Impact of British Colonial Gender Reform on Early Female Marriages and Gender Gap in Education: Evidence from Child Marriage Abolition Act, 1929[*]

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Abstract

The British colonial government set the minimum age at first marriage for females as 14 years in British India in 1929. It was not implemented until 1930, six months after its announcement. Using the princely states as a control group, we employ a difference-in-differences strategy to estimate the causal impact of the abolition of child marriage on underage female marriage. Analyzing historical census data from 1911 to 1981, we find an anticipation effect: female child marriages increased in 1931 but declined sharply in the post-independence period. In the affected regions, female educational attainment increased in the long term.

JEL Codes: I250, J12, N3, O150
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1 Introduction

There is cross– and within-country variation in gender norms (Alesina et al., 2013; Gupta, 2014). This study examines whether legal gender reforms under British colonial rule explain within-country variation in the prevalence of child marriage and the gender gap in education. In particular, our interest is in understanding whether a legal reform that raised the age at first marriage for females could have a persistent impact on female outcomes.

Marital status is an important determinant of female labor force participation (Heckman and Macurdy, 1980; Angrist and Evans, 1998; Goldin and Katz, 2002; Stevenson, 2008). Early marriage has been shown to adversely affect socio-economic status and schooling outcomes for females (Field and Ambrus, 2008; Dahl, 2010; Vogl, 2013). Marriage laws that raise the age at first marriage could be a useful policy tool to improve economic outcomes for women. However, a priori, it is unclear how individuals would react to legal policy changes regarding marriage, because marriage is related to other preexisting cultural practices and institutions (Corno et al., 2020). While research has focused on the impact of marriage laws on fertility and labor market outcomes (Stevenson, 2007; Bharadwaj, 2015; Voena, 2015), we know little about whether marital legal reforms have persistent and longer-term effects on gender norms and practices. In this paper, we shed light on the effects of legal reforms on gender outcomes by analyzing Indias' Child Marriage Restraint Act (1929), also known as the Sarda Act.

The Child Marriage Restraint Act (1929) fixed the minimum legal age at first marriage for females as 14 years in British India.[1] The law was announced six months before it was enforced. The 1931 census report for India noted a huge spike in child marriage in the census year and speculated that the rise in marriages was a preemptive action to avoid the consequences of the law. It mentioned: "it was this interval between the date when the Act was passed and the date on which it came into force which was largely responsible for the enormous increase in the numbers of those married below the age of ten years" (Child Marriage Restraint Act, 1930; Census of India, 1931[2]).[3]

We use two key features of the law to provide a systematic empirical analysis of the anticipation effect of the Sarda Act and evaluate the implementation impact of the law. First, the Act was announced on September 28, 1929, but it came into force six months later, on April 1, 1930. Second, the law applied only to British India. After the Great Rebellion in 1857, the British divided its territories in India into two types of states: British India and the princely states. While the laws of British India rested upon those passed by the British Parliament, the

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[1]This was the first law that the British introduced that made child marriage in India illegal. The British had introduced other social reforms, such as the Bengal Sati Regulation (1829), the Hindu Widow Remarriage Act (1856), the Age of Consent Law (1891), etc; see Appendix B for details.

[2]Census of India, 1931 Vol. 1, Part 1, pp. 229—230

[3]To verify the data on the increased child marriage among females as revealed in the census reports, the British officials compared the census records with records on marriage registration, which was customary among Christians and Muslims in British India. Hindus did not customarily register marriages, but the marriage pattern of those of other religions for whom it was the norm to maintain registration records, such as the Christians, followed the marriage pattern among Hindus (Krishnan, 1977). This is because the Muslims and Christians in India were actually Hindu converts (Krishnan, 1977; Mullatti, 1995). The British census reports found a great increase in marriage registrations in the months preceding the date on which the law would come into force.

courts of the princely states existed under the authority of the respective rulers of those states (Interpretation Act, 1889).

We employ a difference-in-differences strategy to estimate the *announcement* effect of the law abolishing child marriage in British India districts, using historical census marriage data by district, age, and gender from 1911 to 1931, with districts in princely states as the control group. Overall, we find that the proportion of females married at age 5-10 years increased following the announcement of the Sarda Act by 20-29% in British India relative to the princely states (In 1911-1921, there were about 104 married girls out of 1000 girls in the age group of 5-10 years). The results are robust to controlling for population changes, region-specific trends, and differential trends between districts with large or small population size. Further, using migration data from 1921-1931, we show that the effect is unlikely to have been driven by households sorting according to their marriage norms in response to the Sarda Act.

The finding that female child marriages increased in British India in 1931, in comparison with the princely states, suggests that households in British India anticipated the implementation of the law. If households had anticipated strong enforcement of the law and had been deterred from violating it, the child marriage of girls should have declined sharply after the passage of the law. We use historical data from the Census of India between 1911 and 1981- covering both colonial and postcolonial India - to construct district-level panel data on marital status in the population by age and gender and estimate the implementation effect of the Sarda Act. We measure child female marriage for the age group of 10-15 because it is the age-interval for which the marital data that are comparable across colonial (1911-1931) and post-colonial years (1961-1981) under study are available.[4] We find that the Sarda Act reduced the proportion of females married at the age of 10-15 by 51% in the 1961–1981 period, relative to the level in 1921. The results are robust to controlling for long-term population changes. This is in line with the findings of Hatekar et al. (2007), who uses genealogical data for a sample of women from the State of Maharashtra to provide suggestive evidence of the effectiveness of the Sarda Act.

To understand whether the historical legal reform has further long-term consequences, we compare British India districts with their neighboring princely state districts. We match each British India district with a neighboring princely state district that has the closest baseline demographics at the pre-intervention period, including prevalence of female marriage at a young age. For each pair of matched neighboring British India district and princely state, we compare the post-independence gender differential in human capital investment between regions formerly under British India and in princely states in pre-independence India. This allows us to control for differences in cultural practices and social institutions. We test for within-pair differences between the regions that were formerly British India and princely states, using data from independent nationally representative household surveys conducted in India after the 1990s: the District Information System for Education (DISE), and the District Level Household and Facility Survey (DLHS). We find that in districts that were formerly under British India, the mean age of marriage is higher by 0.36 years, compared with the districts that were in princely states.

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[4]See Section-4 for detailed explanation.

We also find that there are 3.54 more girls enrolled in school per 100 enrolled boys for class 7 (approx. 13 years old) in the British districts than those in former princely state districts. These results show persistent effects of the historical colonial legal reforms on gender norms.

Next, we examine the intergenerational transmission mechanism of the age of first marriage. We show that mothers' age at first marriage is positively associated with their daughters' age at first marriage, using National Family and Health Survey (NFHS) data. This relationship is consistent with the literature demonstrating early marriage is associated with worse education and health outcomes for the resulting children, which in turn determine those daughters' age at first marriage (Vogl, 2013; Sekhri and Debnath, 2014; Chari et al., 2017). The age at marriage is associated with fertility changes (Corno et al., 2020), which can have an impact on the social norms of the next generation (Vogl and Freese, 2020). Yount et al. (2016) show that early marriage is a significant risk factor in intimate partner violence. It could be that mothers who marry early have less bargaining or negotiating power in patriarchal households, and as a consequence have less scope to invest in their daughters. India is largely a patrilineal and patrilocal society in which the socialization process requires married girl children to adhere to the domestic and social customs of their marital home (Bagchi, 1993; Mukherjee, 2006). Therefore, in line with the emerging early childhood literature on the causal impact on social preferences (Gould et al., 2011; Giuliano and Spilimbergo, 2014; Billings et al., 2020; Cappelen et al., 2020), life-changing interventions, such as marriage in the formative years, potentially have a lasting effect on social preferences in adulthood.

The short- versus medium/long-run effect contrast establishes that the Sarda Act had an impact. In particular, when government policies force social change on some parts of society, the affected group often responds by taking actions to undermine the new policy, sometimes resulting in a backlash. The short-run results provide evidence of that behavior, and yet the medium/long-run results show that the colonial government succeeded in changing practice and possibly the norms underpinning it. The results highlight the importance of very long-run follow-up in studying interventions that promote social change.

Our findings underscore the importance of understanding the social background when we consider how society responds to the development of the labor market. Social norms can persist for many years and can affect the decision of certain demographic groups to participate in education and the labor market. Even with the same formal institutions and economic environment, some communities may not take full advantage of economic transformation and development because of their historical experience. Moreover, our study explains a significant part of the large regional variation in the degree of gender bias in India. The districts that were in British India have better female education outcomes and females marrying at higher age compared with the districts that were in princely states. This finding suggests that considering historical institutions may be relevant to policy discussions about gender issues, in addition to considering state, religious, or social class differences.

