Firstborn Daughters and Family Structure in sub-Saharan Africa

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Does the absence of missing baby girls in sub-Saharan Africa imply a lack of son preference? This paper shows that it does not. Using birth histories from Demographic and Health Surveys across 34 countries, we exploit the as-good-as-random assignment of a first child's sex to study how having a daughter affects women's family structure and fertility. Women with a firstborn daughter are more likely to divorce, enter polygynous unions, and tend to have more children. Among women whose first birth precedes formal union, a firstborn daughter increases long-run marriage rates but reduces the likelihood of marrying the child's father. Despite these marital transitions, firstborn daughters lead to higher completed fertility and shorter birth intervals. These demographic responses translate into worse living standards for women, including living in poorer households, higher HIV risk and greater acceptance of intimate partner violence. To identify mechanisms, we leverage a geographic regression discontinuity design along ancestral ethnic borders separating matrilineal and patrilineal kinship systems. The effects of firstborn daughters are concentrated in patrilineal societies–where sons carry higher lineage and inheritance value–and are absent or reversed in matrilineal communities. Taken together, our results reveal that subtle but pervasive son preference powerfully shapes family formation and women's life trajectories in sub-Saharan Africa, even in the absence of sex-selective abortion or distorted sex ratios at birth.

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1 Introduction

Son preference is prevalent across many societies (Williamson, 1976). In South and East Asia, skewed sex ratios at birth have raised global concerns, spurring a large literature on the roots and consequences of son preference, including impacts on fertility behavior (Jayachandran and Kuziemko, 2011; Donald et al., 2024), sex-selective abortions (Anukriti, Bhalotra, and Tam, 2016), and unequal parental investments in time, healthcare, and nutrition (Rose, 1999; Jayachandran and Kuziemko, 2011; Jayachandran and Pande, 2017). In contrast, sub-Saharan Africa presents a different picture. Sex ratios at birth are largely balanced, and evidence of missing girls is scarce, which has often been interpreted as an absence of son preference. Yet this conclusion may be misleading. For instance, Anderson (2018) document high post-birth female mortality in much of the region, and survey data indicate that stated preferences for sons remain common (Bongaarts, 2013).

Prior studies on gender preference in Africa have primarily relied on fertility behavior–particularly "birth spacing" and the "stopping rule," whereby parents continue childbearing until achieving a desired sex composition (Rossi and Rouanet, 2015; Norling, 2018; Baland, Cassan, and Woitrin, 2025). Yet these fertility-based approaches overlook key dimensions of gender preference, as family formation in sub-Saharan Africa is far more fluid than in South and East Asia. Births outside marriage are frequent, polygynous unions remain prevalent, and divorce and remarriage are common.[1] These family dynamics, in turn, shape fertility outcomes. Thus, focusing narrowly on fertility or sex ratios risks understating the presence and consequences of son preference in the region.

Research in high-income countries has linked a child's gender to family dynamics such as marriage, divorce, and custody arrangements (Lundberg and Rose, 2003; Lundberg, McLanahan, and Rose, 2007; Dahl and Moretti, 2008; Ichino, Lindstrom, and Viviano, 2014; Blau et al., 2020; Kabatek and Ribar, 2020). However, little is known about how son preference shapes family structures in sub-Saharan Africa. Notable exceptions include Milazzo (2014) on Nigeria and Dahl and Moretti (2004) on Kenya (absent in the published version), who show that mothers with a firstborn daughter have more children, face higher separation rates, and are more likely to enter polygynous unions. In Senegal, Lambert and Rossi (2016) show that sons serve as a form of widowhood insurance, reinforcing the economic value attached to male children, while

[1] In our sample, 20% of first births occur outside marriage; 22% of mothers are in a polygynous union; 3% are currently divorced; and 16% have remarried at least once.

Lambert, van de Walle, and Villar (2017) find that divorced women with a son are significantly less likely to remarry. Systematic evidence across the region and across outcomes, however, remains limited.

A related literature studies how economic conditions shape family formation and marriage systems in sub-Saharan Africa, including the prevalence of polygyny and broader household structures (Tapsoba, 2026). While this work emphasizes the determinants of these institutions, less is known about how within-household shocks such as the gender of children interact with kinship systems to shape family structure and behavior.

This paper addresses these gaps by studying how the sex of the firstborn child affects family structure in sub-Saharan Africa, with a focus on mothers' marital outcomes and fertility. Using over 100 Demographic and Health Surveys (DHS) from more than 30 countries, we exploit the quasi-random assignment of firstborn sex to identify causal effects on family dynamics. We document systematic gender-driven differences consistent with pervasive son preference, and show that these effects vary sharply with kinship systems. These findings highlight how traditional descent rules mediate the impact of within-household shocks, generating persistent differences in family structure and women's outcomes. We also examine implications for women's broader well-being.

Our empirical strategy exploits plausibly exogenous variation in the sex of a woman's firstborn child. Conditional on a live birth, the sex of the first child is widely viewed as quasi-random and has been used extensively to study family structure, fertility, and parental behavior (e.g., Dahl and Moretti 2008; Jayachandran and Kuziemko 2011; Milazzo 2014). As documented in Section 3.1, concerns about sex-selective abortion in sub-Saharan Africa are limited, and sex ratios at first birth in our sample fall within biologically normal ranges and exhibit no systematic correlation with maternal or household characteristics. Our main estimand is therefore the reduced-form causal effect of having a firstborn daughter, capturing how early-life gender composition shapes subsequent marital formation, dissolution, fertility, and living standards. Because parents may adjust fertility in response to firstborn sex, using the sex composition of all children would conflate the direct effect of child gender with endogenous fertility responses; we therefore rely on birth-order-specific variation and explicitly document robustness to selective mortality, cohort effects, and migration.

Guided by this strategy, we begin by examining how child gender influences key dimensions of family structure. First, we analyze the likelihood of marriage among women whose first childbirth occurred before their first union. Interestingly, women with a firstborn daughter are more likely to marry in the long run, though they are less likely to marry the child's father. Once in a union, a firstborn daughter increases the likelihood that a woman enters a polygynous marriage–driven by husbands taking additional wives–and raises the probability of marital dissolution by 4–5%. These effects unfold gradually: divorce and polygyny gaps by child sex widen over time after birth.

We also find that women with firstborn daughters have higher completed fertility and shorter birth intervals. These fertility responses emerge despite the higher rates of divorce associated with firstborn girls. Dynamic specifications show the fertility gap growing steadily with years since the first birth, and the effects are stronger among women who have completed childbearing.

Since most couples in our sample desire and have more than one child, using the sex of the firstborn likely provides a lower bound on the effect of a child's sex on family dynamics. Moreover, the patterns we uncover are economically significant. With half of all mothers having a firstborn daughter, back-of-the-envelope calculations show that even modest individual responses accumulate into meaningful aggregate demographic changes over time.

Beyond effects on partnership and fertility, we show that firstborn daughters are also associated with worse economic and health outcomes for mothers. Women with a firstborn daughter tend to live in poorer households, consistent with research linking family structure to economic well-being (Anderson and Ray, 2019; Brown and Van de Walle, 2021; Djuikom and van de Walle, 2022). They also appear more vulnerable within relationships. We find that women whose first birth occurred outside a union are more likely to contract HIV if their firstborn is a daughter, and both women and men with a firstborn daughter are more likely to justify intimate partner violence (IPV). These findings are consistent with weaker intra-household bargaining power and reduced outside options for women lacking sons (Lambert, van de Walle, and Villar, 2017; Baranov et al., 2021; Sanin, 2021; Ansah et al., 2023; Weitzman, 2020).

Behind these average effects on family structure lies substantial cross-country heterogeneity. A growing literature shows that traditional norms—such as patrilineality, patrilocality, and dowry customs—shape gender preferences and sustain discrimination against daughters (Gupta et al., 2003; Sundaram and Vanneman, 2008; Rossi and Rouanet, 2015; Jayachandran, 2015; Rammohan and Vu, 2018; Lowes, 2022). While practices that elevate the value of sons are consistent with many of the female-firstborn effects we document, they cannot account for the higher long-run likelihood of marriage among women with a daughter.

We argue instead that variation in kinship institutions—in particular, patrilineal versus matrilineal descent—plays a central role in shaping family structure. In patrilineal societies, separation often entails severe losses for women, including the forfeiture of land rights or child custody, whereas matrilineal systems provide women with stronger outside options and greater post-separation security (Clignet, 1970; Poewe, 1978; Holden, Sear, and Mace, 2003; Lowes, 2022). To clarify this interpretation, we develop a stylized two-period model that formalizes how custody rules, gendered child values, and outside options jointly determine marital decisions and fertility under each kinship regime (Appendix C.2).

To test this, we study the heterogeneity of the female firstborn effect in patrilineal versus matrilineal groups. We complement OLS estimates with a geographic regression-discontinuity design, following Lowes (2022), in order to compare women who are as similar as possible except in kinship descent. This approach reveals substantial heterogeneity: among women who had a child before marriage, a firstborn daughter reduces short-term marriage prospects by 10% in patrilineal areas but increases them by 10% in matrilineal areas. Similarly, the increase in fertility following the birth of a firstborn daughter is concentrated entirely on the patrilineal side of the ethnic boundary, with the effect reversing across the border. These results contribute to research on the enduring influence of deep-rooted institutions and highlight the importance of cultural context for understanding gender inequality and designing effective policy reforms, including in inheritance and family law (La Ferrara and Milazzo, 2017; Dillon and Voena, 2018; Rossi, 2019; Bau, 2021; Becker, 2025).

Beyond these findings, our paper makes a broader methodological contribution. Our findings suggest that studies on birth order and sibling effects, as well as research using the sex of the firstborn child as an instrumental variable, should account for family structure selection bias when estimating causal relationships (Maynard 2002; Maynard and Tovote 2010; Lancy 2014; Jakiela et al. 2020), at least in the context of sub-Saharan Africa. Similarly, research on parental responses to child gender (Washington, 2008; Shafer and Malhotra, 2011; Glynn and Sen, 2015; Cronqvist and Yu, 2017) must consider potential endogeneity in family composition.[2]

[2]For instance, researchers finding a positive correlation between having a female eldest sister and the educational attainment of younger siblings might be tempted to attribute a causal interpretation to this effect, assuming the exogeneity of the firstborn's gender. However, if having a female firstborn child increases the likelihood of divorce or polygamy, resulting in more children living with mothers, and if the survey of interest primarily registers sons and daughters living with the head of the household (who are typically male), then any ordinary least squares (OLS) model would yield biased estimates if parental characteristics associated with divorce or polygamy are also correlated with the educational outcomes of younger siblings (e.g., parental time allocation, gender attitudes, etc.). Similar concerns arise in studying the impact of children's gender on parental outcomes (e.g., among judges or politicians) if their marital status is affected by the gender of their children and affects their career.

The paper is organized as follows. Section 2 describes the data and main identification strategy. The effects of a female firstborn on family structure are shown in Section 3. Section 4 investigates some welfare consequences for women who have a female firstborn. Section 5 presents the heterogeneity results by traditional ethnic practice, including the regression discontinuity results. Finally, Section 6 concludes.

2 Data and Descriptive Statistics

2.1 Demographic and Health Surveys Data

To study women's outcomes, we utilize data from the Demographic and Health Surveys (DHS) conducted by USAID in sub-Saharan Africa post-1994. These nationally-representative household surveys provide data for a wide range of household- and individual-level outcomes. We specifically use surveys for which geo-located cluster data is available, totaling 106 DHS surveys from 34 countries. For more information on the DHS surveys and the waves included in this paper's analysis, see Appendix A.

The main analytical sample comes from the DHS Woman's Questionnaire, which is administered to women aged 15-49, collecting data on a large variety of outcomes, including women's complete birth history. This information is used to list all children that the respondent has given birth to, with information on the child's sex, date of birth, survival status, and whether the child (if alive) resides in the same household as the mother.

The DHS surveys provide geographic coordinates for each DHS sampling unit (DHS cluster), with random displacements of 0 to 2 km for urban clusters and 0 to 5 km for rural clusters. To match households' locations to specific geographic areas, we utilize the Stata function *geoinpoly* (Picard 2015). We perform this matching process with both the Murdock ethnic boundary map (Murdock 1959) and with current administrative boundaries.[3]

2.2 Customs Variables and Other Data

To study heterogeneity in the female-firstborn effect across traditional practices, we use the geographic coordinates provided in the DHS to merge each woman at the cluster level with

[3]The information on subnational administrative areas comes from the DHS geographic data and GIS data available at DIVA-GIS.

Murdock's ethnic boundary map. Following the matching protocol developed in Lowes (2022), we assign to each respondent the traditional practices—such as kinship systems—characteristic of the ethnic group historically associated with the cluster's location.[4]

In addition, to report OLS heterogeneity and a fuzzy regression discontinuity design in the Appendix, we also match individuals to traditional practices using self-reported ethnicities at the respondent level, employing the University of Zurich's Atlas of Pre-colonial Societies data. This dataset is an update of Murdock's *Ethnographic Atlas* with ethnographic information for 1,267 ethnic groups and includes over one hundred ethnographic variables from societies prior to industrialization (see Appendix A for details). Out of the 106 DHS surveys included in our sample, 72 (68%) collect self-reported ethnic information at the individual level. From these, we successfully match 89% of respondents to an ethnic group with documented kinship practices as per Murdock (1959).[5] To provide robustness checks to the kinship heterogeneity analysis, we also use a set of geographic covariates (e.g., climate, disease ecology, land characteristics, and slave-trade exposure) compiled from the replication files of Alsan (2015) and Lowes and Nunn (2024) (Appendix A).

To measure impacts on women's living standards, we also use the International Wealth Index (IWI)–a standardized 0–100 DHS-based asset wealth measure– constructed by Smits and Steendijk (2015). The IWI provides a harmonized measure of material well-being across countries, based on household possession of durable goods, access to basic services, and housing characteristics. In the DHS surveys, for every survey, a separate wealth index is created, independent of those used in other surveys. Hence, wealth levels are not differentially comparable across countries or over time. The IWI is comparable between subnational regions of different countries and over time. It is constructed using data from 2.1 million households across 165 surveys conducted between 1996 and 2011 in 97 low- and middle-income countries.

2.3 Sample and Descriptive Statistics

Our analytical sample consists of all women who have ever given birth and for whom birth histories, age, and years of education are available, totaling 927,809 individuals. In the empirical analysis, we will often split this sample into two groups: women whose firstborn child was born

[4]We are grateful to Sara Lowes for sharing the concordance data file with us.

[5]We manually cleaned a great share of the ethnicities self-reported in the DHS surveys and we are also grateful to Alessandra Voena for sharing with us a merge file between the ethnic groups in the DHS and the University of Zurich's Atlas of Pre-Colonial Societies.

prior to their first union (187,756 women) and those whose firstborn child was born after entering their first union (740,053 women). When we incorporate religious affiliation into the analysis, the sample decreases to 863,523 women–176,824 with a firstborn born pre-union and 686,699 with a firstborn born post-union–because this information is missing in a subset of surveys.

Table 1 presents summary statistics for the full sample (columns (1)–(4)). On average, the women in the sample are 31 years old and have 4.2 years of education. Twenty percent of them had their first child before entering into their first marriage or cohabiting relationship, if any. In terms of geographic location, 67% live in rural areas. Regarding religious affiliation, 59% report being Christian, while 35% identify as Muslim. Based on self-reported ethnic data, 65% of the women come from traditionally patrilineal groups, 19% from matrilineal groups, 81% from groups that practice bride price, 89% from groups that historically practiced polygamy, and only 3% belong to ethnic groups that traditionally practiced plough agriculture.

In Tables B1-B2, we report summary statistics separately for the two subsamples defined by whether the firstborn child was born before or after the woman's first union. On average, women in the first group (firstborn before union) tend to have more years of education, are less likely to reside in rural areas, and are more likely to identify as Christian compared to women whose firstborn child was born after their first union.

3 Firstborn Girls and Family Structure

The intricate interplay between family structure and the number and gender composition of children complicates efforts to isolate the specific impact of a child's gender on family structure. When gender preferences affect fertility choices, families with girls may differ significantly from those with boys (Sheps 1963; Yamaguchi 1989; Baland, Cassan, and Woitrin 2025). However, by conditioning on the birth of a child, the sex of the firstborn can be treated as a quasi-random event. This allows for an examination of the impact of the child's sex on family dynamics.

3.1 Identification Strategy

Sex Ratio at Birth. Our identification strategy treats the sex of the firstborn child as a good-as-random event. Conditional on the absence of selective fetal or maternal mortality, natural male-to-female birth ratios typically ranges between 1.03 and 1.06 (Anderson and Ray, 2010). Consistent with prior research in sub-Saharan Africa (Anderson, 2018; Chao et al., 2019), the average firstborn male-to-female birth ratio in our analytical sample is 1.04, which falls within the expected natural range.

Sex-selective abortion is not a common practice in sub-Saharan Africa.[6] As of 2019, 92% of the region's women of reproductive age lived in countries with highly or moderately restrictive abortion laws, and most pregnancies still proceed without a single ultrasound examination (Sippel et al., 2011), further limiting the scope for prenatal sex selection. A natural concern is that access to sex-selection technology, while historically negligible, may have grown in recent decades. However, as shown in Figure B1, we find no evidence of such trends: the probability of having a female firstborn is stable across mother's birth cohorts, firstborn's birth years, survey years, and mother's age at interview.

We also considered regional differences driven by genetic or environmental factors (Anderson and Ray, 2010; Pavic, 2015), as well as cohort specific variations linked to extreme events such as famines or natural disasters (Tan et al., 2009; Song, 2012; Nandi, Mazumdar, and Behrman, 2018). In our data however, geographic-cohort effects explain at most 3% of the variation in the probability of having a female firstborn in rural areas and 6% in urban areas, even after accounting for administrative boundaries, ancestral ethnic regions, and cohort trends (Tables B3–B4).

Women's Selective Mortality. Even though we find no evidence of systematic distortions in birth sex ratios, non-random heterogeneity in women's characteristics could pose identification concerns through women's selective mortality. If firstborn daughters adversely affect maternal health, women with female firstborns may experience higher mortality, leading to selection bias in observed family structures. Consistent with evidence from Nigeria (Milazzo, 2014) and Tanzania (Genicot and Hernandez-de Benito, 2022), we observe a declining male-to-female birth ratio after age 40, suggesting possible selection effects. However, once we control for mothers' birth cohorts, these differences disappear statistically, even in rural areas (Table B4). Still, as a safeguard, we conduct robustness checks that exclude women aged 40 and above.

Columns (5)–(6) of Table 1 also show that women with a female firstborn in our analytical sample do not differ significantly in demographic characteristics. This holds, on average, for years of education and rural residence – variables that may themselves be outcomes of interest–once we control for ethnic area fixed effects, further reducing concerns about selective mortality.

[6] Between 2015 and 2019, an estimated 33 abortions per 1,000 women aged 15-49 occurred annually, with little variation across the four subregions of sub-Saharan Africa (Guttmacher Institute, 2022).

While self-reported religious affiliation shows small but statistically significant differences, we demonstrate below that our results are robust to controlling for religion. We also observe a small difference in age at first birth: women whose first child is female were, on average, slightly older (19.32 vs. 19.28), possibly reflecting maternal characteristics that affect the probability of carrying a female fetus, as discussed next. In the empirical analysis, we also control for age at first birth.

As previously mentioned, we will often partition the regression sample into two subsamples: women whose firstborn child was born before their first union (if applicable) and women whose firstborn child was born after their first union. In both cases, birth sex ratios remain within the natural range (1.03 and 1.05, respectively), and maternal characteristics do not predict firstborn sex (Tables B1-B2).[7]

Maternal Characteristics. Although the evidence is mixed, some prior studies suggest that female fetuses are more likely to survive under conditions of nutritional stress (Catalano and Bruckner 2006; Sutherland and Brunwasser 2018). This raises the concern that certain maternal characteristics at conception or during pregnancy could correlate with the likelihood of having a female versus male firstborn, and these same characteristics might also relate to later family structure or welfare outcomes. To investigate this, we restrict the sample to women whose first child was born within two years of the survey, thereby minimizing the risk of reverse causality (i.e., that the child's sex influences maternal characteristics). As shown in Table B5, neither household wealth nor women's postnatal health or location characteristics are predictive of having a female versus male firstborn in the years proximate to birth.

Recall Bias. A final potential concern is recall bias: unobserved maternal characteristics may influence both the likelihood of misreporting the sex of their firstborn and subsequent family outcomes. It seems implausible that a sufficiently large number of women would misreport the sex of their first child in a way that would materially affect our conclusions. Moreover, our robustness checks, which exclude women aged 40 and above, as well as parents whose first child is no longer alive, help to address this possible concern.

Taken together, these results strongly support the use of the firstborn's sex as a plausibly exogenous variable in our identification strategy.

[7]Subsamples are constructed using the child's date of birth (DHS: *kiddobcmc*) and the date of the woman's first marriage or cohabitation (DHS: *mar1stcmc*).

Table 1: Women's Descriptive Statistics

	Firstborn's Sex					
	Male		Female		Difference (1)-(3)	
	Mean/St.dev. (1)	Obs. (2)	Mean/St.dev. (3)	Obs. (4)	(5)	(6)
Age	31.817	474,587	31.783	453,222	–0.035	–0.001
	[8.508]		[8.474]		(0.021)	(0.001)
Firstborn before union	0.200	474,587	0.204	453,222	0.004***	0.001
	[0.400]		[0.403]		(0.001)	(0.001)
Christian	0.585	441,803	0.594	421,720	0.009***	0.001*
	[0.493]		[0.491]		(0.001)	(0.001)
Muslim	0.354	441,803	0.344	421,720	–0.009***	–0.001*
	[0.478]		[0.475]		(0.001)	(0.001)
Other religion	0.062	441,803	0.061	421,720	–0.000	–0.000
	[0.240]		[0.240]		(0.001)	(0.001)
Age at first birth	19.280	474,586	19.317	453,221	0.037***	0.023**
	[3.893]		[3.864]		(0.010)	(0.009)
Years of education	4.228	474,587	4.292	453,222	0.064***	0.001
	[4.534]		[4.523]		(0.012)	(0.009)
Rural	0.670	474,587	0.666	453,222	–0.004***	–0.002
	[0.470]		[0.472]		(0.001)	(0.001)
Women´s Ethnicity						
Patrilineal descent	0.657	312,104	0.652	296,970	–0.005***	0.001
	[0.475]		[0.476]		(0.002)	(0.001)
Matrilineal descent	0.186	312,104	0.191	296,970	0.005***	–0.000
	[0.389]		[0.393]		(0.001)	(0.001)
Bride price	0.810	312,179	0.809	297,085	–0.001	–0.000
	[0.393]		[0.393]		(0.001)	(0.001)
Polygamous practice	0.895	310,083	0.894	295,169	–0.000	0.000
	[0.307]		[0.307]		(0.001)	(0.001)
Plough	0.034	311,195	0.033	296,035	–0.001*	–0.000
	[0.182]		[0.179]		(0.001)	(0.000)
Woman's year of birth FE						Yes
Survey year FE						Yes
Ethnic area FE						Yes
Country FE						Yes

Notes: This table presents summary statistics for all women included in this paper's analytical sample. Column (1) presents the sample mean and standard deviation for women whose firstborn child is male, and column (2) presents the number of observations with non-missing values. Columns (3) and (4) present the analogous statistics for women whose firstborn child is female. Columns (5) and (6) report the OLS coefficient from a regression of the respondent's characteristic on a firstborn gender indicator variable, with standard errors clustered at the DHS sampling unit level in parentheses. Column (6) controls for survey year, country, mother's year of birth, and ethnic area fixed effects. Individual DHS survey weights are used in all columns. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.2 Empirical Strategy

To test whether the sex of the firstborn child affects the mother's family structure, we estimate the following specification:

$$y_{iect} = \beta \textit{Female firstborn}_i + X_i'\Gamma + \alpha_c + \lambda_e + \delta_t + \epsilon_{iect}, \quad (1)$$

where y_{iect} is the outcome of interest for woman i residing in ethnic area e, country c and survey year t. *Female firstborn*$_i$ is an indicator variable equal to one if her firstborn's sex is female, and zero otherwise. X_i is a vector of covariates for woman i, including age, age squared, and cohort fixed effects, as well as covariates for woman's i's firstborn, including years since birth, years since birth squared, and survival status. We also include fixed effects for country α_c, ethnic area λ_e, and survey year δ_t. We cluster standard errors at the DHS sampling unit (cluster) level.

To account for local unobserved heterogeneity, we will provide robustness checks including the most restrictive DHS cluster fixed effects (as opposed to ethnic are fixed effects) and also control for religion affiliation. As discussed in Section 2.3, the specifications controlling for religion affiliation include fewer observations because not all DHS surveys collect this information.

