Social Insularity and Gender Attitudes: Evidence from Cousin Marriage in Oman

Mohammad Al-Shafaee, Erica Field, Seema Jayachandran, Munir Squires*

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Abstract

In many societies, a woman's social world is largely confined to her family. We examine how this insularity shapes cultural values by studying kin marriage in Oman, where roughly one third of marriages are between first cousins. Using quasi-random variation in the availability of marriageable male cousins as an instrumental variable, we find that marrying a non-cousin transforms women's social environment, sharply reducing daily contact with parents and in-laws. Consistent with weaker vertical cultural transmission of traditional values, marrying a non-cousin leads to more gender-egalitarian attitudes (0.65 SD increase). Strikingly, this occurs alongside outcomes typically associated with reduced female empowerment: marrying a non-cousin increases child marriage by 20 percentage points, and decreases high school completion by the same amount. These results suggest that tight-knit family structures can perpetuate traditional values, highlighting social exposure as a distinct driver of cultural change.

1 Introduction

Traditional values thrive in closed social worlds. In many societies, women's lives are particularly circumscribed, with overlapping practices limiting their social circles primarily to family members: marriage within extended family creates dense kinship networks, female seclusion constrains contact with non-relatives, and women move directly from father's to husband's authority without establishing independent social connections. These practices maintain traditional values both by

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increasing contact with like-minded relatives and by raising the costs of disagreement with them, creating a self-reinforcing loop where norms foster insularity, which in turn shields those norms from challenge.

We examine how social insularity shapes women's cultural values, specifically those related to women's place in society. We study a setting where, despite dramatic educational gains for women, traditional gender attitudes persist. We argue this is in part due to exceptionally strong social ties within family networks. To identify how family ties influence attitudes, we use exogenous variation in whether a woman marries a first cousin (hereafter, cousin), in a setting where a third of marriages are between cousins.[1]

Using survey data from 1,538 women aged 25-50 in Oman, we show that women with fewer marriageable-age male cousins are more likely to marry a non-cousin, which we refer to as "out-marriage."[2] We then show that out-marriage leads to a large reduction in the intensity of ties with kin, such as parents and in-laws. This disruption of traditional family networks leads to more liberal gender attitudes, even as it produces outcomes typically associated with reduced female empowerment: earlier marriage and childbirth, and less education. This counterintuitive pattern—more gender-equal attitudes alongside seemingly worse socioeconomic outcomes—points to the role of social insularity in maintaining traditional values independent of other factors commonly associated with female empowerment.

We argue that marriage patterns shape gender attitudes through social insularity and increased vertical cultural transmission. When a woman marries her cousin, she remains embedded in a dense, homogeneous kin network that limits exposure to alternative perspectives and increases the costs of disagreeing with her parents and in-laws. By contrast, out-marriage exposes a woman to broader social circles and, by loosening the overlap between her natal and marital families, weakens either family's power to enforce its norms.

The liberalizing effect of out-marriage on gender attitudes is potentially in tension with the economic and social functions that cousin marriage serves in this context. Cousin marriages facilitate trust and credible commitments between families, mitigate information asymmetries about potential spouses, strengthen existing relationships, and help preserve family resources and status, advantages that may be lost when marrying out (Do et al., 2013; Mobarak et al., 2019, 2013). These may thus help explain the persistence of both cousin marriage and traditional gender norms.

To identify the causal effect of out-marrying, we exploit "supply-side" variation in how constrained families are in choosing cousin marriage for their daughter: Women differ in how many

[1]Oman's cousin marriage rate is about 40% (Islam, 2012). The rate is similarly high across the broader region (Iqbal et al., 2022; Bittles and Black, 2010; Abbasi-Shavazi et al., 2008).

[2]The surveys were conducted in 2007 and 2009 in eight rural villages, and were not designed to be nationally representative.

male cousins they have who are a few years older than them and, thus, most suitable to marry. We start by presenting evidence on the strong relationship between the availability of marriageable male cousins and out-marriage. We find that, controlling for the number of equivalent female cousins, each additional male cousin of marriageable age reduces the probability of out-marriage by 5 percentage points. This relationship is specific to male cousins within the typical spousal age range (similar age or somewhat older) and does not extend to female cousins or male cousins too distant in age, suggesting we are capturing a direct marriage market effect, and not other characteristics of large extended families. We find evidence against various potential violations of the exclusion restriction, including differences in pre-marital socialization.

Using this instrumental variable, we first examine how out-marriage affects women's social environments. We find that it transforms women's daily social interactions: out-marriage sharply reduces the likelihood of daily contact with parents, in-laws, and siblings. These changes are reinforced by geographic separation, with out-marriage reducing the likelihood of living within one kilometer of one's parents.

We then show that out-marriage leads women to hold more gender-egalitarian views. This effect is large: we find an increase of 0.65 standard deviations in our index of gender attitudes. We find the largest impacts on perceptions of women's capabilities as political leaders and businesspeople.

But while out-marriage leads to more gender-equal attitudes, it also leads to other outcomes typically associated with *lower* female empowerment. Notably, out-marriage leads to an increase in early marriage. The probability of being married by age 16 rises by 22 percentage points, which likely happens because the trust and commitment between kin allow for longer engagement periods. Consistent with earlier marriage, we also find reduced schooling and earlier childbirth. Out-marriage reduces by 22 percentage points the likelihood of completing grade 12, and reduces age at first birth by 2.5 years. Despite these substantial differences in marriage timing, age at first childbirth, and schooling, we find that out-marriage has no detectable effect on women's own employment, which remains low across groups.

These findings contribute to three literatures. The first is on the determinants of gender norms, where foundational work links economic development to shifting gender attitudes (for reviews, see Jayachandran, 2015; Duflo, 2012; Doepke et al., 2012). This literature emphasizes that changes in women's education, labor-market opportunities, and legal and political rights can increase economic returns to more egalitarian gender roles and women's capacity to pursue them. Complementary work emphasizes deep-rooted material and familial determinants, connecting contemporary gender attitudes to historical technologies, kinship systems, and family structures (Alesina et al., 2013; Alesina and Giuliano, 2014; Lowes, 2022; Ashraf et al., 2020). Our paper instead focuses on the contemporaneous role of family structure and social exposure. We show that social insularity,

maintained by close-kin marriage, can offset the liberalizing effects of schooling and economic development. Women from the same birth cohorts, facing the same broader social environment, hold different gender attitudes depending on whether they marry a cousin or not.

Second, our paper relates to models of cultural transmission, which distinguish vertical transmission within families from horizontal and oblique learning from peers and the wider society (Bisin and Verdier, 2001, 2011). These models imply that strong vertical transmission can sustain traditional gender attitudes despite broader social change (Giuliano, 2020). Empirically, vertical transmission of gender norms is well documented, from intergenerational links in gender-role views and labor supply to the persistence of country-of-origin norms among second-generation immigrants (e.g. Farré and Vella, 2013; Fernández et al., 2004; Fernández and Fogli, 2009; Alesina et al., 2013; Giuliano and Nunn, 2021; Dossi et al., 2021). We provide causal evidence on the *intensity* of vertical transmission by using exogenous variation in out-marriage, which we show weakens vertical ties (decreases daily contact with parents and in-laws). Consistent with cultural-transmission models, looser vertical ties erode conservative gender norms: women pushed into out-marriage hold more gender-egalitarian views even though they marry earlier and complete less schooling.

Third, our research contributes to work on kinship intensity and close-kin marriage. An influential line of argument suggests that the decline of kinship groups (in part due to a prohibition on cousin marriage in the Middle Ages) was important in the rise of individualism, innovation, and broadening circles of cooperation in Europe (Henrich, 2020; Schulz et al., 2019). While elements of this argument have found support in other settings (e.g. Ghosh et al., 2023; Bahrami-Rad et al., 2022; Enke, 2019), direct evidence on the mechanisms by which tight kinship affects culture and psychology is absent. We contribute to this by documenting how a decline in cousin marriage is linked to a sharp reduction in vertical cultural transmission. Our findings suggest that kin-based institutions sustain traditional gender norms by changing who women interact with and learn from.[3]

Our results suggest that expanding formal education and economic opportunities for women may have limited impact when they remain embedded in closed family networks. The persistence of traditional attitudes among educated women who marry cousins suggests that social isolation can play a central role. This mechanism likely extends beyond cousin marriage to other practices that limit women's social connections, such as veiling, restrictions on independent movement, and female seclusion. In contexts where traditional practices create dense, inward-looking family networks, interventions that expand women's social circles may matter more for shifting cultural values, even

[3]Recent work shows that cousin marriage serves multiple economic functions: it can ease the burden of upfront marriage payments, either by financing them within the kin group or by replacing them with later bequests (Mobarak et al., 2013; Do et al., 2013), and limit the fragmentation of family property (Bahrami-Rad, 2021; Johow et al., 2019). These benefits help explain the persistence of the practice despite evidence of substantial health costs for offspring (Mobarak et al., 2019; Mete et al., 2020; Hwang et al., 2025).

in the presence of rising education levels and increased access to outside information.[4]

2 Conceptual Framework

The persistence of traditional gender attitudes despite broader modernization suggests a potential role for family network structures in shaping and maintaining cultural values. Anthropologist Germain Tillion, studying gender relations in the Mediterranean, hypothesized "a causal relationship between tribal endogamy (or rather, its degenerate form [first-cousin marriage]) and a particular debasement of the female condition" (Tillion, 1983, p. 28). Our conceptual framework similarly emphasizes how insular kin ties, particularly cousin marriage, can reinforce traditional gender norms.

Marriage choices are important in part because they determine network density and diversity. This is especially consequential for women in contexts like Oman, whose social spheres are often restricted primarily to family members, making the choice of marriage partner a primary determinant of their post-marital social environment (Eickelman, 1984).

When a woman marries her cousin, her husband's kin are also her own, creating overlapping family ties. These tight-knit networks tend to emphasize conformity and collective identity over individualism (Henrich, 2020; Edlund, 2018), creating environments where traditional gender norms can be particularly resistant to change. This may come from both: (1) restricted exposure to alternative perspectives beyond the kin group, and (2) increased capacity for norm enforcement within tight family networks.

The first channel involves social exposure and norm perception within the network. Dense, homogenous kin networks resulting from cousin marriage can create social echo chambers, limiting exposure to alternative perspectives and reinforcing existing norms through frequent interaction with like-minded relatives. Within such networks, the influence of elders may be particularly strong (Bates et al., 2004).[5] Conversely, out-marriage expands the family network beyond the natal kin group. This increases the potential for exposure to varied viewpoints and role models.[6]

The second channel operates through the social costs of norm deviation. The unified overlapping family network resulting from cousin marriage means conflict and disagreement risks jeopardizing all family relationships simultaneously as sanctions can be collectively imposed. In contrast, women who marry non-relatives bridge two distinct family networks. This separation reduces each family's leverage—sanctions from one side risk driving the couple toward the other—potentially lowering

[4]Indeed, Glennerster et al. (2026) show that unstructured mass media exposure can reinforce traditional norms rather than eroding them.

[5]The insular nature of kin networks can moreover lead individuals to overestimate adherence to tradition (Bursztyn et al., 2020). Such misperceptions would reinforce conformity to perceived traditional norms.

[6]In practice, however, such network expansion is not guaranteed. In patrilocal settings, women may merely substitute their birth family's influence for equally insular in-law relationships. A key question then is whether out-marriage merely substitutes the influence of parents for that of in-laws, or whether it reduces their joint influence.

the cost of adopting non-traditional attitudes.

These two channels suggest out-marriage may weaken traditional gender norms and encourage more gender-equal attitudes across society. Cousin marriage, however, is sustained both by traditional gender norms themselves—parents who hold conservative views about women's roles are likelier to favor cousin matches for their sons and daughters—and by economic incentives that may benefit individual women. Because kin trust one another more, marriages arranged between cousins can involve less uncertainty about a prospective spouse and fewer concerns that an engagement will be broken. Dense kin networks may also reassure families about premarital behavior during a long engagement. Girls can therefore delay co-residence and childbirth and remain in school longer (Ambrus and Field, 2008).

Beyond marriage timing, there are at least three ways in which a woman in this setting may benefit from marrying a cousin. First, it means her husband's family are also her own blood relatives. Some women report that this engenders more considerate treatment from in-laws and greater room for accommodation in conflicts, since mistreating a daughter-in-law risks damaging relationships across the wider kin group (Hussain, 1999; Jacoby and Mansuri, 2010; Small et al., 2024).[7] Consistent with this possibility, Campbell (2026) finds that first-cousin marriage is associated with lower physical intimate partner violence and coercive control. The fact that bride price and other transfers circulate within the same extended family may further soften in-laws' demands and limit day-to-day resentment over marriage payments directed at the bride herself (Do et al., 2013; Mobarak et al., 2019; Bittles and Black, 2010; Campbell et al., 2024).[8]

Second, cousin marriage can raise the perceived returns to investing in girls. If marrying a cousin implies parents expect to remain closely tied to a married daughter and her children, her education may be viewed as an investment rather than a pure transfer to another family. In patrilineal settings where daughters share in the inheritance, as dictated in Islam, marrying a patrilateral cousin (that is, her father's brother's son) also keeps any inherited assets within the same lineage (Tillion, 1983; Johow et al., 2019; Bahrami-Rad, 2021), which can further strengthen parents' incentives to finance her schooling or provide her with assets. These transfers may partially compensate daughters for accepting a cousin marriage and redistribute some of the family-level gains from wealth consolidation back to the individual woman.[9]

[7]For example, one of the women interviewed in Hussain (1999) reported that "Consanguineous marriages are popular because relatives are more caring and considerate. The girl is more happy ... and in times of conflict usually the parents-in-law play a supportive role and try and reason with both parties." However many women interviewed in this study felt the reverse was true. One said: "If it is a match within the family then there is more room for accommodation. However, it is usually the daughter-in-law who makes the compromises, whereas a non-related daughter-in-law will not give such concessions to the in-laws."

[8]Marital transfers (mahr) flow from the husband's family to the bride in Oman.

[9]This logic parallels an anthropological literature linking female inheritance, patrilateral cousin marriage, and honor-based control. Tillion (1983), for example, argues that marrying a patrilateral cousin prevents wealth escape when daughters inherit. Similarly, Campbell et al. (2024) interpret honor killings as extreme enforcement devices

Third, if higher-status families are more likely to arrange cousin marriages for their sons (Eickelman, 1984), marrying a cousin may mean a woman has a better-educated, higher-earning husband. Historical and ethnographic work describe higher-status lineages using cousin marriage to preserve property and social standing (Johow et al., 2019; Meriwether, 1999). In these ways, cousin marriage may offer girls private benefits (later marriage, softer treatment by in-laws, greater parental investment, and higher-status husbands) while keeping them tied to insular kin networks.

These forces suggest a tradeoff for women. On the one hand, marriage outside traditional kin networks offers potential benefits of greater social openness: expanding networks, new social connections, and exposure to diverse perspectives and role models. On the other hand, cousin marriage provides greater trust, social cohesion, and economic security, and can package together later marriage, less contentious financial negotiations, more parental investment, and higher-status husbands. The educational differences we observe between cousin marriage and out-marriage may therefore reflect not only the mechanical effects of marriage timing but also strategic parental investment decisions when a cousin match is anticipated. Ex ante, it is ambiguous whether women who marry cousins or women who out-marry will be better off overall: out-marriage tends to expose them to more liberal gender attitudes, while cousin marriage may compensate for greater social insularity by offering a bundle of private material and relational benefits.