This paper contributes to several strands of literature. It broadly contributes to the literature that examines the long term impact of historical economic (Nunn, 2008; Nunn and Wantchekon, 2011; Alesina et al., 2013) and political institutions (Alesina and Fuchs-Schündeln, 2007; Grosfeld and Zhuravskaya, 2015; Becker et al., 2016; Campa and Serafinelli, 2019) on culture and social norms. In particular, this paper builds on the literature on the legacy of colonization policies (Acemoglu et al., 2001; Banerjee and Iyer, 2005; Dell, 2010; Wantchekon et al., 2015; Lowes et al., 2017; Dell and Olken, 2020). Most studies of colonial institutions focus on their effect on economic outcomes and social norms. We add to this literature by examining the effects of a colonial social policy intervention and its interactions with preexisting traditional practices on gender norms and outcomes.

Our paper relates to the growing number of studies that highlight the importance of culture for policy (Schoellman and Tertilt, 2006; Alesina et al., 2015; Ashraf et al., 2020; Bau, forthcoming), and the implications of gender related social practices (Tertilt, 2005, 2006; Croson and Gneezy, 2009; Fernandez and Fogli, 2009; Alesina et al., 2013; Anderson and Bidner, 2015; Corno and Voena, 2016; Jayachandran and Pande, 2017; Corno et al., 2020). It also contributes to the studies on the evolution of culture across generations (Abramitzky et al., 2016; Giuliano and Nunn, 2020).

In addition, this study adds to the emerging literature on the impact of early childhood intervention on preferences during adulthood (Giuliano and Spilimbergo, 2014; Billings et al., 2020; Cappelen et al., 2020). We focus on the changes in the institution of child marriage in colonial India, which plays a key role in determining the experience of young girls in a patrilocal society. We provide suggestive evidence that gender reforms may improve female outcomes possibly via the intergenerational transmission of norms.

The remainder of this paper is organized as follows. We provide the historical background in Section 2, followed by our hypotheses in Section 3. We describe the data and empirical strategy in Sections 4 and 5, respectively. We present the results and a discussion on intergenerational transmission of marriage age in Sections 6 and 7, followed by the conclusion in Section 8.

2   Historical overview

The British first arrived in India in the early 1600s through a trading company called the East India Company. It was not until 1757 that the British had their first military conquest. The East India Company had experimented with a number of political arrangements to maximize its own commercial profits and minimize administrative liabilities. Some states were brought directly under its control, and some states entered into political and commercial treaties. This experiment came to an end with the Great Revolution of 1857, when the British government took control. The British government divided areas under British rule into two territories: British India and princely (or native) states (Interpretation Act, 1889). British India covered all territories ruled by the British government through the governors-general. The princely states were the independent kingdoms of the Indian kings who accepted British suzerainty. They came under the governance of the viceroy or the governor-general, who was the head of

the administration in India and a representative of the monarch in India. A clear distinction between "dominion" and "suzerainty" was supplied by the jurisdiction of the courts of law. The laws of British India were based on laws passed by the British Parliament and the legislative power from those laws was vested in the various governments of British India, both central and local. In contrast, the courts of the princely states existed under the authority of the respective rulers of those states (Interpretation Act, 1889). Although indirect control was exerted over the princely states, the rulers of those regions were not passive figures. The indigenous rulers had their own customs and laws, which they insisted on preserving (Ramusack, 2003).

Before the British came to administer the Indian territories, matters of marriage, maintenance, succession, and legitimacy were resolved using various religious laws, such as Dayabhaga and Mitakshara law for Hindus, the literary traditions of Ithna Ashari and Hanafi for Muslims, and several customary laws for tribal communities. When the British rulers took control of India, they promised not to interfere with personal laws such as those governing marriage, succession, and so on (Carroll, 1983). However, they reserved the right to intervene using statutory laws that would override all religious laws in personal matters. British rulers imposed social reforms in British India at the discretion of the governor-general (see Appendix B for details).

2.1 Child Marriage Restraint Act, 1929 (Sarda Act)

The role of a child bride in early 20th Century Indian society was to be a good wife and mother (Mukherjee, 2006). In a patrilineal and patrilocal society, the socialization process for the girl children in their marital homes was difficult, as they were expected to meet the multifarious demands of the social and domestic customs of the household into which they were married (Bagchi, 1993).

In our paper, we closely examine the impact of the Child Marriage Restraint Act 1929 (also known as the Sarda Act) on both historical and modern marriage outcomes for females. On 1 February 1927, Hai Sahib M. Har Bilas Sarda first introduced into the Legislative Assembly[5] a bill to regulate marriages of Hindu children. The primary objective of the bill was to put an end to child widowhood and remove the impediments to childrens' mental and physical growth posed by early marriages (Srinivasa Aiyar, 1930). There were significant objections to the bill from orthodox sections of the Indian society (Hatekar, 2007). It was referred to the Select Committee to make recommendations that were more conducive to public opinion. The committee made two important changes: (1) it made it applicable to all classes and communities in British India, and (2) it declared solemnization of "child marriage" a punishable offense.

The Child Marriage Restraint Act 1929, passed on 28 September 1929 in the British Legisla-

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[5]The British colonial government in India was headed by the viceroy and appointed members of his council. Each of the 11 provinces in British India had its own governor, who was assisted by a provincial legislative council of appointed officials. A small fraction of Indian local elites were also appointed but were restricted to consulting. The Indian Council Act 1909 allowed 135 Indians to be elected to both the imperial council and the provincial legislative councils. However, the governor was not responsible for these elected Indian members, who were restricted to an advisory role. For details, go to the United Kingdom Parliament website: www.parliament.uk

ture of India, fixed the age of marriage for girls at 14 years and 18 years for boys.[6] It came into effect six months later on 1 April 1930, and it applied to all of British India. The law provided for a fine of Rs 1,000 in addition to imprisonment for up to one month for adults solemnizing the marriage of a girl under the age of 14 years. Under Section 108 (a) of the Indian Penal Code, any citizen of British India aiding in the contract of a child marriage within British India and beyond could be prosecuted (Srinivasa Aiyar, 1930). Therefore, citizens of British India could not avoid the law by migrating to the princely states.

The law would have an impact under several conditions. First, if marriage was just a formality and cohabitation was a substitute for marriage, then marriage laws may not have an impact on economic outcomes. Second, female child marriages would need to be prevalent below the age of 14 among at least some parts of society for the Act to be binding. Third, the population would need to expect that the law would be implemented on the ground.

Marriages in the Hindu community were held as a religious sacrament. Orthodox Hindus held the view that a Hindu marriage should be immediately consummated after the first menstruation through a ceremony of conception (the Garbhadhan). It was argued that puberty was a natural indication of fitness for childbirth and hence marriage, and that the British rulers should not interfere with the religious rites of natives. The Muslim community also practiced child marriage. Marriage norms were governed by Sharia law for Muslims (Carroll, 1983). Marriage was such an important social and religious institution for the natives that British rulers were hesitant to introduce marriage reform laws.[7] However, the British rulers eventually advocated for the bill when the home member in 1929, Sir James Crerar- unlike his predecessors- became vocal about abolishing the practice of child marriage. It was with the help of British votes that the Assembly gained the majority that enabled the Sarda Act to be passed.

Female child marriage was widespread in India. The 1921 census shows regional variation in married ratios for females aged 5–10 years (see Table A.1). The prevalence of girl child marriages in India was based on several economic rationales, in addition to pre-existing traditional norms. The Indian marriage institution is patrilocal (Vogl, 2013). After a daughter is married, she has no economic responsibility for her natal family. It is a social custom that a father does not take money from his daughters. Therefore, the family does not have an incentive to invest in daughters (UNICEF, 2011). Dowries have long been a custom in India. The price of a dowry is positively associated with the age of the bride (UNFPA, 2006). Since within-caste marriage is the prevalent norm in India, parents of daughters risk not being able to find a groom of the same caste if they wait too long (UNICEF, 2011). There is also pressure to marry early to protect chastity and honor (Mukherjee, 2006; Mathur et al., 2018).

For the Sarda Act to be effective, the native population would have to expect that the law

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[6]In 1872, before the Sarda Act (1931), a group called Brahmo Samaj led by Raja Ram Mohan Roy abolished the marriage of girls below 14 years of age under legislation entitled the Native Marriage Act. However, this only applied to the members of that group.