In addition to presenting the estimated coefficient of interest, $\hat{\beta}$, we also adopt the approach of Dahl and Moretti (2008) to report the male firstborn baseline and percent effects. The male firstborn baseline is calculated as the average predicted outcome variable for women with a male firstborn child using the estimated coefficients on the control variables. This allows us to also report the "percent effect", the ratio of $\hat{\beta}$ to the male firstborn baseline, which is equivalent to the odds ratio minus one.

Finally, to capture the dynamic effects of having a female firstborn over time, we extend equation (1) by interacting the *Female firstborn*$_i$ indicator with 5-year intervals (a) since the birth of the first child, while also including interval fixed effects μ_a:

$$y_{iect} = \sum_a \beta_a \textit{Female firstborn}_i \times \mathbb{1}\{\text{Years since birth} = a\} + X_i'\Gamma + \alpha_c + \lambda_e + \delta_t + \mu_a + \epsilon_{iect}. \quad (2)$$

3.3 Firstborn Girls and Marriage Formation

The first channel through which the sex of the firstborn child may influence women's family structure is by affecting the likelihood of entering a union in the first place. This effect is only relevant for women whose first child was conceived prior to their first union. We do not find a significant effect of the firstborn's sex on the likelihood of marrying during pregnancy (Table B6), which provides further evidence against sex-selective abortion. Therefore, to analyze the impact of the firstborn child's sex on union formation, we restrict the sample to the 20% of women whose first child was born before their first marriage or cohabitation, if any.[8]

In contexts characterized by gendered offspring preferences and traditional, gender-based practices (e.g., the need for a son to secure inheritance), the effect of having a firstborn girl rather than a boy is ex-ante ambiguous. On one hand, in societies with a preference for sons, men may be less inclined to marry the mother if the child is female (Dahl and Moretti 2008). On the other hand, in settings where sons are associated with benefits, such as kinship and inheritance, women without a son may have a stronger incentive to enter marriage (Lambert and Rossi 2016; Lambert, van de Walle, and Villar 2017). The opposite patterns may emerge in contexts with daughter preference or daughter-related social and economic advantages.

Women With a First Daughter Are More Likely to End Up Married

Table 2 presents the results of estimating equation (1) with the outcome variable equals one if the respondent ever entered a marriage or cohabitation. The coefficient estimates show that women whose firstborn is female are 0.3-0.6 percentage points more likely to be eventually married than those with a male firstborn (columns (1)-(2)). This effect corresponds to an increase of 0.6-0.9% in the probability of subsequent marriage.

The effect on the probability of ever entering a union combines the likelihood of what is often termed a "shotgun marriage," defined as marrying the father of the child shortly after birth, with future marriage outcomes of the mother. To distinguish between "shotgun" and "subsequent" marriages, we analyze the results in two subsamples. Column (3) of Table 2 restricts the sample to women whose first child was born no more than five years prior to the survey, capturing the likelihood of a shotgun marriage. Column (4), in contrast, focuses on women whose firstborn was born more than five years ago, assessing the long-term likelihood of marriage.

The results suggest that having a daughter increases the probability of subsequent marriage over the long term but not the likelihood of shotgun marriage. In Figure 1a, we observe that the

[8] Using data from the DHS surveys, we compare the birthdate of the first child with the date of the first union to determine whether the firstborn was born before or after the union. Approximately 36% of women were pregnant before their first union, and 44% of these women married during pregnancy. This implies that about 20% of women had their first child before entering a union.

Table 2: Effect of Female Firstborn on Subsequent Marriage

	Ever Married				Married Firstborn's Father		
			Years since Birth < 5	*Years since Birth* ≥ 5		*Years since Birth* < 15	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female firstborn	0.003**	0.006***	-0.001	0.004**	-0.022***	-0.020***	-0.028***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.008)
Ind. controls	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓	✓
DHS Cluster FE		✓					✓
Religion FE		✓					✓
Male baseline	0.69	0.68	0.30	0.82	0.85	0.86	0.86
Percent effect	0.51	0.89	-0.20	0.55	-2.59	-2.29	-3.23
Observations	187,756	176,824	47,843	139,913	29,377	24,534	23,051

Notes: This table presents OLS regressions where the dependent variables are: (i) an indicator equal to 1 if the respondent ever married after the birth of her firstborn (columns (1)–(4)); and (ii) an indicator equal to 1 if the firstborn's father identifier matches the mother's current husband identifier (columns (5)–(7)). The sample is limited to women whose firstborn child was born before they had ever entered a union. In columns (5)–(7), the sample is further restricted to women who are currently in their first union and whose firstborn child lives with them at the time of the survey. Years since birth restricts the sample based on the number of years between the birth of the firstborn child and the survey date. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

increased probability of marriage associated with having a female firstborn peaks 5-10 years after the child's birth, with an increase of 1.2 percentage points.

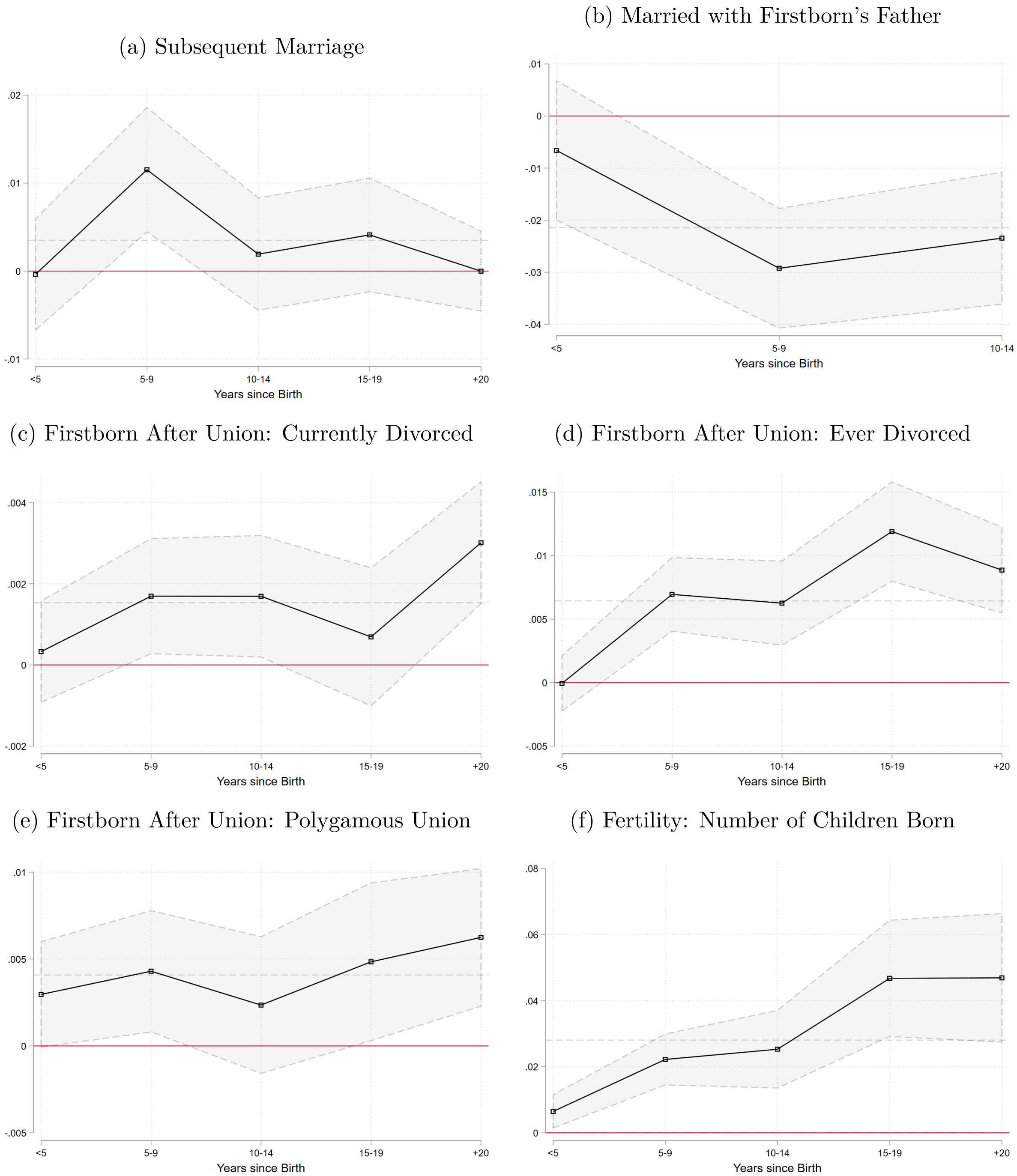
Though Not to the Father of the Child

The preceding results show that women whose firstborn child is female are more likely to marry at some point after birth, although this effect materializes several years later. A natural question is whether these subsequent marriages involve the biological father of the child. In our sample, half of the women who marry after the birth of their first child do so within 30 months, and 72% do so within five years. This timing makes it unlikely that delayed shotgun marriages (marrying the firstborns father) account for the observed patterns.

To further investigate, we construct an indicator variable equal to one if the woman's husband in the household is the biological father of her firstborn child for the subsample for which the information is available. This analysis is restricted to women whose firstborn child resides in the household and whose partner is listed in the household roster.[9] We also present results restricted

[9]We also exclude women for whom information on the firstborn's father is unavailable due to a missing household identifier. Table B7 shows that this information is slightly less available for female firstborns, but the difference becomes statistically insignificant when restricting the sample to firstborns who are still not adults.

Figure 1: Female Firstborn Effect by Years since Firstborn's Birth



Notes: These figures display the estimated $\hat{\beta}_a$ coefficients for *Female firstborn*$_i$ $\times \mathbb{1}\{\text{Years since birth} = a\}$, obtained from the estimation of equation (2). The grey dashed horizontal line represents the corresponding $\hat{\beta}$ estimate from equation (1).

to women whose firstborn child is younger than fifteen, to maximize the likelihood that the child still resides with the mother.

The probability of the woman's husband being the biological father of her firstborn child is 2.2-2.8 percentage points lower if the child is a girl rather than a boy (columns (5)-(7) of Table 2). In Figure 1b, we also observe that the difference by firstborn's sex in the probability of marrying the child's father emerges and peaks around 5–9 years after birth (3 percentage points lower)–coinciding with the period when the gender difference in the probability of ever entering a union becomes statistically significant. However, unlike the effect on marriage likelihood, the negative effect of having a firstborn daughter remains statistically significant thereafter.[10]

Compared to prior findings from higher-income countries, our results indicate an opposite trend. Dahl and Moretti (2008) find that women in the US whose first child is female are 0.09 percentage points more likely to have never been married compared to women whose first child is male. In contrast, our findings suggest an overall higher probability of marriage. Our results are in line with those of Lambert, van de Walle, and Villar (2017), who, in the context of Senegal, find that female divorcees without a son from a previous union are more likely to remarry.

3.4 Firstborn Girls, Marital Dissolution and Polygyny

Beyond shaping entry into a first union, the sex of a woman's first child can affect both the stability and structure of her marriage. In contexts with strong preferences over the sex composition of children, the birth of a daughter instead of a son may generate intra-household tensions and shift incentives within the marriage. These pressures can operate along two distinct margins: dissolution of the union (divorce) and adjustments within the union, such as the expansion of the marriage through polygyny. We study each of these margins in turn.

Marital Dissolution Is More Likely Following a First Born Daughter

In Table 3, the dependent variables are an indicator equal to one if the respondent is currently divorced and an indicator for ever being divorced.

We find that women with a firstborn daughter are more likely to experience marital dissolution, with the probability of being currently divorced increasing by 4.5% (Table 3). The effect is

[10]Because the variable indicating marriage to the firstborn's father is constructed using the child's father identifier, we restrict the analysis in the dynamic specification to firstborn children born less than 15 years before the survey to maximize the probability that the child still resides in the household.

similar when using an alternative measure, "ever divorced," defined as a dummy equal to one if the woman is currently divorced or has had multiple unions by the survey date. While this measure may also capture remarriage following widowhood, Appendix Table B9 shows similar patterns when restricting to surveys with detailed marital histories that distinguish divorce from widowhood. In this subsample, having a female firstborn does not affect the probability of ever being widowed.

Table 3: Effect of Female Firstborn on Marital Dissolution

	All		Firstborn Before Union		Firstborn After Union	
	Divorced (1)	Ever Divorced (2)	Divorced (3)	Ever Divorced (4)	Divorced (5)	Ever Divorced (6)
Female firstborn	0.001***	0.006***	0.000	0.003*	0.002***	0.006***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	0.03	0.16	0.02	0.12	0.03	0.17
Percent effect	4.48	3.61	1.28	2.26	5.09	3.84
Observations	927,809	927,809	187,756	187,756	740,053	740,053

Notes: TThis table presents OLS regressions where the dependent variable is an indicator equal to 1 if the respondent is currently divorced or has ever been divorced (proxied as being currently divorced or having been married more than once). In columns (3)-(4), the sample is limited to women whose firstborn child was born before they had ever entered a union. In columns (5)-(6), the sample is limited to women whose firstborn child was after they entered their first union. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Among women whose first child was born after entering their first union (columns (5)-(6) of Table 3), the probability of being currently divorced increases by 5.1% if the firstborn child is a girl. For this group, the sex of the first child cannot influence the quality of the initial marital match, strengthening the interpretation of a causal effect on marital dissolution. Figures 1c-1d show that the increased probability of divorce does not materialize immediately after the firstborn's birth but instead grows over time.

When we restrict the sample to women whose first child was born prior to their first union (columns (3)-(4)), we also find a positive effect of having a firstborn daughter on the probability of ever having been divorced. However, we do not find a corresponding effect on the probability of being currently divorced. This pattern suggests that women with a firstborn girl are more likely to exit their first union but also more likely to re-enter a union.

Our findings from sub-Saharan Africa align with existing evidence linking daughters to higher divorce risk (Morgan, Lye, and Condran 1988; Bedard and Deschênes 2005; Dahl and Moretti

2008; Kabatek and Ribar 2020). In terms of magnitude, our estimates are larger than those in Dahl and Moretti 2008 for the US, representing a nearly fourfold increase in percentage terms. In the Netherlands, Kabatek and Ribar (2020) find that daughters increase divorce risk only during ages 13–18, whereas we observe effects emerging earlier (Figures 1c-1d).

Women with a Firstborn Girl Are More Likely to Be in a Polygynous Union

We next focus on the within-union expansion margin and examine whether the sex of the firstborn affects the likelihood of entering a polygynous union. In settings where polygyny is accepted and male children are highly valued, having daughters may increase the likelihood that a husband takes an additional wife to secure a son. Consistent with this framework, we distinguish between within-union responses and re-matching across unions.

Table 4 reports estimates across four outcomes: an indicator for being in a polygynous union (column 1); the same indicator restricted to currently married women (column 2); an indicator for being the first wife or monogamous (column 3); and an indicator for the husband having taken additional wives after the respondent (column 4). We present results for the full sample (Panel A) and for three subsamples that help separate the channels described above.

Panel A pools all women. A firstborn daughter raises the probability of polygyny by 0.2 percentage points, or roughly 1 percent relative to the male-firstborn baseline of 22.1 percent (column 1). Conditional on being currently married, the effect increases to 0.3 percentage points (1.0 percent, column 2), and the probability of being the first wife declines by a similar magnitude (column 3). These pooled estimates, however, combine within-union and re-matching effects.

Panel B restricts attention to women whose first birth preceded union formation. In this group, having a firstborn daughter is associated with a lower probability of polygyny—a 0.3 percentage point decline unconditionally and 0.6 percentage points among currently married women (2.3 percent)—and a higher probability of being the first wife. Interpreting these estimates causally is difficult, as we already saw that the sex of the firstborn affects entering a union, and these patterns likely reflect selection into union types rather than behavioral responses within marriage.

Panel C isolates the within-union margin by restricting the sample to women whose first birth occurred after they entered their first union and who remain in that union. Here, a firstborn daughter increases the probability of polygyny by 0.2 percentage points unconditionally and 0.3 percentage points among married women (1.0 percent). As expected, for these women, the effect operates through husbands taking additional wives, as shown in column 4: the husband is 0.2

Table 4: Effect of Female Firstborn on Polygyny

		Currently Married		
	Polygamous	Polygamous	First Wife	Subsequent Wives
	(1)	(2)	(3)	(4)
Panel A: All Women				
Female firstborn	0.002***	0.003***	-0.002***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Male baseline	0.221	0.267	0.839	0.141
Percent effect	0.93	1.03	-0.29	0.39
Observations	927,809	768,330	768,330	768,330
Panel B: Firstborn Before Union				
Female firstborn	-0.003**	-0.006**	0.004*	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Male baseline	0.142	0.241	0.834	0.117
Percent effect	-2.10	-2.32	0.50	-2.21
Observations	187,756	110,590	110,590	110,590
Panel C: Firstborn Before Union, First Union				
Female firstborn	0.002**	0.003**	-0.001	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Male baseline	0.221	0.247	0.871	0.149
Percent effect	0.94	1.04	-0.12	1.44
Observations	610,846	547,801	547,801	547,801
Panel D: Firstborn Before Union, More Than One Union				
Female firstborn	0.006**	0.008***	-0.008***	-0.002
	(0.002)	(0.003)	(0.003)	(0.002)
Male baseline	0.329	0.388	0.684	0.128
Percent effect	1.82	2.11	-1.19	-1.34
Observations	122,035	103,134	103,134	103,134
Ind. controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Country FE	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓

Notes: This table presents OLS regressions of polygyny outcomes on a female firstborn indicator. Column (1): indicator equal to 1 if the respondent is in a polygynous union. Column (2): polygynous conditional on being currently married. Column (3): indicator equal to 1 if the respondent is the first wife (or monogamous). Column (4): indicator equal to 1 if there are subsequent wives after the respondent. Panel A includes all women. Panel B is limited to women whose firstborn was born before entering a union. Panel C further restricts to women in their first union. Panel D restricts to women who have had more than one union. All regressions control for individual characteristics, year of birth, survey year, country, and ethnic area fixed effects. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

percentage points more likely to have taken an additional wife (1.4 percent relative to baseline).

Finally, Panel D focuses on women whose first birth also occurred within a union but who have subsequently been in more than one union. Among this group, the effects are substantially larger: a firstborn daughter raises the probability of polygyny by 0.6 percentage points (1.8 percent) and 0.8 percentage points conditional on current marriage (2.1 percent). The probability of being the first wife falls by 0.8 percentage points (1.2 percent). This pattern indicates that women who exit their first union and subsequently re-partner are more likely to enter polygynous households as junior wives if the firstborn is a girl.

Taken together, and in parallel with the divorce results above, these findings show that the sex of the firstborn shapes marital structure along multiple margins: it affects both within-union expansion through polygyny and re-matching into different types of unions. These effects do not appear to be immediate following the firstborn's birth, but instead strengthen over time, as they are larger for women whose firstborn was born more than five years earlier (Figure 1e).

We may expect these effects to be stronger in contexts with higher baseline prevalence. Given that polygyny is twice as common among women who self-identify as Muslim (38 percent in this sample), the estimated effect is approximately twice as large in this subsample (Table B8), and closer to the 3.5 percent effect found by Milazzo (2014) in Nigeria.

3.5 Firstborn Girls and Fertility: More Children and Shorter Intervals

Finally, an important channel through which the sex of the firstborn may shape women's family trajectories is fertility. The relationship between child gender and fertility is mediated by the broader family structure effects documented above. On one hand, son preference may lead parents to continue childbearing after the birth of a daughter in the search for a son, generating shorter birth intervals and higher completed fertility (Rossi and Rouanet 2015; Anukriti, Bhalotra, and Tam 2016). On the other hand, having a firstborn daughter increases the likelihood of marital dissolution, potentially dampening fertility if union instability reduces opportunities for childbearing (Ichino, Lindstrom, and Viviano 2014; Blau et al. 2020).

Table 5 reports the results of estimating equation (1) using the number of children a woman has given birth to by the time of the survey, as well as the birth interval between the first and the second child, in months, for those women who have at least two children.

On average, women with a firstborn daughter have 0.02-0.03 more births compared to those with

Table 5: Effect of Female Firstborn on Fertility

	All		Firstborn Before Union		Firstborn After Union	
	# Children (1)	# Months Second Child (2)	# Children (3)	# Months Second Child (4)	# Children (5)	# Months Second Child (6)
Female firstborn	0.024***	-0.104**	0.013*	0.042	0.028***	-0.149***
	(0.003)	(0.050)	(0.007)	(0.156)	(0.004)	(0.050)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	3.91	36.56	3.33	44.79	4.06	34.76
Percent effect	0.63	-0.28	0.38	0.09	0.69	-0.43
Observations	927,809	740,923	187,756	133,134	740,053	607,789

Notes: This table reports OLS regressions where the dependent variables are (i) the total number of children the female respondent has ever given birth to, and (ii) the number of months between the birth of her first and second child. Regressions using the birth-interval outcome are restricted to women who have had at least two children. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

a firstborn son. This effect is consistent across subsamples, regardless of whether the first child was born before or after the first union. Even in the presence of son preference, these positive and significant effects on total fertility might not be expected for three reasons.

First, the child's sex effect on fertility may be offset by women's increased likelihood of marital dissolution. Second, our sample includes women of varying ages, some of whom may not have completed their reproductive years, introducing potential downward bias on the total effect. Restricting the analysis to women over 40—who are more likely to have completed childbearing—reveals that the effect of a firstborn daughter on fertility almost doubles (Table B10). Figure 1f further shows that the fertility effect grows steadily with the number of years since the birth of the firstborn.

Third, the majority of couples desire more than one child. In our sample, 90% of men and 80% of women report ideal family sizes exceeding two and three children, respectively. Thus, the firstborn's sex might have only a modest impact on decisions regarding second and higher order births (Dahl and Moretti, 2008). However, we find that having a firstborn daughter increases the likelihood of having k or more children starting at $k = 2$ (Table B11), suggesting that part of the fertility effect operates through shorter birth intervals (Rossi and Rouanet, 2015).

Consistent with this, Table 5 also shows that women with a firstborn daughter experience a shorter interval until the birth of their second child (in the sample of 740,923 women with at least two non-twin children).

These fertility effects are smaller than those observed in India, a context well-known for strong son preference where mothers are almost universally married, and separations are too rare to register. Prior to the introduction of ultrasounds and sex-selective abortion, Anukriti, Bhalotra, and Tam (2016) estimated that women with a firstborn daughter had 0.155 more births than those with a firstborn son—an effect that disappeared following the spread of ultrasound technology. However, our findings are substantially larger than those reported in high-income countries. In the United States, Dahl and Moretti (2008) finds no fertility effect of female firstborns among married couples but documents a lower likelihood of marriage and remarriage. Consistent with this, Blau et al. (2020) shows that female firstborns are associated with reduced fertility, particularly among native-born populations. Similarly, Ichino, Lindstrom, and Viviano (2014) report that in several high-income countries, women with firstborn sons, as opposed to daughters, are more likely to have additional children due to increased marital stability.

3.6 Robustness and Additional Evidence

We begin with additional results that extend the baseline analysis, and then assess the robustness of our findings to alternative specifications and identification concerns.

Second Born's Sex. Since most couples in our sample have more than one child, the sex of the firstborn alone may understate the cumulative impact of child gender composition on family outcomes. Consistent with this, among women with at least two children (83% of the sample), the effect of a female firstborn is larger when the second child is also female—equivalently, a male second-born attenuates the female-firstborn effect—particularly for polygyny and fertility outcomes (Table B12).

Cohort Persistence. Our main analysis pools survey data from the 1990s to 2022, introducing heterogeneity in the calendar years when firstborns were born. Given the evolution of social norms and socioeconomic conditions over time, we do not necessarily expect homogeneous effects across firstborn cohorts. To explore this, we estimate specifications that fully interact equation (1) with indicators for the decade of the firstborn's birth (Table B13). Results reveal persistent effects across decades. The impact of having a female firstborn on subsequent marriage is smaller for firstborns born after 2010, consistent with the delayed manifestation of family structure responses. Similarly, fertility effects weaken over time, likely reflecting incomplete fertility histories for recent cohorts.

We now subject our main estimates to a series of robustness checks addressing potential threats to identification and sensitivity to specification choices.

Selective Mortality and Migration. To address concerns about selective mortality, we exclude women over age 40 at the time of the survey. The results remain consistent, demonstrating robustness to potential age-related selection biases (Table B14). Additionally, we control for the firstborn's survival status. While boys generally face higher early mortality (Pongou, 2013), excess female child mortality is well-documented in sub-Saharan Africa, with an estimated 425,000 additional female deaths annually among children aged 0–14 (Anderson, 2018). Splitting the sample by firstborn survival status confirms that differential child survival does not drive the estimated effects (Table B15). If anything, including women whose first child is deceased in the main sample slightly attenuates the point estimates. We also split the sample by migration status, distinguishing between women who have always lived in the same place and those who have moved. This analysis suggests that migration does not significantly mediate the observed effects (Table B16).