Finally, we note potential parallels with other persistent cultural practices. Female seclusion, as well as more extreme versions of veiling, may similarly preserve traditional values through social insularity. Together, these customs can shield traditional gender norms from external pressures despite modernization along other dimensions. This pattern aligns with our broader argument: insular social networks, whether shaped by marriage patterns or other cultural practices, can sustain conservative values.

3 Data and Empirical Strategy

3.1 Data and Variable Construction

Our research design seeks to estimate the causal effect of out-marriage on women's gender attitudes. To do so, we conducted a survey of women in the Dakhliya region of Oman. The survey was conducted in three villages in the wilayat (district) of Bid Bid in 2007 and five villages in the wilayat of Nizwa in 2009. Both are rural areas, shown on a map in Appendix Figure A.1.

The sampling frame comprised all women ages 25 to 50 in the eight selected villages. This sampling rule yielded 1,722 women of whom 1,637 agreed to be interviewed (95% response rate).

that resolve parent–offspring conflict over wealth-preserving cousin marriage. Parents may similarly apply gentler economic means, investing more in children who accept a cousin marriage.

Of these 1,637 respondents, we drop 33 due to missing data on key variables such as age, ever married, or marriage to a first cousin.

The survey asked respondents to enumerate all aunts and uncles and then all first cousins, including each cousin's age, sex, and survival until age 12. The reported total number of cousins ranged from 0 to 138. We omit respondents who report having zero cousins, as this is highly unlikely in a high-fertility country such as Oman and likely represents non-response. We also trim the top 1% of the distribution (those with more than 97 cousins), as the detailed information about cousins' ages is likely less accurate for respondents reporting such large numbers. These restrictions reduce our sample by 66 respondents to 1,538.

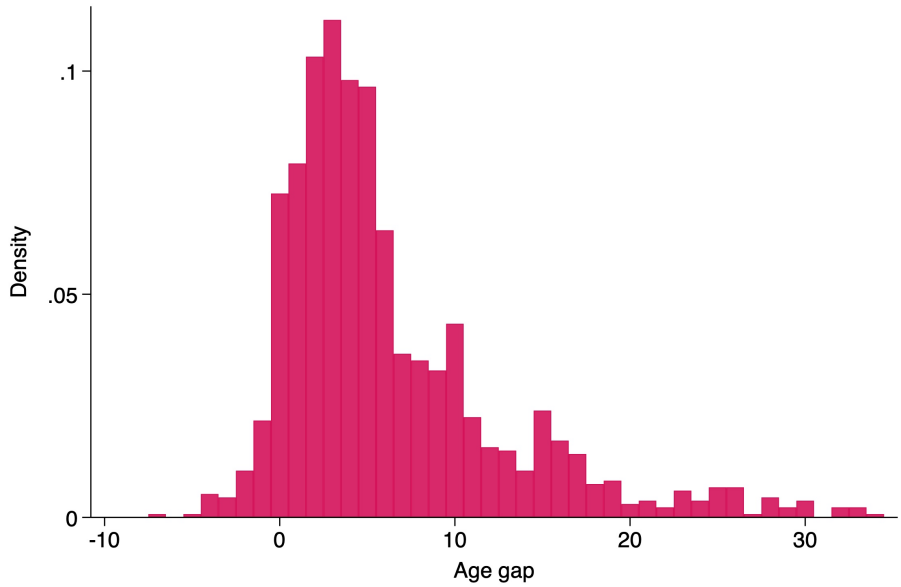
Our treatment variable, $OutMarriage_i$, is a binary indicator equal to 1 if a woman's first marriage was not to a first cousin, and 0 otherwise. This combines women married to relatives more distant than first cousins with those who marry non-relatives. We do this because our instrument generates variation in whether a woman marries a first cousin. Under this definition we also code never-married women as part of the control group ($Outmarriage = 0$), on the grounds that they remain within their natal kin group and do not form the dual family ties central to our conceptualization of out-marriage's effect on social insularity (Wikan, 1991).[10] We discuss this further and show our results are robust to alternative definitions of the treatment variable in Section 4.4.

To address potential endogeneity in marriage choices, we construct an instrumental variable, $MarriageableCousins_i$, based on the availability of potential cousin-husbands, capturing a quasi-random "supply-side" determinant of whether someone marries a cousin. This approach builds on work by Mobarak et al. (2019), who uses cousin availability as an instrument to study health and economic outcomes of cousin marriage in South Asia.

Since spousal suitability is strongly age-dependent, we define $MarriageableCousins$ as a weighted sum of the respondent's relevant-age male cousins. The weights, $w(\cdot)$, reflect each cousin's suitability based on their age relative to the respondent. We derive these weights empirically from the observed distribution of husband-wife age differences in our sample, shown in Figure 1, which confirms that husbands are typically a few years older than their wives. We estimate a pooled density across both survey rounds using an Epanechnikov kernel and normalize the weights to have a maximum of one (see Appendix Figure A.3).

[10] Appendix Figure A.2 provides descriptive support for these decisions. First, women married to second or more distant cousins are significantly less likely to live near their parents than those married to a first cousin, and are more similar to women married to non-relatives. This suggests first-cousin marriages are substantially more insular than marriages between more distant relatives. Second, never-married women are even more likely to live near their parents than women married to a first cousin.

Figure 1: Husband-wife age differences



Notes: The histogram shows the distribution of husband's age minus wife's age, measured in years. Positive values indicate that the husband is older. The figure excludes age gaps of 35 years or more (1.3% of nonmissing observations).

Formally, for each woman i, we calculate the instrument as:

$$MarriageableCousins_i = \sum_{j \in \mathcal{M}_i} w(AgeDiff_{ij}) \tag{1}$$

where $\mathcal{M}_i$ is the set of male cousins of woman i who survived until age 12 (an age by which potential spouses are likely identified), and $AgeDiff_{ij}$ is the age difference between cousin j and woman i. The logic is that having fewer marriageable male cousins increases the likelihood that a woman will marry a non-cousin.

Our primary outcome is an index of gender attitudes constructed from four standard questions about gender attitudes: (i) whether jobs should be allocated based on gender when scarce, (ii) whether women can be effective political leaders, (iii) whether women can succeed in running businesses, and (iv) whether university education is more important for a boy than for a girl (see Appendix B for exact wording). Higher values in our gender attitudes index represent more egalitarian (progressive) views toward gender roles. Following Anderson (2008), we construct our index as a weighted average of the standardized measures, giving more weight to variables containing more unique information.

In addition to our gender attitudes index, we collected data on outcomes related to family proximity and interaction patterns, marriage dynamics, and socioeconomic outcomes. Family contact variables include geographic proximity and frequency of contact with parents, in-laws, and siblings.

Marriage-related variables capture timing (age at marriage, engagement duration), marriage quality, and husband characteristics. Fertility outcomes include age at first birth and number of children from the first marriage. Socioeconomic outcomes include the respondent's employment status and years of education. These complementary measures help assess whether changes in gender attitudes coincide with structural changes in family relationships and women's life circumstances. See Appendix B for variable construction and the wording of questions in the survey.

3.2 Sample Description and Summary Statistics

Figure 2 presents trends in female education, cousin marriage, and gender attitudes by birth year in our cross-sectional sample. Panel (a) reveals a dramatic increase in female educational attainment across birth cohorts, with average years of schooling rising from about 1 year for women born in 1960 to 11 years for those born in 1985. Meanwhile, Panel (b) shows that the rate of cousin marriage among women in our sample remains stable across these same birth cohorts, consistently around 30%.[11]

Panel (c) illustrates the persistence of traditional gender attitudes across birth cohorts. Baseline gender attitudes in our sample are notably conservative. For instance, almost all agree that men should have priority for jobs when scarce (89% agree) and that men make better political leaders than women (87% agree). Similarly, 63% agree that men are better suited for business. Views on education are somewhat more egalitarian, though a significant minority (26%) still believe university education is more important for boys. As the figure shows, these traditional attitudes have remained stable despite rising education levels. This persistence of traditional gender norms despite economic and educational progress suggests the presence of frictions that slow cultural change.

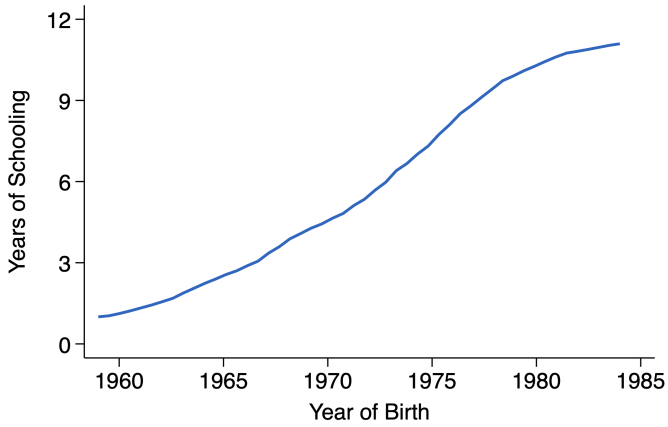
Table 1 presents summary statistics. Panel A shows balance variables, which are characteristics unlikely to be influenced by the choice of spouse: age, height, age of menarche, number of siblings, birth order, whether the respondent or her father has any schooling, and father's land ownership. Panel B presents cousin-related variables, including our key measure of marriageable cousins. On average, women in our sample have 33 total first cousins, with 3.2 male and 3.0 female first cousins of marriageable age.[12]

[11] As in the rest of the analysis, this figure reports the respondent's first marriage.

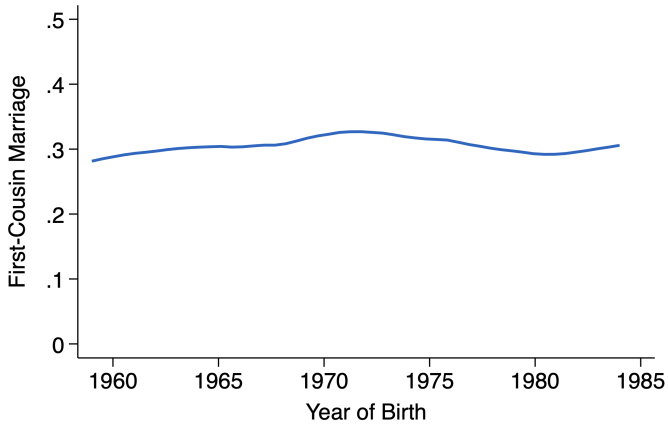
[12] Variation in sample sizes across variables in this table reflects both survey design choices (certain questions were asked only in the second survey round) and the applicability of specific questions (e.g., husband and in-law variables apply only to married respondents, age at first birth only applies to women who have given birth).

Figure 2: Education, cousin marriage, and gender attitudes by birth cohort

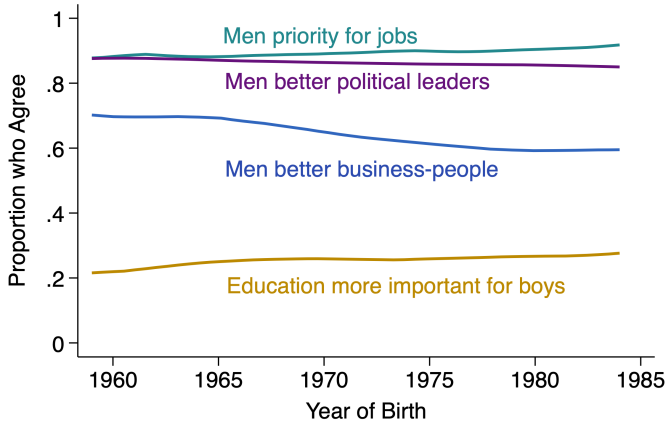
(a) Female schooling



(b) First-cousin marriage



(c) Gender attitudes



Notes: The figure shows patterns by year of birth among ever-married women. Panel (a) reports average years of schooling, panel (b) the proportion whose first marriage was to a first cousin, and panel (c) the proportion agreeing with each statement about gender roles. The curves are estimated using local polynomial regression. Higher values in panel (c) indicate less egalitarian attitudes.

Table 1: Summary statistics

Variable	Mean	SD	Min	Max	Obs.
Panel A: Respondent and natal-family background					
Age (years)	33.58	6.88	25	50	1538
Height (cm)	154.63	6.81	100	185	1505
Age at menarche	13.44	1.42	9	22	1516
Brothers	4.16	2.29	0	14	1538
Sisters	4.06	2.41	0	14	1538
Birth order	3.57	2.24	1	13	1538
Any education	0.82		0	1	1533
Father had any education	0.21		0	1	1527
Father's land ≥5,000 Omani rials	0.63		0	1	911
Panel B: Cousins and instrument					
Total cousins	32.70	19.41	1	97	1538
Total male cousins	16.64	10.10	0	53	1538
Total female cousins	16.06	10.33	0	55	1538
Male cousins 0–6 years older	2.65	2.78	0	19	1538
Male marriageable-age cousins	3.19	2.89	0.00	18.41	1538
Female marriageable-age cousins	2.97	2.91	0.00	20.61	1538
Male share, cousins 5+ years younger	0.49	0.19	0.00	1.00	1434
No cousins 5+ years younger	0.07		0	1	1538
Panel C: Marriage and fertility					
Ever married	0.89		0	1	1538
Married to first cousin	0.27		0	1	1538
Married to second cousin	0.10		0	1	1538
Married to other relative	0.09		0	1	1538
Married to non-relative	0.42		0	1	1538
Out-married	0.61		0	1	1538
Married by age 16	0.44		0	1	1536
Age at marriage	17.52	4.54	9	35	1360
Length of engagement (years)	0.63	1.36	0	15	704
Age at first birth	18.52	4.32	10	35	1276
Children from first marriage	4.56	3.56	0	15	1535

Continued on next page

Table 1 – continued

Variable	Mean	SD	Min	Max	Obs.
Panel D: Family contact					
Parents less than 1 km away	0.47		0	1	1298
In-laws less than 1 km away	0.37		0	1	1063
See parents daily	0.50		0	1	707
See in-laws daily	0.26		0	1	710
See siblings daily	0.42		0	1	714
See husband's siblings daily	0.21		0	1	714
Panel E: Gender attitudes					
Job priority to men	3.09	0.57	1	4	1495
Men are better leaders	3.23	0.69	1	4	791
Men are better at business	2.74	0.74	1	4	792
Education priority to males	2.07	0.82	1	4	791
Panel F: Woman's education and employment					
Completed grade 12	0.35		0	1	1501
Years of education	7.33	5.26	0	16	1501
Employed	0.14		0	1	1527
Panel G: Husband characteristics					
Husband's education (years)	8.24	5.08	0	16	1336
Husband completed grade 12	0.37		0	1	1336
Husband's income (log)	5.74	0.60	2.30	8.86	1027
Husband–wife age gap <10 years	0.76		0	1	1355
Panel H: Other marital outcomes					
Arguments with husband (1–4)	1.59	0.71	1	4	717
Can make purchases	0.85		0	1	668
Life satisfaction (1–5)	4.44	0.76	1	5	789
Divorced	0.04		0	1	675
Husband has co-wives	0.12		0	1	717

Notes: Marriageable-cousin measures are age-weighted counts of first cousins. Never-married women are included when calculating the proportions in each marriage category. Their out-marriage and married-by-16 indicators are coded zero. The younger-cousin male share is calculated among first cousins at least five years younger than the respondent and is undefined for women with no such cousins. Attitude responses range from 1 (strongly disagree) to 4 (strongly agree), with higher values indicating less egalitarian attitudes. Higher values indicate more frequent arguments and greater life satisfaction.