[7]India Office observations on marriage legislation in July 1929 state that "the position of an alien Government vis-a-vis attempts at legislative reform of social abuses which invariably have religious sanctions behind them, has been notoriously difficult in view of pledges of religious neutrality and of non-interference with religious practice" (Mukherjee, 2006).

would be enforced by local police. There are reasons to believe that the people perceived the enforcement of the law. The colonial government was a foreign regime that functioned according to British principles, which are distinct from native Indian religious beliefs and social customs. The British colonial administration followed a policy of overwhelmingly recruiting British and European officers, who are likely to hold beliefs different from that of the Indian natives, to civil and police services (Compton, 1967; Potter, 1973; Campion, 2003). By the early 20th Century, the British police force had to deal with widespread nationalist agitation. Thus, it began maintaining armed reserves to quell communal or political conflict. The armed reserves increased from a few hundred in 1890s to 3,000 in 1929 (Arnold, 1976). Additionally, a Presidency General Reserve of 600 men was created to support local police. There was also a visible presence of Europeans in the police; for example, the Madras Presidency appointed Europeans as police subordinates. One of the rationales was "to be a friendly white face when Europeans visited a police station" (Arnold, 1976). In the case of the colonial judiciary, beliefs about gender reform proved critical in the appointment of Indian judges.[8] The late 19th and early 20th centuries in India saw the use of colonial judiciary among the natives increase dramatically (Prasad, 2013). Women in colonial India also attempted to use English legal principles to their advantage. According to the historian Nita Verma Prasad (Prasad, 2013) "out of all the inheritance disputes that came before the Allahabad High Court between 1875 and 1911, approximately 200, or a staggering seventy percent, involved widows."

In contrast to British India, there were very few marriage reforms in the princely states. The only princely states to implement gender-related reforms were Mysore and Kathiawar Agency of Baroda. Mysore in 1894 abolished the marriage of girls below the age of 8 years, as well as marriage of girls under 16 years of age to men older than 50 years. This law was less stringent than the Sarda Act.[9]

3 Hypotheses

A priori, it is not clear whether a marriage law raising the minimum female age at first marriage would have the desired impact. Parents might be willing to pay the penalty cost for violation of the law and have their daughters married below the legal age. It is also not obvious whether the effects of such legal reforms can persist through generations: peoples' reactions to the marriage law might be short-lived, and the age of first marriage might return to the level that existed before the legal reform if enforcement weakens over time. In other words, it may be difficult to change social norms via legal reform. Therefore, the impact of the marriage law remains an empirical question.

We first test for the effect of the lag between the announcement and enforcement of the law

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[8] A case in point is the appointment of the first Indian permanent judge of the court, Nanabhai Haridas. The reasons for alternative candidates with similar credentials as Haridas not succeeding included their orthodox views, support for infant marriage and opposition of widow remarriage. "The candidates who were subsequently appointed to the Bombay High Court in the nineteenth and early twentieth centuries—Telang, Ranade, and Chandavarkar, were all liberal Hindus who pursued an agenda of social reform"(Chandrachud, 2015).

[9] In the face of widespread discontent among the masses, the Mysore Princely State implemented this reform largely by occasionally prosecuting powerless lower caste members (Ramusack, 2003).

on the behavior of the affected Indian native population. If the preferred age of marriage for girls in some households was below 14 years in early 20th century colonial India - because of the socio-economic costs attached to marriage of girls at a later age- those with daughters younger than 14 years around the time of the announcement might respond by having their daughters married earlier than planned. Conversely, the announcement of the law might have little or no impact on households in which the parents preferred their daughters to be married above the age of 14 years. Census data on marital status for 1921 shows that around 10% of girls in the age group of 5–10 years were reported to be married (see Table A.1), implying that a sizeable proportion of the population in the age group would be affected by the legal marital reform.

The degree of response of those who reacted might also depend on the perceived extent of enforcement: if households believed that the law would be credibly enforced six months later, the announcement of the law would increase the likelihood of a girl being married before its enforcement, relative to when households did not expect such a law to be implemented by the British administration. In our context, the fact that the enforcer of the law was a foreign colonizer, rather than an elected local representative might have led households to expect strict implementation because the cost of enforcement for the implementer was lower than it would have been for an elected (local) government. Our difference-in-differences model estimates the effect of the early announcement of the law on the likelihood of girls in the age group 5-10 years getting married when households *perceived* strong enforcement of the law on the ground.

Our medium-term difference-in-differences estimate tests for the mean reversion of the age of marriage around 30 years after the implementation of the law. If the law had a persistent effect on the age of marriage of girls- for example by changing the social norms around marriage in the impacted regions, then girls' age at first marriage should rise above the pre-intervention levels.

A legal reform can have a significant impact on economic outcomes if it persists over time. If the introduction of a minimum legal age of marriage forces societies to marry girls at a later age, then a higher age at first marriage could become the new norm and be accepted as such by subsequent generations. Marriage norm is a cultural variable and is likely to evolve slowly. While marriage practices can also be affected by economic trends over time, economic incentives for women are likely to be weak in Indian society where womens' market labour is not highly valued (Mathur et al., 2018) and men control access to resources (Sagade, 2005). We seek to understand the long-term impact of the legal reform on gender outcomes, and if this can be explained by intergenerational transmission of norms. For this, we first examine whether variation in underage marriages in modern India can be explained by historical institutions having different marriage laws, comparing neighboring districts that are similar in pre-intervention demographic characteristics and female child marriage rates to control for the market environment, ethnicity, and regional cultural practices. We, then, test for correlation between the ages at first marriage of mothers and daughters to examine the channel of intergenerational transmission of marriage norms. The patrilocal marriage institution in India, where child brides are taught and are expected to abide by the domestic customs and beliefs of their marital homes is almost like an alternative value education system (Bagchi, 1993). Cappelen et al. (2020) have shown that early

childhood education has a lasting causal impact on social preferences. Several empirical studies on the causal impact of early life experiences have shown early childhood as the formative years for adult social preferences (Gould et al., 2011; Giuliano and Spilimbergo, 2014; Billings et al., 2020). Therefore, it is possible that mothers who marry early assimilate the early marriage norm and pass it on to the next generation. Further, early marriage is associated with worse education and health outcomes (Vogl, 2013; Sekhri and Storeygard, 2014; Chari et al., 2017), which in turn determine age at first marriage of daughters.[10]

It has been shown that former princely states have higher levels of access to health centers, schools and roads compared to former British districts (Iyer, 2010). Table A.2 compares economic variables between British India and princely states in the 2000s. We see that princely states have a higher income per capita compared to British India. Therefore, princely states might be expected to have more market opportunities compared to British India, which might encourage more girls in princely states districts to go to school. However, in our following analysis, we show that British India performs better in terms of gender outcomes than do the princely states. We hypothesize that the difference in human capital investment by gender between the princely states and British India is caused by legal gender reforms introduced by the British colonizers in British India.

4   Data

Our main source of information identifying the administrative divisions of British India and the princely states is the Administrative Atlas of India, Census of India (2011), which includes information on whether each district in the census was a part of British India or a princely state. As the landscape of British India and the princely states was mostly settled by 1857, we define a district as being in British India according to the Administrative Atlas of India; otherwise, it is defined as a princely state. We supplement the definition with Baden-Powell (1892), which includes a detailed map of the divisions between areas in British India and the princely states as well as the year of acquisition for each district. The geographical distribution is presented in Figure 1.

To study the marriage pattern and the impact of the Sarda Act in 1929, we digitize data from the Census of India regarding the population and marriage status by gender at the district level for 1911-1931, which covers the large majority of British India and the princely states. We collect data for the age groups of 5-10 and 10-15 years. This includes information on the number of married, widowed, and total population in each age group by gender for each district. The

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[10]Wahhaj (2018) shows in an overlapping generation model that, information asymmetry about marriage partners may generate a negative relationship between age and perceived quality of brides, resulting in an environment in which marriage of girls at a young age could persist through generations. This implies that a policy shock that increases the opportunity costs of early marriage could contribute to delay in female marriage. This is consistent with our hypothesis about the long term effect of the legal reform. Further, the mechanism is complementary to the within-household transmission mechanism that we test empirically.

census data are available at 10-year intervals for 1911, 1921, and 1931.[11] We focus our analysis on data from 1911 to 1931, as these were available for most of British Indian and princely state districts and have consistent definitions of variables across years; where as data for 1941 and 1951 do not exist for some regions, and the definitions of variables are inconsistent both between regions and with those reported in previous years. Our data for 1911-1931 cover districts in Assam, Baroda, Bengal, Bihar and Orissa, Bombay, Central Provinces, Gwalior, Hyderabad, Madras, Punjab, Rajputana, Central India Agency (CIA), and United Provinces.

