 to 2426 observations. The regressions for age at marriage and for marriage duration before the first birth control are specified as Weibull duration models, incorporating the abovementioned covariates when possible.[14] However, in the case of the marriage age equation, the natural population of interest is the whole population of women over 16 years old, as opposed to the cases of the other equations that make sense rather for married women since they are the ones using contraception, bar exceptions, in Tunisia. Since only married women are observed in the data, we are

[13] To empirically examine the gradual changes in norms for social behavior that may influence marriage, we also considered other possible measures in the estimations, such as legal age at marriage or the year of the law of the minimal age at marriage, but no significant result emerged.

[14] In addition to the Weibull distribution, exponential normal and gamma distributions are also routinely employed, which differ from the most general and most flexible functional forms to the Weibull distribution. In particular, the latter allows for monotonically increasing or decreasing hazard functions [Fourgeaud, Gouriéroux and Pradal (1990), Tsay and Chu (2005) and Walters (2009)].

in the case of a truncated sample for the marriage's age equation. Indeed, some women not surveyed are not married at the time of the survey collection, and will probably get married later. To explore this issue, OLS and truncated regressions of the marriage's age have also been estimated, in levels and in logarithms. Still, in the case of the age at marriage model, a few variables that pertain to post-marriage information are omitted. On the other hand, the sample for the marriage's duration till the first birth control is censored due to the 18 percent of married women who were not observed to have made any birth control attempt. This explains the difference between the number of observations in the descriptive results and some estimation results. The diverse estimates of the two models are shown in Table 3.

The regressions for currently using or having ever used contraception are specified as probit models, and their estimates are shown in Table 4. Finally, the choice of the birth control methods, among the women who have chosen to use contraception, is specified as a multinomial logit model, and the estimates are reported in Table 5. In all cases, we omitted, as much as possible, any too obviously endogenous independent variable. However, since the estimates are based on a unique cross-section and it is impossible to find instruments for all possible regressors suspected to suffer from endogeneity, the results should still probably be interpreted as suggestive correlations rather than robust, undeniable causal effects.

3.1. Age at Marriage

We first show that the truncation can almost be neglected, and that it seems to be innocuous in this case. The accelerated failure time (ACT) model is defined by the equation: $\log(t_i) = x_i' b + f_i$, where t_i is the duration variable that is examined (here, time till marriage), x_i are explanatory factors, b is a vector of parameter to estimate, and f_i is an error term to specify, all this for observations $i = 1,\ldots,n$. This equation can be estimated asymptotically (except perhaps for the intercept), by using the OLS, for all reasonable distributions of errors, assuming that all factors are exogenous, but there may be a truncation bias. Therefore, a truncated regression is also estimated, by assuming that the f_i follows a normal distribution. If f_i is normal, then the ACT model is a lognormal model. By changing the functional form of the dependent variable, the hypothesis on the shape of the error in the t_i model can be varied, implicitly. For

example, an equation with t_i in levels is also estimated, using OLS and truncated regressions: $t_i = x_i' b + f_i$. Across all these estimation results, there is general correspondence in the signs and significance of the estimated coefficients, for all methods, including the Weibull duration model that can be seen as connected to the opposite of t_i. Indeed, increasing the hazard function (of marriage) in this case corresponds to decreasing the age of marriage. Therefore, on the whole, there is a qualitative agreement in all estimation results for the marriage's age determinants. However, the estimated coefficient of the variable 'Woman never educated' becomes insignificant, whereas the effect of 'Job & housekeeping' becomes very significant. Moreover, examining the precise estimation results, for column (b) versus column (c), and column (d) versus column (e), shows that the effect of the truncation is in fact insignificant in these data, for any included factor, except for age for which the estimated coefficient changes sign after correction for truncation, as long as only marriage's age correlates are considered. This is confirmed by other not shown functional specifications. As a result, we choose to mostly comment the Weibull duration model estimates without correction for the truncation.

On the whole, the conjecture that age at marriage, in years, is used as a birth control device is supported by all the estimates that confirm the substantial influence of typical determinants of fertility demand. Examining distinct age classes would have been interesting, but our sample is too small to do this. Of course, ideas about marriage may have changed over time, which may imply that the link between age at marriage and birth control is less simple than sometimes claimed. Moreover, not everyone marries. However, using a duration model, and a few regression models, provide us with a simple interpretation grid in which a few control variables, such as age and education, attenuate these concerns.