Panel C presents marriage and fertility statistics. We keep never-married women in our sample, since the availability of male cousins could affect whether a woman marries at all. In our sample, 89% of women have ever married. The distribution of marriage types reveals the prevalence of consanguineous unions: 27% married first cousins, 10% married second cousins, and 9% married other relatives, while 42% married non-relatives. By age 16, 44% of the women in our sample were married. Among those ever married the average age at marriage is 17.5 years. The typical engagement period is about eight months. Women have an average of 4.6 children from their first marriage, and mean age at first birth is 18.5 years.

Panel D reports family proximity and contact: 47% of respondents live within 1 km of their parents and 50% see them daily. The corresponding proportions for in-laws are 37% and 26%. Panel E reports the gender attitudes described above. Panel F presents women's education and employment: 14% are employed, average schooling is 7.3 years, and 35% have completed grade 12. Panels G and H report husband characteristics and other marital outcomes, respectively.

3.3 Empirical Strategy

Our empirical strategy aims to estimate the causal effects of marrying outside traditional family networks. The main relationship we seek to estimate is:

$$GenderAttitudes_i = \alpha + \beta OutMarriage_i + \varepsilon_i, \tag{2}$$

where $GenderAttitudes_i$ is our gender attitudes index for woman i, with higher values indicating more gender-equal views. $OutMarriage_i$ is our main explanatory variable, indicating marriage to someone other than a first cousin (never-married women are coded as 0).

Estimating equation 2 using OLS may lead to biased results due to omitted variables or reverse causality. Women who marry a non-cousin may differ systematically from those who do not in ways that also affect gender attitudes, and gender attitudes may influence the choice to marry a cousin. To address these endogeneity concerns, we employ an instrumental variables (IV) approach.

Our IV strategy relies on quasi-random variation in the availability of potential cousin-husbands. Our instrument, $MarriageableCousins_i$, is the number of marriageable-age male cousins, constructed as described in Section 3.1.[13] The first-stage regression models the likelihood of out-marriage as a function of the instrument and controls:

$$\begin{aligned} OutMarriage_i = \pi + \delta MarriageableCousins_i \\ + \lambda FemaleMarriageableAgeCousins_i + X_i\theta + u_i. \end{aligned} \tag{3}$$

[13]We show our results are robust to using a simple sum of male cousins 0 to 6 years older in section 4.4 after presenting our main results.

The regression controls for $FemaleMarriageableAgeCousins_i$, the female equivalent of our instrument using the same age-weights. This is an important control variable: it purges variation across women in the size of their extended family and in their age relative to their cousins' ages, both of which might be systematically related to gender attitudes and other outcomes we examine.[14] With the addition of this control, the instrument is capturing quasi-random variation in the sex composition of similar-age cousins.

While including *FemaleMarriageableAgeCousins* addresses most of the endogeneity concern, we also control for additional variables to ensure that the instrument is isolating exogenous variation in the supply of marriageable cousins: birth order, number of brothers, number of sisters, and younger-cousin sex composition. Higher birth order women are younger, all else equal, so they tend to have more marriageable (i.e., older) male cousins. Number of brothers and number of sisters, in addition to further controlling for the family's fertility level, serve as a proxy for sex composition preferences.[15] Also to address sex preferences, we control for the male share among first cousins who are at least five years younger than the respondent (and hence unlikely to directly affect marital choice).[16] The vector of control variables X_i also includes age and village-by-round fixed effects. Appendix Table A.8, discussed in Section 4.4, shows the results are stable as we vary the set of additional controls.

3.3.1 First stage estimates

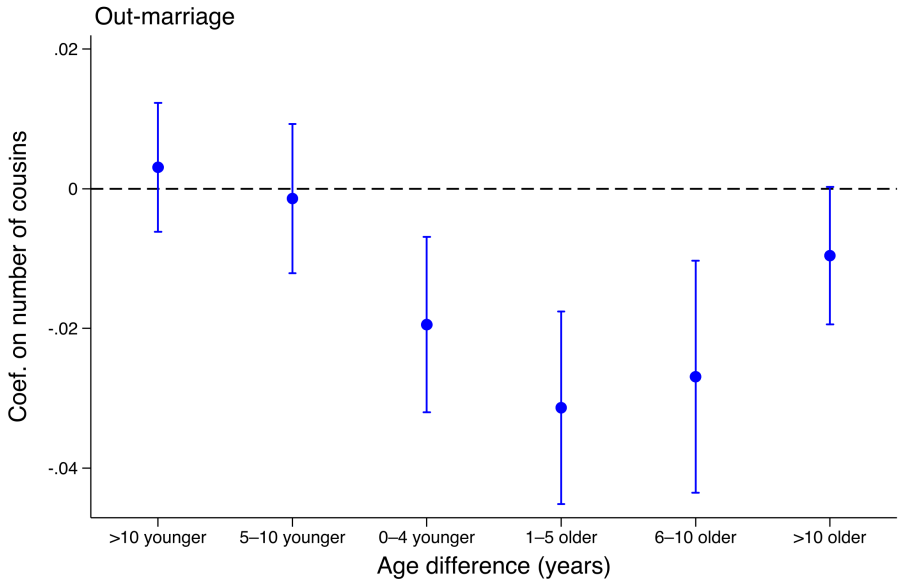
Figure 3 shows that the likelihood of marrying a non-cousin ($OutMarriage_i$) is indeed negatively correlated with the number of male cousins of marriageable age. This figure plots coefficients from a single regression of $OutMarriage_i$ on the number of male cousins in various age-difference bins relative to the respondent. The regression also includes the corresponding female cousin age bins as controls (coefficients for female bins not shown). If the instrument captures marriage market constraints, we expect a negative relationship (more cousins decrease out-marriage) for male cousins in the age range typical for husbands. We find that the probability of out-marriage is most negatively correlated with the number of male cousins 1-5 years older. One additional male cousin in this age bin reduces the likelihood of out-marriage by three percentage points. This magnitude declines for adjacent age bins, in line with the observed age differences documented in Figure 1. This age pattern is consistent with cousin availability affecting marriage choices through

[14] A woman's age relative to her cousins' ages depends on her parents' and her own birth order, among other factors.

[15] Unlike in many parts of East Asia, South Asia, and the Caucasus, there seems to be limited sex selection in Oman and the Arab Gulf more generally (Chao et al., 2019). Thus, most variation in sex composition of siblings and cousins is naturally occurring variation. Consistent with this, the average number of male and female cousins are similar in our data.

[16] For respondents with no such cousins, we set the share to 0.5 and include a separate indicator for having no such cousins.

Figure 3: First stage by cousin age



Notes: OLS coefficients on male first-cousin counts in the age groups shown, from a regression of out-marriage on male and female first-cousin counts in all six age groups, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Bars show 95% confidence intervals based on robust standard errors.

the supply of potential spouses, rather than simply having more (male) cousins.

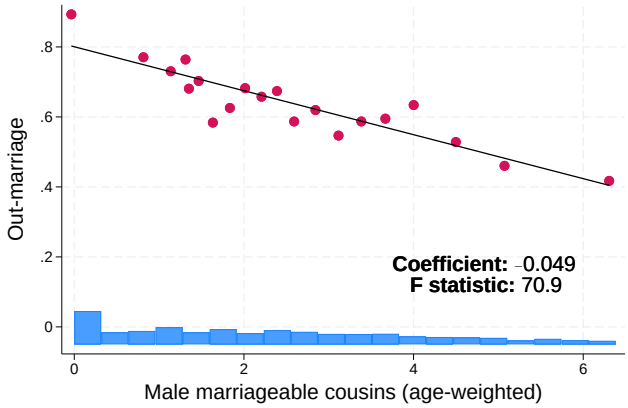
Figure 4 graphically presents the first-stage relationship using the age-weighted instrument. The figure displays binned scatter plots showing the probability of out-marriage against the number of marriageable male cousins. Panel (a) shows the strong negative correlation controlling only for female cousins. Panel (b) shows that this relationship remains strong and statistically significant after including the remaining controls, with each additional age-weighted marriageable male cousin reducing the probability of out-marriage by 4.6 percentage points.[17] The corresponding first-stage F-statistic is 56.6. Appendix Table A.1 shows that this strong first-stage relationship is robust to alternative specifications of the instrument (e.g., simple counts, inverse hyperbolic sine transformation).

Panel (c) of Figure 4 shows no significant relationship between *female* marriageable-age cousins and out-marriage, conditional on male cousins and the other controls. Appendix Table A.3 further shows that the availability of male cousins from a particular family branch predicts marriage to a cousin from that branch. These patterns are consistent with the first stage reflecting the availability of potential spouses.

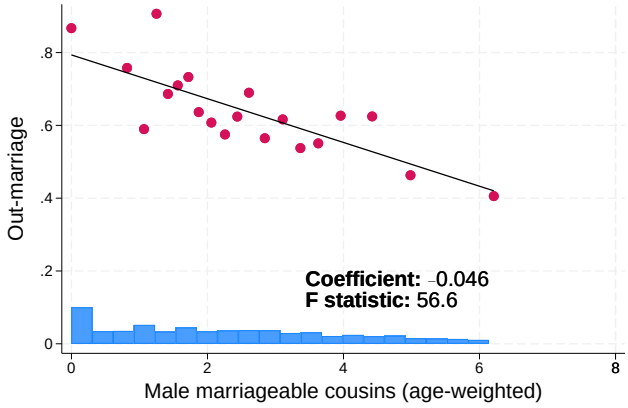
[17] Appendix Table A.2 decomposes the first-stage relationship into two mutually exclusive out-marriage components. An additional marriageable cousin reduces the probability of marrying a non-relative by 3.2 percentage points and the probability of marrying a second cousin or other relative by 1.3 percentage points.

Figure 4: First stage and falsification test

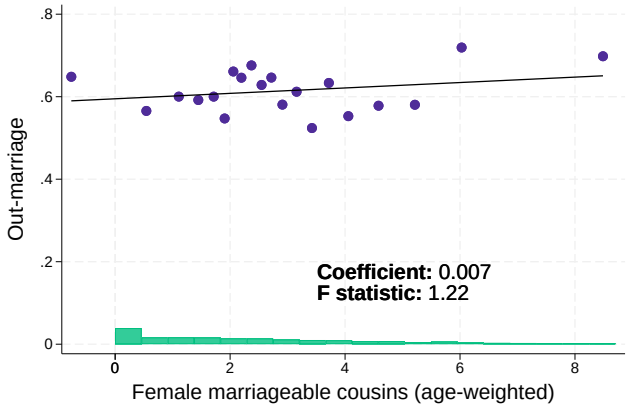
(a) First stage without controls



(b) First stage with controls



(c) Falsification: Female cousins



Notes: Binned scatter plots using age-weighted cousin counts. Panel (a) controls for female first cousins. Panel (b) also controls for birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Panel (c) plots female first cousins, controlling for male first cousins and the remaining controls in panel (b). Panels (a) and (b) display observations with male-cousin counts below eight. The reported coefficients and F-statistics use the full estimation sample and robust standard errors.

3.3.2 Exogeneity and exclusion restriction assumptions

In addition to a strong first stage, the IV strategy relies on two assumptions. First, conditional on the controls, $MarriageableCousins$ is uncorrelated with unobserved determinants of gender attitudes (exogeneity, or as-good-as-random assignment). Second, $MarriageableCousins$ affects gender attitudes only through its effect on $OutMarriage$ (exclusion restriction).

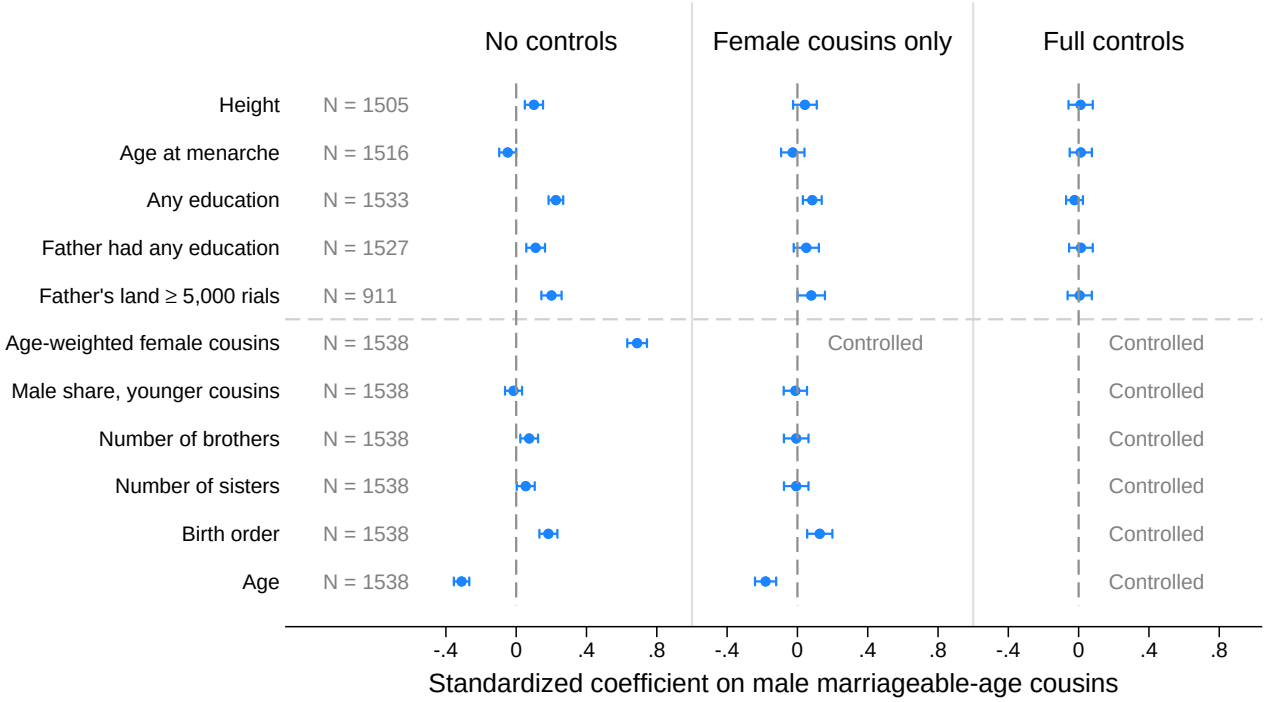
We provide two kinds of evidence for the exogeneity of the instrument. The first is balance on predetermined characteristics. Figure 5 shows that there is no significant relationship between $MarriageableCousins_i$ and predetermined family characteristics, such as father's education, conditional on the control variables. The comparison between the panels with and without controls highlights the importance of controlling for female cousins. The number of male and female cousins are highly correlated, reflecting that extended families vary in their fertility rates. Importantly, controlling for female "marriage-age" cousins removes the correlation between the instrument and family characteristics associated with higher fertility, such as wealth. More broadly, the variable absorbs the broader family characteristics that could confound the analysis. With the inclusion of age-weighted female cousins – and even more so after adding the other control variables – the instrument is conditionally uncorrelated with individual and family characteristics.

The second piece of evidence supporting exogeneity of the instrument is a placebo test that we present in Section 4.2 but preview here. We regress gender attitudes on the age-weighted number of female cousins, controlling for male cousins and our standard controls. Female cousins share the family characteristics that could confound the instrument, but do not affect out-marriage (see Figure 4, Panel c). If those shared characteristics were driving the effect on gender attitudes, the female cousins variable would predict attitudes, but it does not (Figure 7, Panel b).