We further digitize data from the Census of India from 1961 to 1981 to study the medium-run implementation effect. We collect data on the population and marital status for each gender for the age group 10-15 years. This is because to analyze the medium-run effect in the post-independence period, we link census data between 1911 and 1931 with census data of 1961-1981.[12] The age interval for data on female marital status for the younger age group in the census data for the period 1961-1981 is different from that for the period 1911-1931- census data on the marital status of young girls during the period 1961-1981 are grouped together in the age interval of 0-9 years, i.e., marital status data for females aged 5-10 years are not available for the period 1961-1981. Therefore, we use the marriage rate of girls aged 10-15 years, which is available in the census data from 1911-1981, as a consistent outcome measure to examine the medium run effect of the Sarda Act. We, therefore, have a panel dataset at district level that spans 1911-1931 and 1961-1981 in 10-year intervals (see Table A.3 for summary statistics for each year and by province).

We examine the mean age of marriage in 2002–2004 at the district level from the District Level Household and Facility Survey (DLHS Round 3) carried out by the Ministry of Health and Family Welfare of India. The data are available at the district level and include mean age of marriage for women and recorded marriage ceremonies held during the three years preceding the survey, covering 570 districts.[13]

Our measure of human capital investment comes from the District Information System for Education (DISE). The District Information System for Education provides administrative records for enrollment at the school level in India. The data are designed to cover all regions of India in terms of the administrative information for each school in each academic year, including the number of students of each gender enrolled and the number of classrooms in each school. As distinctions between the princely states and British India are mostly at the district level, we aggregate the information at the district level.[14] For the analysis, we aggregate all schools in each district in terms of the number of students enrolled in each class by gender for each year between 2005 and 2013. This gives us estimates of the ratio of male to female students enrolled

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[11]Child marriage rates in 1901-1931 are discussed by historians and statisticians alike (Agarwala, 1962; Malaker, 1973), and the rise in child marriage rates in 1931 is well documented by historians and the British Census statisticians. Furthermore, marriage data from the Indian Census of 1931 are commonly used in the work of economists and historians to gain a deeper understanding of gender bias in marriage patterns in colonial India (Gupta, 2014).

[12]In Appendix D we describe how we match districts across different census years.

[13]The data are released through DevInfo 6.0 by UNICEF.

[14]We exclude Karnataka from the analysis in this sample because of the lack of available data at the time of writing.

in each class in each academic year for 433 districts. On average, the schools in India have 9% more boys than girls enrolled in Class 6.[15]

In addition, we obtained the district-level GDP per capita from the Planning Commission of the Government of India. The geographical controls include latitude and distance to the coast.[16]

To examine the persistence of the age of marriage, we use data from the second round of National Family Health Survey (NFHS-2), which was conducted in 1998-1999, with 90,303 women between the ages of 15 and 49 years from 26 states.[17]

5   Empirical strategy

We argue that British legal reforms affected the marriage behavior of natives in British India by abolishing their traditional marriage customs. To show the impact of the British legal reform on the behavior of the natives, we begin by studying the effects of the Sarda Act, the child marriage abolition law introduced in 1929-1930. Figure 2 plots the percentage of married children in the age groups of 5-10 and 10-15 years from 1911 to 1931 for the whole of India, by gender. The marriage pattern was stable from 1911 to 1921, while in 1931 the proportion of marriages increased dramatically for all young age groups, particularly among females. This is most likely due to the anticipation effect during the six months between the Acts' announcement and implementation (Census of India 1931). Figure 3 illustrates the geographical distribution of the proportion of females married at the age of 5-10 years in 1921, as well as the change from 1921 to 1931.

5.1   Short-run announcement effects

To identify the short-run effect of the announcement of the Sarda Act, we use a difference-in-differences strategy to estimate the impact of the Sarda Act in 1931. We exploit the fact that the Sarda Act was only applicable to British Indian districts and use the princely states as the control group. We compare the level of child marriage in 1931 between districts of British India and princely states, and with baseline differences in 1911-1921, before the announcement and introduction of the Sarda Act. The Sarda Act was announced on September 28, 1929 and only implemented in April 1930. Therefore, using census data from 1911, 1921, and 1931 and estimating the change in 1931, our estimate captures the announcement effect of the Sarda Act on the outcome of interest.

We measure the effect of the Sarda Act on the level of child marriage among females in the age group of 5-10 years, in terms of the proportion of females married among the group. In addition, we estimate the specification with the log married rate as the outcome, which captures

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[15]This is the ratio of raw enrollment. It does not take into account the gender ratio of the population.

[16]Physical distance, not travel distance.

[17]The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a nationally representative sample of India.

the effect of the Sarda Act relative to the baseline married rate of the female population.[18] We use the census data to measure child marriage at age 5-10 years by constructing the share of married females using the formula, $m_{it} = \frac{married_{it} + widowed_{it}}{total_{it}}$, where $married_{it}$ is the number of married females aged 5–10 years in district i in year t, $widowed_{it}$ is the number of widowed females aged 5–10 years in district i in year t, and $total_{it}$ is the total number of females aged 5–10 years in district i in year t. Therefore, m_{it} measures the proportion of females between the ages of 5 and 10 years who are or have been married.

We then estimate the following equation

$$y_{it} = \beta SardaAct_t \times BI_i + \mu_i + \gamma_t + \eta X_{it} + \epsilon_{it} \tag{1}$$

where the outcome variable y_{it} is the (log) rate of child marriage among girls aged 5-10 years ($ln\ m_{it}$), or the level of child marriage rate among girls aged 5-10 years (m_{it}) in district i in year t; $SardaAct_t$ is an indicator for the year 1931; BI_i is an indicator for district i being part of British India, μ_i is a district fixed effect; γ_t is a year fixed effect, and ϵ_{it} is an error term. X_{it} are district-level controls, including (log) total population at the age of 10-15 years. We cluster the standard errors at the district level.

As robustness checks, we implement several alternative empirical strategies to establish the "rush to beat-the-policy" effect by the natives. First, we analyze marriage ratio among girls aged 5-10 years (m_{it}) as outcome variable. Second, we augment our differences-in-differences specification with province-specific time trends to control for unobserved changes in each historical province (there are 13 provinces in our estimation sample)[19]; for example, demographic trends or changes in cultural practices. Third, large and small districts may have different socio-economic conditions. While we control for this with district fixed effects, as a robustness check, we further interact the initial population (log, age 10-15 years) in 1911 with the time trend to control for differential trends that are correlated with the initial population size.

5.2 Medium-run implementation effects

For the medium run, our specification uses the log (and level) marriage rate of girls aged 10-15 years (i.e. 10-14.99 years) as the outcome. To estimate the effects of implementation in the medium run, we use our district panel data from 1911 to 1981 matched across census years. We estimate the medium-term effects during 1961-1981 using the following specification:

$$y_{it} = \sigma_1 SardaAct_t \times BI_i + \sigma_2 Post_t \times B_i + \mu_i + \gamma_t + \eta X_{it} + \epsilon_{it} \tag{2}$$

where the outcome variable y_{it} is the (log) rate of child marriage among girls aged 10-15 years ($ln\ m_{it}$), or the level of child marriage rate among girls aged 10-15 years (m_{it}) in district

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[18]With log rate of child marriages as outcome, we estimate the effect of the Sarda Act on the child marriage rate as a percentage change in child marriages relative to the baseline rate, which may be a more appropriate measure given the heterogeneous levels of child marriage rates, as shown in Table A.1. In particular, β in equation (1) estimates the effect of the Sarda Act in percentage terms.

[19]This includes Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, Central Province, Gwalior, Hyderabad, Madras, Punjab, Rajputana, and UP.

i in year t. $SardaAct_t$ is an indicator for the year 1931, $Post_t$ is an indicator for the years 1961–1981, BI_i is an indicator for the districts forming part of British India, μ_i is a district fixed effect, γ_t is a year fixed effect, ϵ_{it} is an error term, and X_{it} are district-level controls, including the (log) population of males aged 10-15 years. We cluster the standard errors at the district level.

σ_2 estimates the differences between British India and the princely states in 1961-1981 compared with the corresponding baseline differences in 1911-1921. We expect σ_2 to be negative if the Sarda Act had a medium-run implementation effect that lowered the child marriage rate in British India. We also estimate a flexible specification where we replace the $Post_t$ indicator with yearly indicators of 1961, 1971 and 1981 in equation (2). This allow us to estimate the dynamic effects of the impact of the Sarda Act after 31, 41 and 51 years of its implementation.