Religion and Cluster Fixed Effects. To account for potential local unobserved heterogeneity, Tables B17-B19 show that all results on the effect of the firstborn's sex on family structure outcomes are robust to the inclusion of DHS cluster and religious-affiliation fixed effects. Table 2 already demonstrated this robustness for subsequent marriage outcomes.

Education and Rural-urban Heterogeneity. Our results are also fully robust to controlling for women's years of education and rural residence. While these variables may themselves be endogenous to fertility and family structure decisions, including them leaves the estimates essentially unchanged when they are included (Tables B20-B23). Moreover, heterogeneity analyses show that the effects are neither specific to rural areas nor disproportionately concentrated among women with lower levels of education (Figure B3).

Outlier Effects. Finally, we re-estimate equation (1) for each outcome, systematically excluding one country at a time to assess sensitivity to country-specific outliers. The results remain robust across all exclusions (Table B25).

Taken together, these results demonstrate that our findings are robust across birth-order compositions, cohorts, subpopulations, and geographic contexts, and are not driven by selective mortality, migration, or country-specific outliers.

4 Female Firstborn Welfare Impact

4.1 Magnitude of the Effects

The findings show child's sex affects family structure through changes in women's marital status, marriage structure, and fertility. The coefficients are small but the effects are sizable as one mother in two has a firstborn daughter. Within the period spanning from 1980 to 2020, an average of approximately 3,257,076 firstborn daughters were born in sub-Saharan Africa each year. Our results imply that the presence of firstborn daughters led to an annual increase of roughly 78 thousand births, resulting in an overall surplus of about 3 million births over the course of the last four decades.[11]

Beyond birth statistics, we can predict the annual number of additional subsequent marriages and divorces on the continent due to the births of firstborn girls as opposed to boys. Out of approximately 223,540,630 women who had children in 2020,around 20% had a child prior to their first union. Given our estimates, having a firstborn daughter (49% of these women) leads to over 130,000 additional marriages per year. Our estimates further imply that firstborn daughters lead to an additional 600,000 women ever experiencing divorce at a given year.[12]

4.2 Wealth Effects

There is ample evidence that family structure shapes the well-being of both adults and children. Brown and Van de Walle (2021), for instance, document significantly higher poverty rates among female-headed households, particularly when the female head is unmarried. Divorce, polygamy, and lower marriage rates can reduce access to spousal income and weaken claims to household resources. For women, the economic and physical costs of being unmarried are substantial: Anderson and Ray (2019) find elevated female mortality among unmarried individuals in Africa,

[11] We estimate the total number of firstborn girls born each year by multiplying the total number of new births by 24% (the average proportion of firstborn children from the DHS surveys) and by the annual sex birth ratio. Both the number of new births and the sex birth ratio are sourced from: United Nations, Department of Economic and Social Affairs, Population Division (2022). *World Population Prospects 2022*, Online Edition. For the back-of-the-envelope estimate on fertility, we multiply the estimate of 3,257,076 firstborn daughters born in each year with our estimate (0.024) of column (1) of Table 5.

[12] By multiplying the female population in 2020 by the proportion of women aged 15 to 64 sample (55%, source: United Nations Population Division. World Population Prospects: 2024 Revision) and the proportion who have children (73% in our DHS sample), we estimate a total of 223,540,630 women. For the back-of-the-envelope estimate of subsequent marriages, we multiply 223,540,630 by 0.20, by 0.49, and by our column (2) estimate from Table 2 (0.006). For ever divorced, we multiply 223,540,630 by 0.49 and by our column (2) estimate from Table 3 (0.006).

pointing to the severe disadvantages faced by women outside stable unions. Sons may also attract more support from extended kin, especially in contexts where lineage or property transmission follows the male line.

These cultural and institutional dynamics suggest that the sex of the firstborn child could translate into long-term economic disadvantage for women. A natural question, then, is whether women whose first child is a girl live in poorer households than those with firstborn sons.

Directly answering this question is challenging without access to a full consumption module. To address it indirectly, we estimate the impact of having a firstborn girl on the wealth index of the household in which the woman lives at the time of the survey.

We merge our sample with the International Wealth Index (IWI). The IWI provides a harmonized measure of material well-being across countries, based on household possession of durable goods, access to basic services, and housing characteristics (Smits and Steendijk, 2015).[13] The IWI scale ranges from 0 to 100 and is additive. As expected, the distribution in our sample is heavily right-skewed: 50% of households score below 26, and 75% score below 48 (see Figure B2).

We estimate equation (1) using the IWI as the outcome variable, restricting the sample to DHS surveys where the IWI is available (96% of the surveys). We find that women whose first child was a girl live in poorer households at the time of the survey (columns (1) and (2) of Table 6). The negative effect is larger and statistically significant for women whose first child was born after entering a union (panel B). In Table B26, we also show that the results are qualitatively similar where we instead use the original DHS wealth index standardized at the survey level.

4.3 Other Welfare Impacts

The previous section showed that having a firstborn daughter can lead to material disadvantages for women. The greater demands on marriage and increased marital instability associated with firstborn daughters is likely led to other negative consequences for women's welfare. The increased marital instability and pressure to secure partners associated with firstborn daughters is likely to diminish women's bargaining power in relationships and to settle for worse and riskier relationships to secure a partner, possibly due to the desire, or need, to have a son.

This decrease in bargaining power may manifest itself in concerning health and safety outcomes,

[13] In over 75% of the surveys used in this paper, the correlation between the IWI and DHS survey-specific wealth indices exceeds 0.90, with the lowest observed correlation being 0.77. See section 2 for further details.

Table 6: Effect of Female Firstborn on Wealth, HIV and IPV Justification

	Wealth		HIV			IPV Justification	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Firstborn Before Union							
Female Firstborn	0.049	–0.078	0.005	0.006	–0.005	0.006	0.005
	(0.096)	(0.074)	(0.003)	(0.004)	(0.004)	(0.007)	(0.008)
Female Firstborn × High HIV Area					0.016**		
Observations	179,813	166,579	54,876	47,763	47,763	171,558	156,149
Male baseline	37.55	38.25	0.13	0.13	0.03	1.20	1.17
Percent effect	0.13	0.13	4.19	4.19	–14.05	0.48	0.48
Female Firstborn+Female Firstborn × High Area					0.012**		
					(0.006)		
Male baseline (High)					0.18		
Percent effect (High)					6.39		
Panel B: Firstborn After Union							
Female Firstborn	–0.127***	–0.134***	–0.000	–0.000	0.000	0.010**	0.012***
	(0.044)	(0.031)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)
Female Firstborn × High HIV Area					–0.002		
					(0.003)		
Observations	713,971	673,108	190,171	178,884	178,884	676,699	633,360
Male baseline	31.16	31.19	0.07	0.07	0.02	1.59	1.59
Percent effect	–0.41	–0.41	–0.38	–0.38	2.22	0.64	0.64
Female Firstborn+Female Firstborn × High Area					–0.001		
					(0.003)		
Male baseline (High)					0.13		
Percent effect (High)					–1.00		
Ind.controls	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Country FE	✓		✓			✓	
Ethnic Area FE	✓		✓			✓	
DHS Cluster FE		✓		✓	✓		✓
Religion FE		✓		✓	✓		✓

Notes: This table presents OLS regressions estimating the effect of having a female firstborn on three sets of outcomes: (i) household wealth, measured using the International Wealth Index (IWI); (ii) HIV infection, measured as an indicator equal to 1 if the respondent tested HIV-positive in the DHS biomarker module; and (iii) attitudes toward intimate partner violence (IPV), measured by the number of reasons the respondent reports as justifying wife-beating. Panel A restricts the sample to women whose firstborn child was born before they entered their first union; Panel B restricts the sample to women whose firstborn child was born after union formation. In columns where interactions with High HIV Area appear, high denotes ethnic areas with above-median HIV prevalence. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

particularly higher acceptance of intimate partner violence (IPV) and increased rates of sexually transmitted infection, such as HIV. Indeed, established research shows how deteriorating options outside marriage can weaken women's bargaining position within relationships, increasing their vulnerability to intimate partner violence (Aizer, 2010; Anderberg et al., 2016; Baranov et al., 2021; Sanin, 2021; Ansah et al., 2023). Parallel evidence from India demonstrates that firstborn daughters increase both the risk and severity of IPV in states with skewed sex ratios at birth (Weitzman, 2020). Similarly, Anderson (2018) attributes higher female HIV rates in common law countries to married women's weaker property rights compared to civil law countries, which limits their ability to refuse sexual demands.

Recall that we found that women who had a child prior to their first union are less likely to marry their child's father if the firstborn is a girl, but more likely to subsequently marry. This may lead them to engage in riskier sexual behavior. Our analysis confirms that these women are more likely to contract HIV, with this effect naturally concentrated to ethnic areas with high baseline HIV prevalence (columns (3)-(5) of panel A in Table 6).[14] In these areas, the percent effect indicates that the probability of women contracting HIV is 6.3% higher if the first child was female.

Beyond health outcomes, women's relationship quality appears to be also negatively affected. We find that having a female firstborn is associated with greater acceptance of IPV, measured by the number of reasons they find justifying for wife-beating, with a stronger effect on mothers who had their firstborn after their first union (columns (6)-(7) of Table 6).[15] Importantly, this effect persists even when we restrict our analysis to women who remain in their first union, indicating that even women who maintain stable marriages may experience deteriorating relationship quality (Table B24). Finally, restricting the sample to couples who are both in their first marriage, living together, and have the same number of children (to maximize the likelihood that they share the same firstborn child), we find evidence that husbands who have a firstborn girl also display greater justification of IPV (Table B24). Note that this effect contrasts with findings suggesting that fathers of daughters tend to adopt more progressive views on gender equality (Borrell-Porta, Costa-Font, and Philipp, 2019; Washington, 2008).

These findings collectively suggest that, beyond economic outcomes, the impact of having a firstborn daughter affects women's health risks, relationship quality, and exposure to adverse

[14]We define high HIV prevalence as ethnic areas with HIV rates above the median, which is 3.8%. In low-prevalence areas, the average HIV rate is 1.7%, while in high-prevalence areas, it is 14.7%.

[15]We do not use the separate module on IPV incidence due to a lack of consistency across DHS surveys in the IPV module's sampling strategy based on women's marital status.

attitudes regarding intimate partner violence.

5 The Role of Kinship Structure

The preceding sections document that having a firstborn daughter has systematic consequences for women's marriage patterns, fertility, and welfare outcomes. Higher rates of polygamy, separation, and subsequent fertility following the birth of a girl point to persistent son preference. Yet some findings—most notably the higher eventual marriage rates among women with a firstborn daughter—are not easily reconciled with taste-based preferences alone. Instead, they suggest the presence of structural vulnerabilities faced by women in the absence of a husband or son, as emphasized in Genicot and Hernandez-de Benito (2022).

To understand this heterogeneity, we examine how variation in kinship institutions shapes both son preference and the consequences of having a daughter. A growing literature highlights the long-lasting influence of historical social structures and norms on contemporary economic behavior (Nunn, 2020; Gelfand, Gavrilets, and Nunn, 2024). Patrilineality, patrilocality, and gendered inheritance practices, in particular, have been shown to foster son preference and perpetuate gender inequality (Gupta et al., 2003; Sundaram and Vanneman, 2008; Rossi and Rouanet, 2015; Jayachandran, 2015; Rammohan and Vu, 2018; Lowes, 2022). These institutions govern lineage continuity, inheritance, residence patterns, and women's social status, and are central to the social and economic logic of childbearing (Lesthaeghe, 1989).

Among these institutions, kinship structure—whether descent is traced through the mother (matrilineal) or the father (patrilineal)—plays a particularly central role. Patrilineal systems reinforce son preference because sons are typically required to carry the lineage, inherit family land, and provide old-age support. In contrast, matrilineal societies assign intrinsic value to daughters as lineage bearers. Crucially, women in matrilineal systems face fewer economic and social losses in the absence of a husband. Unlike in patrilineal societies, where women often lose access to land and custody of children upon separation, matrilineal norms ensure women retain stronger claims to land and family assets (Clignet, 1970; Poewe, 1978; Holden, Sear, and Mace, 2003). In patrilineal systems, by contrast, the absence of a husband or son can leave women economically vulnerable, reinforcing incentives for son preference. These institutional differences are therefore expected to mediate the impact of having a daughter on family structure outcomes.

The empirical patterns we document reflect the interaction of kinship institutions, gendered child values, and women's outside options following separation. To clarify these mechanisms, and to illustrate why firstborn-gender effects on marriage and fertility need not be monotone, Appendix C.2 presents a stylized two-period model with endogenous separation, remarriage, and custody rules under patrilineal and matrilineal regimes. The model is intended solely as an interpretive device and is not used for estimation.

We now describe in more detail how these kinship systems function.

5.1 Patrilineal vs. Matrilineal Kinship

Patrilineal and matrilineal systems define how lineage, inheritance, and kinship affiliation are organized. In patrilineal societies, family identity, names, and assets are inherited through the father's lineage. Children belong to their father's lineage, and upon marriage women are incorporated into their husband's lineage, effectively severing their role in determining descent or inheritance for their birth family. In contrast, matrilineal systems trace descent through the mother's lineage. Children belong to the same matrilineal group as their mother, and married spouses remain members of distinct lineages. In such systems, a man's heirs are typically his sister's children—particularly her sons—rather than his own biological children (see Figure C1 in Appendix C.1). While sons may still be preferred for inheritance within matrilineal societies, daughters occupy a higher status than in patrilineal systems because they are essential for lineage continuation.

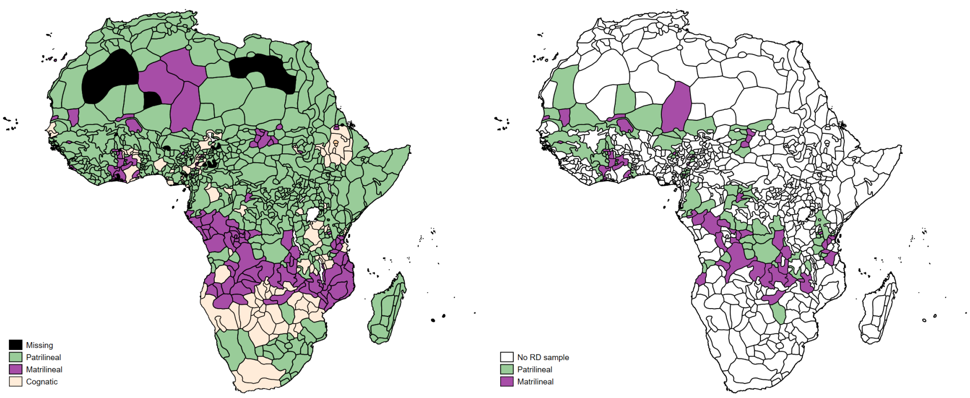
Although patrilineality is the most prevalent kinship structure worldwide (Murdock, 1959), matrilineality is found across many regions, with its highest concentration in sub-Saharan Africa, particularly within the "matrilineal belt" spanning parts of Central and Southern Africa. Figure 2a maps patrilineal groups in green, matrilineal groups in purple, and cognatic groups[16]—where descent is traced through a combination of male and female links—in beige.

There is no single theory of the origin of matrilineality. Early anthropological accounts viewed matrilineality as an ancestral form of social organization, with the subsequent rise of patrilineal systems attributed to the emergence of alienable property and patrilocal residence (Morgan, 1877; Engels, 1884; Murdock, 1949). More recent work links patrilineality to ecological conditions favoring plow agriculture and the domestication of large animals (Alesina, Giuliano, and Nunn, 2013; Alesina, Brioschi, and Ferrara, 2021; Becker, Enke, and Falk, 2020; Alsan, 2015), while matrilineality is more prevalent in regions suited to hoe agriculture (Tene, 2023). Other scholars

[16]The cognatic label encompasses groups classified as ambilineal, bilateral, duolateral, and quasi-lineages.

Figure 2: Kinship Structure in Africa

(a) All Ethnic Areas (b) Geographic RD Setting



Notes: Panel (a) maps ethnic areas in Africa according to traditional kinship descent. Panel (b) highlights ethnic areas that share a boundary with a group practicing a different form of kinship descent.

argue that the African slave trades contributed to the persistence or adoption of matrilineal kinship by generating demographic shocks—particularly the disproportionate removal of men—that made matrilineal structures more resilient for lineage continuity and member incorporation (Lovejoy, 1989; MacGaffey, 2000). Consistent with this view, Lowes and Nunn (2024) documents a strong correlation between exposure to the slave trades and the prevalence of matrilineal kinship.

Existing evidence suggests that matrilineal societies are associated with healthier children, smaller gender gaps in education and political participation, and lower rates of domestic violence (Robinson and Gottlieb, 2019; Lowes, 2021, 2022). At the same time, these societies exhibit lower levels of spousal cooperation and higher HIV prevalence, highlighting trade-offs inherent in different kinship systems (Lowes, 2022; Loper, 2025).

5.2 Empirical Strategy: Geographic RD

We are interested in the heterogeneity of the female firstborn effects on family structure by kinship structure. Our preferred specification is a geographic regression discontinuity design because it allows us to investigate this heterogeneity using a sample of women who are similar in aspects other than ancestral kinship descent.[17] As in Moscona, Nunn, and Robinson 2020; Lowes 2022; Fontenay, Gobbi, and Goni 2024, we construct a border-adjacency sample and restrict attention to ethnic areas that differ in kinship practices across the border; in particular,

[17] Interested readers can find significant heterogeneity in the firstborn effect between women of matrilineal and patrilineal descent in an OLS analysis across the entire sample in Section C.3 of the Appendix.

we focus on patrilineal–matrilineal pairs as in Lowes 2022.

We compare the female firstborn effect on women who live in DHS clusters that are geographically close, but where one DHS cluster is in the ancestral land of a patrilineal ethnic group, while the other DHS cluster is in an ancestral matrilineal one (see Figure 2b and Table A1 for list of surveys included). The rationale behind this approach is that these multiple kinship boundaries are arbitrary, and the regions adjacent to these borders are very similar in terms of geography, historical background, and cultural attributes (Lowes 2022).

Our estimation equation is as follows:

$$\begin{aligned} y_{idep} \quad = \quad & \theta_p + \beta \mathit{Female\ firstborn}_i + \gamma \mathit{Female\ firstborn}_i \times \mathit{Patrilineal}_e + \pi \mathit{Patrilineal}_e + \\ & f(\mathit{location}_{idep}) + X_i' \Gamma + Z_d' \Sigma + \alpha_c + \delta_t + \epsilon_{idep}, \end{aligned} \quad (3)$$

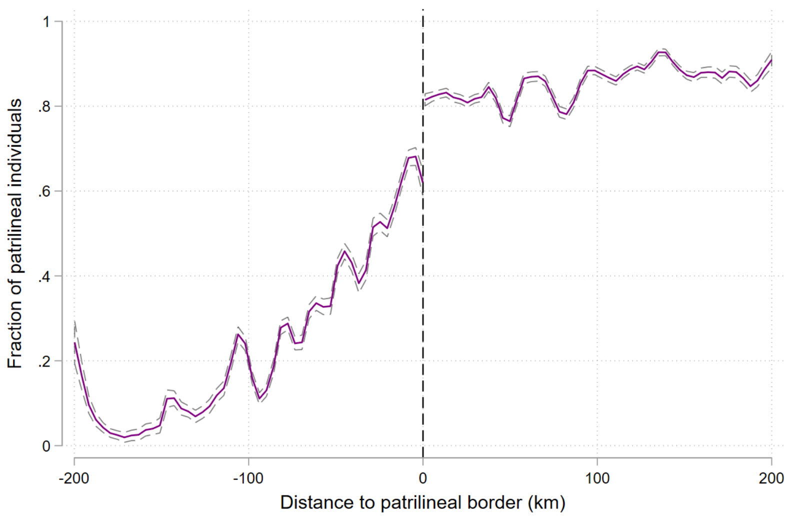
where y_{idep} is the outcome of interest for woman i in DHS cluster d, located in ethnic area e and ethnic pair p. The term θ_p denotes ethnic-pair fixed effects, where each pair consists of neighboring ethnic groups practicing matrilineal and patrilineal kinship. The function $f(\text{location}_{idep})$ is an RD polynomial controlling flexibly for geographic location within each ethnic pair; our baseline uses a local linear specification in latitude and longitude (Dell and Querubin, 2018; Lowes, 2022). The vectors X_i, α_c, and δ_t are defined as above. Standard errors are clustered at the DHS cluster level, with robustness checks clustering at the ethnic-area level. The baseline sample includes women living within 200 km of an ethnic boundary, with sensitivity analyses using thresholds from 50 to 300 km.

The coefficients of interest are β and $\beta + \gamma$, which capture the female firstborn effect within matrilineal and patrilineal societies, respectively, with $\mathit{Patrilineal}_e$ being a dummy variable equal to one if the woman resides in a historic patrilineal ethnic area.

The ethnic-pair strategy increases the likelihood that women located near the boundary are highly similar across most observable characteristics, aside from their distinct kinship-based ancestral origins. As we know, the assignment to one kinship system or another is not purely random (Alesina, Giuliano, and Nunn 2013; Becker, Enke, and Falk 2020), and some geographic and cultural variables exhibit some degree of imbalance at the border (Table C10). These imbalances are less problematic in our setting because we are not interested in the causal effect of matrilineality itself, but rather in how the female-firstborn effect varies by kinship. Still, to address concerns and ensure that comparisons are made among women who are as similar as possible, the specification will allow for flexibly controlling for a set of DHS-cluster characteristics (Z_d)–including local economic conditions as well as geographic and cultural factors–selected using a Lasso-based procedure (Belloni, Chernozhukov, and Hansen 2014), see Appendix C.4.

Discontinuity at the border. The heterogeneity design is based on the assumption that the ethnic divisions delineated by Murdock (1959) still accurately reflect current ethnic affiliations of the populations residing in these areas. Figure 3 illustrates a sharp discontinuity in the fraction of women in the sample who report belonging to patrilineal or matrilineal kinship groups at the border, restricting the sample to DHS surveys that collect ethnicity information. There is an approximately 20 percentage point increase in the likelihood of being of patrilineal descent on the patrilineal side of the border, reflecting a strong persistence of kinship affiliation (Table C4). However, as naturally expected, the assignment to matrilineal or patrilineal ethnic groups is not strictly adhered to by all individuals near the geographic boundary. Hence, we also report the coefficients of interest (β and $\beta + \gamma$) in a fuzzy regression discontinuity (RD) design. In this design, the traditional practice of the respondent's location ethnic areas ($Patrilineal_e$) is used as an instrument to predict the kinship practice of the woman's ethnic group ($Patrilineal_i$), see Table C4 for the first-stage results.

Figure 3: Self-Reported Ethnicity and Distance to the Ancestral Border



Notes: This figure plots a local polynomial smooth, with a 95% level CI, of the relationship between women's kinship descent according to self-reported ethnicity and the one assigned based on their geographic location. The x-axis reports geographic distance to the matrilineal or patrilineal border. The y-axis reports the fraction of the sample at each distance that identifies as being a member of the patrilineal kinship group.

Kinship and firstborn's sex. To continue using the firstborn´s sex as a source of exogenous variation, the ancestral borders should not predict the firstborn' sex. Columns (4)–(6) in Table C4 confirm this by estimating a version of equation (3) with *Female firstborn*$_i$ as the dependent variable and showing that *Patrilineal*$_e$ has no predictive power over *Female firstborn*$_i$.