We next turn to the exclusion restriction, which requires that exogenously having fewer male cousins a few years older than her affects a woman's attitudes only because it increases her likelihood of out-marrying. We lay out a few different potential threats to the exclusion restriction. First, conditional on marrying a cousin, having more marriageable-age cousins may affect *which* cousin a woman marries. That is, rather than just altering whether or not a woman marries a cousin (extensive margin), the instrument affects the set of potential cousin-husbands, and hence potentially the 'quality' of her husband (intensive margin). This would violate the exclusion restriction, which assumes all changes in outcomes that come from variation in the instrument comes from variation in $OutMarriage_i$.

A second potential violation of the exclusion restriction is if a reduction in cousin availability shifts women from marrying a first cousin to never marrying rather than leading her to out-marry. This would be problematic since our instrument might then affect our outcomes through a channel

Figure 5: Relationship between the instrument and predetermined characteristics



Notes: OLS coefficients on the age-weighted number of male first cousins. The instrument and each outcome are standardized. The full specification includes the characteristics marked "Controlled," village-by-round fixed effects, and an indicator for having no first cousins at least five years younger than the respondent. Bars show 95% confidence intervals based on robust standard errors.

other than changing the value of $OutMarriage_i$, which in this case would remain equal to zero.[18]

A third potential violation is if cousin availability affects women through some channel other than whether or whom they marry. Knowing a daughter has no marriageable cousins may lead her parents to raise her differently. Figure 5 shows no relationship between $MarriageableCousins_i$ and the respondent's height, age of menarche, or whether she has any education, which are childhood outcomes that would respond to differential parental investment. However, other forms of differential upbringing are harder to rule out, such as her parents trying harder or less hard to inculcate traditional values. Similar-age male cousins could also have been a woman's childhood playmates, shaping her attitudes early on, and they remain part of her kin network after marriage, so they could affect her attitudes regardless of whom she marries.

Section 4.4 presents empirical tests that speak to these exclusion restriction concerns.

3.3.3 Interpretation of the LATE

The IV strategy estimates a local average treatment effect (LATE). The LATE captures the causal effect of out-marriage on gender attitudes specifically for the subpopulation of compliers—those women whose decision whether to marry a cousin is influenced by how many marriageable male cousins they have. These are women who would marry a first cousin if male cousins of a suitable age gap are available, but otherwise would out-marry.

Consider a simplified case in which the instrument is binary: a woman has either limited or plentiful marriageable cousins. An always-taker is a woman who (or, more accurately, whose family) *prefers* out-marriage to cousin marriage. She will out-marry even when marriageable cousins are plentiful. A never-taker is someone who would marry a cousin even if marriageable-age cousins are scarce, for example by marrying a cousin who is 5 years younger than her or 15 years older.

In the context we study, cousin marriage is common and many families' first choice for their children, all else equal. Thus, the compliers are a quite typical population: They are families who favor cousin marriage but not at all costs.

The framework of LATE is also helpful for laying out how out-marriage changes the husband's "type." An analogous supply-side constraint to cousin marriage affects men's marital choices too. When women out-marry, sometimes their husband was compelled to do so because of a dearth of marriageable female cousins, so he is a complier. However, other times he will be an always-taker, someone with an explicit preference for out-marriage. Meanwhile, when women marry a cousin, their husbands are either compliers or never-takers. Thus, out-marriage entails marrying a husband

[18] We show in Section 4.4 that our results are nearly identical if we use 'not married to a first cousin' as our treatment, rather than out-marriage. Doing so more cleanly links our instrument to the treatment variable: Fewer marriageable-age cousins pushes women away from marrying a first cousin, which could then lead them to either marry a non-cousin or to never-marry.

and having in-laws with less adherence to the practice of cousin marriage, on average.

Families with a weaker preference for cousin-marriage might differ in many ways, including their gender attitudes. Without data on gender attitudes of husbands (or their parents) we cannot directly speak to this. However, we note that part of the causal effect of out-marriage is likely to operate through a change in the composition of husbands and in-laws.

4 Results

We estimate the impacts of out-marriage (marrying someone other than a first cousin) using the IV specification described in Section 3.3, with the number of marriageable male cousins as our instrument. We first examine how out-marriage affects women's contact with and geographic proximity to parents and in-laws, then turn to gender attitudes, age at marriage, and related outcomes.

4.1 Effect of Out-Marriage on Family Contact and Proximity

Figure 6 shows the effect of out-marriage on geographic proximity to and daily interactions with family. Marrying a non-cousin significantly reduces women's contact with their parents and in-laws and, suggestively, with their siblings.

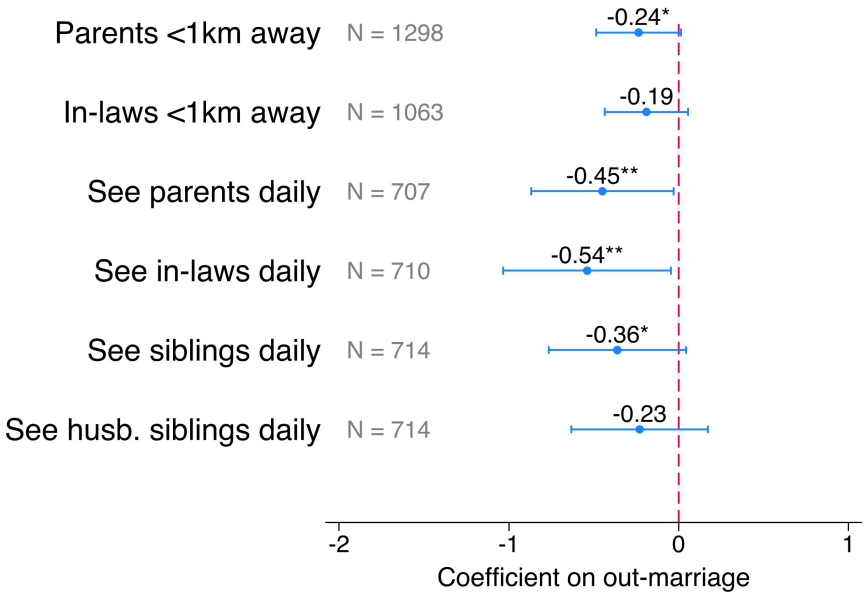
Out-marriage reduces the likelihood of living within 1 km of parents by 24 percentage points and reduces the likelihood of living within 1 km of in-laws by 19 percentage points. This physical distancing extends beyond immediate proximity: out-marriage increases the probability of living more than 50 kilometers from parents by 13 percentage points (Appendix Figure A.4).

Family interaction also decreases. Out-marriage reduces the likelihood of seeing parents daily by 45 percentage points, in-laws by 54 percentage points, and siblings by 36 percentage points. These effects are larger than the proximity changes alone would predict, indicating that the decline in contact is not driven entirely by co-residence.

Note that if residence were strictly patrilocal, a woman would live near her husband's family regardless of whether he were a cousin. That out-marriage reduces proximity and contact with in-laws implies either that husbands of out-marrying women were themselves less likely to be living near their parents before the marriage, or that the couple is more likely to move away from his family after marriage. Either way, out-marriage reduces women's ties to both sides of the kin network rather than simply substituting parental influence with in-law influence.

Women's proximity to and frequent interaction with parents and in-laws allow vertical cultural transmission to be sustained. As they weaken, and women's dense kin networks give way to more dispersed arrangements, women are likely exposed to more diverse views. Moreover, by virtue of

Figure 6: Effect of out-marriage on family contact



Notes: The figure reports 2SLS estimates of the effect of out-marriage on proximity to and daily contact with family members. Out-marriage is instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. All outcomes are binary indicators. Bars show 95% confidence intervals based on robust standard errors. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

being less embedded in their kin network, they are also freer to adopt the alternative perspectives.

4.2 Effect of Out-Marriage on Gender Attitudes

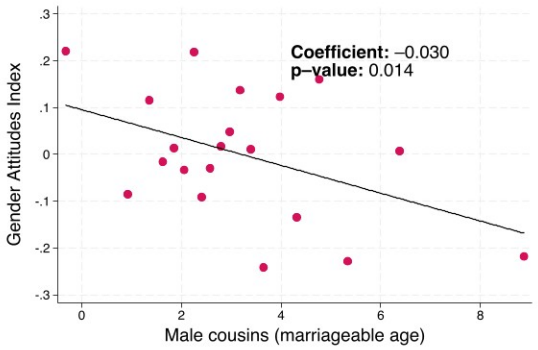
Figure 7 presents our main results on gender attitudes. Panel A shows the reduced form relationship between our instrument (marriageable male cousins) and the gender attitudes index in a binned scatter plot: women with fewer marriageable male cousins, and thus a higher likelihood of out-marriage, hold more gender-equal attitudes. Panel B presents the falsification test using female cousins previewed in section 3.3.2. The absence of a correlation between age-weighted female cousins and gender attitudes is reassuring that our results are not driven by family size or other cousin-related confounders.

Panel C of Figure 7 presents the IV estimates. Out-marriage increases our index of egalitarian gender attitudes by 0.65 standard deviations. That leaving traditional family networks leads women to develop more egalitarian views about gender roles is consistent with the reduced social insularity documented above: less exposure to the dense, homogeneous network of extended kin makes it easier to adopt less traditional views.

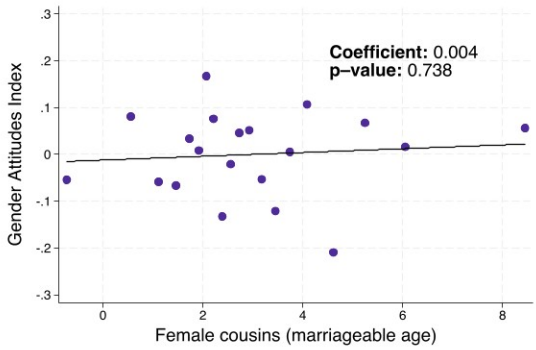
The largest effects are on perceptions of women's capabilities: support for women as political

Figure 7: Effect of out-marriage on gender attitudes

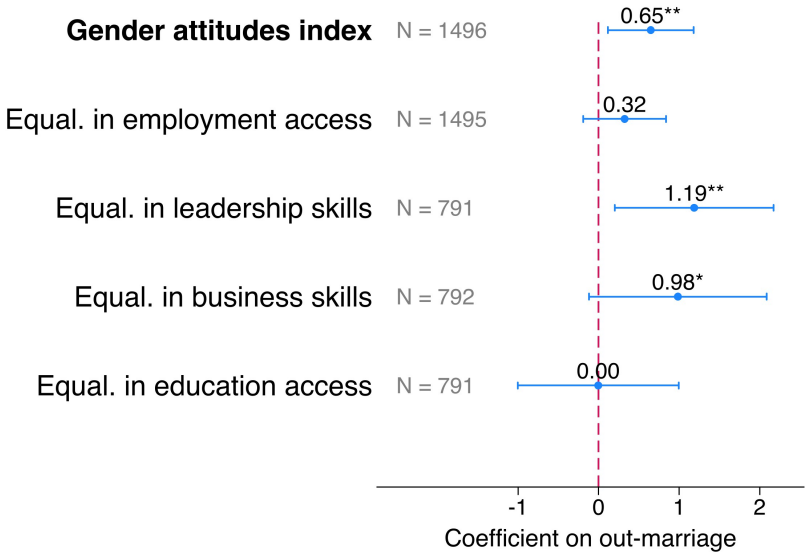
(a) Reduced form



(b) Falsification reduced form



(c) IV coefficients



Notes: Panels (a) and (b) show binned scatter plots of the gender-attitudes index against age-weighted male and female first-cousin counts, respectively. Each controls for the other cousin count, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Panel (c) reports 2SLS estimates of the effect of out-marriage, instrumented by the male-cousin count, with the same controls as panel (a). Outcomes are in standard-deviation units. Higher values indicate more egalitarian attitudes. The index combines the four attitude measures, with weights renormalized over the components observed for each respondent. Bars show 95% confidence intervals based on robust standard errors. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

leaders and as businesspeople increase by about 1 standard deviation. The effect on support for gender equality in job opportunities is positive (0.3 standard deviations) but not statistically significant. Out-marriage has no detectable effect on views about educational equality, where baseline attitudes are already relatively liberal (only 26% agree that university education is more important for boys). This is consistent with out-marriage moderating the most conservative components of the index rather than pushing women toward uniformly progressive views.

Rather than use a four-point scale from strongly agree to strongly disagree, Appendix Table A.5 presents results on binary indicators for disagreeing with a given (pro-male) statement. While this loses some of the variation in the data, its magnitudes are perhaps easier to interpret. We find that out-marriage increases the probability of disagreeing with pro-male statements by 17 percentage points.

While reduced contact with extended family plausibly explains much of the attitude change, the type of husband a woman marries may also play a role. Women who out-marry have husbands who themselves did not marry a cousin, some of whom likely hold less traditional views than men who prefer cousin marriage. Out-married husbands are also typically lower-earning (see Section 4.3), and women may form views about men's leadership and business capabilities partly from observing their own husbands. To gauge the importance of husband type as a channel, Section 4.4 adds observable husband characteristics to the regression and finds that the estimated effect of out-marriage on gender attitudes remains large (about 0.5 standard deviations).

Our analysis shows that out-marriage increases gender-equal attitudes. These findings hold across various specification checks and alternative approaches, as detailed in Section 4.4.

4.3 Effect of Out-Marriage on Marriage Timing, Education, and Husband Characteristics

This section examines the effects of out-marriage on outcomes commonly associated with women's status: marriage timing, education, and economic well-being via husband characteristics. Strikingly, we show that the liberalizing effect of out-marriage on gender attitudes coexists with effects on these other dimensions that are typically associated with *reduced* female empowerment.

Table 2 (Panel A) shows that out-marriage leads to a 22 percentage point increase in the probability of being married by age 16. Figure 8 plots the estimated effect of out-marriage on the cumulative probability of being married by each age from 10 to 20 and shows the baseline fraction married by each age. The estimated effect is near zero through age 12, becomes large at age 14, remains so through age 19, and then declines.