A woman's age is a biological factor that affects her odds of having a child. We also find that it strongly affects age at marriage in the estimates, even though the sign of its coefficient is changed when considering the truncation. This is not surprising because most unobserved women yet-to-be-married are young. This selection is highly correlated with age. Biological and decision dynamics evolve with age.[15] On the one hand, age affects biological processes and therefore lifecycle fertility. The older a

[15] As argued, for example, in Bongaarts (2006), Bongaarts and Potter (1983) and Rosero-Bixby (1996).

woman is, the shorter her reproductive span, and the more limited her possibilities of having more children. As a consequence, the more limited an older woman's prospects in the marriage market will be. On the other hand, age influences the psychological state and behavior of women. In addition, the desire to have children declines with age, as Cochrane and Guilkey (1995) argued for Tunisia in the 1990s. However, owing to the lack of robustness of the sign of the estimated coefficient of age to the correction or not for the truncation, we prefer not to interpret this effect, and rather consider the introduction of the women's age variable as a mere control. Interestingly, the number of children desired is found to have a significant positive impact on the hazard of marriage, accelerating the contracting of marriage on average. As suggested, childbearing is a central component of the marriage decision.

We find that women who believe being able to fulfil both job and housekeeping tasks marry significantly later, by almost eight months. Diverse interpretations are possible. Overworked women may be less inclined to marry early and thereby to accumulate burdens arising with childbirth. The results also show that, as in Wong (2005), (prior to marriage) employed women postpone marriage more than the unemployed women. This is consistent with raising children being a hindrance to career development and even securing a job. In addition, because of the correlation of a woman's labor force participation and the minimum husband's quality that she would accept, her perceived number of marriageable men may decrease. This phenomenon has been found to be more pronounced under rising male wage inequality, which may reduce the propensity to marry, as argued by Loughran (2002).[16]

A woman having a higher income, as proxied by the variable 'woman finances marriage' in these estimations, is associated with a higher hazard of being married. Contrary to findings by Palamuleni (2011) in Malawi, wealthier women who finance their own wedding in Tunisia marry approximately one year earlier, perhaps because they are more attractive financially to male suitors. As is usually found, urban women marry later, albeit only by approximately seven months. [17] This is consistent with women in urban areas being more educated, having more job opportunities, and being less traditional.

[16] See also Brown and Norville (2001); Hirschman and Rindfuss (1980); and Macunovich (1996).
[17] For example, in Zahangir et al. (2008) in Bangladesh.

In contrast to its effect on other decisions, which we discuss below, a woman's education has no significant effect on age at marriage. However, it is found that the few women with higher education in the sample tend to have married later.[18]

Finally, we find that the presence of social and family networks, in particular proxied by the variable 'family meeting place of partner', increases the hazard of the marriage event. Women belonging to a traditional family, which typically arranges the marriage, spend on average 15 months less on partner search. This is not surprising, since traditional Muslims often marry first cousins or other kin. In addition, this is confirmed by the effect of the variable 'intra-family marriage' that accelerates marriage occurrence by almost one and a half years. Traditional families typically push for early marriage lest late marriage harm a girl's reputation and her marriage prospects. We now turn to the second-stage decision, which is the delay in the first birth control use after marriage.

3.2. Marriage Duration before First Birth Control Use

Once married, a woman and her partner can more practically plan the size of their family. In some cases, the spell before her first birth control use can be extended if a woman's goal (or her family's goal) is to achieve a moderate family size. The delay, here measured in years, may also be motivated by timing the births in relation to other objectives, such as schooling, career development, financial constraints due to wedding costs, or temporary health issues.