5.3   Long-run persistent effects

To obtain a causal estimate of the long-term impact of a colonial legal reform is a challenging task because many post-colonial policies might affect marriage outcomes, thereby confounding the estimation. We adopt the following empirical strategy to control for the confounding effects of post-colonial institutions and policies.

We adopt an empirical strategy where we match bordering districts between princely states and British India using the female married ratio and population in the age group 5–10 years measured at the pre-intervention year, 1911. Differences between pairs of neighboring districts belonging to the two administrations are scaled in percentage terms, and we calculate a weighted score of differences between the British district and each of its princely state neighbors. Specifically, we calculate $\Delta M_{ij} = |(M_{PS,i} - M_{BP,j})|/M_{BP,j}$ and $\Delta n_{ij} = |(n_{PS,i} - n_{BP,j})|/n_{BP,j}$, where $M_{BP,j}$ and $n_{BP,j}$ are the married ratio and female population of the British district j in 1911, respectively, and $M_{PS,i}$ and $n_{PS,i}$ are the married ratio and female population of a princely state neighboring district i of the district j in 1911. We construct a measure of similarity between the pair of districts i, j by $S_{ij} = 0.5\Delta M_{ij} + 0.5\Delta n_{ij}$. Then, for each British district, we find the neighboring princely state district that has the minimum score S_{ij} to pair with the British district (i.e. $\hat{i}(j) = argmin_{i(j)}S_{i(j)}$). This provides 56 pairs of districts in British India and princely states. We refer to each pair of the matched districts, $\hat{i}(j), j$, as a block of districts. Our empirical strategy is to identify the impact of the colonial reform on marriage outcomes by comparing, within each block, districts that were historically British India and princely states.

We then estimate the following equation:

$$FMR^g_{dbt} = \alpha BI_d + X'_{dt}\xi + \delta_b + \gamma_t + \mu_{dbt} \tag{3}$$

FMR^g_{dbt} measures the ratio of female to male students enrolled in grade g in district d of block b in year t. BI_d is an indicator for district d in block b, which belonged to British India before independence. α, the coefficient of interest, captures whether there were systematically more female children enrolled in school in districts that belonged to British India. δ_b is the block fixed effect, which captures systematic differences between blocks, such as gender ratio, unobserved gender bias in social norms, and the provision of schools. X'_{db} are district-level

controls, which include the proportion of rural schools in district d, the average number of classrooms in schools in district d, log GDP per capita (in 2000), latitude, and distance to the coast. We also control for the ratio of female to male students enrolled in class 1 in year t, which measures contemporary labor market conditions that affected the enrollment ratio of children in grade 1.[20] γ_t is a year fixed effect that controls for yearly variations in gender differences in school enrollment. μ_{dbt} is an error term.[21]

To test for the impact of British India's child marriage reform on the female age of marriage in post-colonial India, we use the district-level aggregate of the District Level Household and Facility survey (2002–2004). We estimate the following equation:

$$M_{db} = \sigma BI_{bd} + X'_{bd}\Phi + \kappa_b + \tau_{bd} \qquad (4)$$

M_{db} is a continuous measure of the age of marriage in 2002–2004 for district d in block b. σ is the coefficient of interest, since it indicates whether female marriages occurred at a later age in former British India districts compared with the districts that were formerly under the princely states. X_{bd} are the district-level controls, including latitude, distance to the coast, and log GDP per capita (in 2000). κ_b is a block fixed effect that accounts for systematic differences between blocks. τ_{bd} is an error term.

6 Results

6.1 Short-run announcement effects

Panel (a) of Table 1 reports the estimate of equation (1), where we estimate the short-run announcement effect of the Sarda Act. Column (1) reports the estimate for equation (1); we find that the announcement effect generated an increase in the child marriage rate in British India in 1931 by 20% compared with the baseline level,[22] using the princely states as our control group. Panel (b) of Table 1 shows that the announcement effect of the Sarda Act on the level of child marriage rate of girls aged 5-10 years is 0.0153 percentage points, which is a 15.3 percent increase from the mean (mean marriage ratio in 1921=0.10).

We further examine the robustness of the results in Table 1. British India districts and the princely states may have different unobserved trends; for example, they may be located in different geographical regions in India that have different social or cultural changes over time. We therefore control for historical province-specific[23] trends in column (2) of panel (a) of Table 1. We find that the effect of the announcement of the Sarda Act remains robust to this

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[20]The minimum age of class 1 student in India is 6 years.

[21]All standard errors are clustered at the block level.

[22]In the case of the (log) proportion of married girls at 5-10 years of age shown in Table 1, our estimate measures a change in the marriage rate among girls aged 5–10 years as a percentage of the baseline. This addresses the heterogeneity of the marriage rate for girls aged 5–10 years across regions. While each district may have a different baseline marriage rate for girls aged 5–10 years, the response to the announcement of the Sarda Act is in proportion to the extent of child marriage in 1911-1921. Jayachandran et al. (2010) examines the impact of modern medicine on maternal mortality, using log mortality rate as outcome variable following a similar logic.

[23]To clarify, provinces retain the internal autonomy of the princely states; however, foreign policies of the provinces are controlled by the British.

specification, whereby the point estimate is strikingly similar to that in column (1) of Table 1, while the standard error of the estimate becomes larger.

Further, British India districts and the princely states may have different economic trends - for example, some districts with a large initial population might have experienced economic booms, which may confound our estimates. Therefore, we control for (log) population in 1911 $\times$ year trend in column (3). In panel (a), the estimate of the impact on the log marriage rate shows that, after controlling for population-specific trends, British India experienced a 29.1% increase in the child marriage rate, suggesting that any unobserved factor that correlates with the population trend is likely to drive our previous results downward. The coefficient for the level of marriage in Panel (b) remains at a similar magnitude upon inclusion of population-specific trends, although it is imprecise. When we further control for both the (log) population $\times$ year trend and the province-specific trends in column (4), the point estimate is robust and statistically significant. This suggests that our estimate of the anticipation effect of the Sarda Act is not driven by unobserved differences between the British district and the princely state districts.

In Table A.4, we test for the parallel trend assumption on whether the British India districts and princely states have different trends in the outcome before the reform, using 1911-1921 data and a specification that replace $BI \times SardaAct$ with interaction of BI and an indicator for year 1921. The estimates suggest there is no differential trend before the reform.

Overall, we find that the proportion of females married at age 5–10 years increased after the announcement of the Sarda Act by 20-29% in British India relative to the princely states. This is a significant increase, since the underlying share of females married in this age group was high in 1921, when 100 in 1,000 girls were or had been married at age 5–10 years.

6.1.1 Misreporting of Age

In Appendix C, we examine the issue of potential misreporting of age and how it may relate to childrens' marital status. If households are more likely to misreport the age of married children, this may cause a measurement error in our specification that is correlated with the treatment variable. To rule out misreporting of the age group, we conduct checks of the age structure by comparing the number of females reported to be aged 5–10 and 10–15 years in each district and estimate whether this is correlated with the treatment variable for the announcement effect. We find no evidence that the announcement changed the reported age structure of the census; hence, age misreporting does not confound the interpretation of our estimate.

6.2 Medium-run implementation effect

Table 2 reports the estimate of equation (2). In line with Figure 4, by comparing estimates before and after the implementation of the Sarda Act, we find a significant reduction in the level of child marriage at the age of 10-15 years. We find that in British India, the Sarda Act

reduced the proportion of married females aged 10-15 years by 50.6% relative to the baseline level. Column (2) reports the estimate of the level of marriage ratio, which remains robust. Overall, Table 2 suggests a significant reduction in child marriage following the implementation of the Sarda Act. In column (1), we find that the estimate of the Sarda Act 1931, which captures the short-run announcement effect for the 10-15 years age group, is statistically significant at the 1% level of significance. This is in line with the short-run effect on the marriage of girls aged 5-10 years.

In Table A.7, we estimate a more flexible form of equation (2) by replacing the post indicator with the yearly effect in 1961, 1971, and 1981. We find that in 1961, the effect of the Sarda Act results in a reduction of roughly 37.3% in the proportion of married females aged 10-15 years relative to the pre-Sarda Act level, and that the estimate becomes larger - 54.4% in 1971 and 62.6% in 1981- as shown in columns (1) and (2).