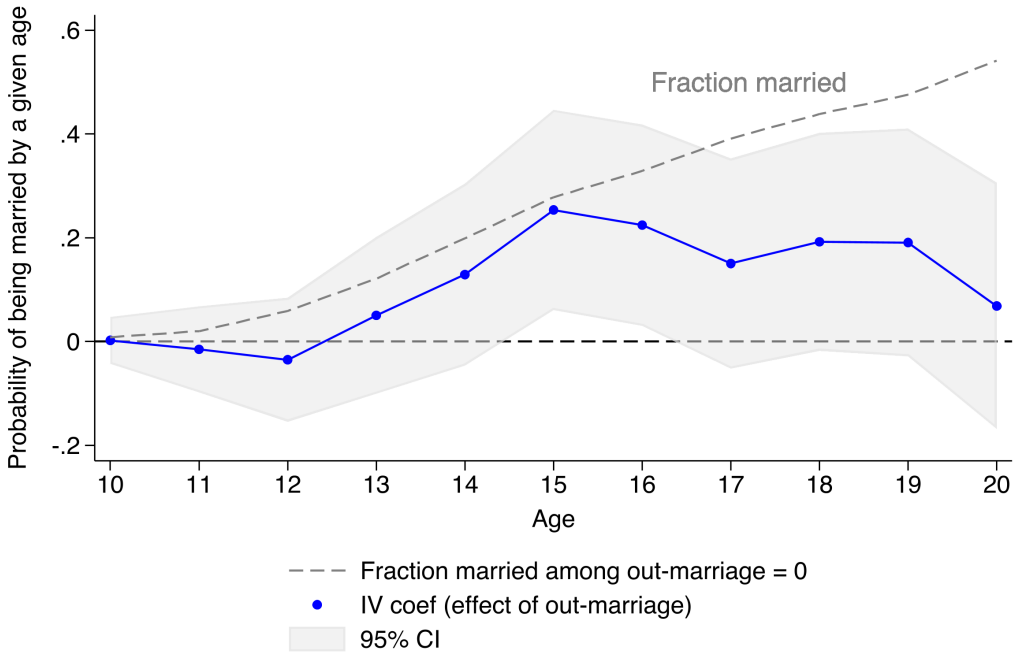
The similar reductions in engagement length (1.5 years) and age at marriage (1.2 years) in Panel A of Table 2 imply that out-marriage leads to earlier marriage chiefly by shortening engagements,

Table 2: Effect of out-marriage on marriage timing and socioeconomic outcomes

	Coefficient	SE	N	F-stat.
Panel A: Marriage and Fertility				
Married by 16	0.224**	(0.099)	1,536	56.4
Age at marriage	-1.212	(1.036)	1,360	59.0
Length of engagement (years)	-1.527**	(0.734)	704	21.8
Age at first birth	-2.459**	(1.152)	1,276	47.6
Panel B: Education and Employment				
Completed grade 12	-0.223*	(0.120)	1,501	53.9
Years of education	-1.045	(1.011)	1,501	53.9
Woman employed	-0.028	(0.107)	1,527	55.6
Panel C: Husband Quality				
Husband education (years)	-1.538	(1.186)	1,336	58.4
Husband completed 12th grade	-0.140	(0.127)	1,336	58.4
Husband's log income	-0.329*	(0.177)	1,027	52.1
Husband-wife age gap $<$ 10 years	-0.141	(0.099)	1,355	58.7
Panel D: Marriage Satisfaction				
Argues with husband	0.171	(0.282)	717	21.8
Can make purchases	-0.034	(0.163)	668	26.0
Satisfied with life	0.111	(0.396)	789	19.3
Divorced	-0.041	(0.072)	675	23.0
Husband has co-wives	0.196	(0.132)	717	21.8

Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Out-marriage equals one for marriage outside first cousins and zero for first-cousin and never-married women. The married-by-16 outcome includes never-married women as zeros and excludes two married women with unknown marriage age. Age at first birth is inferred from the respondent's age and the age of her oldest reported child. Higher values indicate more frequent arguments (1–4) and greater life satisfaction (1–5). Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. F-statistics are Kleibergen–Paap statistics.

Figure 8: Effect of out-marriage on marriage by age



Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Each outcome indicates marriage by the age shown. Never-married women are coded zero. Two married women with unknown marriage age are excluded. The dashed line shows the share married by each age among women coded zero for out-marriage, including never-married women. Shading shows 95% confidence intervals based on robust standard errors. N = 1,536.

not by changing the age at engagement. The shorter engagements may reflect lower trust outside kin networks, as discussed in Section 2. Out-marriage also reduces age at first birth by 2.5 years, a concerning finding given the low mean age at first birth in our sample (18.5 years) and the known risks of adolescent pregnancy (Ardington et al., 2015).

Earlier marriage also affects women's human capital. Out-marriage leads to a 22 percentage point reduction in the likelihood of completing grade 12 (Panel B of Table 2). The estimated effect on total years of education is also negative (-1 year) but not statistically significant.[19] Despite these educational consequences, we find no effect of out-marriage on women's employment, which is low in our sample both for women who out-marry and those who do not.

The economic status of husbands that women marry also seems to worsen when they out-marry. Out-marriage leads women to match with husbands who earn less and have less schooling (Panel C of Table 2), though these differences are either marginally or not significant. This suggests that women who marry non-relatives typically match with lower socioeconomic status men. This pattern is consistent with ethnographic evidence from Oman and neighboring regions, where cousin marriage is viewed as a strategy to maintain family status and is especially favored by wealthier families (Eickelman, 1984).

Despite these differences in marriage timing, education, and husband quality, we find no significant effects of out-marriage on our measures of marriage satisfaction (Panel D of Table 2). This is worth noting because when a woman marries a cousin, her in-laws are also her own blood relatives, which could in principle generate more goodwill, better treatment in conflicts, and a more supportive marital environment (see Section 2). In practice, we find no evidence of changes in the frequency of arguments with the husband, ability to make independent purchases, life satisfaction, divorce, or the probability that the husband has co-wives. Out-marriage alters many aspects of women's lives and socioeconomic outcomes but does not appear to change these dimensions of marital relationship quality.

The pattern across these results is clear: out-marriage leads women to hold more gender-equal attitudes despite experiencing earlier marriage and childbirth, obtaining less education, and having lower-income husbands. Since education and income are generally viewed as making women's gender attitudes more progressive, the evidence supports the idea that the change in gender attitudes comes from the reduction in social insularity, rather than from schooling or improved socioeconomic status.

[19] These effects may also reflect the strategic parental investment channel discussed in Section 2, not only the mechanical consequence of earlier marriage.

4.4 Robustness and Threats to Identification

Our finding that marrying outside traditional family networks leads to more gender-equal attitudes holds across various specification checks and alternative variable definitions. Table A.4 presents our main results alongside several robustness checks and OLS estimates for comparison.

Choice of Controls. Appendix Table A.8 shows how the estimates change as we add successive sets of controls: female marriageable-age cousins, family controls (birth order, number of brothers and sisters), age, and village-by-round fixed effects. The estimated effect on the gender-attitudes index ranges from 0.60 to 0.70 standard deviations and remains statistically significant across all five specifications.

Exclusion Restriction: Cousin Match Quality. A potential concern with our IV strategy is that the availability of marriageable male cousins could affect outcomes through two distinct channels: the probability of marrying outside the family (the "extensive margin") and the choice set among potential cousin-husbands (the "intensive margin"). This intensive margin effect could threaten our identification strategy if having more marriageable cousins affects match quality, conditional on marrying a cousin, which would violate the exclusion restriction.

To address this concern, we test for robustness in two ways. First, we construct an "extensive margin" version of our instrument by restricting the sample to women who have at most 2 marriageable cousins. This approach, shown in Panel E of Table A.4, shifts focus towards the binary decision of whether to marry outside the family. That is, the variation induced by this instrument is more heavily weighted towards the extensive margin. The estimated coefficient becomes larger, though the restricted sample means the effect is imprecisely estimated, and the first stage F-statistic drops below 10. As further evidence, we note that the log-like inverse hyperbolic sine (IHS) transformation of the instrument (Panel C of Table A.4) similarly places more weight on the first few cousins relative to later ones, and provides results consistent with our baseline estimate.

Second, we add controls for husband's education and income to the main specification to partial out intensive margin changes in husband quality that the instrument might induce. These are "bad controls" in the sense that they are outcomes affected by our treatment, so this evidence is intended as suggestive only. The estimated effect of out-marriage, conditional on husband characteristics, remains large at 0.5 standard deviations and is statistically significant at the 10% level, as shown in Table A.6.[20]

The results across these two approaches support our interpretation that the estimated effects come from having to marry outside traditional family networks rather than from the specifics of which cousin one might marry. This is consistent with our broader argument that leaving closed

[20]This analysis also helps distinguish between two competing mechanisms for the causal effect: (1) social network changes from out-marriage, versus (2) differences in husband characteristics directly influencing women's views.

family networks, rather than specific match characteristics, leads to more gender-equal attitudes. We cannot, however, rule out some contribution from intensive margin effects.

Exclusion Restriction: Never-Married. Another potential concern regarding the IV exclusion restriction is that the instrument (cousin availability) might affect whether a woman marries at all. If a reduction in available cousins causes some women to shift from marrying a first cousin to *never* marrying, the instrument could affect their attitudes through a channel other than out-marriage versus cousin marriage. Since our sample includes never-married women (approximately 11% of our sample), this pathway represents a potential violation.

We address this by, first, examining whether cousin availability affects the probability of ever marrying and, second, assessing how sensitive our results are to grouping never-married women with those who marry a non-cousin rather than with those who marry a cousin.[21] For the first exercise, we reassuringly find that our instrument has a small and statistically insignificant effect on the probability of ever marrying (coefficient = -0.004; robust standard error = 0.004).

Given the small effect on ever marrying, it is unsurprising that the IV results are similar when we reclassify never married women. Instead of 'out-marriage', we use an indicator for not marrying a first cousin as the endogenous regressor, which places never-married women in the same category as those who marry a non-cousin. We then estimate the IV effect of not marrying a cousin on our main outcome, the gender attitudes index. The results of this alternative specification confirm our main findings (see Appendix Table A.4, Panel G). We continue to find a statistically significant effect of marriage type on gender attitudes, with coefficients that are similar to our baseline estimates using out-marriage as the treatment. This similarity suggests that our core conclusions are not sensitive to how never-married women are classified in the treatment variable.

Exclusion Restriction: Pre-Marital Effects. An additional threat to our identification strategy is that the number of marriageable cousins might affect gender attitudes through pre-marital channels. This could happen if the availability of male cousins shapes women's gender attitudes through childhood socialization (e.g., via mixed-gender play, or cousins policing each other's behavior). Similarly, parents might anticipate their daughter's marriage prospects based on cousin availability and adjust socialization practices accordingly (e.g., emphasizing values suitable for an expected cousin or non-cousin marriage). If the instrument's effect is mostly through these pre-marital channels, we would expect its impact to be largely determined at the time of marriage and remain relatively constant (or even attenuate) throughout the duration of the marriage. In contrast, if

[21] Our baseline approach treats never marrying as more similar to marrying a cousin than a non-cousin. This is reasonable if never-married women remain within their birth family's sphere of influence, experiencing social insularity similar to that of women who marry cousins. In this patriarchal context, where women often remain under the guardianship of male relatives if unmarried, this seems plausible (Wikan, 1991). Never-married women's proximity to their parents shown in Appendix Figure A.2 supports this. In principle, though, not marrying could lead to lower insularity, with unmarried women gaining independence from their natal family.

the effect works through post-marital social exposure mechanisms (as our conceptual framework suggests) we would expect the effect to strengthen over time as women spend more years embedded in either the insular environment of cousin marriage or the more diverse social networks associated with out-marriage.

We test this by examining how the effect varies with the duration of marriage. However, age at marriage is endogenous to the availability of marriageable cousins, so in practice we report heterogeneity by respondent age, a measure of potential years of marriage.

To investigate how the effect evolves post-marriage, we estimate the following reduced-form regression, interacting our instrument with respondent age:

$$\begin{aligned} GenderAttitudes_i = \beta_0 &+ \beta_1 MarriageableCousins_i + \beta_2 Age_i \\ &+ \beta_3 (MarriageableCousins_i \times Age_i) \\ &+ \lambda FemaleMarriageableAgeCousins_i + X_i\gamma + u_i \end{aligned} \tag{4}$$

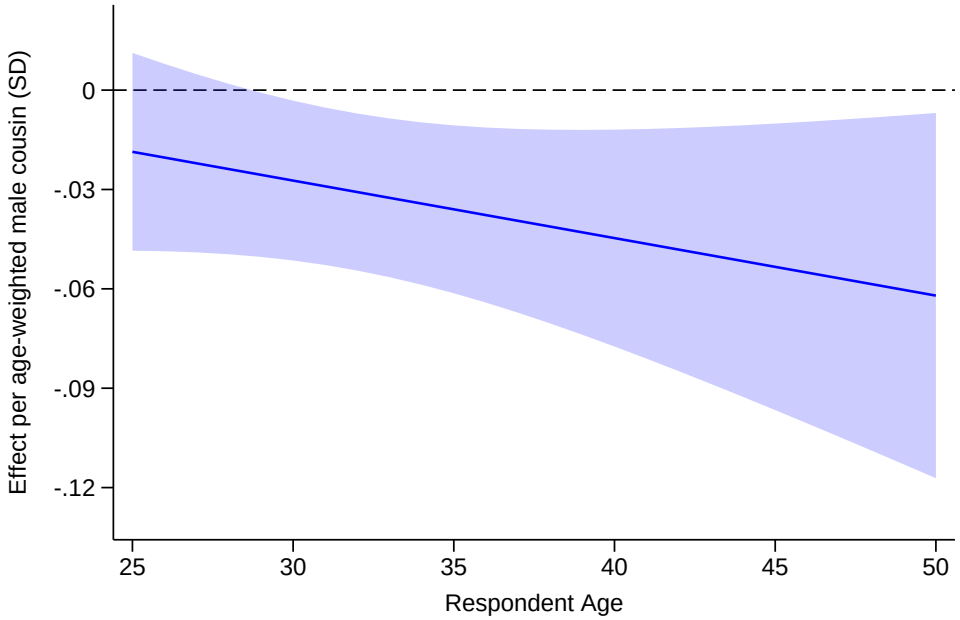
with all variables as defined in section 3.3. The coefficient β_3 captures the linear change in the instrument's effect per year of age. The marginal effect of the instrument at a given age is $\beta_1 + \beta_3 Age_i$.

Figure 9 plots this estimated marginal effect of marriageable cousins on the gender attitudes index across the sample age range (25-50). While adding the interaction term reduces statistical power, the pattern suggests that effects strengthen over time. The magnitude of the effect triples from age 25 to age 50, increasing from around -0.02 to -0.06 (per cousin). Although the 95% confidence bands are wide, this increase in effect size with age is consistent with a mechanism that builds up post-marriage rather than one determined entirely pre-marriage (which would instead produce a flat or declining profile). This suggests that the instrument's effect operates primarily through post-marriage channels, such as family interaction and social exposure.

OLS versus IV Estimates. The OLS and IV estimates differ considerably. As shown in Panel F of Table A.4, the OLS relationship between out-marriage and gender attitudes is close to zero and not statistically significant. This contrasts with our IV estimates, which indicate a large positive effect of out-marriage, suggesting selection into who marries within versus outside the family.

The attenuation in OLS estimates could be driven by selection patterns of who chooses to marry a first cousin or not. Ethnographic evidence from Oman suggests that wealthy, high-status families particularly value cousin marriage as a strategy to preserve family resources and status (Eickelman, 1984). If women from these families also tend to hold more gender-equal attitudes regardless of whom they marry, this would create a correlation that obscures the causal relationship in OLS estimates. This explanation is consistent with the correlations in our data: husband's income

Figure 9: Reduced-form effect of male cousins on gender attitudes by respondent age



Notes: The curve shows the coefficient on the age-weighted number of male first cousins at each respondent age, from an OLS regression of the gender-attitudes index that includes an interaction between age and the male-cousin count. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. The index is in standard-deviation units. Higher values indicate more egalitarian attitudes. Shading shows 95% confidence intervals based on robust standard errors. N = 1,496.

is positively correlated with gender-equal attitudes and negatively correlated with out-marriage (Appendix Figure A.5). These correlations are only suggestive, however, since husband's income may itself be affected by marriage choices.

Alternative Instrument Specifications. Finally, we explore the robustness of our results to alternative specifications of this instrument, focusing here on the stability of the estimated effect of out-marriage on gender attitudes.