The variable 'desired number of children' is found not to intervene significantly in regulating fertility. It may make sense that a woman, or her partner, decides to start using birth control because they want at least one birth, while the total number of desired children may not matter much for the timing of the first use of contraception. Moreover, the couple may seek to have a definite number of children only after having had their first child. Finally, any contemporary measure of ideal family size may not provide accurate information on the woman's, or the couple's, past motives for having children, as it imperfectly

[18] We do not report this variable in the table for consistency with the sets of covariates in the other equations and to avoid drawing conclusions based on too small a subsample.

reflects retrospective opinions that are easily modified over time. For example, a woman may adjust her fertility desire to changes in socioeconomic conditions that alter her perceived costs and benefits of children. In the case of undesired births, ex post revision of her family size preference may occur through ex post rationalization. That is, the stated desired number of children may inaccurately reflect what the woman desired when she decided to marry and to first use birth control.

The older a woman is, the greater the likelihood that she has used contraception soon after marriage. This is consistent with older women having lived in a context of higher fertility. Conversely, the husband's age is only slightly negatively correlated, at the 10 percent level, with the timing of the first use of birth control after marriage.

The difficulty of reconciling a woman's tasks simultaneously as a housewife and a worker affects fertility regulation after marriage. Consistent with the previously obtained results for age at marriage, a woman who is able to perform both professional and housekeeping tasks is significantly less inclined to use birth control early, with an almost two-year delay. However, her possible career plans, as measured by whether she was employed before marriage, do not affect the hazard rate of her initial birth control, perhaps because it is a pre-marriage variable. Indeed, while 37.7 percent of respondents worked before marriage, only 14.4 percent were still working at the time of the survey. In contrast, her husband's professional skill level and education do not affect the timing of first birth control use. This may reflect the more limited role that the husband plays in the fertility timing decision, as fathers typically spend less time with children than mothers.[19] In contrast, women's education matters a great deal. Educated women first use contraceptives earlier after marriage, which contrasts with findings obtained by Bloom and Trussel (1984) in the US. Never-educated women delay birth control by as much as 34 months on average.

The variable indicating frequent discussions between spouses significantly and substantially increases the risk of the birth control event—that is, diminishes the span without birth control—by more than five

[19] Consistent with Becker and Lewis (1973) and Schultz (1986).

years on average. In couples that communicate well, the woman may not feel an obligation to have children immediately after her marriage to increase her likelihood of retaining her husband. Instead, early contraception takes place. This is the case, for example, for couples in which both spouses are enrolled in higher education and decide to complete their studies before having children.

Urban women have a higher hazard level—that is, contraception occurs on average fifteen months earlier. Sometimes regarded as an alternative measure of the costs of children, due to the presumably higher shadow price of children, residing in an urban area induces women to reduce their demand for children and hence to intensify contraception.

Belonging to a traditional family in which the marriage is arranged by the parents, and the presence of family interference, are found to delay the use of contraceptives by 13 and 16 months, respectively, perhaps because conservative values favor large family size. This is consistent with findings in the literature that family-arranged marriages are associated with higher fertility.[20] Moreover, the availability of financial parental assistance is found to significantly delay the first birth control by almost four years. In addition, beyond direct family pressure, parental financial assistance induces a positive income effect on fertility, which may lead the couple to adjust their family size upward and delay birth control use.

3.3. Contraceptive Use

The third regulation decision considered in this paper is captured by two dummy variables indicating whether a contraceptive is currently used (i.e., at the time of the survey) or has ever been used.[21] It is typically difficult to elicit significant correlates of contraceptive use in the literature. For example, using

[20] Ghimire and Axinn (2013); Hong (2006); Frini (2014).
[21] 'Are you using any contraceptive method at the moment?' and 'Do you have any experience of contraceptive practice?', respectively.

data from Ghana, Johnson et al. (2012) only find effects (significantly positive) for two district-level variables: a general socioeconomic development index and population density. In our case, the estimated marginal effects from the respective probit models for the two contraception-use variables are shown in Table 4. We discuss them jointly because the significant effects are often similar in the two models.

The estimates again highlight familial influences as significant factors in determining fertility strategy. When family members are tightly knit through intra-family marriage, encroachment on marital life, or intergenerational financial transfers, contraceptive devices are less often used, during the survey or before. As in Ghimire and Axinn's (2013) findings in Nepal, the widespread erosion of family-arranged marriages may also have weakened resistance to contraception in Tunisia.