5.3 Female Firstborn Effects: Heterogeneity by Kinship

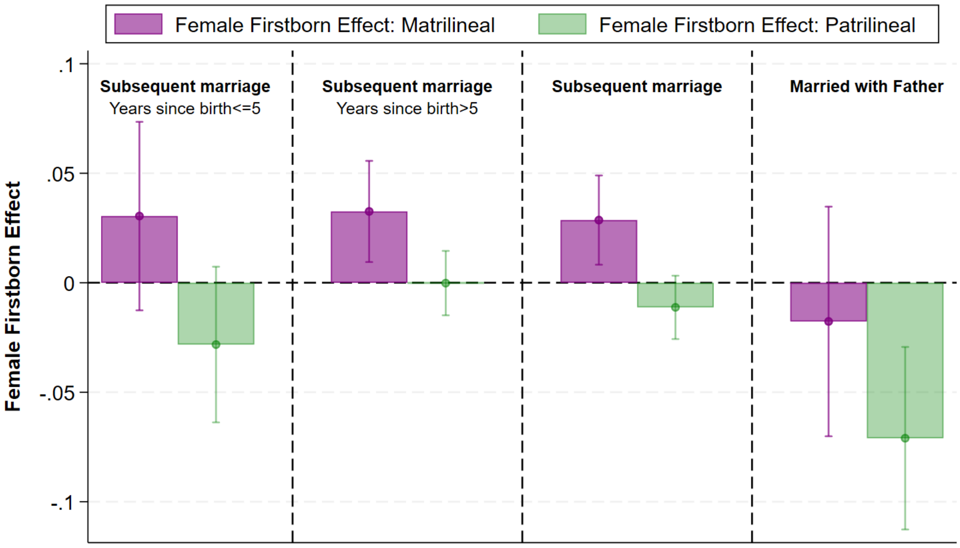
Figure 4 presents the estimated female firstborn effect in matrilineal areas ($\hat{\beta}$ from equation (3)) in purple, and the effect in patrilineal areas ($\hat{\beta} + \hat{\gamma}$) in green. Full coefficient tables and additional robustness appear in Appendix C.4.

Subsequent marriage. We begin by revisiting the specific subgroup of women who gave birth to their first child before entering into their initial marriage or cohabitation. Figure 4a reveals clear heterogeneity in the effects. In patrilineal areas, the results show a significant 3.9 percentage point decline (10% lower probability) in the likelihood of marriage within the first five years for women who had a firstborn daughter, compared to those with a son (see columns (1)-(2) of Table C5). The fuzzy RD suggests a decline of 6 percentage points in the likelihood of marriage within five years for patrilineal women with a firstborn daughter prior to their first union. Notably, for women in patrilineal areas who gave birth more than five years ago, the initial difference in early marriage timing does not persist–there is no longer a significant difference in long-run marriage rates by the child's sex (columns (4)-(6)). In contrast, matrilineal areas show the opposite pattern. The presence of a firstborn daughter raises the likelihood of marriage, by approximately 3-4 percentage points, and this positive effect emerges both within the first five years and in the longer term. These kinship-specific patterns are consistent with the idea that, where sons are central for lineage and inheritance, the arrival of a daughter weakens short-run marriage prospects for unmarried mothers, while in matrilineal settings a daughter can improve those prospects.

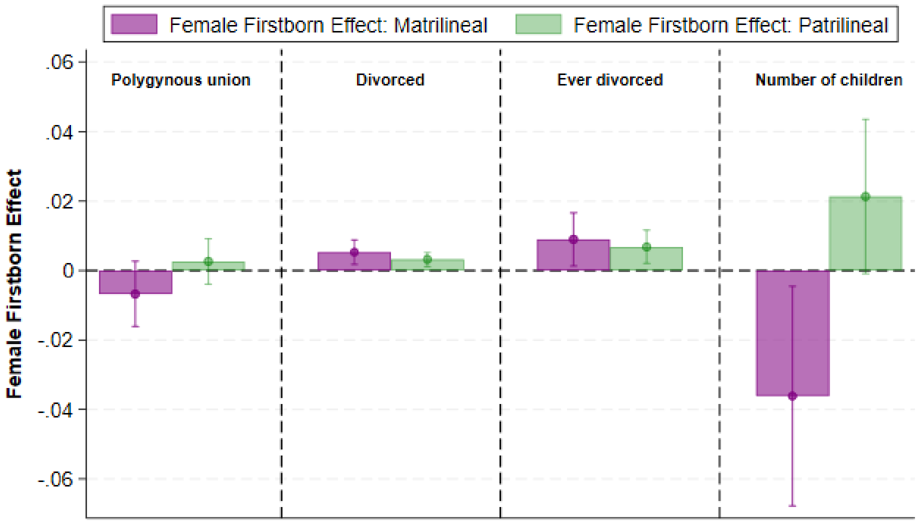
Figure 4a and columns (7)-(9) of Table C5 also document heterogeneity in the probability of marrying the firstborn's father. Consistent with the aggregate results in Section 3, women with a firstborn daughter are less likely to end up married to the child's biological father than women with a son. This negative effect is particularly pronounced in patrilineal areas (6-13 pp less likely if the firstborn is a girl), where the combination of lower short-run marriage rates and a reduced likelihood of marrying the child's father suggests that firstborn daughters shift women's trajectories away from "delayed shotgun" marriages and toward re-partnering with different spouses. In matrilineal areas, the gap in marriage to the biological father is smaller and does not offset the overall increase in the probability of ever marrying, implying that daughters are

Figure 4: Female Firstborn Effect on Family Structure: Kinship Heterogeneity

(a) Firstborn Before Union: Subsequent Marriage



(b) All Women: Polygyny, Divorce, and Fertility



Notes: This figure plots the estimated female firstborn effect for matrilineal ethnic areas (in purple) and patrilineal ethnic areas (in green), along with the 90% confidence intervals, derived from estimating equation (3). The point estimates are reported in Tables C5-C9.

less detrimental to women's outside options when lineage runs through women.

Polygyny and Divorce. Next, we consider heterogeneity of the female firstborn effect by kinship on the probability of polygamy and of marital dissolution (Figure 4b). We observe that the increased likelihood of polygamy following a firstborn daughter, compared to a firstborn son, is only present among women of patrilineal descent, although the effect is not statistically significant in the intention to-treat estimates (Table C6). In contrast, the effect on divorce rates is observed in both matrilineal and patrilineal areas (Tables C7-C8), and, if anything, is larger in the former, where marriages tend to be less stable (Loper 2025; Lowes 2022).

Fertility. Finally, heterogeneity in fertility reveals that the RD estimates confirm differential effects of a firstborn daughter relative to a son (Figure 4b and Table C9). A firstborn daughter reduces fertility by 0.03 children in matrilineal areas (0.08 among women of matrilineal descent using fuzzy RD estimates), while increasing fertility by 0.02 children in patrilineal areas (0.08 among women of patrilineal descent).

These patterns align with lineage-specific incentives embedded in descent rules. In patrilineal societies, sons ensure lineage continuity and secure access to land and other kin-based resources. The absence of a son therefore increases the marginal value of additional births, both through a "try for a son" motive and through the role of male offspring in strengthening a woman's position within the husband's kin group. This is consistent with evidence from settings with strong son preference, where the absence of sons raises fertility or shortens birth intervals (e.g., Rossi and Rouanet 2015). It is also in line with Donald et al. (2024), who show experimentally that exogenous income gains increase fertility among women without a son, consistent with childbearing as a strategy to secure old-age support and inheritance access in patrilineal systems.

In matrilineal societies, by contrast, daughters already ensure lineage continuity and provide access to kin-based support. As a result, the marginal benefit of additional childbearing following a firstborn daughter is lower. The negative fertility response we document in matrilineal areas is consistent with this mechanism.

5.3.1 Validity and Sensitivity Checks

Bandwidth and Specification. We assess the sensitivity of our heterogeneity analysis of the female firstborn effect by kinship descent to various robustness checks (see Appendix C.5). Figure C3 presents the robustness of our findings across different bandwidth specifications (50–300 km), showing how the choice of bandwidth affects the female firstborn effect within both matrilineal and patrilineal groups across the various family structure outcomes of interest. Additionally, we demonstrate that the results remain robust to alternative specifications of the running variable, including higher-degree polynomials in latitude and longitude and, alternatively, polynomial terms in distance to the border (columns (1)–(3) for each outcome in Appendix Tables C11–C15).

Robustness to GPS Displacement. A potential concern in designs using geographic DHS data is that household coordinates are randomly displaced—up to 2 km in urban areas and up to 5 km in rural areas, with an additional 1% of rural clusters displaced up to 10–15 km—to protect respondent privacy. This displacement may induce measurement error in distance to the boundary. Column (4) in Tables C11–C15 shows that the point estimates are robust to dropping observations within 15 km of the boundary.

Clustering at the ethnic level. The heterogeneity results are robust to clustering standard errors at the ethnic-area level rather than at the DHS cluster level (column (5) in Tables C11–C15).

5.3.2 Patrilineality and Other Related Practices

Patrilocality. In sub-Saharan Africa, patrilineality and patrilocality are closely intertwined. According to Murdock's classification of marital residence after the initial years of marriage, 98.8% of patrilineal ethnic areas are also patrilocal. In contrast, only 23.8% of matrilineal ethnic areas are patrilocal. However, among the remaining 76.2% of matrilineal areas, the majority still involve women relocating to live with the husband's family, especially through avunculocal residence (living with the husband's maternal uncle).

Restricting the sample to ethnic areas included in the RD design, only five of the matrilineal areas are matrilocal. This pattern suggests that differences in postmarital residence are unlikely to drive the heterogeneous child-sex effects documented above, relative to lineage and inheritance mechanisms. Consistent with this interpretation, the results are robust both to controlling for matrilocal ethnic areas (Tables C5–C9) and to excluding the five matrilocal areas from the sample (Tables C16, C17).

Bride Price. In patrilineal areas, the exchange of bride price is also more prevalent than in matrilineal regions. In our RD sample, 94% of the patrilineal areas are traditionally associated with substantial bride prices, compared to just 42% of matrilineal areas. But, the coefficients on female firstborn by kinship structure are unchanged when including bride price at the ethnic area level in the list of controls.

Finally, we replicate the geographic RD design using discontinuities in bride-price practices, rather than kinship, interacting Female Firstborn$_i$ with Bride Price Area$_e$ in place of Patrilineal$_e$, and restricting the sample to contiguous ethnic areas that differ in the prevalence of bride price. This alternative RD yields little evidence of heterogeneous female-firstborn effects. The main exception is that, in areas with substantial bride price, the negative effect of a firstborn daughter on marriage to the child's father is stronger, consistent with higher marriage costs while the divorce effect disappears (Tables C18-C19).

6 Conclusion

This paper studies how the gender of the first child shapes family structure in sub-Saharan Africa. Using large-scale demographic data, we show that having a firstborn daughter has persistent effects on marriage, divorce, polygamy, and fertility.

Women with a firstborn daughter are more likely to marry in the long run but, when the birth occurs prior to their first union, are less likely to marry the childs father. They also face higher risks of divorce, greater exposure to polygamous unions, and higher fertility than women with firstborn sons. These patterns indicate that firstborn gender plays a central role in shaping maternal marital trajectories.

We document substantial heterogeneity by kinship descent. Exploiting a geographic regression discontinuity design along ethnic borders, we show that patrilineal institutions amplify the effects of a firstborn daughter on marriage instability, polygamy, and fertility. In contrast, in matrilineal societies, women with firstborn daughters experience more favorable marriage outcomes and lower fertility. These findings highlight the importance of traditional kinship institutions in shaping son preference and its consequences.

Beyond family structure, the effects extend to womens welfare. Women with firstborn daughters tend to live in poorer households, face higher risks of HIV, and are more likely to be in unions where intimate partner violence is socially accepted. More broadly, our results underscore the need to account for endogenous family structure when estimating the causal effects of offspring gender on family and child outcomes.

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Online Appendix

A Data and Variable Definitions

A.1 DHS Survey Data and Variables

The data and detailed information on the sampling procedure and variable definitions can be found at http://dhsprogram.com/data/Data-Variables-and-Definitions.cfm.

Table A1: List of DHS Surveys Included in the Analysis

Country (1)	DHS Surveys (2)	RD Sample (3)
Angola	2015–2016	2015–2016
Benin	1996, 2001, 2011–2012, 2017–2018	
Burkina Faso	1998–1999, 2003, 2010, 2021	1998–1999, 2003, 2010, 2021
Burundi	2010, 2016–2017	
Cameroon	2004, 2011, 2018	2004, 2011, 2018
Car	1994–1995	1994–1995
Chad	2014–2015	2014–2015
Cote D'Ivoire	1994, 1998–1999, 2011–2012, 2021	1994, 1998–1999, 2011–2012, 2021
DCR	2007, 2013–2014	2007, 2013–2014
Eswatini	2006–2007	
Ethiopia	2000, 2005, 2011, 2016	
Gabon	2012, 2019–2021	2012, 2019–2021
Gambia	2019–2020	2019–2020
Ghana	1998, 2003, 2008, 2014, 2022	1998, 2003, 2008, 2014, 2022
Guinea	1999, 2005, 2012, 2018	1999, 2005, 2012, 2018
Kenya	2003, 2008–2009, 2014, 2022	
Lesotho	2004, 2009, 2014	
Liberia	2007, 2013, 2019–2020	
Madagascar	1997, 2008–2009, 2021	
Malawi	2000, 2004, 2010, 2015–2016	2000, 2004, 2010, 2015–2016
Mali	2001, 2006, 2012–2013, 2018	2001, 2006, 2012–2013, 2018
Mauritania	2019–2021	2019–2021
Mozambique	2011	2011
Namibia	2000, 2006–2007, 2013	
Niger	1998, 2012	1998, 2012
Nigeria	2003, 2008, 2013, 2018	2003, 2008, 2013, 2018
Rwanda	2005, 2010, 2014–2015, 2019–2020	
Senegal	1997, 2005, 2010–2011, 2012–2013, 2014, 2015, 2016, 2017, 2018, 2019	1997, 2005, 2010–2011, 2012–2013, 2014, 2015, 2016, 2017, 2018, 2019
Sierra Leone	2008, 2013, 2019	
Tanzania	1999, 2007–2008, 2010, 2015–2016, 2022	1999, 2007–2008, 2010, 2015–2016, 2022
Togo	1998, 2013–2014	1998, 2013–2014
Uganda	2000–2001, 2006, 2011, 2016	
Zambia	2007, 2013–2014, 2018	2007, 2013–2014, 2018
Zimbabwe	1999, 2005–2006, 2010–2011, 2015	1999, 2005–2006, 2010–2011, 2015

Notes: This table lists the DHS surveys included in the main analytical sample. Column (3) indicates which surveys are used in the regression discontinuity analysis presented in Section 5.

Definitions of variables used in this paper from the DHS survey:

- **HIV**: A subset of the DHS surveys are complemented with HIV-related biomarkers. The HIV result is based on blood that is collected in the household. In the analysis it is a dummy variable equal to one if the result is positive.
- **Attitudes IPV**: For women who were randomly chosen and interviewed for the domestic violence module, the outcome is built as the count of affirmative answers about whether domestic violence is justifiable in different situations. The situations are: a woman argues with her husband, a woman burns the food, a woman goes out without her husband's permission, a woman refuses sex, or a woman neglects the children.
- **DHS cluster controls**: These data come from geospatial covariate datasets linking survey cluster locations to ancillary local characteristics, including **ln(population)** (log count of individuals within a 2 km urban or 10 km rural buffer), **ln(average PPP)** (log average

purchasing power parity in 2005 USD within the same buffer), **ln(distance to closest urban center)** (log travel time in minutes to a high-density urban center based on 2015 infrastructure), and **ln(distance to national border)** (log geodesic distance to the nearest international border).

A.2 Ethnographic Atlas (Murdock, 1959)

The list of variables used from the Ethnographic Atlas defined at the ethnic-area level are:

- **Patrilineal kinship descent**: indicator variable equal to one if the ethnic group practiced patrilineal kinship (v43 =1).
- **Matrilineal kinship descent**: indicator variable equal to one if the ethnic group practiced matrilineal kinship (v43=3).
- **Bride price**: indicator variable equal to one if ethnic group practiced bride price or wealth transferred to the bride's family (v6=1).
- **Polygynous**: indicator variable for different forms of polygyny (v9=3,4,5,6, or 7).
- **Matrilocal**: indicator variable equal to one if the ethnic group practiced matrilocal residence (v12=5 or 9).
- **Level of jurisdictional hierarchy**: variable ranging 1-5 capturing level of centralization beyond the local group (v33).
- **Settlement complexity**: variable ranging 1-8 from nomadic or fully migratory to complex settlements (v30).
- **Dependence on agriculture**: variable ranging 1-9 capturing level of dependence on agriculture and (v5).
- **Female participation in agriculture**: variable ranging 1-6 capturing women's relative participation in agriculture (v54).
- **Plough**: indicator variable equal to one if plough was present (v39= 2 or 3).
- **Moral high god**: indicator variable equal to one if the group had a moral high God involved in human morality (v34=4).

A.3 Other Datasets

- **International Wealth Index (IWI)**: Asset-based index from DHS household modules measuring material well-being (durable goods, services, housing), constructed by Smits and Steendijk (2015) using 2.1 million households in 165 surveys (1996–2011) across 97 low- and middle-income countries; additive scale from 0 to 100.
- **Other geographic variables**: the rest of the geographical variables used in the paper are sourced from Lowes and Nunn (2024)'s and Alsan (2015)'s replication files: mean daily temperature, mean altitude, malaria ecology, mean distance to coast, tsetse fly suitability index, average agricultural suitability, average suitability forpastoralism, ln(land area), and slave trade (ln (1+atlantic and indian) exports).

B Female Firstborn Effects: Additional Analysis

B.1 Female Firstborn Effects: Appendix Tables

Table B1: Firstborn Before Union: Women's Descriptive Statistics

	Firstborn's Sex					
	Male		Female		Difference (1)-(3)	
	Mean/St.dev. (1)	Obs. (2)	Mean/St.dev. (3)	Obs. (4)	(5)	(6)
Age	30.696	95,395	30.692	92,361	–0.004	–0.003
	[8.561]		[8.549]		(0.049)	(0.003)
Firstborn before union	1.000	95,395	1.000	92,361	0.000	0.000
	[0.000]		[0.000]		(0.000)	(0.000)
Christian	0.723	89,956	0.733	86,868	0.009***	0.005**
	[0.447]		[0.443]		(0.003)	(0.002)
Muslim	0.214	89,956	0.206	86,868	–0.008***	–0.003*
	[0.410]		[0.404]		(0.002)	(0.002)
Other religion	0.063	89,956	0.062	86,868	–0.001	–0.002
	[0.242]		[0.241]		(0.001)	(0.001)
Age at first birth	18.524	95,395	18.535	92,361	0.011	–0.011
	[3.668]		[3.609]		(0.022)	(0.020)
Years of education	6.020	95,395	6.101	92,361	0.080***	0.038*
	[4.542]		[4.500]		(0.027)	(0.022)
Rural	0.555	95,395	0.549	92,361	–0.006*	–0.004*
	[0.497]		[0.498]		(0.003)	(0.002)
Women´s Ethnicity						
Patrilineal descent	0.681	57,168	0.683	55,097	0.002	0.003
	[0.466]		[0.465]		(0.004)	(0.002)
Matrilineal descent	0.226	57,168	0.227	55,097	0.000	0.001
	[0.419]		[0.419]		(0.003)	(0.002)
Bride price	0.828	57,129	0.831	55,064	0.003	0.001
	[0.377]		[0.375]		(0.003)	(0.001)
Polygamous practice	0.890	56,696	0.891	54,662	0.001	0.001
	[0.313]		[0.312]		(0.003)	(0.002)
Plough	0.019	56,939	0.019	54,862	0.001	–0.000
	[0.135]		[0.137]		(0.001)	(0.001)
Woman's year of birth FE						Yes
Survey year FE						Yes
Ethnic area FE						Yes
Country FE						Yes

Notes: This table presents summary statistics for all women included in this paper's analytical sample whose first child was born before the first union. Column (1) presents the sample mean and standard deviation for women whose firstborn child is male, and column (2) presents the number of observations with non-missing values. Columns (3) and (4) present the analogous statistics for women whose firstborn child is female. Columns (5) and (6) report the OLS coefficient from a regression of the respondent's characteristic on a firstborn gender indicator variable, with standard errors clustered at the DHS sampling unit level in parentheses. Column (6) controls for survey year, country, mother's year of birth, and ethnic area fixed effects. Individual DHS survey weights are used in all columns. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B2: Firstborn After Union: Women's Descriptive Statistics

	Firstborn's Sex					
	Male		Female		Difference (1)-(3)	
	Mean/St.dev. (1)	Obs. (2)	Mean/St.dev. (3)	Obs. (4)	(5)	(6)
Age	32.099	379,192	32.063	360,861	–0.036	–0.001
	[8.471]		[8.432]		(0.024)	(0.001)
Firstborn before union	0.000	379,192	0.000	360,861	0.000	0.000
	[0.000]		[0.000]		(0.000)	(0.000)
Christian	0.550	351,847	0.558	334,852	0.009***	0.001
	[0.498]		[0.497]		(0.001)	(0.001)
Muslim	0.389	351,847	0.380	334,852	–0.009***	–0.001
	[0.487]		[0.485]		(0.001)	(0.001)
Other religion	0.061	351,847	0.061	334,852	0.000	0.000
	[0.240]		[0.240]		(0.001)	(0.001)
Age at first birth	19.470	379,191	19.518	360,860	0.048***	0.033***
	[3.925]		[3.902]		(0.011)	(0.010)
Years of education	3.779	379,192	3.828	360,861	0.049***	–0.006
	[4.419]		[4.412]		(0.013)	(0.010)
Rural	0.699	379,192	0.696	360,861	–0.002*	–0.001
	[0.459]		[0.460]		(0.001)	(0.001)
Women´s Ethnicity						
Patrilineal descent	0.652	254,936	0.645	241,873	–0.006***	0.001
	[0.476]		[0.478]		(0.002)	(0.001)
Matrilineal descent	0.177	254,936	0.183	241,873	0.006***	–0.000
	[0.381]		[0.387]		(0.001)	(0.001)
Bride price	0.806	255,050	0.803	242,021	–0.002	–0.000
	[0.396]		[0.397]		(0.001)	(0.001)
Polygamous practice	0.896	253,387	0.895	240,507	–0.000	–0.000
	[0.306]		[0.306]		(0.001)	(0.001)
Plough	0.038	254,256	0.036	241,173	–0.001*	–0.000
	[0.191]		[0.187]		(0.001)	(0.000)
Woman's year of birth FE						Yes
Survey year FE						Yes
Ethnic area FE						Yes
Country FE						Yes

Notes: This table presents summary statistics for all women included in this paper's analytical sample whose first child was born after the first union. Column (1) presents the sample mean and standard deviation for women whose firstborn child is male, and column (2) presents the number of observations with non-missing values. Columns (3) and (4) present the analogous statistics for women whose firstborn child is female. Columns (5) and (6) report the OLS coefficient from a regression of the respondent's characteristic on a firstborn gender indicator variable, with standard errors clustered at the DHS sampling unit level in parentheses. Column (6) controls for survey year, country, mother's year of birth, and ethnic area fixed effects. Individual DHS survey weights are used in all columns. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B3: Women's Age and Probability of Female firstborn

	(1)	(2)	(3)	(4)	(5)
21-30	0.002	0.002	0.003	0.003	0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
31-40	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
+40	-0.005**	-0.004	-0.003	-0.002	-0.003
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Constant	0.489***	0.488***	0.488***	0.488***	0.488***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Country FE	✓	✓			
Mother's year of birth FE		✓			
Country × Mother's year of birth FE			✓		
Ethnic area × Mother's year of birth FE				✓	
Administrative area 1 × Mother's year of birth FE					✓
R-squared	0.000	0.000	0.002	0.029	0.024
Observations	927,809	927,809	927,805	925,000	924,365

Notes: OLS regressions; dependent variable is an indicator that the woman's firstborn is female * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors,in parentheses, clustered at the DHS sampling unit.

Table B4: Women's Age and Probability of Female firstborn: By Rural-Urban

	Urban					Rural				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
21-30	0.001	-0.000	0.004	0.001	0.004	0.002	0.003	0.003	0.003	0.003
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
31-40	0.001	-0.003	-0.001	-0.004	-0.002	-0.002	0.000	-0.001	-0.001	-0.000
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
+40	-0.001	-0.005	-0.002	-0.003	-0.004	-0.006**	-0.004	-0.004	-0.004	-0.003
	(0.004)	(0.005)	(0.006)	(0.006)	(0.006)	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)
Constant	0.490***	0.493***	0.490***	0.492***	0.490***	0.488***	0.487***	0.487***	0.487***	0.487***
	(0.003)	(0.004)	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Country FE	✓	✓				✓	✓			
Mother's year of birth FE		✓					✓			
Country × Mother's year of birth FE			✓					✓		
Ethnic area × Mother's year of birth FE				✓					✓	
Administrative area 1 × Mother's year of birth FE					✓					✓
R-squared	0.000	0.000	0.006	0.054	0.059	0.000	0.000	0.003	0.040	0.033
Observations	302,436	302,436	302,423	298,639	299,174	625,373	625,373	625,368	622,144	622,756

Notes: OLS regressions; dependent variable is an indicator that the woman's firstborn is female. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors,in parentheses, clustered at the DHS sampling unit.