Table A.4 presents results using four different instrument specifications. Panel A shows the baseline using an age-weighted measure of male cousins, which is our baseline specification. Panel B uses age weights estimated from first-cousin marriages rather than all marriages. Panel C applies the inverse hyperbolic sine transformation as a pseudo-logarithmic function that captures the intuition that the effect of an additional cousin on marriage outcomes should be decreasing in the number of cousins already available. Panel D uses a simpler count of male cousins zero to six years older than the respondent to ensure results are not driven by the specific weighting scheme. Across these specifications, the estimated effect of out-marriage on the gender attitudes index remains stable and statistically significant. The point estimates all fall within a quite narrow range of 0.55 to 0.65 standard deviations (Panels A to C significant at 5%, and Panel D at 10%). First-stage F-statistics remain reassuring (56 for baseline, 53 for first-cousin marriage weights, 64 for IHS, and 43 for simple count). This suggests our findings are not sensitive to the specific functional form chosen for the instrument.[22]

5 Conclusion

Traditional family structures, particularly cousin marriage, help maintain conservative gender attitudes in Oman. Using quasi-random variation in the availability of marriageable male cousins, we show that women pushed into out-marriage develop more gender-equal attitudes, a shift of 0.65 standard deviations in our index or, equivalently, a 17 percentage point increase in the likelihood of agreeing with gender-equal statements. This change appears to operate primarily through shifts in social network structure: out-marriage reduces daily contact with parents and in-laws and weakens vertical ties within the extended family.

It is not clear that out-marriage is advantageous for individual women. It leads to outcomes typically viewed as worse: earlier marriage, less schooling, as well as matches with lower-earning

[22] We also consider the coefficient of inbreeding (F) as a continuous alternative to the binary out-marriage indicator: $F = 1/16$ for first cousins, $F = 1/64$ for second cousins, $F = 1/128$ for more distant relatives, and $F = 0$ for non-relatives, normalized so that a one-unit change corresponds to a shift from non-relative to first-cousin marriage. Unlike the binary indicator, F does not collapse second cousins and non-relatives into the same category. Appendix Table A.1, column (5) shows the instrument strongly predicts F (first-stage F-statistic: 57). Appendix Table A.7 reports the corresponding IV estimates, which are consistent with our baseline findings.

husbands. This points to a tension between aggregate progress on female equality through reductions in social insularity, and individual well-being of women. Weaker ties to kin may foster cultural change while exposing women to early marriage and reduced educational opportunities.

Demographic change may naturally disrupt these marriage patterns. Fertility decline in Oman and similar societies will reduce the number of cousins available as potential spouses, increasing the share of women with few or no marriageable-age cousins. Our results suggest that a fertility decline from 9 to 3 children per woman (roughly the change Oman has undergone since the early 1980s) would reduce cousin marriage enough to raise women's gender-egalitarian attitudes by approximately 0.1 standard deviations.[23] Such shifts in kinship structure can thus erode social insularity and weaken vertical cultural transmission, with consequences for the evolution of gender norms.

Our results also suggest education and economic opportunity may have weaker effects on gender attitudes when women's daily interactions remain concentrated within conservative kin networks. Interventions that create regular contact outside the kin group, such as women's groups or community organizations, could complement these policies. Exposure to alternative viewpoints about gender roles (Jensen and Oster, 2009; Dhar et al., 2022) may be most effective when paired with such changes in everyday social interaction.

Dense family networks provide insurance, trust, and cooperation but also limit exposure to less traditional norms. How marriage patterns shape these networks offers a potential explanation for the uneven change in gender attitudes across societies.

[23] A factor-of-three reduction in fertility shrinks the number of marriageable male cousins by roughly $(1/3)^2 = 1/9$: each parent has one-third as many siblings, and each aunt or uncle has one-third as many children. Starting from the sample mean of 3.19 age-weighted marriageable male cousins (Table 1), the long-run mean falls to about 0.35, a decline of roughly 2.8 cousins. At the reduced-form slope of -0.030 on the gender attitudes index (Panel A of Figure 7), this corresponds to a shift of about 0.1 standard deviations. The full $(1/3)^2$ scaling requires both the grandparents' and parents' generations to complete the transition. Women born before 1970 in our sample, who have largely completed fertility, report 8.6 children on average; Oman's total fertility rate is currently about 2.5 (World Bank, 2024).

References

Abbasi-Shavazi, MJ, P. McDonald, and M. Hosseini-Chavoshi (2008) "Modernization or Cultural Maintenance: The Practice of Consanguineous Marriage in Iran," *Journal of Biosocial Science*, 40 (6), 911–933.

Alesina, Alberto and Paola Giuliano (2014) "Family ties," in *Handbook of economic growth*, 2, 177–215: Elsevier.

Alesina, Alberto, Paola Giuliano, and Nathan Nunn (2013) "On the origins of gender roles: Women and the plough," *The quarterly journal of economics*, 128 (2), 469–530.

Ambrus, A. and E. Field (2008) "Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh," *Journal of Political Economy*, 116 (5), 881–930.

Anderson, Michael L (2008) "Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," *Journal of the American Statistical Association*, 103 (484), 1481–1495.

Ardington, Cally, Alicia Menendez, and Tinofa Mutevedzi (2015) "Early Childbearing, Human Capital Attainment, and Mortality Risk: Evidence from a Longitudinal Demographic Surveillance Area in Rural KwaZulu-Natal, South Africa," *Economic Development and Cultural Change*, 63 (2), 281–317, 10.1086/678983, Publisher: The University of Chicago Press.

Ashraf, Nava, Natalie Bau, Nathan Nunn, and Alessandra Voena (2020) "Bride Price and Female Education," *Journal of Political Economy*, 128 (2), 591–641, 10.1086/704572, Publisher: The University of Chicago Press.

Bahrami-Rad, Duman (2021) "Keeping it in the family: Female inheritance, inmarriage, and the status of women," *Journal of Development Economics*, 153, 102714.

Bahrami-Rad, Duman, Jonathan Beauchamp, Joseph Henrich, and Jonathan Schulz (2022) "Kin-Based Institutions and Economic Development," August, 10.2139/ssrn.4200629.

Bates, Robert H., Avner Greif, and Smita Singh (2004) "The political economy of kinship societies," *Politics from Anarchy to Democracy: Rational Choice in Political Science*, 66, Publisher: Stanford University Press.

Bisin, Alberto and Thierry Verdier (2001) "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory*, 97 (2), 298–319, 10.1006/jeth.2000.2678.

——— (2011) "Chapter 9 - The Economics of Cultural Transmission and Socialization," in Benhabib, Jess, Alberto Bisin, and Matthew O. Jackson eds. *Handbook of Social Economics*, 1, 339–416: North-Holland, 10.1016/B978-0-444-53187-2.00009-7.

Bittles, Alan H and Michael L Black (2010) "Consanguinity, human evolution, and complex diseases," *Proceedings of the National Academy of Sciences*, 107, 1779–1786.

Bursztyn, Leonardo, Alessandra L. González, and David Yanagizawa-Drott (2020) "Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia," *American Economic Review*, 110 (10), 2997–3029, 10.1257/aer.20180975.

Campbell, Olympia L. K. (2026) "Cousin marriage and reduced exposure to intimate partner violence and coercive control," *Proceedings of the National Academy of Sciences*, 123 (36), e2600906123, 10.1073/pnas.2600906123.

Campbell, Olympia L. K., Cecilia Padilla-Iglesias, Grégory Fiorio, and Ruth Mace (2024) "Genetic markers of cousin marriage and honour cultures," *Evolution and Human Behavior*, 45 (6), 106636, 10.1016/j.evolhumbehav.2024.106636.

Chao, Fengqing, Patrick Gerland, Alex R. Cook, and Leontine Alkema (2019) "Systematic assessment of the sex ratio at birth for all countries and estimation of national imbalances and regional reference levels," *Proceedings of the National Academy of Sciences of the United States of America*, 116 (19), 9303–9311, 10.1073/pnas.1812593116.

Dhar, Diva, Tarun Jain, and Seema Jayachandran (2022) "Reshaping Adolescents' Gender Attitudes: Evidence from a School-Based Experiment in India," *American Economic Review*, 112 (3), 899–927, 10.1257/aer.20201112.

Do, Quy-Toan, Sriya Iyer, and Shareen Joshi (2013) "The economics of consanguineous marriages," *Review of Economics and Statistics*, 95 (3), 904–918.

Doepke, Matthias, Michèle Tertilt, and Alessandra Voena (2012) "The Economics and Politics of Women's Rights," *Annual Review of Economics*, 4 (Volume 4, 2012), 339–372, 10.1146/annurev-economics-061109-080201.

Dossi, Gaia, David Figlio, Paola Giuliano, and Paola Sapienza (2021) "Born in the family: Preferences for boys and the gender gap in math," *Journal of Economic Behavior & Organization*, 183, 175–188, 10.1016/j.jebo.2020.12.012.

Duflo, Esther (2012) "Women Empowerment and Economic Development," *Journal of Economic Literature*, 50 (4), 1051–1079, 10.1257/jel.50.4.1051.

Edlund, Lena (2018) "Cousin marriage is not choice: Muslim marriage and underdevelopment," *AEA Papers and Proceedings*, 108, 353–57.

Eickelman, Christine (1984) *Women and community in Oman*: NYU Press.

Enke, Benjamin (2019) "Kinship, cooperation, and the evolution of moral systems," *The Quarterly Journal of Economics*, 134 (2), 953–1019.

Farré, Lídia and Francis Vella (2013) "The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labour Force Participation," *Economica*, 80 (318), 219–247, 10.1111/ecca.12008, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecca.12008.

Fernández, Raquel and Alessandra Fogli (2009) "Culture: An empirical investigation of beliefs, work, and fertility," *American economic journal: Macroeconomics*, 1 (1), 146–177.

Fernández, Raquel, Alessandra Fogli, and Claudia Olivetti (2004) "Mothers and Sons: Preference Formation and Female Labor Force Dynamics*," *The Quarterly Journal of Economics*, 119 (4), 1249–1299, 10.1162/0033553042476224.

Ghosh, Arkadev, Sam Il Myoung Hwang, and Munir Squires (2023) "Economic Consequences of Kinship: Evidence From U.S. Bans on Cousin Marriage," *The Quarterly Journal of Economics*, 138 (4), 2559–2606.

Giuliano, Paola (2020) "Gender and culture," *Oxford Review of Economic Policy*, 36 (4), 944–961, 10.1093/oxrep/graa044.

Giuliano, Paola and Nathan Nunn (2021) "Understanding cultural persistence and change," *The Review of Economic Studies*, 88 (4), 1541–1581.

Glennerster, Rachel, Joanna Murray, and Victor Pouliquen (2026) "Mass Media and Contraception Use: An Experimental Test of Modernization Theory in Burkina Faso," Document de Travail DT/2026-02, DIAL.

Henrich, Joseph (2020) *The WEIRDest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous*: Farrar, Straus and Giroux.

Hussain, R. (1999) "Community Perceptions of Reasons for Preference for Consanguineous Marriages in Pakistan," *Journal of Biosocial Science*, 31, 449–461.

Hwang, Sam Il Myoung, Deaglan Jakob, and Munir Squires (2025) "Health Effects of Cousin Marriage: Evidence from US Genealogical Records," *American Economic Review: Insights*, 7 (3), 396–410, 10.1257/aeri.20230544.

Iqbal, Sarosh, Rubeena Zakar, Florian Fischer, and Muhammad Zakria Zakar (2022) "Consanguineous marriages and their association with women's reproductive health and fertility behavior in Pakistan: secondary data analysis from Demographic and Health Surveys, 1990–2018," *BMC Women's Health*, 22 (1), 118, 10.1186/s12905-022-01704-2.

Islam, M Mazharul (2012) "The practice of consanguineous marriage in Oman: prevalence, trends and determinants," *Journal of biosocial science*, 44 (5), 571–594.

Jacoby, Hanan G. and Ghazala Mansuri (2010) "Watta Satta: Bride Exchange and Women's Welfare in Rural Pakistan," *American Economic Review*, 100 (4), 1804–25.

Jayachandran, Seema (2015) "The Roots of Gender Inequality in Developing Countries," *Annual Review of Economics*, 7 (1), 63–88, 10.1146/annurev-economics-080614-115404.

Jensen, Robert and Emily Oster (2009) "The power of TV: Cable television and women's status in India," *Quarterly Journal of Economics*, 124 (3), 1057–1094.

Johow, Johannes, Kai P Willführ, and Eckart Voland (2019) "High consanguinity promotes intergenerational wealth concentration in socioeconomically privileged Krummhörn families of the 18th and 19th centuries," *Evolution and Human Behavior*, 40 (2), 204–213, Publisher: Elsevier.

Lowes, Sara (2022) "Kinship Structure and the Family: Evidence from the Matrilineal Belt," September, 10.3386/w30509.

Meriwether, Margaret L. (1999) *The Kin Who Count: Family and Society in Ottoman Aleppo, 1770-1840*: University of Texas Press, Google-Books-ID: iFtq9TcWzjkC.

Mete, Cem, Laurent Bossavie, John Giles, and Harold Alderman (2020) "Is consanguinity an impediment to child development?" *Population Studies*, 74 (2), 139–159, Publisher: Routledge.

Mobarak, A Mushfiq, Theresa Chaudhry, Julia Brown et al. (2019) "Estimating the health and socioeconomic effects of cousin marriage in South Asia," *Journal of Biosocial Science*, 51 (3), 418–435, Publisher: Cambridge University Press.

Mobarak, Ahmed Mushfiq, Randall Kuhn, and Christina Peters (2013) "Consanguinity and other marriage market effects of a wealth shock in Bangladesh," *Demography*, 50 (5), 1845–1871.

Schulz, Jonathan F, Duman Bahrami-Rad, Jonathan P Beauchamp, and Joseph Henrich (2019) "The Church, intensive kinship, and global psychological variation," *Science*, 366 (6466), Publisher: American Association for the Advancement of Science.

Small, Neil, Rifat Razaq, Vishal Sharma, Alice Cunningham, Zuneera Khurshid, and Shahid Islam (2024) "Changing patterns in marriage choice and related health risk in the Pakistani heritage community in Bradford UK: a qualitative study," *Wellcome Open Research*, 9, 690, 10.12688/wellcomeopenres.23338.3.

Tillion, Germaine (1983) *The Republic of Cousins: Women's Oppression in Mediterranean Society*, London: Al Saqi Books, Originally published as *Le Harem et les cousins* in 1966 by Seuil.

Wikan, Unni (1991) *Behind the Veil in Arabia: Women in Oman*, Chicago, IL: University of Chicago Press, `https://press.uchicago.edu/ucp/books/book/chicago/B/bo3613908.html`.

World Bank (2024) "Fertility rate, total (births per woman) – Oman," `https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=OM`, World Development Indicators. Accessed: 2026-05-25.