Family interference, which is generally accompanied by opportunities for childcare by grandparents, often reduces the time that a woman has to devote to her children, and thereby reduces her opportunity cost of having children. In that case, it gives her incentives to have more children and, as a consequence, diminishes her use of contraceptives. In line with the literature, benefiting from family childcare facilitates the coordination of a woman's roles as worker and housewife, thereby allowing higher fertility. [22] As in Del Boca (2002), Ermisch (1989), and Frini (2014), additional family childcare availability fosters fertility. In our estimates, the presence of family interference is associated with a similar decline in the probability of having used contraception during the survey, or ever, by approximately 15 percent in both cases. Moreover, as previously found for the delay in the first birth control, the availability of parental financial support allows for higher fertility by diminishing the likelihood of having ever used contraception by 29 percent, and of using it during the survey by 35 percent. Finally, marriages arranged by families are also associated with an 11 percent lower use of contraception during the survey.

[22] See recent contributions by Aassve et al. (2012); Compton and Pollak (2011); and Rindfuss et al. (2007).

A traditional sociocultural context still appears to be unfavorable to birth control. Indeed, women who believe that having an additional child is a 'decision made by God' are half as likely to practice contraception. These women may often simply act as passive observers of their own procreation process. As in the equation for the delay in the first birth control, strong communication between spouses affects birth control in the past (decreasing the probability of use by 40 percent) but not during the survey. Similar to findings in Link (2011) and Sharan and Valente (2002), better communication between the husband and wife increases contraception use, at least in the past. This is consistent with contraception often being a decision made jointly by spouses.

A woman's age positively affects her contraceptive use, during the survey and in the past. Although many respondents are observed around the end of their reproductive period (49 percent are 37–49 years old), there is sufficient variation in the age variable to reveal a decline in the need and capacity for children with age (by between one and three percent per year), as women approach the end of their fertile period. However, the husband's age does not influence contraceptive use.

A woman having more education is associated with a greater use of contraception, whether in the past (a 22 percent increase in the probability of use relative to women with no education) or during the survey (a 15 percent increase). The literature has long shown that women's schooling favors better knowledge and more effective and intensive use of contraceptive methods.[23] The effect of education may also be related to labor market participation. For example, Adebowale et al. (2014) find that more-educated Malawian women are more likely to be engaged in professional activities and, as a consequence, more likely to limit their number of children. As before, male education does not influence the contraception decision, in contrast to Cochrane and Guilkey's (1995) findings for Tunisia in 1988.

The effect of the compatibility between the woman's two roles as housewife and worker negatively impacts the probability of past contraceptive use (by 15 percent), although it is insignificant for current use. Perhaps this compatibility matters mostly in the early lifecycle, when the woman is attempting to

[23] Rosenzweig and Schultz (1989); Chen et al. (1990); Schuler et al. (1997).

establish her career. If this were the case, it would correspond generally to some ‘past use’ of contraceptives and explain the results. However, this is not supported by the other variable on careers (woman employed before marriage), which has no significant impact on contraceptive use, either at present or previously. Moreover, the husband’s skill levels and residency in urban areas are not associated with fertility control in this case.

The number of children desired is negatively associated with current contraceptive use, as in Bollen et al. (1995) for Tunisia in 1988, but only slightly at negative four percent per additional child, and it does not significantly affect past use. This may be because past contraceptive use is not directly related to the current number of children desired because fertility goals may change over time and are only binding when reached. In addition, the contemporaneous use of contraceptives during the survey is often associated with the youngest women in the observed sample, who have a short fertility history. In that case, the stated number of children desired should relatively accurately express their motivation for fertility regulation. In contrast, large spells of past regulation often correspond to older women who have a long fertility history and have adjusted their desire for children over time.

Finally, the use of contraceptives is also related to health. Lost pregnancies, which may be a sign of health problems, seem to induce women to avoid sexual relationships and thereby the probability of contraceptive use by almost one-third, in the short and long run.

3.4. Birth Control Methods

Once the decision to use a contraceptive is made, a woman has to select a birth control method. This matters, first, because different methods may have different rates of failure. Hotz and Miller (1993) found that US couples use more efficient contraceptives when they have more children, which may be

the result of having experienced several methods over time. The methods also affect sexual pleasure and comfort differently. For example, Rosenzweig and Schultz (1989) found in the US that the more educated couples were, the more sexually satisfying the methods they chose, while they also achieved better protection due to greater knowledge. Methods may also differ in their availability and in their cost when they are not free.