Table B5: Prediction Female Firstborn: Two Years Since Birth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
International Wealth Index	-0.000	-0.000																		
	(0.000)	(0.000)																		
Ln(BMI)			0.009	0.010																
			(0.015)	(0.016)																
Anemic					0.003	0.002														
					(0.006)	(0.006)														
HIV							0.009	0.010												
							(0.016)	(0.017)												
Cluster: Rural									0.001	0.000										
									(0.004)	(0.004)										
Cluster: Log(pop)											0.001	0.001								
											(0.001)	(0.001)								
Cluster: Log(ppp)													0.001	0.005						
													(0.003)	(0.005)						
Log(distance nearest city)															-0.001	-0.002				
															(0.001)	(0.001)				
Ethnic area: patrilineal																	-0.005	-0.004		
																	(0.004)	(0.005)		
Ethnic area: matrilineal																			0.000	-0.007
																			(0.005)	(0.007)
Country FE		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Cohort FE		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
Survey year FE		✓		✓		✓		✓		✓		✓		✓		✓		✓		✓
R-squared	0.000	0.001	0.000	0.002	0.000	0.002	0.000	0.003	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001
Observations	87,816	87,812	54,581	54,580	32,391	32,390	24,445	24,444	91,203	91,199	82,340	82,335	73,638	73,633	68,182	68,179	91,203	91,199	91,203	91,199

Notes: OLS regressions; dependent variable is an indicator for female firstborn. Sample limited to women whose first child was born within two years of the survey date. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors,in parentheses, clustered at the DHS sampling unit.

Table B6: Effect of Female Firstborn on Marriage During Pregnancy

	(1)	(2)
Female firstborn	-0.000	0.002
	(0.002)	(0.002)
Mother and firstborn controls	✓	✓
Year FE	✓	✓
Country FE	✓	
Ethnic area FE	✓	
DHS Cluster FE		✓
Religion FE		✓
Male firstborn baseline	0.44	0.44
Percent effect	-0.03	0.39
Observations	335,791	313,293

Notes: OLS regressions; dependent variable is an indicator variable = 1 if the respondent is estimated to have gotten married during pregnancy. Sample is limited to women that became pregnant before their first union. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B7: Probability of Missing Father Information (Firstborn's Child Living with Mother Sample)

			Years since Birth < 15	
	(1)	(2)	(3)	(4)
Female firstborn	-0.006**	-0.007*	0.002	-0.003
	(0.003)	(0.004)	(0.002)	(0.002)
Mother and firstborn controls	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Country FE	✓		✓	
Ethnic area FE	✓		✓	
DHS Cluster FE		✓		✓
Religion FE		✓		✓
Male firstborn baseline	0.23	0.23	0.06	0.05
Percent effect	-2.78	-2.92	2.86	-6.18
Observations	37,243	23,071	25,983	13,323

Notes: OLS regressions; dependent variable is an indicator equal to 1 if firstborn father survival and/or co-residence information is missing. Sample: women whose firstborn was born before any union, currently in their first union, and co-residing with the firstborn at survey. Cols. (3)–(4) restrict to firstborns born <15 years before the survey. sym* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B8: Female Firstborn Effect: Heterogeneity by Women's Religious Affiliation

	Subsequent Marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)
Female firstborn	-0.005	-0.009	-0.005	-0.003	-0.000	0.010
	(0.007)	(0.017)	(0.007)	(0.004)	(0.001)	(0.016)
Female firstborn × Christian	0.010	0.011	0.010	0.006	0.001	0.026
	(0.007)	(0.017)	(0.008)	(0.005)	(0.001)	(0.016)
Female firstborn × Muslim	0.009	0.010	0.011	0.009*	0.002	0.011
	(0.008)	(0.019)	(0.008)	(0.005)	(0.001)	(0.017)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Religion FE	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Christian	0.005**	0.002	0.006**	0.003**	0.001**	0.036***
	(0.018)	(0.626)	(0.022)	(0.012)	(0.028)	(0.000)
Female firstborn+Female firstborn*Muslim	0.005	0.001	0.006**	0.007***	0.002***	0.021***
	(0.160)	(0.930)	(0.048)	(0.000)	(0.000)	(0.000)
Observations	176,824	45,138	131,686	611,091	686,699	686,699

Notes: OLS regressions; dependent variables are subsequent marriage, polygamous union, currently divorced, and fertility outcomes. Specification follows (1) with interactions between the female-firstborn indicator and Christian/Muslim dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B9: Surveys with Prior Union Information: Female Firstborn Effect

	All		Firstborn Before Union		Firstborn After Union	
	Ever Divorced (1)	Ever Widowed (2)	Ever Divorced (3)	Ever Widowed (4)	Ever Divorced (5)	Ever Widowed (6)
Female firstborn	0.005***	-0.000	-0.005	-0.004	0.007***	0.000
	(0.002)	(0.001)	(0.005)	(0.003)	(0.002)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	0.15	0.07	0.17	0.08	0.15	0.07
Percent effect	3.19	-0.60	-2.69	-4.87	4.38	0.40
Observations	157,774	157,774	24,306	24,306	133,455	133,455

Notes: OLS regressions; dependent variable is an indicator equal to 1 if the respondent has ever been divorced or widowed, constructed from current marital status and how the previous union ended.. Sample limited to surveys for which information on how previous union ended is available. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B10: Women Above 40: Female Firstborn Effect on Number of Children:

	All		Firstborn Before Union		Firstborn After Union	
	(1)	(2)	(3)	(4)	(5)	(6)
Female firstborn	0.044***	0.030**	0.005	0.040	0.055***	0.037**
	(0.011)	(0.013)	(0.028)	(0.044)	(0.012)	(0.015)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓		✓		✓	
Ethnic area FE	✓		✓		✓	
DHS Cluster FE		✓		✓		✓
Religion FE		✓		✓		✓
Male baseline	6.17	6.18	5.59	5.45	6.29	6.33
Percent effect	0.72	0.48	0.08	0.73	0.88	0.58
Observations	170,702	152,212	29,750	17,073	140,896	121,870

Notes: OLS regressions; dependent variable is the number of children the respondent ever gave birth to. Sample limited to women aged 40 years old and above. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, reported in parentheses, clustered at the DHS sampling unit.

Table B11: Effect of Female Firstborn on Having k or More Children

	(1) 2+	(2) 3+	(3) 4+	(4) 5+	(5) 6+	(6) 7+
Female firstborn	0.002***	0.003***	0.004***	0.005***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male firstborn baseline	0.81	0.63	0.48	0.35	0.25	0.17
Percent effect	0.22	0.49	0.86	1.34	1.31	1.90
Observations	927,809	927,809	927,809	927,809	927,809	927,809

Notes: OLS regressions: dependent variable are dummies corresponding to the number of children the female respondent ever gave birth to. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors,reported in parentheses, clustered at the DHS sampling unit.

Table B12: Effect of Female Firstborn on Family Structure: Heterogeneity by Secondborn's Sex

	Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)
Female firstborn	0.004*	0.003	0.003	0.002	0.002***	0.012**
	(0.002)	(0.011)	(0.002)	(0.001)	(0.001)	(0.005)
Female firstborn × Female secondborn	0.001	-0.004	0.002	0.004**	-0.000	0.040***
	(0.003)	(0.012)	(0.003)	(0.002)	(0.001)	(0.006)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Female secondborn	0.005**	-0.001	0.005**	0.006***	0.001***	0.053***
fp2	(0.039)	(0.930)	(0.020)	(0.000)	(0.008)	(0.000)
Observations	134,742	10,538	124,127	549,314	615,123	615,123

Notes: This table presents OLS regressions where the dependent variable are the subsequent marriage, polygamous union, currently divorce, and fertility outcomes. The sample is limited to women who have had at least two children. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table B13: Female Firstborn Effect: Heterogeneity by Firstborn's Decade of Birth

	Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)
Female firstborn	-0.000	0.028	0.001	0.005**	0.002**	0.043***
	(0.003)	(0.143)	(0.003)	(0.002)	(0.001)	(0.011)
1990-1999 × Female firstborn	0.005	-0.014	0.002	0.001	0.000	-0.010
	(0.005)	(0.143)	(0.004)	(0.003)	(0.001)	(0.013)
2000-2009 × Female firstborn	0.005	-0.032	0.007	-0.003	-0.001	-0.022*
	(0.005)	(0.143)	(0.005)	(0.003)	(0.001)	(0.012)
2010+ × Female firstborn	0.003	-0.028	0.005	-0.000	-0.001	-0.031**
	(0.005)	(0.143)	(0.008)	(0.003)	(0.001)	(0.012)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Firstborn´s Birth Decade	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*1990-1999	0.005	0.014	0.003	0.006***	0.002***	0.033***
	(0.117)	(0.284)	(0.342)	(0.002)	(0.009)	(0.000)
Female firstborn+Female firstborn*2000-2009	0.005	-0.005	0.008**	0.002	0.001*	0.022***
	(0.119)	(0.515)	(0.027)	(0.359)	(0.066)	(0.000)
Female firstborn+Female firstborn*2010+	0.003	-0.001	0.006	0.004**	0.001	0.013***
	(0.542)	(0.874)	(0.397)	(0.035)	(0.262)	(0.003)
Observations	187,751	47,801	139,905	657,740	740,053	740,053

Notes: OLS regressions; dependent variables are: subsequent marriage, polygamous union, currently divorce, and fertility outcomes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B14: Women´s Age ≤ 40: Female Firstborn Effect on Family Structure

	Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)
Female firstborn	0.004**	-0.001	0.006**	0.004***	0.001***	0.022***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.003)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male firstborn baseline	0.65	0.30	0.80	0.25	0.03	3.53
Percent effect	0.61	-0.19	0.70	1.45	3.96	0.63
Observations	157,946	47,748	110,153	542,776	599,150	599,150

Notes: OLS regressions; dependent variable: subsequent marriage, polygamous union, currently divorce, and fertility outcomes. Sample limited to women aged 40 years old or less at the survey date. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table B15: Female Firstborn Effect: Heterogeneity by Firstborn's Survival Status

	Firsborn Alive						Firsborn Not Alive					
	Subsequent marriage			Postmarital Outcomes			Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)	Overall (7)	< 5 (8)	≥ 5 (9)	Polyg. (10)	Div (11)	Fert. (12)
Female firstborn	0.004*	-0.001	0.005**	0.004***	0.002***	0.032***	0.004	0.016	0.004	0.003	0.001	0.002
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)	(0.004)	(0.016)	(0.004)	(0.003)	(0.001)	(0.011)
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Male firstborn baseline	0.66	0.29	0.81	0.26	0.03	3.84	0.83	0.41	0.90	0.36	0.03	5.22
Percent effect	0.53	-0.40	0.58	1.64	5.50	0.83	0.46	3.93	0.47	0.98	3.30	0.04
Observations	162,446	44,346	118,053	560,894	630,733	630,733	25,257	3,338	21,801	96,834	109,309	109,309

Notes: OLS regressions; dependent variable are: subsequent marriage, polygamous union, currently divorce, and fertility outcomes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses,clustered at the DHS sampling unit.

Table B16: Female Firstborn Effect: Heterogeneity by Migration Status

	Never Migrated						Ever Migrated					
	Subsequent marriage			Postmarital Outcomes			Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)	Overall (7)	< 5 (8)	≥ 5 (9)	Polyg. (10)	Div (11)	Fert. (12)
Female firstborn	0.004	-0.001	0.005	0.007***	0.002**	0.031***	0.004	0.003	0.004	0.003**	0.001	0.028***
	(0.003)	(0.006)	(0.004)	(0.002)	(0.001)	(0.007)	(0.003)	(0.007)	(0.003)	(0.002)	(0.001)	(0.006)
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Male firstborn baseline	0.62	0.22	0.78	0.27	0.04	4.18	0.76	0.40	0.86	0.24	0.03	3.94
Percent effect	0.63	-0.53	0.63	2.80	4.33	0.73	0.50	0.70	0.45	1.30	2.11	0.72
Observations	58,216	16,889	41,261	182,157	209,512	209,512	70,770	15,526	55,175	238,315	267,576	267,576

Notes: OLS regressions; dependent variable are: subsequent marriage, polygamous union, currently divorce, and fertility outcomes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses,clustered at the DHS sampling unit.

Table B17: Effect of Female Firstborn on Polygyny (Religion and Cluster FE)

	All		Firstborn Before Union		Firstborn After Union	
	(1)	Married (2)	(3)	Married (4)	(5)	Married (6)
Female firstborn	0.002***	0.003***	-0.001	-0.003	0.003***	0.004***
	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
DHS Cluster FE	✓	✓	✓	✓	✓	✓
Religion FE	✓	✓	✓	✓	✓	✓
Male baseline	0.22	0.27	0.14	0.24	0.24	0.27
Percent effect	1.02	1.11	-1.05	-1.41	1.20	1.34
Observations	863,523	715,083	176,824	103,992	686,699	611,091

Notes: OLS regressions; dependent variable is an indicator that the respondent is currently in a polygynous union. In columns (3)-(4), the sample is limited to women whose firstborn child was born before they had ever entered a union. In columns (5)-(6), the sample is limited to women whose firstborn child was after they entered their first union. Married restricts the sample to women currently in a union. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B18: Effect of Female Firstborn on Marital Dissolution (Religion and Cluster FE)

	All		Firstborn Before Union		Firstborn After Union	
	Divorced (1)	Ever Divorced (2)	Divorced (3)	Ever Divorced (4)	Divorced (5)	Ever Divorced (6)
Female firstborn	0.001***	0.005***	-0.000	0.001	0.001***	0.006***
	(0.000)	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
DHS Cluster FE	✓	✓	✓	✓	✓	✓
Religion FE	✓	✓	✓	✓	✓	✓
Male baseline	0.03	0.16	0.02	0.12	0.03	0.17
Percent effect	3.99	3.37	-2.14	0.66	5.19	3.57
Observations	863,523	863,523	176,824	176,824	686,699	686,699

Notes: OLS regressions; dependent variable is an indicator that the respondent is currently divorced or has ever been divorced (proxied as being currently divorced or having been married more than once). In columns (3)-(4), the sample is limited to women whose firstborn child was born before they had ever entered a union. In columns (5)-(6), the sample is limited to women whose firstborn child was after they entered their first union. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B19: Effect of Female Firstborn on Fertility (Religion and Cluster FE)

	All		Firstborn Before Union		Firstborn After Union	
	# Children (1)	# Months Second Child (2)	# Children (3)	# Months Second Child (4)	# Children (5)	# Months Second Child (6)
Female firstborn	0.022^{***}	-0.100^{*}	0.014^{*}	-0.024	0.024^{***}	-0.149^{***}
	(0.003)	(0.053)	(0.008)	(0.189)	(0.004)	(0.054)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
DHS Cluster FE	✓	✓	✓	✓	✓	✓
Religion FE	✓	✓	✓	✓	✓	✓
Male baseline	3.91	36.62	3.33	44.83	4.05	34.81
Percent effect	0.57	-0.27	0.41	-0.05	0.59	-0.43
Observations	863,523	689,102	176,824	125,214	686,699	563,888

Notes: OLS regressions; dependent variables: (i) total number of children ever born, and (ii) months between the first and second births. Regressions using the birth-interval outcome are restricted to women with at least two children. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B20: Female Firstborn on Subsequent Marriage, Education & Rural–Urban Controls

	Ever Married				Married Firstborn's Father		
			Years since Birth < 5	*Years since Birth* ≥ 5		*Years since Birth* < 15	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female firstborn	0.004^{**}	0.006^{***}	-0.001	0.005^{***}	-0.022^{***}	-0.020^{***}	-0.028^{***}
	(0.002)	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.008)
Ind. controls	✓	✓	✓	✓	✓	✓	✓
Mother´s education	✓	✓	✓	✓	✓	✓	✓
Rural	✓		✓	✓	✓	✓	
Year FE	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓	✓
DHS Cluster FE		✓					✓
Religion FE		✓					✓
Male baseline	0.69	0.68	0.30	0.82	0.85	0.86	0.86
Percent effect	0.55	0.89	-0.49	0.61	-2.62	-2.33	-3.23
Observations	187,756	176,824	47,843	139,913	29,377	24,534	23,051

Notes: OLS regressions; dependent variables: ever marrying after first birth and firstborn's father matching the respondent's current husband. Sample limited to women whose firstborn was born prior to first union; columns (5)-(7) further restrict to women currently in their first union whose firstborn lives with them. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B21: Female Firstborn on Polygyny, Education & Rural–Urban Controls

	All		Firstborn Before Union		Firstborn After Union	
	(1)	Married (2)	(3)	Married (4)	(5)	Married (6)
Female firstborn	0.002^{**}	0.003^{***}	-0.003^{*}	-0.005^{**}	0.003^{***}	0.004^{***}
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Mother´s education	✓	✓	✓	✓	✓	✓
Rural	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	0.22	0.27	0.14	0.24	0.24	0.27
Percent effect	0.91	1.00	-1.90	-2.09	1.32	1.43
Observations	927,809	768,330	187,756	110,590	740,053	657,740

Notes: OLS regressions; dependent variable is an indicator that the respondent is currently in a polygynous union. In columns (3)-(4), the sample is limited to women whose firstborn child was born before they had ever entered a union. In columns (5)-(6), the sample is limited to women whose firstborn child was after they entered their first union. Married restricts the sample to women currently in a union. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B22: Female Firstborn on Marital Dissolution, Education & Rural-Urban Controls

	All		Firstborn Before Union		Firstborn After Union	
	Divorced (1)	Ever Divorced (2)	Divorced (3)	Ever Divorced (4)	Divorced (5)	Ever Divorced (6)
Female firstborn	0.001***	0.006***	0.000	0.003**	0.002***	0.006***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Ind. controls	✓	✓	✓	✓	✓	✓
Mother´s education	✓	✓	✓	✓	✓	✓
Rural	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	0.03	0.16	0.02	0.12	0.03	0.17
Percent effect	4.45	3.57	1.22	2.40	5.08	3.79
Observations	927,809	927,809	187,756	187,756	740,053	740,053

Notes: OLS regressions; dependent variable is an indicator that the respondent is currently divorced or has ever been divorced. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B23: Female Firstborn on Fertility, Education & Rural-Urban Controls

	All		Firstborn Before Union		Firstborn After Union	
	# Children (1)	# Months Second Child (2)	# Children (3)	# Months Second Child (4)	# Children (5)	# Months Second Child (6)
Female firstborn	0.024***	-0.106**	0.016**	-0.016	0.027***	-0.148***
	(0.003)	(0.050)	(0.007)	(0.154)	(0.004)	(0.050)
Ind. controls	✓	✓	✓	✓	✓	✓
Mother´s education	✓	✓	✓	✓	✓	✓
Rural	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Male baseline	3.92	36.55	3.33	44.77	4.06	34.76
Percent effect	0.62	-0.29	0.48	-0.04	0.68	-0.43
Observations	927,809	740,923	187,756	133,134	740,053	607,789

Notes: OLS regressions; dependent variables: (i) the total number of children the female respondent has ever given birth to, and (ii) the number of months between the birth of her first and second child. Regressions using the birth-interval outcome are restricted to women who have had at least two children. Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B24: Female Firstborn Effect on IPV Justification (Firstborn After Union, 1st Union)

	Wife's Attitudes		Husband's Attitudes	
	(1)	(2)	(3)	(4)
Female firstborn	0.010**	0.013***	0.014	0.021*
	(0.005)	(0.005)	(0.009)	(0.011)
Ind. controls	✓	✓		
Year FE	✓	✓	✓	✓
Country FE	✓		✓	
Ethnic area FE	✓		✓	
Religion FE		✓		
Cluster FE		✓		✓
Male baseline	1.61	1.61	0.71	0.69
Percent effect	0.62	0.83	1.96	3.00
Male baseline (high)				
Percent effect (high)				
Observations	506,994	474,984	73,492	59,590

Notes: Cols. (1)–(2): OLS; dependent variable is the number of wife-beating justifications reported by the respondent. Sample: women whose firstborn was born after entering—and who remain in—their first union at survey. Cols. (3)–(4): OLS; dependent variable is the number of wife-beating justifications reported by the husband. Sample: co-residing couples where both spouses are in their first union and report the same number of children (likely sharing the same firstborn). High IPV Area = ethnic areas with above-median IPV acceptance Standard errors, in parentheses, clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B25: Dropping One Country at a Time: Effect of Female Firstborn

	Subsequent marriage					
	Overall	< 5	≥ 5	Polyg.	Div	Fert.
Angola	0.003*	–0.000	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Benin	0.003**	–0.001	0.004**	0.004***	0.002***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Burkina Faso	0.004**	–0.000	0.005**	0.004***	0.002***	0.026***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Burundi	0.003*	–0.001	0.004**	0.004***	0.002***	0.027***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Cameroon	0.004**	–0.001	0.005**	0.004***	0.001***	0.030***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Car	0.003*	–0.001	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Chad	0.004**	–0.001	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Cote D'Ivoire	0.004**	–0.001	0.005***	0.004***	0.002***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
DCR	0.004**	–0.000	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Eswatini	0.003**	–0.001	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Ethiopia	0.004**	–0.001	0.005**	0.004***	0.001***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Gabon	0.004**	0.000	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Gambia	0.003*	–0.001	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Ghana	0.003*	–0.001	0.004**	0.004***	0.001***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Guinea	0.003*	–0.001	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Kenya	0.002	–0.002	0.004*	0.004***	0.002***	0.026***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Lesotho	0.004**	0.001	0.005**	0.004***	0.001***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Liberia	0.004**	–0.000	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Madagascar	0.004**	0.000	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Malawi	0.003*	–0.002	0.004**	0.004***	0.001***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Mali	0.003*	–0.001	0.004**	0.003***	0.002***	0.026***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Mauritania	0.004**	–0.000	0.004**	0.004***	0.001***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Mozambique	0.004**	0.000	0.004**	0.004***	0.002***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Namibia	0.004**	0.001	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Niger	0.004**	–0.001	0.004**	0.004***	0.001***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Nigeria	0.004**	0.000	0.005**	0.004***	0.002***	0.027***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Rwanda	0.003**	–0.000	0.004**	0.004***	0.001***	0.027***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Senegal	0.004**	0.000	0.005***	0.004***	0.001***	0.030***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Sierra Leone	0.004**	–0.001	0.005***	0.004***	0.002***	0.027***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Tanzania	0.003**	0.000	0.004**	0.004***	0.002***	0.027***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Togo	0.003**	–0.001	0.005**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Uganda	0.003*	–0.001	0.004**	0.004***	0.002***	0.028***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Zambia	0.003*	–0.002	0.004**	0.004***	0.002***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)
Zimbabwe	0.003*	–0.002	0.004**	0.004***	0.002***	0.029***
	(0.002)	(0.004)	(0.002)	(0.001)	(0.000)	(0.004)

Notes: This table presents the coefficient estimate of Female firstborn where the dependent variable are the subsequent marriage, polygamous union, currently divorce, and fertility outcomes. Each row represents the country that is excluded from the estimation in each regression. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, clustered at the DHS sampling unit, reported in parentheses.