In columns (3) and (4) of Table A.7, we report the estimates using level as the outcome. The estimate for the level effect is significant and is largest for the year 1961; we find that the Sarda Act reduced the proportion of married females at age 10-15 by 5.7 percentage points. For the years 1971-1981, the estimates are negative, which indicates a persistent effect in later years, although the magnitude is smaller and not significant.

In Table A.5, we test for the parallel trend assumption on whether the British India districts and princely states have different trends in the outcome before the reform, using 1911-1921 data and a specification that replace $BI \times SardaAct$ with interaction of BI and an indicator for year 1921. The estimates suggest there is no differential trends in the proportion of female married at 10-15 before the reform.

Our findings suggest an overall reduction in child-marriage after the implementation of the Sarda Act, based on panel data for 1911 to 1981. We find that the Sarda Act reduced the proportion of females married at the age of 10-15 years by 51% in the period 1961–1981, relative to the level in 1921. The pattern remains the same with the level of marriage ratios as the outcome.

6.3   Long-run effects

6.3.1   Mean age of marriage

In Table 3, we report the causal estimate of the implementation of the Sarda Act in the long run using matched difference-in-differences design, for which we match districts bordering princely states and British provinces using the married ratio and female population in the age group 5-10 years in 1911. We find that in the long run the mean age of marriage increases in the British provinces. Column (1) of Table 3 shows the mean age of marriage rises by 0.45 years in British provinces after controlling for fixed effects for blocks of matched districts. In column (2) of Table 3, we find that the results remain robust after additionally controlling for economic covariates.

6.3.2 DISE

In Table 4, we report the equation (3) estimated for each class from 4 to 7. Comparing across columns, it is clear that the gender enrollment ratio begins to differ in grades 4, 5, 6 and 7, at which time the decision to attend school is more closely related to a human capital investment decision beyond that of basic literacy. The estimate for class 7 (col. 1) suggests that in British districts, on average 3.54 more girls enrolled in school per 100 enrolled boys compared with the princely state districts. The magnitudes of the coefficients increases with an increase in class grades. This suggests that class 5 is a critical time: if girls drop out of school during this time, they may not return, whereas those that stay in education from this point are about as likely to proceed as boys.

6.3.3 Migration as a confounder

If households migrated and sorted into districts by marriage norms in anticipation and reaction to the Sarda Act, this may confound our estimation of the impact of the Sarda Act on the marriage pattern. This form of selection bias is less likely in the Indian context. There are empirical studies to support in-group bias in preferences for marriages (Banerjee et al., 2013; Munshi and Rosenzweig, 2016), which renders migration into societies with different marriage norms less likely. Frequent interaction and close social ties exist within ones' own social group, which provides an extensive income insurance network (Caldwell et al., 1986; Mazzocco and Saini, 2012; Munshi and Rosenzweig, 2016).[24]

We examine the extent of migration in the period of 1921-1931 in British Provinces and the princely states using migration data from the census report that indicates the origin and destination provinces/states. This allows us to understand the pattern of migration between British Provinces and the princely states. Table A.8 presents the province/state level summary statistics on migration from 1921-1931.

Table A.8 suggests that only a limited level of migration occurred for this period of time, in line with the literature regarding post-independence India. In 1921, on average there were about 25 emigrants per 1,000 population for British provinces, and 68 emigrants per 1,000 population for the princely states. In addition, the level of migration was very stable between 1921 to 1931, for both British provinces and princely states, suggesting that households were unlikely to have migrated in response to the Sarda Act. The level of emigrants per 1,000 population for British provinces reduced slightly from 25 to 24 between 1921 and 1931 (see Appendix E for more discussion).

Most importantly, if households migrated and sorted according to their marriage norms in response to the Sarda Act, we would expect to observe a systematic change in the level of emigration from British provinces to the princely states. About 5.66 emigrants per 1,000 of

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[24]Munshi and Rosenzweig (2016) provide evidence regarding the prevalence of *low level* male rural to urban and urban to rural migration in India in comparison with countries of similar size and levels of economic development. It argues that economic benefits derived from income insurance provided by social networks is one of the reasons for males not *permanently* migrating away from their native villages.

population migrated to the princely states from the British province in 1921, while in 1931 it remained at almost exactly the same level as 5.9. Therefore, given that the level of migration was low and that we do not observe a systematic change in migration between British provinces and the princely states, our estimates represent the impact of the Sarda Act on the population in British districts and are unlikely to be driven by the sorting of households between districts.

7   Intergenerational Transmission of Age of Marriage

For a female child marriage prevention law to have a long-term effect, change in marriage behavior needs to persist for more than one generation. One way for this to occur is through a change in norms induced by the law. Females positively affected by the legal policy experienced the social norm of marrying at a later age, unlike those who were not affected by the law and married at an early age. Early marriage in a patrilocal and patrilineal society such as India is akin to early childhood intervention for young girls who are taught to abide by the domestic and social customs of their marital home. Brides marrying into households that accept older brides live in a social environment where older brides have become the norm. Similarly, brides who marry into households that accept younger brides may be taught to become a custodian of that norm in their marital home. Emerging research on early childhood have shown a causal link between childhood intervention and adult social preferences (Gould et al., 2009; Giuliano and Spilimbergo, 2014; Billings et al., 2020). It is possible that early experience of a social norm has a long term impact on social preferences.

Another possibility is that fertility changes resulting from delays in marriage may lead to persistence in the change in the female marriage age. Women married at a younger age may give birth to more children, increasing the number of siblings in a family.[25] If there is sibling competition in the marriage market (e.g. Vogl (2013) finds that older daughters may marry sooner if they have a younger sister), mothers' age at first marriage may be associated with that of their daughters.

To shed some light on possible channels through which early marriage could be transferred across generations, we focus on mothers' age of first marriage. The literature on the potential economic impacts of marital laws shows that delaying mothers' age of marriage improves education and health outcomes for children (Sekhri and Debnath, 2014; Chari et al., 2017). We add to this literature by providing suggestive evidence that mothers who marry late are also less likely to marry away their minor daughters.

We empirically examine if later age of marriage of mothers is associated with later age of marriage of their daughters. We use data from the National Family Health Survey (NFHS-2, 1998-1999). We analyze subsamples of girls who are between 10 to 21 years old. Our outcome of interest is whether the girl is unmarried at the time of interview. That is, we compare the

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[25]Mensch et al. (1998) suggests that young brides cannot negotiate their sexual activity and are under pressure to bear children but younger mothers may suffer higher child mortality.

marriage outcome of girls of the same age whose mothers differ in their age at first marriage, controlling for relevant mother and household level characteristics.[26]

It is customary for girls in India to reside with the husbands' family after marriage. We follow Vogl (2013) by using the indicator variable of co-residency with the natal family as a measure of females not being married. We estimate the following:

$$D_{ij}^k = \alpha A_j + \eta_s + \kappa X_j + \psi X_h + \epsilon_{ij} \tag{5}$$

where D_{ij}^k is an indicator variable that takes a value of 1 if the daughter i of mother j at age k is unmarried (i.e., lives with her natal family), A_j is the age at first marriage of the mother j. Our parameter of interest is α, which captures the relationship between mothers' age at first marriage and the probability of their daughters not getting married at a young age. We control for mothers' covariates comprising mothers' age, whether the mother listens to a radio or watches television every week, the total number of children, a dummy variable for whether the mothers' partner ever attended school, and a set of fixed effects for caste, religion, and education level of the mother (X_j). We control for the age of the household head, including the fixed effects of the sex of the household head, economic status of the household (X_h), and district-rural-urban fixed effects (η_s).[27] We estimate this equation separately for the samples of girls between 12 to 14 years of age, 14 to 18 years of age, and 10 to 21 years of age (at the time of the interview).

Table 5 provides suggestive evidence of transmission of marriage norms from mothers to daughters. Column (1), (2) and (3) show that the probability that girls aged 12 to 14 years old, 14 to 18 years old, 10 to 21 years old are unmarried is positively correlated with the age at first marriage of their mothers, respectively. The correlations are statistically significant at 1% level in columns (2) and (3). The findings suggest that if the mother gets married later, the daughter is also likely to get married at a later age. Although the variations in the sample do not causally identify the channels of intergenerational transmission, our findings suggest that marriage at later age could transmit from mother to daughters, consistent with the evidence in section 6.2 and 6.3 that marriage reform in colonial India may influence age of marriage across generations.

8 Conclusion

Using historical census data on marriage and literacy (1911–1931), we show that there is a perverse effect on female child marriages due to the announcement of the Child Marriage Restraint Act (1929). We interpret the rise in female child marriages between the ages of 5 and 10 years as a response of the natives to avoid being subjected to the law after its implementation. We show regions that responded to announcement of the law by getting their younger daughters

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[26]The survey covers 90,303 women aged 15-49 years from 26 states.