We estimate a multinomial logit model in which IUD is the base category, as this is the most frequent alternative (58 percent). The other categories are: calendar methods; a combination of the pill, IUD, and the calendar method; and other methods. This division both preserves sufficient frequencies in all alternatives and allows for meaningful analyses. The estimates are reported in Table 5.

Only a few effects appear to be significant. Conditional on the list of independent variables included in the multinomial model that appear insignificant when comparing these choices, IUD and the pill are found to be substitutable. Indeed, none of the introduced effects significantly distinguishes the use of IUD from the use of the pill. This is interesting because these two methods give a woman more decision power over birth control.

A woman's age increases the probabilities of using all methods other than the pill and IUD. This is the case for using the calendar method or various combinations of methods, including (or not) the calendar. This may involve cohort issues, as some older women did not have as much choice of methods in their early fertility span as are available today. Once again, the husband's age does not influence the choice of birth control method.

Living in an urban area and women being more educated are positively associated with the use of the calendar method relative to IUD (and the pill), regardless of whether the calendar method is considered in isolation or grouped with IUD and the pill. Specifically, 79 percent of urban women and 86 percent of educated women use the calendar method, while only 21 percent of rural women and 14 percent of the non-educated women do. The opposite result was found in the very different context of Ethiopia, where educated women and urban women tended to use modern contraception (Lakew et al. 2013;

Mekonnen and Worku 2011). This may be related to the fact that the calendar method, based on monitoring one's fertility each month, requires the husband's cooperation. In urban areas, men are often more open minded and cooperative, which may facilitate the use of the calendar method instead of IUD. For example, a husband having a positive attitude toward contraception was found to facilitate an increased use of contraceptives in Cameroon (Pillai and Teboh 2011). Additionally, urban women have a greater tendency to use a diverse mix of methods. As women's education seems to favor the calendar method (whether on its own or combined with the pill and IUD), it may be that the calendar method requires some minimal knowledge of mathematics for efficient application. More active women, as measured by having been employed before marriage, are more likely to choose a diverse mix of other methods of contraception, perhaps because this mix better fits the more diverse circumstances encountered in an active life.

Again, male education and skill levels do not intervene in fertility regulation, beyond a slight negative effect (at the 10 percent level) of being an unskilled worker on preferring the calendar method. In these data, as opposed to Cochrane and Guilkey (1995), women's education affects the choice of method, while the husband's education does not matter much.

Finally, the number of children desired is not correlated with the choice of method. This suggests that all methods may be perceived as sufficiently efficient means of birth control by the surveyed women. In addition, most of the family relationship variables we consider, whether with the husband or the rest of the family, do not affect a woman's choice of method. For instance, this is the case for communication between spouses, intra-family marriage, and encroachment on marital life, which were nonetheless correlated with the previously considered decisions.

However, a deficit in female autonomy measured by the obligation to have a relative accompany the woman when she visits a health center is positively and significantly correlated with the use of methods not hindered by this restriction, as opposed to IUD, which requires visiting a doctor to obtain a prescription. In general, greater female autonomy has been found to contribute to increasing contraceptive use (Sallee 2000). We find that it may also affect which kind of contraceptive is used.

Finally, descending transfers are positively and significantly associated with a lower occurrence of the combination of the calendar method, the pill, and IUD.

It is worth considering these results in terms of beneficial or undesirable consequences for (1) efficiency, (2) pleasure and comfort, and (3) health. In doing so, the main comparison we can consider is between IUD/the pill on the one hand and the calendar method on the other. IUD and the pill are more efficient than the calendar method. However, they may be less comfortable and create health problems. Using condoms provides the best protection against venereal diseases, while the calendar method and IUD do not protect against sexually transmitted diseases. In contrast, IUD is very efficient birth control; it is followed in this respect by the pill, which has good efficiency unless the patient forgets to take it, while the other methods may involve rare accidents that allow for unwanted births. In terms of comfort outcomes, condoms are the least comfortable method, while calendar is the most comfortable method, and IUD and the pill occupy an intermediate position. Focusing mostly on the comparison of IUD and the pill with the calendar method, we may attempt to deduce the consequences for some significant correlates in the estimation. In this respect, a woman being young is the variable that has the best consequences because it simultaneously improves efficiency, comfort, and health. In contrast, roughly speaking, a woman's education and a rural location have positive impacts on efficiency but negative impacts on comfort and health. This is mostly because the calendar and associated methods are less efficient and do not protect well against sexually transmitted diseases, while they are more comfortable.