Table B26: Effect of Female Firstborn on Household Wealth Measures

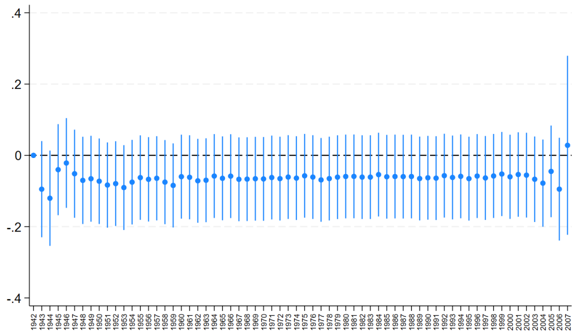
	Wealth Index (1)	Wealth (Std.) (Cluster) (2)	1st Quintile (3)	2nd Quintile (4)	3rd Quintile (5)	4th Quintile (6)	5th Quintile (7)
Panel A: Firstborn Before Union							
Female firstborn	1,368.647	-0.000	-0.002	-0.000	-0.003	0.002	0.003
	(898.281)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Male baseline	13152.657	-0.026	0.185	0.192	0.203	0.208	0.212
Observations	170,953	170,947	170,953	170,953	170,953	170,953	170,953
Panel B: Firstborn After Union							
Female firstborn	-100.788	-0.006**	-0.000	0.003***	-0.001	-0.000	-0.002**
	(543.165)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male baseline	-9032.096	0.009	0.231	0.206	0.200	0.187	0.176
Observations	651,044	651,013	651,044	651,044	651,044	651,044	651,044
Ind. controls	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓	✓

Notes: This table presents OLS regressions of household wealth measures on a female firstborn indicator. Column (1): DHS wealth index. Column (2): DHS wealth index standardized within DHS cluster. Columns (3)–(7): indicators for each wealth quintile. Panel A is limited to women whose firstborn was born before entering a union. Panel B is limited to women whose firstborn was born after entering a union. All regressions control for individual characteristics, year of birth, survey year, country, and ethnic area fixed effects. Standard errors, in parentheses, are clustered at the DHS sampling unit. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

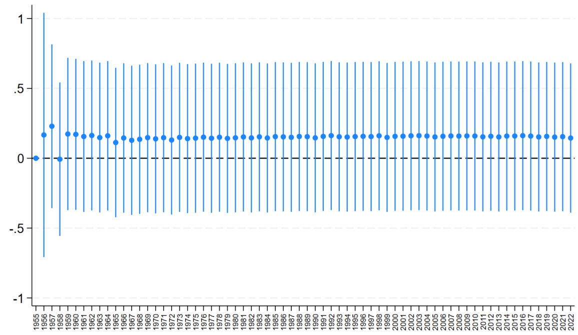
B.2 Female Firstborn Effects: Appendix Figures

Figure B1: Probability of a Female Firstborn Child by Year of:

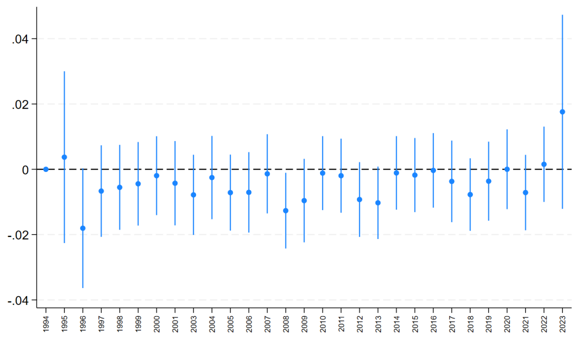
(a) Women's Year of Birth



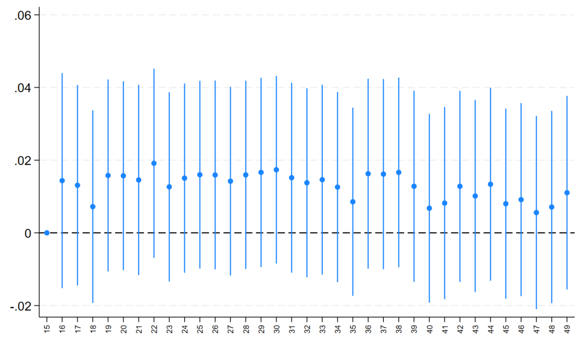
(b) Firstborn's Year of Birth



(c) Survey year

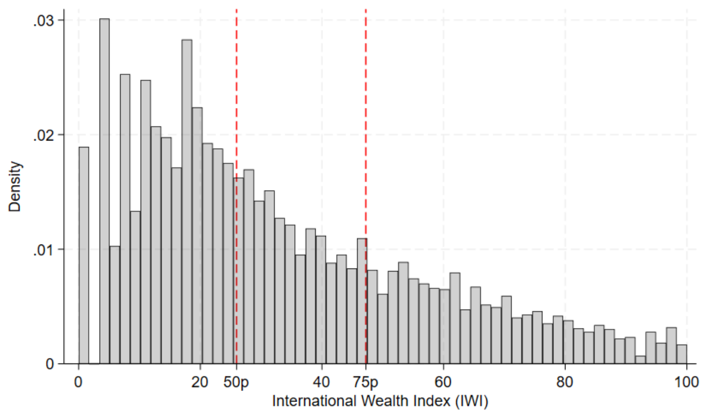


(d) Women's Age



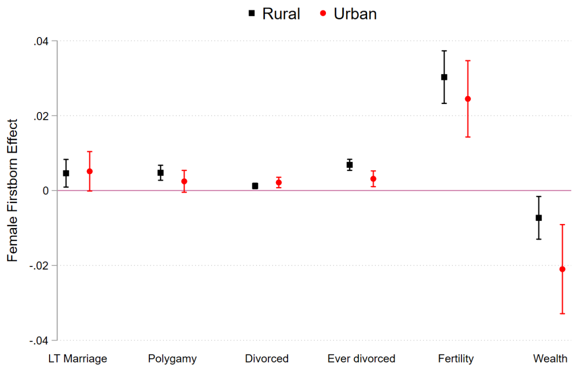
Notes: This figure displays the coefficients from regressions of an indicator for the firstborn being female on: (a) mother's year of birth fixed effects, (b) firstborn's year of birth fixed effects, (c) survey year fixed effects, and (d) mother's age fixed effects.

Figure B2: Histogram IWI

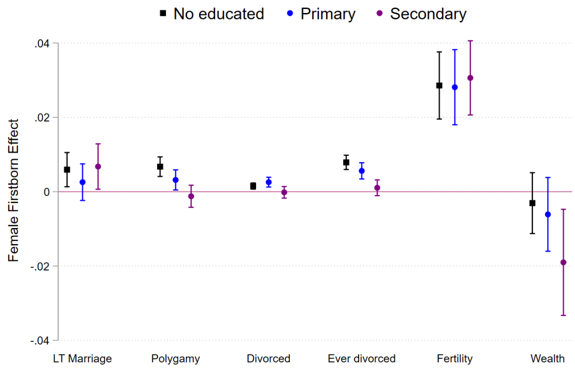


Notes: This figure displays the histogram of the International Wealth Index (IWI). The red dashed lines indicate the 50th and 75th percentiles.

Figure B3: Female Firstborn Effect: Heterogeneity by Residence and Education



(a) Rural vs. Urban



(b) Education Level

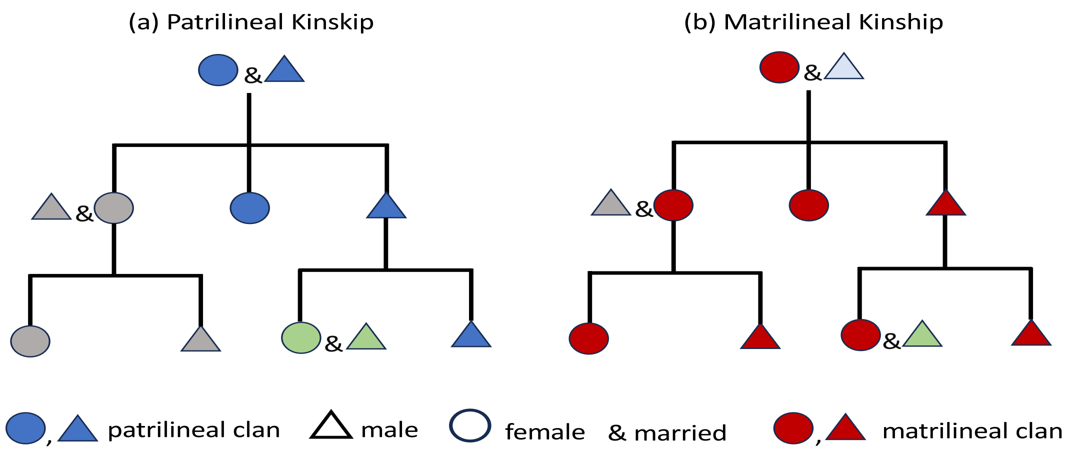
Notes: Panel (a) displays heterogeneity by location of residence, while Panel (b) presents heterogeneity by women's education level. Each point plots the coefficient on Female firstborn from estimating equation (1) for the outcome shown on the horizontal axis, separately for each subsample. Ninety-percent confidence intervals are shown.

C Kinship Heterogeneity

C.1 Kinship Systems

Matrilineality and patrilineality are systems of lineage and inheritance that determine how kinship and descent are traced within a society. Figure C1 illustrates the difference, where men are represented by triangles and women by circles. An initial couple has three children: a son and two daughters, one of whom is married with children.

Figure C1: Kinship Diagram



In patrilineal societies, sons and unmarried daughters are considered to belong to their father's lineage. Married daughters join their husband's family. Property, family name, and social status are passed down from father to sons.

In matrilineal societies, all three children belong to their mother's lineage. Only the daughter's children will belong to the same lineage. Upon a son's death, his property goes to the next in line descendant, typically his sister's children, mainly her sons. In matrilineal societies, although boys are still favored in terms of inheritance, daughters have a higher status than in patrilineal societies as they are the key to lineage continuation.

C.2 Model

This section presents a stylized two-period model intended solely to clarify mechanisms. The model is not used for estimation and is not meant to match moments quantitatively.

Environment and Kinship Regimes

Time is discrete with periods $t = 1, 2$. A man and a woman interact under kinship regimes $R \in \{P, M\}$, where P denotes a patrilineal regime and M a matrilineal regime. There are no cross-regime unions. Agents are risk neutral and do not discount the future.

Timing, Unions, and Fertility

Period 1: matching and union choice. At the beginning of period 1, men and women are randomly matched in pairs. Upon meeting, a man and a woman choose among three relationship statuses: remaining single (S), cohabitation (C), or marriage (M). If a relationship is formed in period 1 (cohabitation or marriage), the couple has exactly one child in that period.

Agents are forward-looking and fully anticipate all future payoffs.

End of period 1: continuation and marriage formalization. At the end of period 1, couples who formed a union decide whether to separate or to remain with the *same partner*. Marriage confers a per-period surplus $\gamma_M > 0$, enjoyed only when married. Thus, If the couple remains together, it enters period 2 married. For expositional clarity, we refer to these couples who cohabited in period 1 and then remained together as being *married by the end of period 1*.

Period 2: continuation and rematching. Couples who remain together spend period 2 with the same partner and have exactly one additional child in that period. Individuals who are single at the start of period 2–either because they chose to remain single or because they separated–receive a new match opportunity with probability p and may form a new union in that period.

Child gender and values. The first child is of gender $k \in \{g, b\}$ with $\Pr(k = g) = \Pr(k = b) = 1/2$. The per-period value of an existing child is denoted $x_k^R \geq 0$ and depends on the kinship regime $R \in \{P, M\}$ and the child's gender. If a couple remains together into period 2, the expected value of the second child is $\bar{x}^R = \frac{1}{2}(x_g^R + x_b^R)$.

Match Quality and Information

Each couple has a latent match quality $m \sim \mathcal{N}(0, \sigma_m^2)$. Individual utilities incorporate idiosyncratic components, $m^\ell = m + \varepsilon^\ell$ for $\ell \in \{w, m\}$, with correlation ρ between m^w and m^m. Before choosing a relationship in period 1, partners observe a noisy signal $s = m + \eta$, where $\eta \sim \mathcal{N}(0, \sigma_\eta^2)$, and evaluate options using the posterior mean

$$\mathbb{E}[m \mid s] = \mu_m + \omega(s - \mu_m), \qquad \omega = \frac{\sigma_m^2}{\sigma_m^2 + \sigma_\eta^2}.$$

Within-Union Payoffs

If partners $\ell \in \{w, m\}$ are in a union under regime R with an existing child of gender k, per-period utility is

$$u^\ell = m^\ell + x_k^R + \gamma_M \cdot \mathbb{1}\{\text{married}\}.$$

Thus, in period 1 cohabitation yields $m^\ell + x_k^R$, while marriage yields $m^\ell + x_k^R + \gamma_M$. In period 2, continuation with the same partner yields $m^\ell + x_k^R + \bar{x}^R + \gamma_M$.

Custody and Separation

Cohabitation. Separation from cohabitation is costless. In both kinship regimes, the mother retains custody of the child.

Marriage. Divorce entails a cost $K > 0$. Custody is regime specific: under patrilineality, the father has custody, whereas under matrilineality, the mother has custody.[18]

C.2.1 Single Utilities and Rematching in Period 2

At the start of period 2, a single individual receives a new match opportunity with probability p. Any new union formed in period 2 yields one child with expected value $\bar{x}^R$.

[18] In patrilineal societies, children are incorporated into the father's lineage and custody typically rests with the father, whereas in matrilineal societies children belong to the mother's lineage and custody rests with the mother (Murdock, 1959, 1967; Goody, 1976; Lowes, 2022).

Men receive an idiosyncratic single-utility shock $V_S^m \sim \mathcal{N}(0, \sigma_{S,m}^2)$.

We allow women's single utilities to depend on the kinship regime and the sex of the first child. Anthropological and empirical work emphasizes that in patrilineal systems children are affiliated with the father's lineage, whereas in matrilineal systems children are affiliated with the mother's lineage. These institutional differences shape women's post-separation claims, access to kin-based support, and custody, and therefore the value of being single with a child (Murdock, 1959, 1967; Goody, 1976; Lowes, 2022). In addition, a large literature documents son preference and gendered marital dynamics in Sub-Saharan Africa, implying that women's outside options may differ by the sex of the child.

Taken together, these considerations suggest that the "single with a child" state is more punitive under patrilineality than under matrilineality, and that the value of a child may differ by gender depending on which child strengthens a woman's position within the relevant kin network. Accordingly, we assume that women's single utilities satisfy

$$V_S^w(P,b) > V_S^w(P,0) > V_S^w(P,g), \qquad V_S^w(M,g) > V_S^w(M,b) = V_S^w(M,0) = 0.$$

Specifically, we parameterize

$$V_S^w(P,g) = -\frac{\phi}{2}, \qquad V_S^w(P,b) = +\frac{\phi}{2}, \qquad V_S^w(M,g) = \psi,$$

with $\phi > 0$ and $\psi > 0$.

Let $EV_{wR}(k)$ denote the expected period 2 continuation value for a woman who is single with child state (R, k), integrating over rematching opportunities, and let EV_m^R denote the analogous continuation value for a man.

Stay and Separation Thresholds

At the end of period 1, each partner compares the continuation value of remaining with the same partner into period 2 to the value of separation, which combines the relevant single-utility continuation value with the possibility of rematching. Because marriage confers a surplus γ_M, while divorce entails a cost K and may involve a loss of child value depending on custody, the attractiveness of staying depends on both match quality and the institutional environment. As a result, stay decisions are characterized by partner-specific threshold rules in match quality.

A couple remains together if and only if both partners weakly prefer staying to separating. This yields individual stay conditions

$$m^w \geq \tau_w(R,k), \qquad m^m \geq \tau_m(R,k),$$

where the thresholds $\tau_w(R,k)$ and $\tau_m(R,k)$ are reported in Table C1. The partner with the tighter constraint acts as the veto player for continuation.

The threshold expressions are obtained by equating the value of continuation with the same partner to the value of separation followed by rematching in period 2.

Table C1: Stay thresholds at the end of period 1

Case	Woman stay condition	Man stay condition
Cohabitation	$m^w \geq EV_{wR}(k) - \bar{x}^R - \gamma_M$	$m^m \geq EV_m^R - \bar{x}^R - x_k^R - \gamma_M$
Patrilineal marriage	$m^w \geq EV_{wP}(0) - \bar{x}^P - x_k^P + K - \gamma_M$	$m^m \geq EV_m^P - \bar{x}^P + K - \gamma_M$
Matrilineal marriage	$m^w \geq EV_{wM}(k) - \bar{x}^M + K - \gamma_M$	$m^m \geq EV_m^M - \bar{x}^M - x_k^M + K - \gamma_M$

C.2.2 Implications of the Separation Thresholds

Result 1 (Custody reallocates the veto constraint but does not affect aggregate outcomes) *Fix any (R,k) and suppose that child values are identical across regimes, $x_k^P = x_k^M \equiv x_k$, and that women face no regime- or gender-specific single-utility shifters ($\phi = \psi = 0$), so that $EV_{wP}(k) = EV_{wM}(k)$ for all k. Assume further that the joint distribution of (m^w, m^m) is symmetric with respect to spouses.*

Then the probability that a married couple remains together at the end of period 1 is identical under patrilineal and matrilineal regimes. Custody affects which spouse internalizes the loss of the child upon separation, and therefore which spouse acts as the veto player, but does not change the probability of staying, separating, or expected fertility across regimes.

Result 2 (Gendered child values increase separation after a less-preferred first child) *Under marriage, the spouse who does not retain custody upon divorce internalizes the loss of child value through the term $-x_k^R$ in their stay threshold. Consequently, within each regime, a lower child value x_k^R raises the relevant stay threshold and increases the likelihood of separation at the period 1 boundary.*

Result 3 (Single-utility shifters generate offsetting incentives) *Gender-specific single utilities affect separation and remarriage through the outside option $EV_R(k)$. Under patrilineality, a lower single value following a daughter reduces women's outside options and increases their willingness to remain married or to remarry after separation. Under matrilineality, a higher single value following a daughter weakens women's incentives to remarry after separation. Because child values affect separation decisions while single-utility shifters affect post-separation remarriage, the net effect of first-child gender on marriage outcomes by the end of period 2 is theoretically ambiguous.*

Result 4 (Fertility effects are generally ambiguous) *Let completed fertility be the expected number of children by the end of period 2. First-child gender affects completed fertility through* *two margins: (i) the probability the initial couple remains together into period 2, which determines whether a second child is born with the same partner; and (ii) the probability a separated individual forms a new union in period 2, which may also produce a child.*

Gendered child values affect fertility through the first margin by altering separation incentives via the custody-determined veto constraint, while gender-specific single-utility shifters (ϕ, ψ) *affect fertility through the second margin by shaping post-separation remarriage incentives. Because these forces operate in opposite directions, the effect of first-child gender on completed fertility need not be monotone and is generally ambiguous.*

In contrast, a model with son preference alone and no regime-specific outside options would predict higher fertility following a firstborn daughter due to continued childbearing within intact unions. The presence of kinship-dependent custody rules and gendered outside options breaks this prediction and allows fertility responses to differ across patrilineal and matrilineal regimes.

C.2.3 Illustrative Example

Figure C2 presents simulated equilibrium outcomes under a calibration in which sons are more highly valued under patrilineality, daughters are more highly valued under matrilineality, and women's single utilities depend on the gender of the first child.

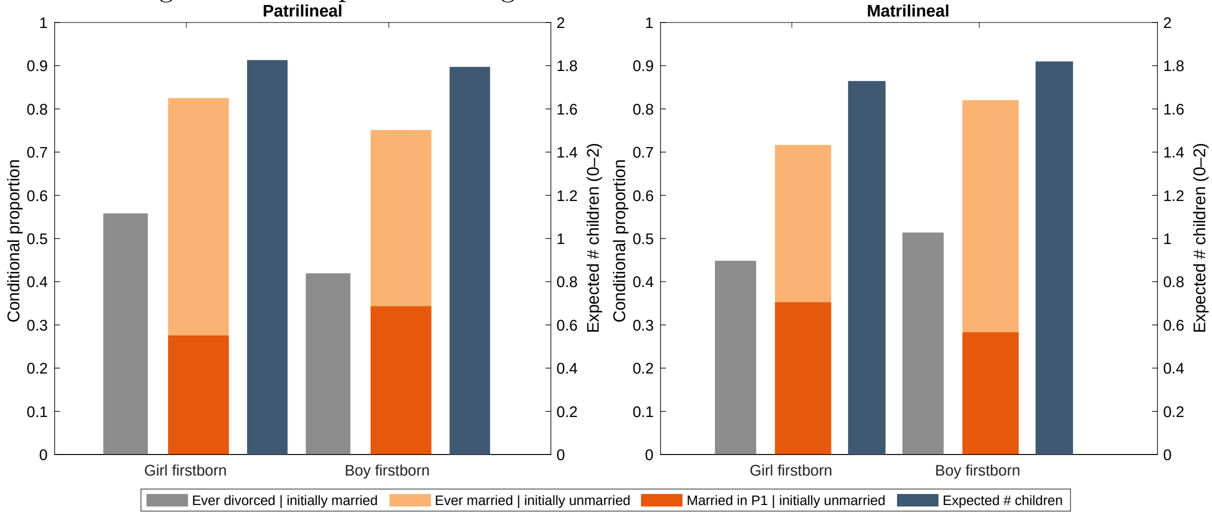


Figure C2: Marriage, divorce, and fertility by kinship regime and firstborn gender

Notes: Orange bars report the probability of marriage conditional on having had a firstborn prior to the first union. Dark orange bars correspond to marriage occurring at the end of period 1 with the same partner, while light orange bars include marriages occurring in period 2. Gray bars report the probability of divorce for women whose first child was born prior to their first union. Blue bars (right axis) report the expected number of children.

The figure illustrates how custody rules, gendered child values, and women's outside options interact to shape marriage, separation, and fertility outcomes. Under patrilineality, daughters reduce women's post-separation outside options, lowering separation thresholds and strengthening continuation and remarriage incentives. Under matrilineality, daughters increase women's outside options, weakening remarriage incentives despite higher child values within ongoing unions. As a result, first-child-gender effects on marriage and fertility need not be monotone: the same

Table C2: Illustrative parameter values used in the example simulation

Parameter	Value	Description
σ_m	2	SD of latent match quality
ρ	0.5	Correlation between partners' idiosyncratic match components
σ_η	2	SD of signal noise ($s = m + \eta$)
$\sigma_{S,m}$	0.2	SD of men's single-utility shock in period 2
γ_M	0.1	Per-period marriage surplus (breaks C vs. M tie)
x_g^P	0.2	Value of an existing girl under patrilineality
x_b^P	2.5	Value of an existing boy under patrilineality
x_g^M	2.5	Value of an existing girl under matrilineality
x_b^M	0.2	Value of an existing boy under matrilineality
$\bar{x}^P$	1.35	Expected value of second child under P
$\bar{x}^M$	1.35	Expected value of second child under M
K	0.4	Divorce cost
ϕ	1.5	Patrilineal penalty in women's single utility after a girl firstborn
ψ	1	Matrilineal bonus in women's single utility after a girl firstborn
p	0.95	Probability a single individual receives a match opportunity in period 2

child-gender shock can simultaneously increase separation while raising eventual marriage rates through remarriage. The figure is intended solely to illustrate these offsetting mechanisms rather than match empirical magnitudes.

C.3 Patrilineal vs. Matrilineal Kinship Heterogeneity: OLS

This section studies heterogeneity in the impact of a female firstborn on family structure by kinship descent. We extend equation (1) by interacting *Female firstborn*$_i$ with the mother's ancestral kinship practice, $Patrilineal_i$, a dummy equal to one for patrilineal descent and zero for matrilineal descent. The estimating equation is: $y_{iec} = \beta_1 \textit{Female firstborn}_i + \beta_2 \textit{Female firstborn}_i \times \textit{Patrilineal}_i + X_i'\Gamma + \alpha_c + \lambda_e + \delta_t + \epsilon_{iec}$.

Of the 106 DHS surveys in our sample, 72 (68%) collect self-reported ethnicity at the individual level. We successfully match 89% of these respondents to an ethnic group with documented kinship practices following Murdock (1959). We focus on women of either patrilineal or matrilineal descent, with 79% classified as patrilineal ($Patrilineal_i = 1$) and 21% as matrilineal ($Patrilineal_i = 0$). Table C3 reports the OLS results. The coefficient on *Female firstborn* reflects the effect for women of matrilineal descent, while the sum of the first two coefficients—reported in bold at the bottom of the table—gives the effect for patrilineal women. Across both kinship systems, having a firstborn daughter is associated with higher rates of subsequent marriage, polygamous unions, and divorce. Two differences are particularly notable. First, among women whose first child was born prior to their first union, matrilineal women exhibit an immediate increase in the likelihood of entering a subsequent union following the birth of a daughter,

Table C3: Female Firstborn and Kinship: OLS Estimates (Self Report Ethnicity)

	Subsequent marriage			Postmarital Outcomes		
	Overall (1)	< 5 (2)	≥ 5 (3)	Polyg. (4)	Div (5)	Fert. (6)
Female firstborn × Patrilineal	0.000 (0.005)	0.003 (0.012)	0.000 (0.006)	-0.002 (0.003)	-0.003* (0.002)	0.039*** (0.012)
Female firstborn	0.005 (0.005)	-0.002 (0.010)	0.006 (0.005)	0.006** (0.003)	0.004** (0.002)	0.004 (0.010)
Patrilineal	0.007 (0.006)	-0.031** (0.013)	0.018** (0.007)	0.021*** (0.005)	-0.006*** (0.002)	0.005 (0.016)
Ind. controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Ethnic area FE	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.005** (0.036)	0.001 (0.851)	0.006** (0.021)	0.004*** (0.006)	0.001* (0.052)	0.043*** (0.000)
Observations	101,309	24,717	76,539	369,406	410,679	410,679

Notes: OLS regressions: dependent variables: subsequent marriage, polygamous union, currently divorce, and fertility outcomes. Sample limited to surveys with available women´s ethnicity information and to women who descent from either patrilineal or matrilineal groups. Specification includes dummies for women´s patrilineal ethnicity on its own and interacted with female firstborn. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

whereas for patrilineal women this effect emerges only several years later and remains modest. Second, we observe a positive effect of a female firstborn on total fertility exclusively within patrilineal societies.