[27]The education level is reported as no education, primary, secondary or higher. Religion is reported as Hindu, Muslim, Sikh, Christian, Buddhist, Jain, Jewish, Parsi, Sanamahi, and others or no religion. Caste information categories are Scheduled Caste, Scheduled Tribe, Other Backward Caste, or None. The economic status variables are household ownership of radio, television, refrigerator, bicycles, motorcycles, cars, and access to electricity.

married early have more girls attending schools today and fewer girls getting married below the current legal age of marriage. Furthermore, using various large-scale micro-datasets, we show that two regions that have had different legal reforms in the past behave differently when placed under the same modern institution. If two regions are given the same opportunities in terms of provision of schools, we argue that the region that has had gender-related legal reforms will have more females exploiting the opportunities.

Our findings support policy intervention that eliminates prejudiced behaviour by showing its positive long-term impact. However, for economic growth, it may not be enough for the social planner to provide infrastructure; we also need to change the bottlenecks on the demand side.

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9 Figures and Tables

Figure 1: Distribution of Princely States and British Direct Rule Regions
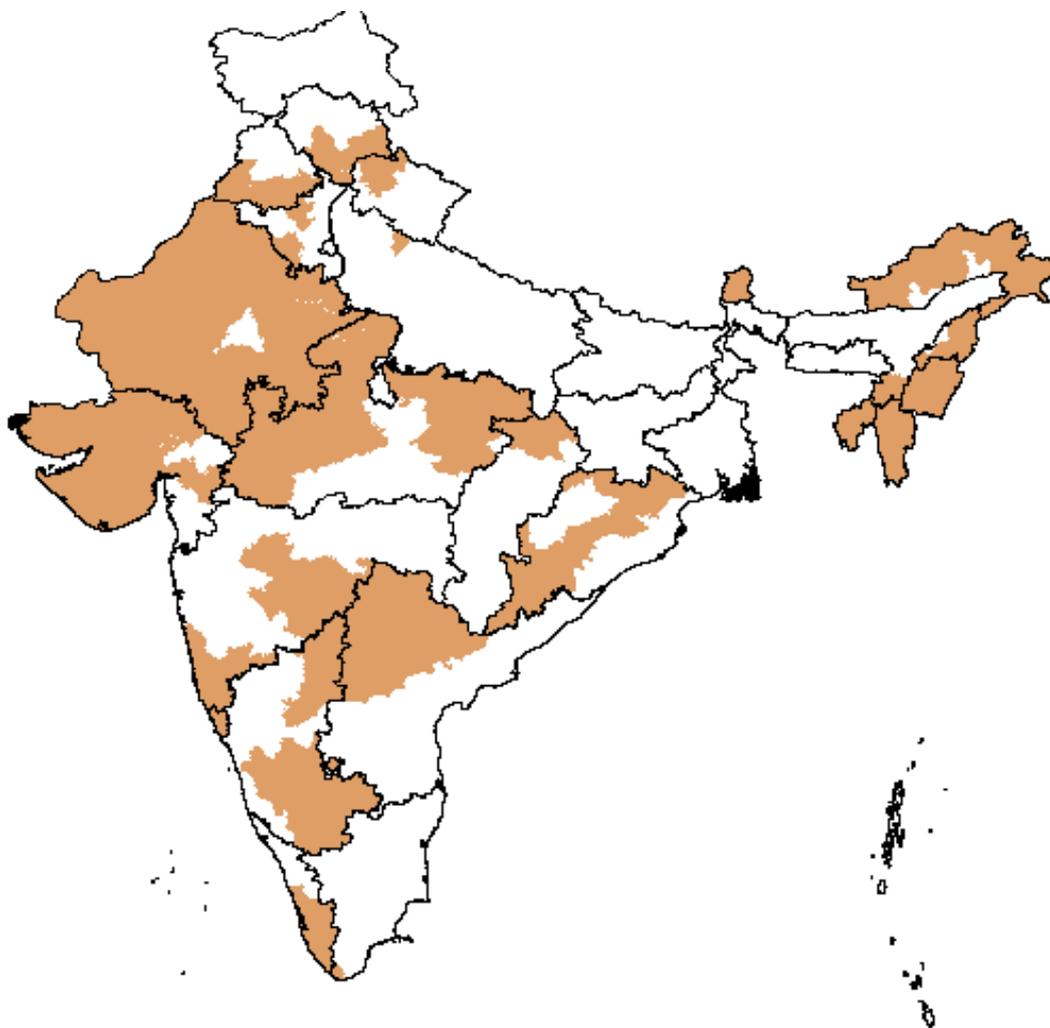
Note: The figure plots the geographical distribution of districts formerly belonging to British India and the princely states in India. The shaded parts were districts that belonged to princely states and the white parts are districts that were under British India. The solid line is the state boundary in post-colonial India. Sources: Baden-Powell (1892) and Census of India (2011).

Figure 2: Marriage Pattern in 1881-1931: Time Series

(a) National trend

(b) Our sample
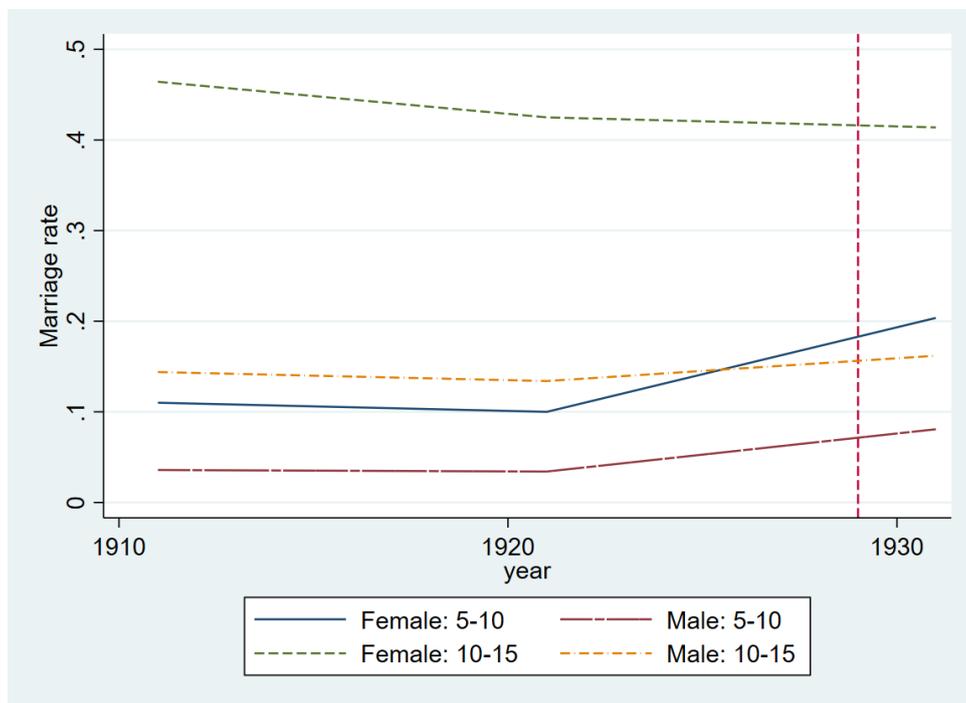
Note: The figure plots the proportion of children married in India for the period 1881-1931, reported in each census year (i.e., every 10 years), by gender and age group. The proportion of children married is calculated using the total number of married children (including both married and widowed), divided by the total number of children in each specific gender and age-group. Panel (a) plots the proportion of married children aged 5-10 years, and 0-15 years and for each gender at national level. Panel (b) plots the average proportion of married children at district level in our sample, for each census year and age group including 5-10 and 10-15 years. Data are from the Census of India (1881-1931).