4. Conclusion

In this investigation, we consider fertility decisions made by married women and their families in Tunisia through several consecutive choices: age at marriage, marriage duration at the first contraceptive use, contraception decision, and choice of method. A sequential perspective makes it possible to better capture distinct lifecycle stages, given, for example, concerns about completing

schooling or professional establishment early in life, then fertility plans, and finally health concerns. This approach reveal successive motivations of women, couples, and families that can help us to better grasp the overall birth control trajectory.

Although strict causal inference is not possible with the cross-sectional data that is used, the correlations obtained provide suggestive explanations that call for additional collection efforts to better identify lifecycle decisions of family members and the precise interaction with the extended family. Only the woman's age is a significant correlate in all the estimated successive birth control decisions. The other independent variables appear to differently affect the different stages. Some of these factors are notably not influential, such as the number of children desired, which has no significant effect on contraceptive choice or first birth control timing, although its effect is significant for the age at marriage; and the education of the woman, which has no effect on age at marriage but does on delaying first birth control use.

Among our main findings is the ubiquitous influence of the examined family on a woman's birth control strategies. In particular, the availability of family childcare and parental financial assistance and direct family pressure likely make a couple less inclined to limit fertility. Thus, failing to consider the husband and other extended family members may make family planning policies less efficient in Tunisia.

This work has a number of policy implications. Although we cannot assess - using these data - the direct effects of social policies or the changes in services offered on contraception practices, it is nevertheless valuable to draw tentative policy lessons. The found hints about successive motivations of women suggest that family planning policies should be more a matter of 'fine tuning' than a simple focus on the general target of the number of children as the exclusive fertility objective pursued by women and their families. In particular, the fertility decision—that is, having a child or not—and the number of children desired or the spacing of births have sufficiently distinct correlates that policy designs addressing these dimensions should be distinct.

Additionally, policy-makers should take greater consideration of the extended family when designing family planning programs. For example, fertility surveys could be directed not only toward women but also husbands and their families. Moreover, media and advertising campaigns for fertility monitoring should also be targeted at men and families, not just women. Finally, future research should incorporate more dynamic analyses of women decisions in relation to family interactions within fertility processes. This broader perspective suggests that the resurgence of traditionalist politico-religious movements that promote the role of extended families, may affect future fertility regulation in Muslim countries. For example, family networks, and other cultural factors, may be underlying the found association of terrorism and fertility in MENA countries and elsewhere.

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Appendix

Table 1. First birth control

	Marriage duration before first birth control use					**Number of surviving children before first birth control use**				
Age	Marriage duration at first birth control use by region		Marriage duration at first birth control use by education level		Average	Surviving children at first birth control use by region		Surviving children at first birth control use by education level		Average
	Urban	Rural	Illiterate	Educated		Urban	Rural	Illiterate	Educated	
20–24	1.22	1.59	1.59	1.28	1.37	0.94	1.12	1.14	0.96	1.01
25–29	1.85	2.54	3.07	1.77	2.10	1.15	1.51	1.62	1.17	1.28
30–34	2.05	3.94	3.89	1.94	2.64	1.18	1.99	1.95	1.15	1.44
35–39	2.82	5.76	5.19	2.70	3.62	1.45	2.70	2.41	1.42	1.79
40–44	4.17	6.93	6.80	3.80	5.03	2.02	3.13	3.06	1.87	2.37
45–49	5.10	10.11	8.76	4.09	6.56	2.35	4.25	3.76	1.96	2.91
Total	3.16	5.60	5.84	2.71	3.92	1.61	2.63	2.68	1.46	1.93