A key limitation of this comparison is that women of patrilineal and matrilineal descent may differ along unobserved dimensions correlated with family structure. Ecological and historical conditions associated with plow agriculture, large-animal domestication, or exposure to slavery (Tene, 2023; Becker, Enke, and Falk, 2020; Alsan, 2015; Lowes and Nunn, 2024) may independently shape the relative valuation of sons and daughters. As a result, the heterogeneity documented in this section may reflect both kinship institutions and other correlated ancestral characteristics.

C.4 RD Estimates

Table C4: RD Validity: First Stage and Female Firstborn Probability

	Outcome: Patrilineal Ethnic Group			Outcome: Female Firstborn		
	All (1)	Firstborn Before Union (2)	Firstborn After Union (3)	All (4)	Firstborn Before Union (5)	Firstborn After Union (6)
Patrilineal area	0.191*** (0.016)	0.218*** (0.023)	0.184*** (0.016)	0.001 (0.006)	0.001 (0.014)	0.000 (0.006)
Ind. controls	✓	✓	✓	✓	✓	✓
Cluster controls	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓
F	139	92.5	126	.0137	.00868	.00437
Observations	122,608	17,302	105,302	151,298	24,305	126,991

Notes: Geographic RD regressions. Dependent variables are an indicator for self-reported patrilineal ethnicity (cols. (1)–(3)) and an indicator for female firstborn (cols. (4)–(6)) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

We next examine kinship heterogeneity using the geographic regression discontinuity design in equation (3). We report both intention-to-treat (ITT) estimates and results from a fuzzy RD design that instruments self-reported patrilineal descent with residence in a historically patrilineal ethnic area. First-stage results are reported in Table C4. Tables C5–C9 present the ITT estimates. Fuzzy RD estimates are labeled "Fuzzy RD." Baseline "Cluster controls" include local economic characteristics at the time of the survey: log population size, a measure of purchasing power parity, and log distance to the nearest urban center. Specifications labeled "+ Cluster controls (lasso-selected)" expand the set of geographic covariates to include variables exhibiting imbalance at the border (Table C10), namely malaria ecology, average agricultural suitability, and ethnic-area indicators for bride price, matrilocal residence, and polygamy. In these specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a double Lasso procedure (Belloni, Chernozhukov, and Hansen, 2014).

Table C5: Female Firstborn, Kinship, and Subsequent Marriage: RD Estimates

	Ever Married											
	Years since birth											
	< 5			≥ 5			Overall			Married Firstborn´s father		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)	ITT (10)	ITT (11)	Fuzzy RD (12)
Female firstborn × Patrilineal	-0.072**	-0.075***	-0.138*	-0.026**	-0.030**	-0.020	-0.037***	-0.042***	-0.064*	-0.044	-0.050	-0.182
	(0.029)	(0.029)	(0.080)	(0.013)	(0.013)	(0.047)	(0.012)	(0.013)	(0.037)	(0.033)	(0.033)	(0.121)
Female firstborn	0.033*	0.040**	0.073*	0.030***	0.032***	0.030	0.027***	0.030***	0.044**	-0.021	-0.018	0.048
	(0.020)	(0.020)	(0.042)	(0.010)	(0.010)	(0.027)	(0.009)	(0.010)	(0.021)	(0.025)	(0.026)	(0.059)
Patrilineal	0.034	0.043	0.502**	0.067***	0.096***	0.826***	0.056***	0.078***	0.686***	0.059*	0.109**	1.052
	(0.025)	(0.029)	(0.230)	(0.013)	(0.020)	(0.308)	(0.013)	(0.018)	(0.234)	(0.031)	(0.047)	(1.143)
Ind. controls	✓			✓			✓	✓		✓		
Cluster controls	✓			✓	✓	✓	✓	✓	✓	✓		
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	-0.039*	-0.035*	-0.064	0.004	0.002	0.010	-0.010	-0.011	-0.020	-0.065***	-0.068***	-0.133*
(p-value)	(0.067)	(0.091)	(0.157)	(0.639)	(0.780)	(0.680)	(0.227)	(0.163)	(0.310)	(0.002)	(0.001)	(0.064)
Male baseline (patrilineal)	0.37	0.35	0.65	0.81	0.77	0.51	0.71	0.68	0.70	0.98	0.95	0.96
Percent effect (patrilineal)	-10.34	-10.19	-9.86	0.46	0.29	2.00	-1.36	-1.65	-2.89	-6.66	-7.14	-13.90
Male baseline (matrilineal)	0.29	0.30	0.25	0.91	0.94	0.20	0.72	0.74	0.40	0.71	0.73	-0.47
Percent effect (matrilineal)	11.45	13.22	29.60	3.34	3.44	15.20	3.80	4.08	10.98	-3.00	-2.47	-10.35
Observations	6,561	6,417	4,413	17,738	17,238	12,264	24,305	23,661	16,684	3,988	3,943	2,599
DHS clusters	2,162	2,109	1,541	3,744	3,634	2,907	3,997	3,877	3,125	1,764	1,742	1,265

Notes: This table presents OLS regressions where the dependent variables are: (i) an indicator equal to 1 if the respondent ever married after the birth of her firstborn (columns (1)–(9)); and (ii) an indicator equal to 1 if the firstborn's father identifier matches the mother's current husband identifier (columns (10)–(12)). The sample is limited to women whose firstborn child was born before ever been in a union. Columns (1) to (6) restrict the sample based on the number of years since the firstborn child was born relative to the time of the survey. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C6: Female Firstborn, Kinship, and Polygyny: RD Estimates

	All			Firstborn Before Union			Firstborn After Union		
	ITT	ITT	Fuzzy RD	ITT	ITT	Fuzzy RD	ITT	ITT	Fuzzy RD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female firstborn × Patrilineal	0.007	0.009	0.030	0.001	0.003	-0.021	0.008	0.009	0.037
	(0.007)	(0.007)	(0.022)	(0.019)	(0.020)	(0.052)	(0.007)	(0.007)	(0.024)
Female firstborn	-0.005	-0.007	-0.015	-0.008	-0.011	-0.003	-0.004	-0.006	-0.017
	(0.006)	(0.006)	(0.013)	(0.014)	(0.015)	(0.029)	(0.006)	(0.006)	(0.014)
Patrilineal	0.023**	-0.011	0.042	0.009	-0.030	-0.251	0.024**	-0.007	0.068
	(0.010)	(0.013)	(0.085)	(0.020)	(0.027)	(0.292)	(0.010)	(0.014)	(0.087)
Ind. controls	✓	✓	✓	✓			✓	✓	✓
Cluster controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.002	0.003	0.015	-0.007	-0.007	-0.024	0.004	0.004	0.020*
(p-value)	(0.545)	(0.519)	(0.150)	(0.565)	(0.562)	(0.386)	(0.400)	(0.371)	(0.083)
Male baseline (patrilineal)	0.32	0.33	0.87	0.42	0.40	-0.01	0.31	0.32	0.84
Percent effect (patrilineal)	0.74	0.77	1.75	-1.74	-1.88	226.08	1.14	1.19	2.37
Male baseline (matrilineal)	0.31	0.31	0.88	0.17	0.19	0.07	0.34	0.34	0.85
Percent effect (matrilineal)	-1.63	-2.14	-1.67	-5.00	-5.68	-4.22	-1.22	-1.66	-2.00
Observations	130,576	128,012	104,797	15,257	14,886	10,613	115,315	113,122	94,179
DHS clusters	4,943	4,787	4,090	3,640	3,540	2,835	4,943	4,787	4,081

Notes: This table presents geographic RD regressions where the dependent variable is an indicator variable = 1 if the respondent is currently married in a polygnous union. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C7: Female Firstborn, Kinship, and Currently Divorced: RD Estimates

	All			Firstborn Before Union			Firstborn After Union		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)
Female firstborn × Patrilineal	-0.002	-0.002	-0.009	0.003	0.002	-0.008	-0.003	-0.003	-0.011
	(0.002)	(0.002)	(0.007)	(0.006)	(0.006)	(0.016)	(0.003)	(0.003)	(0.008)
Female firstborn	0.005**	0.005**	0.009**	-0.002	-0.001	0.002	0.006***	0.007***	0.011**
	(0.002)	(0.002)	(0.004)	(0.005)	(0.005)	(0.009)	(0.002)	(0.002)	(0.005)
Patrilineal	-0.001	0.002	0.015	-0.005	-0.001	0.011	-0.000	0.003	0.019
	(0.002)	(0.003)	(0.016)	(0.005)	(0.006)	(0.042)	(0.002)	(0.003)	(0.017)
Ind. controls	✓			✓			✓		
Cluster controls	✓		✓	✓		✓	✓		✓
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.003**	0.003**	-0.000	0.001	0.000	-0.006	0.003***	0.003***	-0.000
(p-value)	(0.011)	(0.011)	(0.925)	(0.833)	(0.914)	(0.439)	(0.009)	(0.010)	(0.942)
Male baseline (patrilineal)	0.00	-0.00	0.01	0.01	0.00	-0.07	0.00	0.00	0.02
Percent effect (patrilineal)	92.45	-496.53	-2.35	5.34	11.06	8.60	82.21	209.33	-1.14
Male baseline (matrilineal)	0.06	0.06	0.03	0.04	0.05	-0.01	0.06	0.06	0.03
Percent effect (matrilineal)	8.29	8.48	33.80	-4.09	-2.81	-20.50	10.50	11.03	39.36
Observations	151,298	148,071	119,652	24,305	23,661	16,684	126,991	124,408	102,965
DHS clusters	4,943	4,787	4,090	3,997	3,877	3,125	4,943	4,787	4,085

Notes: This table presents geographic RD regressions where the dependent variable is an indicator variable = 1 if the respondent is currently divorced. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C8: Female Firstborn, Kinship, and Ever divorced: RD Estimates

	All			Firstborn Before Union			Firstborn After Union		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)
Female firstborn × Patrilineal	-0.003	-0.002	0.007	-0.015	-0.014	-0.044	0.000	0.000	0.018
	(0.005)	(0.005)	(0.017)	(0.013)	(0.013)	(0.033)	(0.006)	(0.006)	(0.020)
Female firstborn	0.010**	0.009*	0.005	0.013	0.011	0.025	0.008	0.008	-0.001
	(0.005)	(0.005)	(0.010)	(0.009)	(0.009)	(0.018)	(0.005)	(0.005)	(0.012)
Patrilineal	-0.002	0.005	0.074	0.018	0.018	0.134	-0.009	-0.001	0.043
	(0.006)	(0.008)	(0.051)	(0.011)	(0.013)	(0.116)	(0.006)	(0.009)	(0.052)
Ind. controls	✓			✓			✓		
Cluster controls	✓		✓	✓		✓	✓		✓
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.007**	0.007**	0.012	-0.002	-0.003	-0.018	0.008***	0.008**	0.017*
(p-value)	(0.014)	(0.019)	(0.138)	(0.857)	(0.737)	(0.308)	(0.009)	(0.012)	(0.055)
Male baseline (patrilineal)	0.16	0.18	-0.12	0.31	0.29	-0.28	0.13	0.16	-0.10
Percent effect (patrilineal)	4.44	3.80	-9.86	-0.53	-1.04	6.57	6.10	4.94	-16.54
Male baseline (matrilineal)	0.20	0.17	-0.16	0.04	0.04	-0.53	0.25	0.21	-0.11
Percent effect (matrilineal)	4.95	5.14	-3.10	35.51	25.55	-4.73	3.28	3.66	0.59
Observations	151,298	148,071	119,652	24,305	23,661	16,684	126,991	124,408	102,965
DHS clusters	4,943	4,787	4,090	3,997	3,877	3,125	4,943	4,787	4,085

Notes: This table presents geographic RD regressions where the dependent variable is an indicator variable = 1 if the respondent is ever divorced. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C9: Female Firstborn, Kinship, and Number of Children: RD Estimates

	All			Firstborn Before Union			Firstborn After Union		
	ITT	ITT	Fuzzy RD	ITT	ITT	Fuzzy RD	ITT	ITT	Fuzzy RD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female firstborn × Patrilineal	0.051**	0.057**	0.178**	0.021	0.047	0.230	0.053**	0.057**	0.153*
	(0.023)	(0.023)	(0.070)	(0.055)	(0.055)	(0.143)	(0.026)	(0.026)	(0.079)
Female firstborn	-0.028	-0.036*	-0.097**	0.002	-0.020	-0.123	-0.033	-0.037*	-0.083*
	(0.019)	(0.019)	(0.040)	(0.038)	(0.039)	(0.077)	(0.022)	(0.022)	(0.045)
Patrilineal	0.015	0.025	0.285	0.002	-0.004	-0.051	0.013	0.031	0.359
	(0.028)	(0.036)	(0.245)	(0.052)	(0.070)	(0.606)	(0.031)	(0.042)	(0.266)
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cluster controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.023*	0.021	0.081**	0.023	0.027	0.107	0.021	0.020	0.069*
(p-value)	(0.095)	(0.113)	(0.018)	(0.556)	(0.488)	(0.179)	(0.144)	(0.154)	(0.065)
Male baseline (patrilineal)	4.15	4.27	8.55	3.46	3.31	7.76	4.28	4.41	8.77
Percent effect (patrilineal)	0.55	0.50	0.95	0.67	0.82	1.38	0.48	0.46	0.79
Male baseline (matrilineal)	4.27	4.17	8.44	3.69	3.83	8.70	4.38	4.25	8.52
Percent effect (matrilineal)	-0.66	-0.86	-1.15	0.05	-0.53	-1.41	-0.74	-0.86	-0.98
Observations	151,298	148,071	119,652	24,305	23,661	16,684	126,991	124,408	102,965
DHS clusters	4,943	4,787	4,090	3,997	3,877	3,125	4,943	4,787	4,085

Notes: This table presents geographic RD regressions where the dependent variable is the number of children the respondent gave birth to by the time of the survey. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

C.5 RD Estimates: Additional Analysis

Table C10: Balance on Geographic Characteristics at Ethnic Area- and DHS Cluster-Level

	Ethnic-Area-Level			DHS Cluster-Level			
	Matrilineal (1)	Patrilineal (2)	SE (3)	Matrilineal (4)	Patrilineal (5)	SE (6)	RD Coef. (7)
Geographic Variables							
Mean Daily Temperature	24.699	24.862	0.416	23.984	26.061	0.061***	–0.063
	(88)	(88)		(3,420)	(4,677)		
Mean Altitude	0.370	0.363	0.047	0.492	0.248	0.007***	–0.059
	(88)	(88)		(3,420)	(4,677)		
Mean Distance To Coast	635.547	674.407	47.466	517.458	470.264	5.989***	5.281
	(146)	(147)		(6,125)	(6,320)		
Ln(Land Area)	9.952	9.978	0.166	10.487	10.528	0.021**	–0.000
	(146)	(147)		(6,125)	(6,320)		
Malaria Ecology	14.217	14.705	1.044	12.706	16.984	0.167***	1.995**
	(146)	(147)		(6,125)	(6,320)		
Tsetse Fly Suitability Index	0.319	0.331	0.085	0.117	0.161	0.013***	0.039
	(146)	(147)		(6,125)	(6,320)		
Average Agricultural Suitability	0.394	0.394	0.022	0.354	0.398	0.004***	0.040***
	(146)	(147)		(6,125)	(6,320)		
Average Suitability For Pastoralism	0.287	0.296	0.021	0.266	0.360	0.003***	0.034
	(146)	(147)		(6,125)	(6,320)		
Slave Trade and Cultural Variables							
Slave Trade (Ln(1+Atlantic And Indian))	3.012	3.227	0.463	4.709	4.979	0.084***	–0.286
	(146)	(147)		(6,125)	(6,320)		
Bride Price	0.637	0.912	0.046***	0.495	0.946	0.007***	0.305***
	(146)	(147)		(6,125)	(6,320)		
Matrilocal	0.069	0.000	0.021***	0.033	0.000	0.002***	–0.056**
	(144)	(146)		(5,771)	(6,315)		
Polygynous	0.573	0.897	0.048***	0.640	0.873	0.007***	0.314***
	(143)	(145)		(6,106)	(6,318)		
Level Of Jurisdictional Hierarchy	2.169	2.192	0.113	2.571	2.426	0.015***	–0.143
	(136)	(125)		(6,011)	(6,049)		
Settlement Complexity	6.000	5.846	0.229	6.555	6.405	0.029***	–0.035
	(136)	(130)		(6,011)	(6,072)		
Dependence On Agriculture	5.966	5.979	0.164	5.858	5.723	0.022***	–0.208
	(146)	(143)		(6,125)	(6,193)		
Female Participation In Agriculture	4.136	3.655	0.204**	4.007	2.949	0.027***	–0.194
	(81)	(84)		(4,137)	(4,753)		
Plough	0.000	0.008	0.008	0.000	0.009	0.001***	0.015
	(136)	(130)		(6,011)	(6,072)		
Moral High God	0.356	0.465	0.087	0.146	0.583	0.011***	0.079
	(59)	(71)		(2,639)	(3,937)		
DHS Cluster Variables							
Rural				0.673	0.646	0.008***	–0.029
				(6,125)	(6,320)		
Ln(Population)				8.313	8.680	0.042***	0.250***
				(5,320)	(5,338)		
Ln(Average Ppp)				6.913	6.977	0.014***	0.037**
				(4,244)	(4,254)		
Ln(Distance Nearest City)				3.875	3.976	0.039**	–0.336**
				(3,965)	(3,852)		
Ln(Distance National Border)				10.814	10.595	0.029***	–0.207
				(4,235)	(4,244)		
Number of groups	146	147		6125	6320		

Notes: Mean comparisons of geographic and cultural traits at the ethnic-area level (cols. (1)–(3)) and DHS-cluster level (cols. (4)–(7)) for the RD sample. Cols. (3) and (6) report t-test standard errors and significance. Col. (7) reports RD estimates of the patrilineal indicator on the listed variable (clustered at the DHS-cluster level). Second row gives observations in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table C11: Robustness RD Estimates: Female Firstborn, Kinship, and Subsequent Marriage

	Ever Married																			
	Years since birth																			
	< 5					≥ 5					Overall					Married Firstborn´s father				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Female firstborn × Patrilineal	-0.076***	-0.075***	-0.075**	-0.074**	-0.075***	-0.030**	-0.030**	-0.030**	-0.034**	-0.030***	-0.042***	-0.042***	-0.041***	-0.044***	-0.049***	-0.050	-0.046	-0.046	-0.055	-0.046
	(0.029)	(0.029)	(0.029)	(0.030)	(0.028)	(0.013)	(0.013)	(0.013)	(0.014)	(0.011)	(0.013)	(0.013)	(0.013)	(0.013)	(0.011)	(0.033)	(0.033)	(0.033)	(0.034)	(0.030)
Female firstborn	0.041**	0.040**	0.040**	0.039*	0.040**	0.032***	0.032***	0.032***	0.034***	0.032***	0.030***	0.031***	0.031***	0.031***	0.036***	-0.018	-0.020	-0.020	-0.014	-0.021
	(0.020)	(0.020)	(0.020)	(0.020)	(0.019)	(0.010)	(0.010)	(0.010)	(0.011)	(0.008)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.026)	(0.026)	(0.026)	(0.025)	(0.026)
Patrilineal	0.044	0.055	0.078*	0.045	0.045*	0.096***	0.103***	0.103***	0.110***	0.095***	0.078***	0.088***	0.095***	0.084***	0.084***	0.108**	0.064	0.037	0.105**	0.094***
	(0.029)	(0.034)	(0.043)	(0.030)	(0.025)	(0.020)	(0.023)	(0.029)	(0.020)	(0.019)	(0.018)	(0.020)	(0.026)	(0.018)	(0.015)	(0.047)	(0.047)	(0.059)	(0.048)	(0.030)
Ind. controls											✓	✓	✓	✓	✓					
Cluster controls						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓			✓	✓	✓			✓	✓	✓			✓	✓	✓			✓	✓
$LatLon^2$ RD	✓					✓					✓					✓				
Distance RD		✓	✓				✓	✓				✓	✓				✓	✓		
$Distance^2$ RD			✓					✓					✓					✓		
Exclude 15km from border				✓					✓					✓					✓	
Cluster S.E. Ethnic-Area					✓					✓					✓					✓
Female firstborn+Female firstborn*Patrilineal	-0.035*	-0.036*	-0.035*	-0.035	-0.035*	0.002	0.002	0.002	0.000	0.002	-0.011	-0.011	-0.011	-0.013	-0.013*	-0.068***	-0.066***	-0.066***	-0.069***	-0.067***
(p-value)	(0.094)	(0.088)	(0.094)	(0.117)	(0.080)	(0.790)	(0.762)	(0.762)	(0.973)	(0.778)	(0.161)	(0.170)	(0.171)	(0.121)	(0.055)	(0.001)	(0.002)	(0.002)	(0.002)	(0.000)
Male baseline (patrilineal)	0.33	0.34	0.34	0.37	0.34	0.77	0.89	0.89	0.73	0.77	0.67	0.77	0.77	0.67	0.65	0.99	0.86	0.86	0.97	0.98
Percent effect (patrilineal)	-10.57	-10.44	-10.27	-9.46	-10.34	0.28	0.27	0.27	0.04	0.29	-1.67	-1.43	-1.43	-1.94	-2.06	-6.86	-7.69	-7.64	-7.17	-6.83
Male baseline (matrilineal)	0.31	0.31	0.31	0.30	0.31	0.94	0.84	0.84	0.97	0.94	0.75	0.68	0.68	0.75	0.76	0.71	0.81	0.80	0.72	0.71
Percent effect (matrilineal)	13.17521	13.02979	12.98639	12.94574	13.12101	3.440956	3.83471	3.834657	3.49964	3.443523	4.088862	4.517896	4.518374	4.163727	4.664754	-2.566433	-2.44135	-2.425782	-2.007583	-3.040079
Observations	6,417	6,417	6,417	5,988	6,417	17,238	17,238	17,238	16,119	17,238	23,661	23,661	23,661	22,113	23,661	3,943	3,943	3,943	3,737	3,943
DHS clusters	2,109	2,109	2,109	2,005	130	3,634	3,634	3,634	3,465	136	3,877	3,877	3,877	3,698	139	1,742	1,742	1,742	1,673	120

Notes: This table presents OLS regressions where the dependent variables are: (i) an indicator equal to 1 if the respondent ever married after the birth of her firstborn (columns (1)–(15)); and (ii) an indicator equal to 1 if the firstborn's father identifier matches the mother's current husband identifier (columns (16)–(20)). The sample is limited to women whose firstborn child was born before ever been in a union. Columns (1) to (10) restrict the sample based on the number of years since the firstborn child was born relative to the time of the survey. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C12: Robustness RD Estimates: Female Firstborn, Kinship, and Polygyny

	All					Firstborn Before Union					Firstborn After Union				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Female firstborn × Patrilineal	0.009	0.009	0.009	0.012	0.009	0.004	0.004	0.004	0.008	0.004	0.009	0.009	0.009	0.011	0.009
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.020)	(0.020)	(0.020)	(0.020)	(0.018)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Female firstborn	-0.007	-0.007	-0.006	-0.008	-0.007	-0.011	-0.011	-0.011	-0.014	-0.011	-0.006	-0.006	-0.005	-0.006	-0.006
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.015)	(0.015)	(0.015)	(0.015)	(0.013)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Patrilineal	-0.011	-0.008	-0.016	-0.010	-0.011	-0.030	-0.040	-0.034	-0.042	-0.033	-0.007	-0.002	-0.012	-0.004	-0.008
	(0.013)	(0.015)	(0.018)	(0.014)	(0.013)	(0.027)	(0.032)	(0.039)	(0.029)	(0.024)	(0.014)	(0.016)	(0.019)	(0.015)	(0.013)
Ind. controls	✓	✓	✓	✓							✓	✓	✓	✓	
Cluster controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓			✓	✓	✓			✓	✓	✓			✓	✓
$LatLon^2$ RD	✓					✓					✓				
Distance RD		✓	✓				✓	✓				✓	✓		
$Distance^2$ RD			✓					✓					✓		
Exclude 15km from border				✓					✓					✓	
Cluster S.E. Ethnic-Area					✓					✓					✓
Female firstborn+Female firstborn*Patrilineal	0.003	0.003	0.003	0.004	0.002	-0.007	-0.008	-0.008	-0.006	-0.008	0.004	0.004	0.004	0.005	0.004
(p-value)	(0.518)	(0.520)	(0.525)	(0.347)	(0.487)	(0.565)	(0.553)	(0.553)	(0.649)	(0.568)	(0.371)	(0.372)	(0.377)	(0.258)	(0.298)
Male baseline (patrilineal)	0.33	0.34	0.33	0.32	0.33	0.40	0.30	0.30	0.41	0.40	0.31	0.34	0.34	0.30	0.32
Percent effect (patrilineal)	0.78	0.77	0.76	1.21	0.73	-1.84	-2.55	-2.55	-1.44	-1.88	1.21	1.12	1.11	1.62	1.12
Male baseline (matrilineal)	0.31	0.31	0.31	0.32	0.31	0.19	0.28	0.28	0.18	0.19	0.34	0.31	0.31	0.36	0.33
Percent effect (matrilineal)	-2.115207	-2.151827	-2.110125	-2.386336	-2.128389	-5.958565	-4.046754	-4.082253	-7.59974	-5.916808	-1.625752	-1.793545	-1.746737	-1.791691	-1.645109
Observations	128,012	128,012	128,012	120,307	128,012	14,886	14,886	14,886	14,000	14,886	113,122	113,122	113,122	106,303	113,122
DHS clusters	4,787	4,787	4,787	4,572	141	3,540	3,540	3,540	3,373	137	4,787	4,787	4,787	4,572	141