A Appendix: Supplementary Tables and Figures

Table A.1: First stage: baseline and alternative instruments

	(1)	(2)	(3)	(4)	(5)
Cousin measure:	*(baseline)*	0-6 years older	IHS	Weighted count ≤ 2	*(baseline)*
	Outcome: Out-marriage				Outcome: F
Male cousins	-0.046***	-0.039***	-0.153***	-0.084***	0.047***
	(0.006)	(0.006)	(0.019)	(0.029)	(0.006)
Female cousins	0.007	0.004	0.021	0.012	-0.007
	(0.006)	(0.006)	(0.019)	(0.013)	(0.006)
Observations	1538	1538	1538	652	1372
F-stat on instrument	56.60	43.75	65.00	8.49	57.10
Controls	Yes	Yes	Yes	Yes	Yes

Notes: OLS estimates. Columns (1)–(4) use the male-cousin measure shown and the corresponding female-cousin control. IHS denotes the inverse hyperbolic sine of the age-weighted count. Column (4) restricts the sample to respondents with an age-weighted male-cousin count no greater than two. Column (5) uses the baseline age-weighted counts and the coefficient of inbreeding, normalized to one for first-cousin marriage and zero for marriage to a non-relative. All regressions also control for birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. F-statistics are robust tests of the excluded male-cousin coefficient in the first stage. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.2: First stage: marriage to non-relatives and more distant relatives

	(1)	(2)	(3)
	Total	Components of out-marriage	
	Out-marriage	Married a non-relative	Married a second cousin or other relative
Male marriageable cousins	-0.046***	-0.032***	-0.013***
	(0.006)	(0.006)	(0.004)
Observations	1538	1538	1538
Controls	Yes	Yes	Yes

Notes: OLS coefficients on the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Marriage to a non-relative and marriage to a second cousin or other relative partition out-marriage. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.3: First stage by type of cousin

	(1)	(2)	(3)	(4)
	Married to son of:			
	Mother's sister	Mother's brother	Father's sister	Father's brother
Number of corresponding cousins	0.044***	0.042***	0.037***	0.068***
	(0.008)	(0.009)	(0.008)	(0.011)
Number of other cousins	0.003	-0.002	-0.002	-0.001
	(0.004)	(0.003)	(0.003)	(0.004)
Observations	1538	1538	1538	1538
F-stat on instrument	29.53	22.04	19.28	40.20

Notes: OLS estimates for marriage to each first-cousin type. Each regression includes separate age-weighted counts of male cousins of the indicated type and all other types, and corresponding female-cousin counts. All regressions also control for birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. F-statistics are robust tests of the male-cousin coefficient for the indicated type. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.4: Effect of out-marriage on gender attitudes: alternative specifications

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable				
	Gender attitudes index	Equal job priority	Equal leadership ability	Equal business ability	Equal education priority
Panel A: Age weights estimated from all marriages (baseline)					
Out-marriage	0.648**	0.324	1.187**	0.985*	-0.004
	(0.272)	(0.262)	(0.503)	(0.563)	(0.509)
Observations	1496	1495	791	792	791
F-stat on instrument	56.2	56.1	19.7	19.8	19.7
Controls	Yes	Yes	Yes	Yes	Yes
Panel B: Age weights estimated from first-cousin marriages					
Out-marriage	0.651**	0.302	1.276**	1.079*	0.002
	(0.279)	(0.267)	(0.536)	(0.605)	(0.540)
Observations	1496	1495	791	792	791
F-stat on instrument	53.3	53.2	17.7	17.8	17.7
Controls	Yes	Yes	Yes	Yes	Yes
Panel C: Male Cousins (IHS)					
Out-marriage	0.647**	0.393	0.834*	0.829	0.306
	(0.270)	(0.264)	(0.504)	(0.546)	(0.500)
Observations	1496	1495	791	792	791
F-stat on instrument	64.1	64.1	20.5	20.5	20.5
Controls	Yes	Yes	Yes	Yes	Yes
Panel D: Male Cousins (0-6 years older)					
Out-marriage	0.553*	0.241	1.255**	1.394*	-0.225
	(0.288)	(0.275)	(0.635)	(0.749)	(0.617)
Observations	1496	1495	791	792	791
F-stat on instrument	43.1	43.0	12.8	12.9	12.8
Controls	Yes	Yes	Yes	Yes	Yes
Panel E: Male Cousins (Weighted count $\leq$2)					
Out-marriage	1.449	-0.174	2.196	1.202	0.941
	(0.964)	(0.741)	(1.693)	(1.439)	(1.342)
Observations	628	628	308	308	308
F-stat on instrument	7.6	7.6	3.2	3.2	3.2
Controls	Yes	Yes	Yes	Yes	Yes
Panel F: OLS					
Out-marriage	-0.034	-0.077	0.038	-0.083	0.132*
	(0.053)	(0.051)	(0.077)	(0.076)	(0.076)
Observations	1496	1495	791	792	791
Controls	Yes	Yes	Yes	Yes	Yes
Panel G: Alternative Treatment (Not Married to First Cousin)					
Not married to first cousin	0.738**	0.368	1.331**	1.105*	-0.004
	(0.318)	(0.299)	(0.595)	(0.646)	(0.571)
Observations	1496	1495	791	792	791
F-stat on instrument	45.4	45.3	15.9	15.9	15.9
Controls	Yes	Yes	Yes	Yes	Yes

Notes: Panels A–E report 2SLS estimates of the effect of out-marriage using the instruments indicated. IHS denotes the inverse hyperbolic sine of the age-weighted count. Panel E restricts the sample to respondents with an age-weighted male-cousin count no greater than two. Panel F reports OLS. Panel G uses the baseline instrument and codes never-married women as one for the alternative treatment. Each regression includes the female-cousin measure corresponding to its instrument. Panel F uses the baseline female-cousin measure. All regressions also control for birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Outcomes are in standard-deviation units. Higher values indicate more egalitarian attitudes. The index combines the four attitude measures, with weights renormalized over the components observed for each respondent. F-statistics are Kleibergen–Paap statistics. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.5: Effect of out-marriage on binary gender attitudes

	Mean (%)	Coefficient	SE	N	F-stat.
Egalitarian responses (%)	22.7	17.0**	(7.1)	1,496	56.2
Equal job priority	10.6	7.3	(7.8)	1,495	56.1
Equal leadership ability	13.4	26.1*	(15.8)	791	19.7
Equal business ability	37.0	40.2*	(23.8)	792	19.8
Equal education priority	73.6	19.0	(20.2)	791	19.7

Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Each individual outcome equals 100 for disagreement (including strong disagreement) with the corresponding pro-male statement and zero for agreement (including strong agreement). The first row averages these outcomes over answered questions. Higher values indicate more egalitarian attitudes. Coefficients and standard errors are in percentage points. Means are calculated in each estimation sample. Robust standard errors are in parentheses. F-statistics are Kleibergen–Paap statistics. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.6: Effect of out-marriage on gender attitudes: husband characteristics

	(1)	(2)	(3)	(4)
Outcome:	Gender attitudes index			
Out-marriage	0.648**	0.524**	0.423	0.469*
	(0.272)	(0.264)	(0.260)	(0.264)
Husband education (yrs)		0.018***		-0.003
		(0.007)		(0.010)
Husband income (log)			0.212***	0.222***
			(0.056)	(0.067)
Observations	1496	1301	993	973
F-stat on instrument	56.19	57.06	51.34	51.19

Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Columns (2)–(4) add husband's education, log income, or both, as indicated. Each column uses observations with non-missing values for its included variables. The gender-attitudes index is in standard-deviation units. Higher values indicate more egalitarian attitudes. F-statistics are Kleibergen–Paap statistics. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.7: Effect of the coefficient of inbreeding on gender attitudes

	(1)	(2)	(3)	(4)	(5)
	Gender attitudes index	Equal job priority	Equal leadership ability	Equal business ability	Equal education priority
Coefficient of inbreeding (F)	-0.451*	-0.123	-1.148**	-0.972	0.249
	(0.273)	(0.267)	(0.539)	(0.592)	(0.517)
Observations	1335	1334	714	715	714
F-stat on instrument	57.6	57.6	20.1	20.1	20.1
Controls	Yes	Yes	Yes	Yes	Yes

Notes: 2SLS estimates of the effect of the coefficient of inbreeding, instrumented by the age-weighted number of male first cousins. The coefficient of inbreeding is normalized so that a one-unit increase corresponds to moving from marriage to a non-relative to first-cousin marriage. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Outcomes are in standard-deviation units. Higher values indicate more egalitarian attitudes. F-statistics are Kleibergen–Paap statistics. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.8: Sensitivity to the choice of controls

Outcome	(1)	(2)	(3)	(4)	(5)
Panel A: Gender attitudes (standard deviation units)					
Gender-attitude index	0.700***	0.601**	0.597**	0.694**	0.648**
	(0.207)	(0.266)	(0.267)	(0.283)	(0.272)
Observations	1,496	1,496	1,496	1,496	1,496
F-stat on instrument	122.1	70.6	68.9	61.5	56.2
Panel B: Family contact (indicators)					
Parents within 1 km	−0.241**	−0.217	−0.255*	−0.196	−0.236*
	(0.113)	(0.134)	(0.134)	(0.134)	(0.127)
Observations	1,298	1,298	1,298	1,298	1,298
F-stat on instrument	76.4	53.5	51.8	53.1	52.0
In-laws within 1 km	0.095	−0.116	−0.137	−0.087	−0.189
	(0.128)	(0.135)	(0.138)	(0.136)	(0.125)
Observations	1,063	1,063	1,063	1,063	1,063
F-stat on instrument	64.7	50.5	47.3	50.0	48.1
See parents daily	−0.177	−0.403*	−0.454**	−0.254	−0.449**
	(0.179)	(0.208)	(0.220)	(0.210)	(0.214)
Observations	707	707	707	707	707
F-stat on instrument	33.2	25.4	22.6	23.0	21.8
See in-laws daily	−0.339*	−0.424*	−0.475**	−0.443*	−0.539**
	(0.181)	(0.221)	(0.234)	(0.232)	(0.252)
Observations	710	710	710	710	710
F-stat on instrument	32.8	24.8	22.0	22.0	20.6
See own siblings daily	−0.183	−0.344*	−0.384*	−0.190	−0.361*
	(0.173)	(0.198)	(0.209)	(0.205)	(0.207)
Observations	714	714	714	714	714
F-stat on instrument	34.3	26.0	23.0	23.1	22.0
See husband's siblings daily	−0.224	−0.218	−0.265	−0.223	−0.230
	(0.162)	(0.187)	(0.200)	(0.198)	(0.205)
Observations	714	714	714	714	714
F-stat on instrument	33.8	25.7	22.6	22.7	21.5
Female marriageable-age cousins	No	Yes	Yes	Yes	Yes
Birth order, brothers, and sisters	No	No	Yes	Yes	Yes
Younger-cousin sex composition	No	No	Yes	Yes	Yes
Age	No	No	No	Yes	Yes
Village-by-round effects	No	No	No	No	Yes

Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. The sample is held fixed across columns within each outcome. The gender-attitudes index is in standard-deviation units. Higher values indicate more egalitarian attitudes. Family-contact outcomes are indicators. Younger-cousin sex composition comprises the male share among first cousins at least five years younger than the respondent and an indicator for having no such cousins. The share is set to 0.5 in that case. F-statistics are Kleibergen–Paap statistics. Robust standard errors are in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure A.1: Map of Bid Bid and Nizwa, Oman

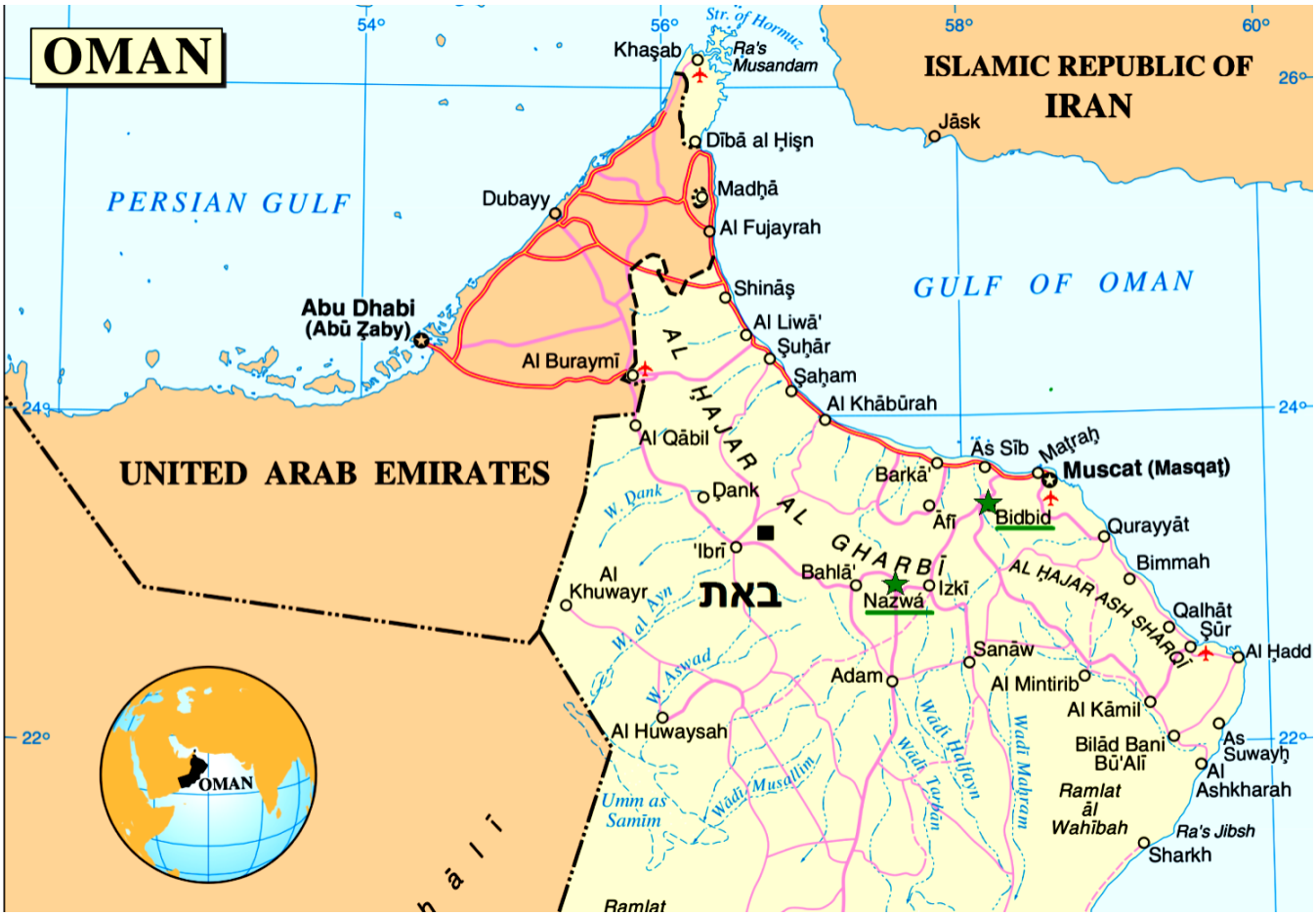
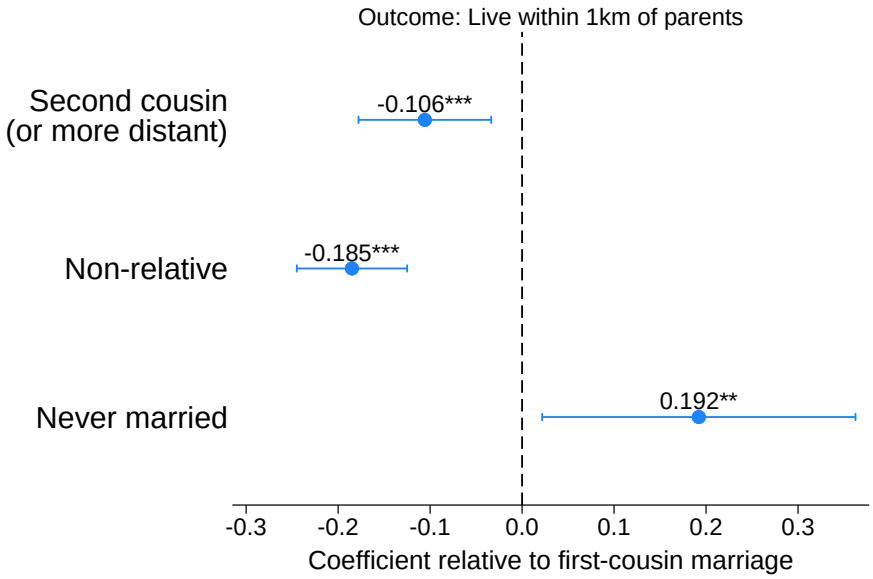
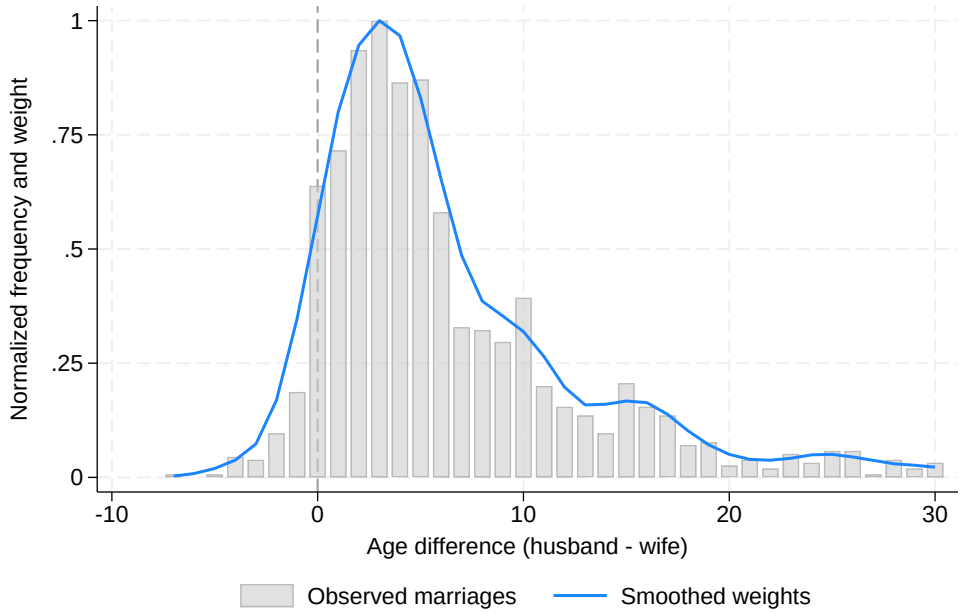