Table 2. Descriptive statistics

Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**Max**
Dependent variables					
Woman's age at marriage	3,175	21.61	4.20	10	45
Marriage duration before first birth control use	2,595	4.28	4.77	0	28
Contraceptive currently used	3,175	0.62	0.48	0	1
Contraceptive ever used	3,175	0.82	0.38	0	1
Pill	3,170	0.43	0.49	0	1
IUD	3,172	0.58	0.49	0	1
Calendar	3,122	0.19	0.39	0	1
Modality grouping implant, injection, tying tubes, gel, coïtus, condom…	3,175	0.37	0.48	0	1
Modality grouping pill, IUD and calendar	3,175	0.38	0.48	0	1

Independent variables					
Woman's age	3,175	35.85	7.45	16	49
Husband's age	3,175	42.95	9.44	22	99
Woman never educated	3,173	0.37	0.48	0	1
Husband educated	3,165	0.82	0.38	0	1
Job and housekeeping compatibility	3,137	0.59	0.49	0	1
Woman employed before marriage	3,175	0.32	0.46	0	1
Husband skilled worker	3,094	0.14	0.35	0	1
Husband unskilled worker	3,094	0.62	0.48	0	1
Urban	3,175	0.60	0.48	0	1
Woman finances marriage	3,175	0.00	0.01	0	1
Couple finances marriage	3,175	0.00	0.04	0	1
Family interference	3,029	0.52	0.49	0	1
Descending financial transfers	3,175	0.06	0.24	0	1
Intra-family marriage	3,172	0.45	0.49	0	1
Family meeting place partner	3,175	0.69	0.46	0	1
Discussion between wife and husband	3,175	0.97	0.15	0	1
Companion to health center	3,174	0.24	0.43	0	1
God gives baby	3,175	0.01	0.13	0	1
Lost pregnancies	3,175	0.09	0.28	0	1
Number of desired children	3,175	3.23	1.46	0	16

Table 3. Estimated coefficients of Weibull duration models

Woman's age at marriage						**Marriage duration before first birth control**	
	Weibull duration model (a)	OLS (b)	Truncated regression (c)	OLS in Logs (d)	Truncated regression in Logs (e)		Weibull duration model (f)
Woman's age	-0.0388***	.0572***	-.0324***	.0862***	-.0731***	Woman's age	0.0134***
(or Log)	(0.00397)	(.0100)	(.0123)	(.0149)	(.0199)		(0.003)
Woman never	0.0178	-.357**	-.377**	-.0209***	-.0206***	Husband's age	-0.00539*
educated	(0.0751)	(.166)	(.180)	(.00732)	(.00813)		(0.002)
Job and	-0.166***	.225	.249	.00828	.00869	Woman never	-0.231***
housekeeping	(0.0565)	(.146)	(.159)	(.00642)	(.00721)	educated	(0.058)
compatibility							
Woman employed	-0.415***	1.77***	1.83***	.0813***	.0870***	Husband educated	0.0475
before marriage	(0.0617)	(.160)	(.178)	(.00703)	(.00809)		(0.072)
Urban	-0.0701	.275*	.270	.0126*	.0142*	Job and	-0.14***
	(0.0686)	(.161)	(.177)	(.00708)	(.00801)	housekeeping	(0.054)
						compatibility	
Woman finances	-0.0410	1.61	1.00	.0910	.0676	Woman employed	0.0736
marriage	(0.0682)	(3.99)	(4.41)	(.175)	(.203)	before marriage	(0.060)
Intra-family marriage	0.143**	-.797***	-.917***	-.0454***	-.0407***	Husband skilled	0.085
	(0.0620)	(.149)	(.163)	(.00678)	(.00737)	worker	(0.093)
Family meeting place	0.282***	-1.01***	-1.12***	-.0348***	-.0519***	Husband unskilled	-0.046
partner	(0.0635)	(.154)	(.170)	(.00655)	(.00771)	worker	(0.063)
Number of desired	0.119***	-.284***	-.289***	-.0121***	-.0123***	Urban	0.109**
children	(0.0167)	(.0501)	(.0537)	(.00220)	(.00241)		
							(0.054)
Constant	-15.9***	20.8***	24.5***	2.80***	3.39***	Descending	-0.309***
	(0.398)	(.420)	(.521)	(.0529)	(.0718)	financial transfers	
							(0.106)
Weibull parameter	1.67					Family interference	-0.112**
log(p)	(0.0198)						
							(0.052)
							(0.148)
						Number of desired	-0.0098
						children	(0.016)
						Constant	-2.187***
							(0.266)
Observations	3,132	3,132	3,132	3,132	3,132	Observations	2,901

Note: Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.