Notes: This table presents geographic RD regressions where the dependent variable is an indicator variable = 1 if the respondent is currently married in a polygnous union. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C13: Robustness RD Estimates: Female Firstborn, Kinship, and Divorce

	All					Firstborn Before Union					Firstborn After Union				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Female firstborn × Patrilineal	-0.002	-0.002	-0.002	-0.002	-0.002	0.002	0.002	0.002	0.001	0.002	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Female firstborn	0.005**	0.005**	0.005**	0.005**	0.005*	-0.001	-0.001	-0.001	-0.002	-0.002	0.007***	0.007***	0.007***	0.007***	0.007**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Patrilineal	0.002	0.004	0.008**	0.003	0.002	-0.001	-0.003	0.000	0.000	-0.002	0.003	0.006*	0.009**	0.003	0.003
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.006)	(0.006)	(0.008)	(0.006)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
Ind. controls	✓	✓	✓	✓	✓						✓	✓	✓	✓	✓
Cluster controls		✓			✓							✓			
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓			✓	✓	✓			✓	✓	✓			✓	✓
LatLon^2 RD	✓					✓					✓				
Distance RD		✓	✓				✓	✓				✓	✓		
Distance^2 RD			✓					✓					✓		
Exclude 15km from border				✓					✓					✓	
Cluster S.E. Ethnic-Area					✓					✓					✓
Female firstborn+Female firstborn*Patrilineal	0.003**	0.003**	0.003**	0.003**	0.003**	0.000	0.001	0.001	-0.001	0.000	0.003***	0.003**	0.003***	0.003**	0.003**
(p-value)	(0.012)	(0.012)	(0.011)	(0.018)	(0.044)	(0.932)	(0.887)	(0.885)	(0.884)	(0.897)	(0.010)	(0.010)	(0.010)	(0.013)	(0.033)
Male baseline (patrilineal)	0.01	0.03	0.03	-0.00	0.00	0.00	0.03	0.03	-0.00	0.00	0.01	0.03	0.03	-0.00	0.00
Percent effect (patrilineal)	39.72	9.68	10.95	-84.41	243.65	7.72	1.80	1.85	19.22	6.76	29.79	11.56	11.80	-62170.29	209.33
Male baseline (matrilineal)	0.05	0.03	0.03	0.07	0.06	0.05	0.03	0.03	0.06	0.05	0.05	0.03	0.03	0.06	0.06
Percent effect (matrilineal)	9.99967	20.42021	17.85827	7.908655	8.794374	-2.894563	-4.275029	-4.261256	-2.886676	-3.199899	13.6383	24.08079	23.66766	10.51984	11.02903
Observations	148,071	148,071	148,071	139,101	148,071	23,661	23,661	23,661	22,113	23,661	124,408	124,408	124,408	116,986	124,408
DHS clusters	4,787	4,787	4,787	4,572	141	3,877	3,877	3,877	3,698	139	4,787	4,787	4,787	4,572	141

Notes: This table presents geographic RD regressions where the dependent variable is an indicator variable = 1 if the respondent is currently divorced. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C14: Robustness RD Estimates: Female Firstborn, Kinship, and Ever Divorced

	All					Firstborn Before Union					Firstborn After Union				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Female firstborn × Patrilineal	-0.002	-0.002	-0.002	-0.002	-0.002	-0.014	-0.014	-0.014	-0.012	-0.014	0.000	0.000	0.000	-0.000	0.000
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Female firstborn	0.009*	0.009*	0.009*	0.009*	0.009**	0.011	0.011	0.011	0.010	0.011	0.008	0.008	0.008	0.008	0.008
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Patrilineal	0.005	0.010	0.017	0.006	0.006	0.018	0.020	0.020	0.017	0.018	-0.001	0.006	0.015	0.001	-0.001
	(0.008)	(0.009)	(0.010)	(0.008)	(0.007)	(0.013)	(0.015)	(0.019)	(0.013)	(0.013)	(0.009)	(0.010)	(0.012)	(0.009)	(0.008)
Ind. controls	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓
Cluster controls		✓										✓			
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓			✓	✓	✓			✓	✓	✓			✓	✓
LatLon^2 RD	✓					✓					✓				
Distance RD		✓	✓				✓	✓				✓	✓		
Distance^2 RD			✓					✓					✓		
Exclude 15km from border				✓					✓					✓	
Cluster S.E. Ethnic-Area					✓					✓					✓
Female firstborn+Female firstborn*Patrilineal	0.007**	0.007**	0.007**	0.007**	0.007*	-0.003	-0.003	-0.003	-0.002	-0.002	0.008**	0.008**	0.008**	0.008**	0.008**
(p-value)	(0.020)	(0.019)	(0.020)	(0.024)	(0.053)	(0.733)	(0.704)	(0.706)	(0.811)	(0.749)	(0.012)	(0.011)	(0.012)	(0.015)	(0.040)
Male baseline (patrilineal)	0.19	0.19	0.19	0.17	0.16	0.30	0.16	0.16	0.29	0.29	0.18	0.19	0.19	0.15	0.16
Percent effect (patrilineal)	3.51	3.60	3.57	3.91	4.14	-1.03	-2.10	-2.09	-0.75	-0.79	4.44	4.13	4.10	5.08	4.89
Male baseline (matrilineal)	0.16	0.16	0.16	0.18	0.19	0.04	0.14	0.14	0.05	0.04	0.19	0.17	0.17	0.22	0.21
Percent effect (matrilineal)	5.651641	5.519756	5.580235	4.887145	4.825614	27.9162	7.997193	7.999654	20.47451	26.1734	4.08209	4.457198	4.529822	3.614092	3.676113
Observations	148,071	148,071	148,071	139,101	148,071	23,661	23,661	23,661	22,113	23,661	124,408	124,408	124,408	116,986	124,408

Notes: Geographic RD regressions. Dependent variable is an indicator variable = 1 if the respondent is ever divorced. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table C15: Robustness RD Estimates: Female Firstborn, Kinship, and Number of Children

	All					Firstborn Before Union					Firstborn After Union				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Female firstborn × Patrilineal	0.058**	0.057**	0.056**	0.047**	0.057**	0.047	0.048	0.047	0.030	0.032	0.057**	0.057**	0.056**	0.049*	0.057*
	(0.023)	(0.024)	(0.024)	(0.024)	(0.027)	(0.055)	(0.055)	(0.055)	(0.057)	(0.049)	(0.026)	(0.026)	(0.026)	(0.026)	(0.032)
Female firstborn	-0.036*	-0.035*	-0.035*	-0.028	-0.034	-0.020	-0.020	-0.020	-0.015	-0.009	-0.037*	-0.037*	-0.036*	-0.030	-0.036
	(0.019)	(0.019)	(0.019)	(0.019)	(0.024)	(0.039)	(0.039)	(0.039)	(0.039)	(0.029)	(0.022)	(0.022)	(0.022)	(0.022)	(0.029)
Patrilineal	0.027	-0.022	0.025	0.034	0.019	-0.004	0.017	-0.020	0.001	0.003	0.034	-0.021	0.046	0.041	0.026
	(0.036)	(0.041)	(0.051)	(0.038)	(0.043)	(0.070)	(0.078)	(0.101)	(0.070)	(0.048)	(0.042)	(0.047)	(0.057)	(0.044)	(0.049)
Ind. controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cluster controls	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓			✓	✓	✓			✓	✓	✓			✓	✓
LatLon^2 RD	✓					✓					✓				
Distance RD		✓	✓				✓	✓				✓	✓		
Distance^2 RD			✓					✓					✓		
Exclude 15km from border				✓					✓					✓	
Cluster S.E. Ethnic-Area					✓					✓					✓
Female firstborn+Female firstborn*Patrilineal	0.021	0.022	0.022	0.019	0.024*	0.027	0.028	0.027	0.015	0.023	0.020	0.020	0.020	0.018	0.022
(p-value)	(0.112)	(0.110)	(0.110)	(0.172)	(0.066)	(0.492)	(0.475)	(0.481)	(0.714)	(0.574)	(0.152)	(0.154)	(0.154)	(0.200)	(0.102)
Male baseline (patrilineal)	4.25	4.26	4.28	4.25	4.20	3.31	3.78	3.78	3.30	3.29	4.39	4.35	4.35	4.40	4.35
Percent effect (patrilineal)	0.50	0.51	0.50	0.44	0.56	0.81	0.74	0.73	0.45	0.71	0.46	0.46	0.46	0.42	0.50
Male baseline (matrilineal)	4.19	4.17	4.16	4.19	4.24	3.83	3.48	3.48	3.85	3.84	4.27	4.32	4.32	4.26	4.32
Percent effect (matrilineal)	-.8630691	-.8446204	-.8393929	-.667666	-.7897027	-.5312938	-.5648889	-.5651598	-.4014392	-.2233152	-.860814	-.847835	-.839005	-.7063243	-.8226829
Observations	148,071	148,071	148,071	139,101	148,071	23,661	23,661	23,661	22,113	23,661	124,408	124,408	124,408	116,986	124,408
DHS clusters	4,787	4,787	4,787	4,572	141	3,877	3,877	3,877	3,698	139	4,787	4,787	4,787	4,572	141

Notes: This table presents geographic RD regressions where the dependent variable is the number of children the respondent gave birth to by the time of the survey. Cluster controls include the log of population size, the log of average purchasing power parity (PPP) in US dollars, and the log of distance to the closest urban center. In specifications labeled + Cluster controls (lasso-selected), the set of candidate geographic covariates is expanded to include malaria ecology, average agricultural suitability, bride price ethnic area, matrilocal ethnic area, and polygamy ethnic area. In these lasso-selected specifications, all controls—except ethnic-pair, cohort, country, and survey-year fixed effects—are selected using a Lasso-based procedure. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the DHS sampling unit.

Table C16: Female Firstborn and Subsequent Marriage: RD Kinship Dropping Matrilocal

	Ever Married											
	Years since birth											
	< 5			≥ 5			Overall			Married Firstborn´s father		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)	ITT (10)	ITT (11)	Fuzzy RD (12)
Female firstborn × Patrilineal	-0.075**	-0.079***	-0.138*	-0.026**	-0.029**	-0.020	-0.037***	-0.042***	-0.064*	-0.044	-0.046	-0.182
	(0.029)	(0.029)	(0.080)	(0.013)	(0.013)	(0.048)	(0.012)	(0.013)	(0.037)	(0.033)	(0.033)	(0.121)
Female firstborn	0.037*	0.044**	0.074*	0.029***	0.031***	0.030	0.028***	0.031***	0.044**	-0.021	-0.022	0.048
	(0.020)	(0.021)	(0.042)	(0.010)	(0.011)	(0.027)	(0.010)	(0.010)	(0.021)	(0.025)	(0.026)	(0.059)
Patrilineal	0.035	0.047	0.501**	0.062***	0.098***	0.826***	0.052***	0.080***	0.686***	0.060*	0.103**	1.052
	(0.026)	(0.030)	(0.230)	(0.014)	(0.020)	(0.307)	(0.014)	(0.018)	(0.234)	(0.031)	(0.046)	(1.143)
Ind. controls	✓			✓			✓	✓		✓		
Cluster controls	✓			✓	✓	✓	✓	✓	✓	✓		
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	-0.038*	-0.035*	-0.065	0.003	0.002	0.010	-0.009	-0.011	-0.020	-0.065***	-0.067***	-0.133*
(p-value)	(0.071)	(0.095)	(0.155)	(0.664)	(0.790)	(0.680)	(0.240)	(0.170)	(0.307)	(0.002)	(0.001)	(0.064)
Male baseline (patrilineal)	0.37	0.35	0.66	0.80	0.76	0.51	0.70	0.67	0.70	0.96	0.93	0.96
Percent effect (patrilineal)	-10.19	-10.02	-9.87	0.43	0.28	2.00	-1.34	-1.65	-2.89	-6.75	-7.20	-13.90
Male baseline (matrilineal)	0.29	0.30	0.25	0.92	0.95	0.20	0.73	0.75	0.40	0.72	0.75	-0.47
Percent effect (matrilineal)	12.91	14.72	29.61	3.21	3.29	15.20	3.80	4.06	11.01	-2.96	-2.88	-10.35
Observations	6,384	6,240	4,412	17,331	16,831	12,263	23,722	23,078	16,682	3,893	3,848	2,599
DHS clusters	2,124	2,071	1,540	3,691	3,581	2,906	3,943	3,823	3,124	1,739	1,717	1,265

Notes: Geographic RD regressions. Dependent variables: (i) ever married after firstborn (cols. (1)–(9)); (ii) firstborn's father ID matches current husband ID (cols. (10)–(12)). Sample: women whose firstborn was born before any union. Cols. (1)–(6) restrict by years since firstborn relative to survey. The sample excludes matrilocal ethnic areas.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table C17: Female Firstborn and Postmarital Outcomes: RD Kinship Dropping Matrilocal

	Polygamous union			Currently Divorced			Ever Divorced			Fertility		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)	ITT (10)	ITT (11)	Fuzzy RD (12)
Female firstborn × Patrilineal	0.008	0.010	0.030	-0.001	-0.001	-0.010	-0.002	-0.002	0.007	0.051**	0.058**	0.178**
	(0.007)	(0.007)	(0.022)	(0.002)	(0.002)	(0.007)	(0.005)	(0.006)	(0.017)	(0.024)	(0.024)	(0.070)
Female firstborn	-0.006	-0.007	-0.015	0.004*	0.005**	0.009**	0.009**	0.008*	0.005	-0.028	-0.036*	-0.097**
	(0.006)	(0.006)	(0.013)	(0.002)	(0.002)	(0.004)	(0.005)	(0.005)	(0.010)	(0.019)	(0.020)	(0.040)
Patrilineal	0.019*	-0.010	0.043	-0.000	0.003	0.015	0.001	0.006	0.074	0.013	0.022	0.286
	(0.010)	(0.014)	(0.085)	(0.002)	(0.003)	(0.016)	(0.006)	(0.008)	(0.051)	(0.029)	(0.037)	(0.245)
Ind. controls	✓	✓	✓	✓			✓			✓	✓	✓
Cluster controls	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓
+Cluster controls (lasso-selected)		✓	✓		✓	✓		✓	✓		✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Patrilineal	0.002	0.003	0.015	0.003**	0.003**	-0.000	0.007**	0.007**	0.012	0.023*	0.022	0.081**
(p-value)	(0.559)	(0.523)	(0.151)	(0.012)	(0.012)	(0.917)	(0.014)	(0.020)	(0.139)	(0.093)	(0.108)	(0.018)
Male baseline (patrilineal)	0.31	0.33	0.87	0.01	0.00	0.01	0.17	0.18	-0.12	4.12	4.23	8.55
Percent effect (patrilineal)	0.74	0.78	1.74	62.14	190.78	-2.62	4.13	3.73	-9.84	0.55	0.51	0.95
Male baseline (matrilineal)	0.33	0.32	0.88	0.06	0.06	0.03	0.19	0.17	-0.16	4.31	4.22	8.44
Percent effect (matrilineal)	-1.84	-2.32	-1.66	7.24	7.57	34.01	4.94	4.85	-3.12	-0.66	-0.86	-1.15
Observations	129,048	126,484	104,795	149,294	146,067	119,648	149,294	146,067	119,648	149,294	146,067	119,648
DHS clusters	4,887	4,731	4,089	4,887	4,731	4,089	4,887	4,731	4,089	4,887	4,731	4,089

Notes: Geographic RD regressions. Dependent variables: polygamous union, currently divorced, ever divorced, and number of children. The sample excludes matrilocal ethnic areas.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Table C18: Female Firstborn, Bride Price, and Subsequent Marriage: RD Estimates

	Ever Married											
	Years since birth											
	< 5			≥ 5			Overall			Married Firstborn´s father		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)	ITT (10)	ITT (11)	Fuzzy RD (12)
Female firstborn × Bride price	0.004	0.005	0.016	-0.012	-0.011	-0.038	-0.005	-0.005	-0.012	-0.020	-0.020	-0.119*
	(0.018)	(0.018)	(0.072)	(0.009)	(0.009)	(0.028)	(0.008)	(0.008)	(0.028)	(0.019)	(0.020)	(0.070)
Female firstborn	-0.005	-0.005	-0.016	0.016**	0.016**	0.037*	0.009	0.008	0.016	-0.008	-0.009	0.067
	(0.014)	(0.014)	(0.048)	(0.007)	(0.007)	(0.019)	(0.006)	(0.006)	(0.019)	(0.014)	(0.014)	(0.050)
Bride price	0.008	0.013	0.240	-0.004	-0.002	0.018	-0.002	0.001	0.061	0.027*	0.026	0.233*
	(0.015)	(0.017)	(0.153)	(0.008)	(0.008)	(0.057)	(0.007)	(0.008)	(0.060)	(0.015)	(0.016)	(0.131)
Ind. controls	✓			✓			✓			✓		
Cluster controls	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Bride Price	-0.001	-0.000	-0.000	0.004	0.005	-0.001	0.003	0.003	0.004	-0.029**	-0.029**	-0.052**
(p-value)	(0.934)	(0.998)	(0.991)	(0.486)	(0.395)	(0.959)	(0.508)	(0.499)	(0.703)	(0.032)	(0.032)	(0.037)
Male baseline (bride price)	0.27	0.27	0.69	0.80	0.80	-0.07	0.66	0.66	0.57	0.84	0.84	0.24
Percent effect (bride price)	-0.32	-0.01	-0.05	0.49	0.61	0.79	0.51	0.53	0.71	-3.43	-3.46	-21.32
Male baseline (no bride price)	0.34	0.33	0.41	0.82	0.82	-0.02	0.70	0.70	0.55	0.88	0.88	0.12
Percent effect (no bride price)	-1.38	-1.49	-3.97	1.96	1.97	-161.41	1.23	1.18	2.84	-0.95	-0.99	57.29
Observations	29,455	29,305	12,995	82,041	81,643	42,085	111,504	110,956	55,095	18,079	17,989	9,597
DHS clusters	6,979	6,918	3,272	11,389	11,271	6,472	12,414	12,275	6,958	5,116	5,072	2,843

Notes: Geographic Bride Price RD regressions. Dependent variables: (i) ever married after firstborn (cols. (1)–(9)); (ii) firstborn's father ID matches current husband ID (cols. (10)–(12)). Sample: women whose firstborn was born before any union. Cols. (1)–(6) restrict by years since firstborn relative to survey. The sample excludes matrilocal ethnic areas.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

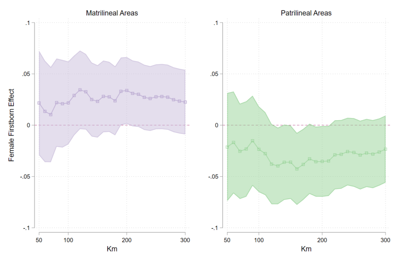
Table C19: Female Firstborn, Bride Price, and Post Marital Outcomes: RD Estimates

	Polygamous union			Currently Divorced			Ever Divorced			Fertility		
	ITT (1)	ITT (2)	Fuzzy RD (3)	ITT (4)	ITT (5)	Fuzzy RD (6)	ITT (7)	ITT (8)	Fuzzy RD (9)	ITT (10)	ITT (11)	Fuzzy RD (12)
Female firstborn × Bride Price	0.005	0.005	0.001	-0.001	-0.001	-0.007	-0.005	-0.004	-0.013	0.001	0.003	0.038
	(0.004)	(0.004)	(0.013)	(0.001)	(0.001)	(0.004)	(0.003)	(0.003)	(0.010)	(0.013)	(0.013)	(0.041)
Female firstborn	-0.003	-0.004	-0.001	0.001	0.001	0.005*	0.007***	0.006**	0.014*	0.032***	0.029***	0.008
	(0.003)	(0.003)	(0.010)	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.008)	(0.010)	(0.010)	(0.030)
Bride Price	0.022***	0.021***	0.139***	0.000	0.000	0.000	-0.004	-0.004	-0.043**	0.018	0.003	-0.082
	(0.005)	(0.005)	(0.031)	(0.001)	(0.001)	(0.007)	(0.003)	(0.003)	(0.021)	(0.015)	(0.015)	(0.093)
Ind. controls	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Cluster controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
+Cluster controls (lasso-selected)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pair FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LatLon RD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Female firstborn+Female firstborn*Bride Price	0.002	0.001	-0.000	0.000	0.000	-0.001	0.002	0.003	0.001	0.033***	0.032***	0.046***
(p-value)	(0.508)	(0.588)	(0.927)	(0.724)	(0.739)	(0.319)	(0.248)	(0.161)	(0.798)	(0.000)	(0.000)	(0.002)
Male baseline (bride price)	0.25	0.25	0.80	0.03	0.03	0.00	0.17	0.16	0.24	4.01	4.02	9.29
Percent effect (bride price)	0.65	0.55	-0.05	1.11	1.09	-47.73	1.24	1.58	0.36	0.82	0.80	0.50
Male baseline (no bride price)	0.30	0.30	0.82	0.02	0.02	-0.02	0.13	0.14	0.17	4.25	4.23	9.59
Percent effect (no bride price)	-1.05	-1.26	-0.16	4.54	4.62	-26.32	5.18	4.70	8.21	0.76	0.70	0.08
Observations	582,407	576,284	363,167	686,183	679,474	412,342	686,183	679,474	412,342	686,183	679,474	412,342

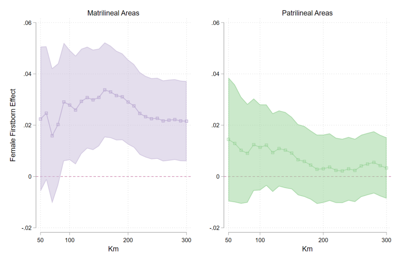
Notes: Geographic Bride Price RD regressions. Dependent variables: polygamous union, currently divorced, ever divorced, and number of children. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, clustered at the DHS sampling unit.

Figure C3: Kinship Heterogeneity: Bandwidth Sensitivity

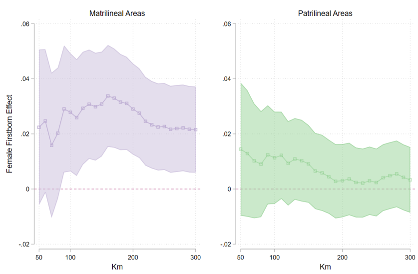
(a) Subsequent Marriage: YSB < 5



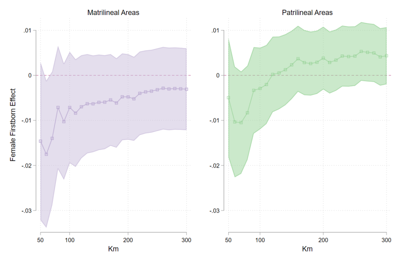
(b) Subsequent Marriage: YSB ≥ 5



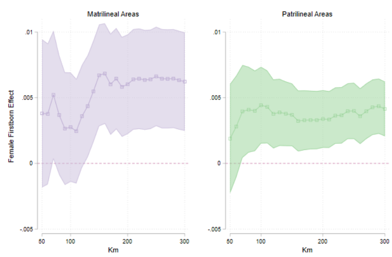
(c) Subsequent Marriage



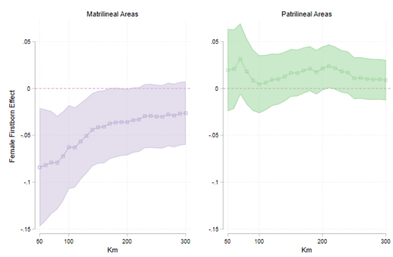
(d) Polygamy



(e) Divorce



(f) Total Fertility



Notes: This figure plots the estimated female firstborn effect for matrilineal ethnic areas (in purple) and patrilineal ethnic areas (in green), along with the 90% confidence intervals, derived from estimating equation (3) re-estimated while varying the geographic RD bandwidth (maximum distance from the kinship border) between 50 and 300 km.