Figure A.2: Parental proximity by marriage type



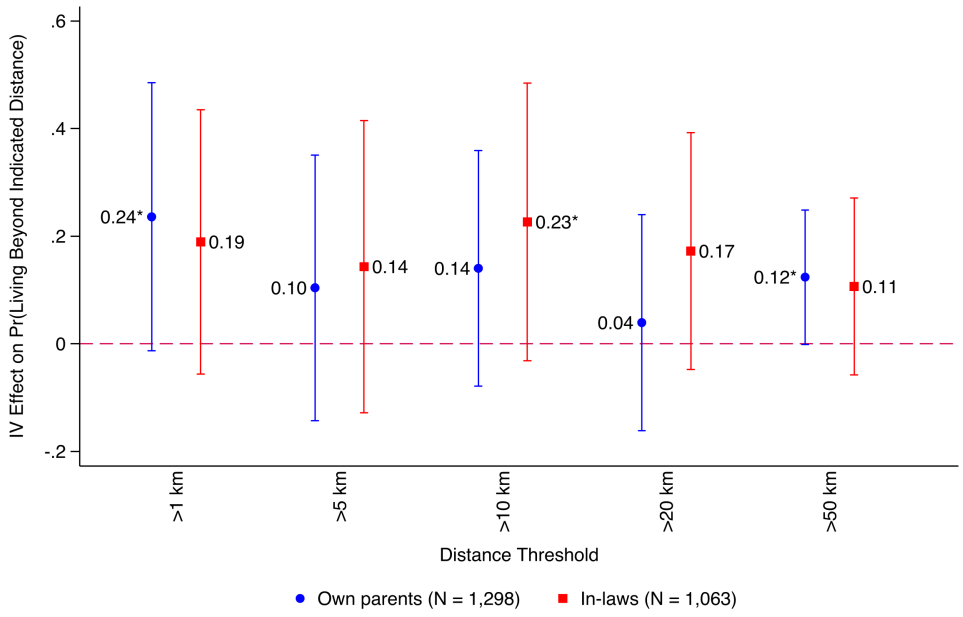
Notes: OLS coefficients from a regression of living within 1 km of the respondent's parents on marriage-type indicators. First-cousin marriage is the omitted category. The regression controls for birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Bars show 95% confidence intervals based on robust standard errors. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. N = 1,298.

Figure A.3: Husband-wife age differences and cousin weights



Notes: Bars show husband-minus-wife age differences for 1,412 marriages, pooled across both survey rounds. The curve is an Epanechnikov kernel density estimate using Stata's default bandwidth rule (1.095 years). Each series is normalized to a maximum of one. Cousin weights are taken from the curve at integer age differences from -7 to 30 years and are zero outside this range.

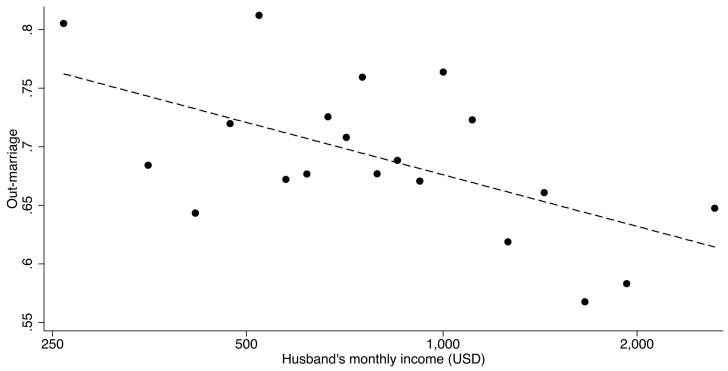
Figure A.4: Effect of out-marriage on distance from parents and in-laws



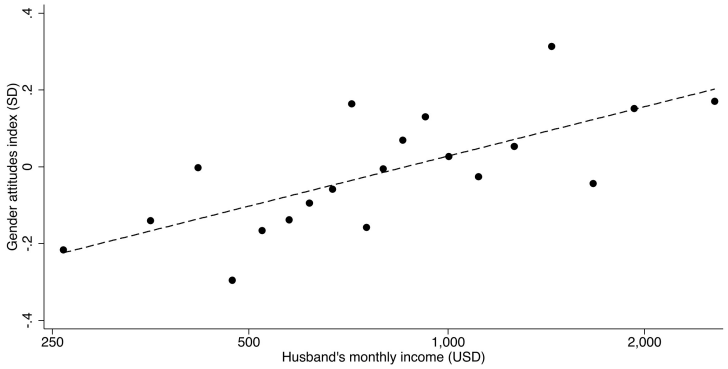
Notes: 2SLS estimates of the effect of out-marriage, instrumented by the age-weighted number of male first cousins. All regressions control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Each outcome indicates living beyond the distance shown from parents or in-laws. Bars show 95% confidence intervals based on robust standard errors. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Figure A.5: Out-marriage and gender attitudes by husband's income

(a) Out-marriage by husband's income



(b) Gender attitudes by husband's income



Notes: Binned scatter plots of out-marriage and the gender-attitudes index against husband's monthly income. Both panels control for the age-weighted number of female first cousins, birth order, numbers of brothers and sisters, younger-cousin sex composition, age, and village-by-round fixed effects. Each panel uses 20 bins. Lines show linear fits. Income is shown on a logarithmic scale, with labels in US dollars (1 Omani rial = 2.59 US dollars). The index is in standard-deviation units. Higher values indicate more egalitarian attitudes. N = 1,027 in panel (a) and 993 in panel (b).

B Appendix: Survey questions and variable definitions

This appendix gives the survey questions and definitions of variables used in the paper, grouped in the order of Table 1. Quoted text is from the questionnaire.

Respondent and natal-family background

Age (years). "How old are you in years?"

Height (cm). "Respondent's approximate height in centimeters".

Age at menarche. "At what age did you begin menstruation?"

Brothers and sisters. Separate counts from the sibling roster, which includes siblings who survived past age 12, including those who subsequently died.

Birth order. One plus the number of older siblings in the roster of siblings who survived past age 12, including those who subsequently died.

Any education. "What is your level of education? (highest class completed)" The indicator equals one for any reported formal or non-formal education and zero for no schooling. We also use this response to construct years of education and completion of grade 12, described below.

Father had any education. "What is your father's level of education? (highest class completed)" The father's any-education indicator equals one for any reported formal or non-formal education and zero for no schooling. The response categories are the same as for the respondent's education, described below.

Father's land ≥5,000 Omani rials. "What is (or was if deceased) the approximate value of your father's land-holdings?" is recorded in value bands. The land indicator equals one for bands starting at 5,000 Omani rials and zero for the band below 5,000.

Village-by-round fixed effects. Indicators for combinations of the recorded village and survey round.

Brothers and sisters 0–6 years older. Separate counts based on reported current ages, used in the additional brothers analysis.

Cousins and instrument

Total cousins, total male cousins, and total female cousins. Counts of first cousins from the family roster, which includes cousins who survived to age 12, including those who subsequently died.

Male cousins 0–6 years older. The number of male first cousins from the family roster who are zero to six years older than the respondent. The corresponding female-cousin count is constructed in the same way.

Male marriageable-age cousins and female marriageable-age cousins. Age-weighted counts of male and female first cousins. Weights reflect the observed distribution of husband–wife age differences and are normalized to a maximum of one. See Section 3.1 for the weighting method and Figure A.3 for the weighting curve.

Male share, cousins 5+ years younger. The male share among first cousins at least five years younger than the respondent. Table 1 reports this share only for respondents with such cousins. In regressions, the share is set to 0.5 for respondents with no such cousins, and a separate indicator identifies these respondents.

No cousins 5+ years younger. An indicator equal to one if the respondent has no first cousins at least five years younger, and zero otherwise.

Alternative cousin instruments. The alternative instruments use weights estimated from first-cousin marriages only, the inverse hyperbolic sine of the weighted count, or the number of cousins zero to six years older than the respondent. Corresponding female-cousin measures enter as controls.

Cousins by family branch. For the cousin-type analyses, the roster distinguishes sons of the respondent's mother's sister, mother's brother, father's sister, and father's brother. We construct male and female cousin counts and marriage indicators for these four branches.

Marriage and fertility

Ever married. Based on "Current marital status" and "How many times have you been married?".

Married to first cousin, second cousin, other relative, or non-relative. "What is your relationship with this spouse?" We use the first marriage. First-cousin marriage includes double first cousins. Each category indicator equals zero for never-married women.

Out-married (out-marriage). An indicator equal to one for marriage to a second cousin, another relative, or a non-relative. It equals zero for first-cousin marriage and for never-married women.

Married by age 16. An indicator equal to one if the reported age at first marriage is at most 16. Never-married women are coded zero, and married women with missing marriage age are excluded. The indicators for marriage by other ages are constructed in the same way.

Age at marriage. "How old were you at the time of this marriage?" We use age at first marriage.

Length of engagement (years). "If the marriage was arranged, how old were you at the time it was arranged?" Age at first marriage minus age when the marriage was arranged, in years.

Age at first birth. Inferred from the respondent's age and available information on her children's ages.

Children from first marriage. The number of children listed in the first-marriage fertility roster, including children who died.

Not married to a first cousin. The alternative treatment in Table A.4 equals one for all women not married to a first cousin, including never-married women.

Coefficient of inbreeding. Assigned from the reported relationship: 1/16 for first cousins, 1/64 for second cousins, 1/128 for other relatives, and zero for non-relatives. We divide these values by 1/16, so first-cousin marriage equals one.

Family contact

Parents less than 1 km away and in-laws less than 1 km away. Distance from parents' residence, in kilometres, is recorded separately for the respondent's parents and her husband's parents, using their current residence or residence at death. The response bands are less than 1 km, 1–5 km, 6–10 km, 11–20 km, 21–50 km, and more than 50 km. We use indicators for the lowest distance band and for living beyond the thresholds shown in the distance figure.

See parents daily. An indicator equal to one if the respondent reports seeing her parents daily, and zero for less frequent contact.

See in-laws daily. An indicator equal to one if the respondent reports seeing her parents-in-law daily, and zero for less frequent contact.

See siblings daily. An indicator equal to one if the respondent reports seeing her siblings daily, and zero for less frequent contact.

See husband's siblings daily. An indicator equal to one if the respondent reports seeing her husband's siblings daily, and zero for less frequent contact.

Gender attitudes

The four response categories are agree strongly, agree, disagree, and disagree strongly. Table 1 reports them from 1 (strongly disagree) to 4 (strongly agree). The birth-cohort figure uses indicators for agreement. For the regression results, the measures are oriented so that higher values indicate more egalitarian attitudes.

Job priority to men. "When jobs are scarce, men should have more right to a job than women." Round 1 offers only agree or disagree.

Men are better leaders. "On the whole, men make better political leaders than women do."

Men are better at business. "On the whole, men make better businesspeople than women do."

Education priority to males. "A university education is more important for a boy than for a girl."

Gender attitudes index. The index combines the four standardized attitude measures using inverse-covariance weights, renormalized over the components observed for each respondent. Higher values indicate more egalitarian attitudes.

Woman's education and employment

Completed grade 12. Based on "What is your level of education? (highest class completed)". The indicator equals one for class 12, technical college, or a university degree, and zero for no schooling or classes 1–11. Non-formal or adult education is treated as missing.

Years of education. "What is your level of education? (highest class completed)" We code no schooling as zero, classes 1–12 as the corresponding years of education, technical college as fourteen years, and a university degree as sixteen years. Non-formal or adult education is treated as missing.

Employed. "Are you currently working for pay?" Employment equals one for yes and zero for no, including retirement.

Husband characteristics

Husband's education (years). "What was your husband's level of education at the time of marriage?" We code no schooling as zero, classes 1–12 as the corresponding years of education, technical college as fourteen years, and a university degree as sixteen years. Non-formal or adult education is treated as missing.

Husband completed grade 12. Based on the husband's reported education at marriage. The indicator equals one for class 12, technical college, or a university degree, and zero for no schooling or classes 1–11. Non-formal or adult education is treated as missing.

Husband's income (log). "What is your husband's personal income per month from work?" Income is reported in Omani rials. The regressions use its natural logarithm, defined for positive reported income.

Husband–wife age gap and age gap <10 years. "How old was your husband at the time of this marriage?" The husband–wife age gap is the husband's age at first marriage minus the respondent's age at first marriage. The age-gap indicator equals one if this difference is less than ten years.

Other marital outcomes

Arguments with husband (1–4). "How often do you and your husband have arguments over decisions such as household purchases or your children's activities?" The responses are often, regularly,

sometimes, and almost never. We code them from 1 (almost never) to 4 (often).

Can make purchases. "Does or did your husband mind if you make large purchases for the household without his permission?" The purchase-autonomy indicator equals one for no and zero for yes.

Life satisfaction (1–5). "All things considered, how satisfied are you with your life as a whole these days?" Responses range from 1 (completely dissatisfied) to 5 (completely satisfied).

Divorced. "What is the current status of this marriage?" The divorce indicator equals one if the first marriage ended in divorce and zero if the respondent remains in that marriage. Marriages that ended with the husband's death are excluded from this indicator.

Husband has co-wives. "Does or did your husband have any co-wives at any time during the marriage?" Refers to the first marriage.