Table 4. Probit model estimates of contraceptive use at the time of the survey and ever used (marginal effects)

	Contraceptive use at the time of the survey	**Contraceptive ever used**
Woman's age	0.0103***	0.0277***
	(0.003)	(0.004)
Husband's age	0.0011	-0.0039
	(0.002)	(0.003)
Woman never educated	-0.150***	-0.222***
	(0.05)	(0.06)
Husband educated	0.014	0.059
	(0.06)	(0.07)
Job and housekeeping compatibility	-0.080	-0.147**
	(0.04)	(0.05)
Woman employed before marriage	0.0072	0.009
	(0.05)	(0.06)
Husband skilled worker	-0.019	0.146
	(0.08)	(0.10)
Husband unskilled worker	-0.029	-0.007
	(0.05)	(0.06)
Urban	-0.0006	0.069
	(0.05)	(0.06)
Descending financial transfers	-0.352***	-0.290**
	(0.09)	(0.11)
Family interference	-0.146***	-0.158***
	(0.04)	(0.05)
Intra-family marriage	-0.106**	-0.080
	(0.05)	(0.05)
Discussion between wife and husband	0.155	0.391**
	(0.15)	(0.16)
God gives baby	-0.583***	-0.475**
	(0.18)	(0.18)
Lost pregnancies	-0.289***	-0.330***
	(0.08)	(0.08)
Number of desired children	-0.0385**	-0.025
	(0.01)	(0.01)
Constant	0.187	0.102
	(0.25)	(0.29)

Observations	2,901	2,901

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5. Multinomial logit: method choice (estimated coefficients with base category IUD)

	Pill	**Calendar**	**Implant, injection, tying tubes, gel, coitus, condom…**	**Grouping of pill, IUD and calendar**
Woman's age	-0.008	0.0666***	0.0699***	0.0600***
	(0.01)	(0.02)	(0.01)	(0.009)
Man's age	0.013	-0.012	-0.003	0.0004
	(0.01)	(0.01)	(0.008)	(0.006)
Woman never educated	-0.211	-1.180***	0.234	-0.375**
	(0.21)	(0.42)	(0.17)	(0.15)
Husband educated	-0.225	-0.167	0.064	0.129
	(0.27)	(0.41)	(0.19)	(0.16)
Woman employed before marriage	0.028	0.224	0.337**	0.179
	(0.24)	(0.31)	(0.16)	(0.14)
Husband skilled worker	-0.142	-0.662	-0.261	0.147
	(0.40)	(0.48)	(0.27)	(0.21)
Husband unskilled worker	0.267	-0.615*	0.021	-0.106
	(0.27)	(0.32)	(0.18)	(0.16)
Urban	-0.282	1.108***	-0.353**	0.322**
	(0.22)	(0.41)	(0.15)	(0.14)
Descending financial transfers	0.390	-0.227	-0.519*	-0.667**
	(0.39)	(0.54)	(0.29)	(0.26)
Intra-family marriage	0.386*	-0.373	0.122	0.036
	(0.22)	(0.34)	(0.15)	(0.13)
Family interference	-0.20	0.23	-0.14	-0.088
	(0.21)	(0.30)	(0.14)	(0.12)
Discussion between wife and husband	0.669	1.052	-0.192	0.774*
	(0.75)	(1.09)	(0.39)	(0.41)
Companion to health center	0.316	0.511	0.393**	0.069
	(0.25)	(0.35)	(0.17)	(0.15)
Number of desired children	-0.129	-0.023	0.035	-0.016
	(0.08)	(0.09)	(0.05)	(0.05)
Constant	-1.591	-4.869***	-2.389***	-2.16***
	(1.10)	(1.76)	(0.75)	(0.68)
Observations	2,426	2,426	2,426	2,426

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1