Figure 3: Girls Married 5-10 years (%), All Religions: Original 1931 Administrative Division

(a) Girls married 5- 10 (%): 1921
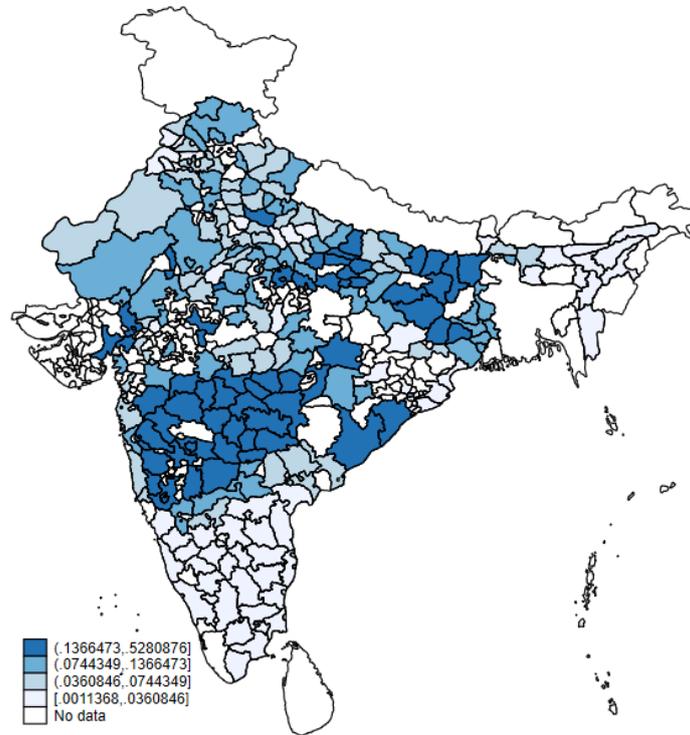
(b) Δ Girls married 5- 10 (%): 1931- 1921
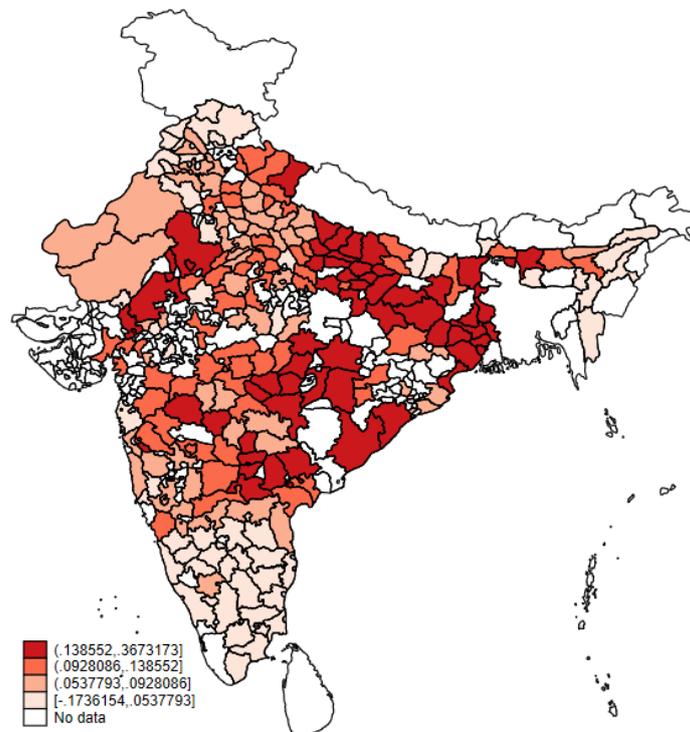
Note: The figure plots the geographical distribution of female marriages at the age of 5-10 years at district level for the period 1921-1931. The district boundaries are for year 1931, from the Administrative Atlas of India (Census of India, 2011) that we digitized. Panel (a) plots the proportion of girls married at age 5-10 years in 1921 for each district in our sample. Panel (b) plots the change in proportion of girls married at the age of 5-10 years between 1921 and 1931 (in absolute percentage points). Data are from the Census of India (1921 and 1931).

Figure 4: Female Marriage Pattern in 1911-1981, by British India and Princely States

(a) Married ratio 5-10
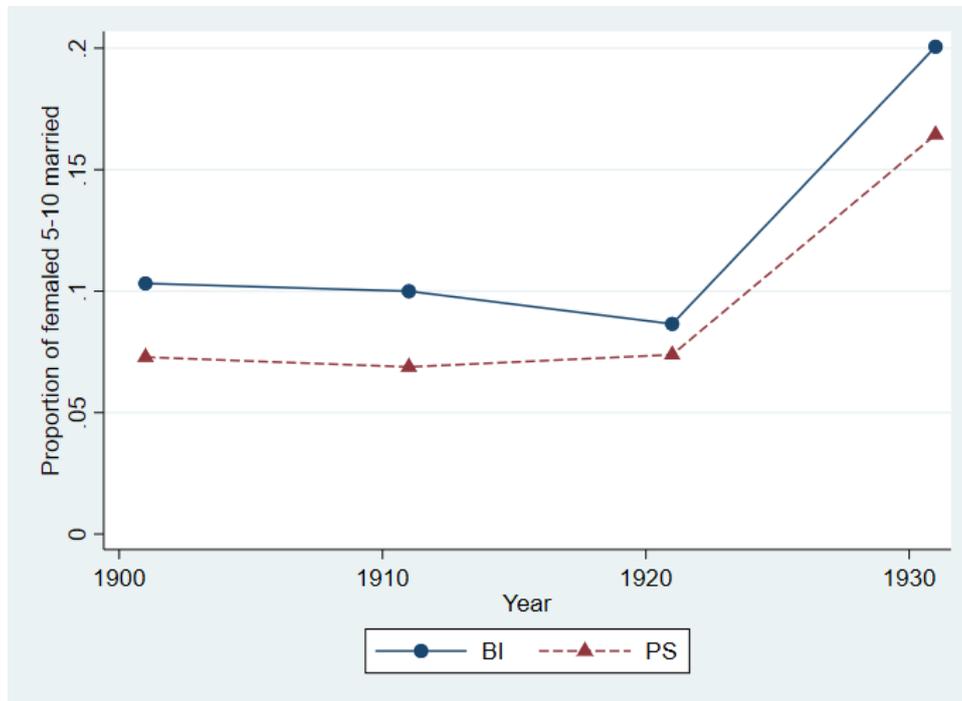
(b) Married ratio 10-15
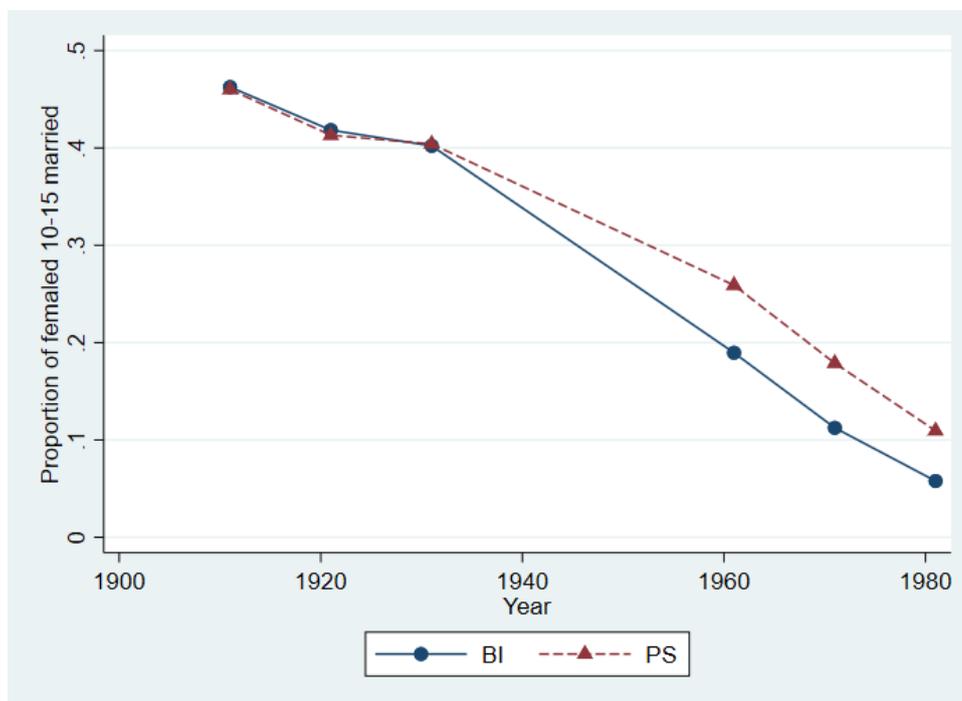
Note: The graph plots the proportion of females married in each census year at district level in our sample. Panel (a) plots the proportion of married females at age 5-10 years for the period 1911-1931, by British India and princely states in balanced sample of districts. Panel (b) plots the proportion of females married at age 10-15 years for the period 1911-1981, for the sample of districts where the districts could be linked between 1931 and 1981, by British India and princely states. The solid lines represent British India and the dotted lines are for princely states. Data are from the Census of India 1911-1931, and 1961-1981.

Figure 5: Age Structure in Census of India for 1911-1931

(a) Girls
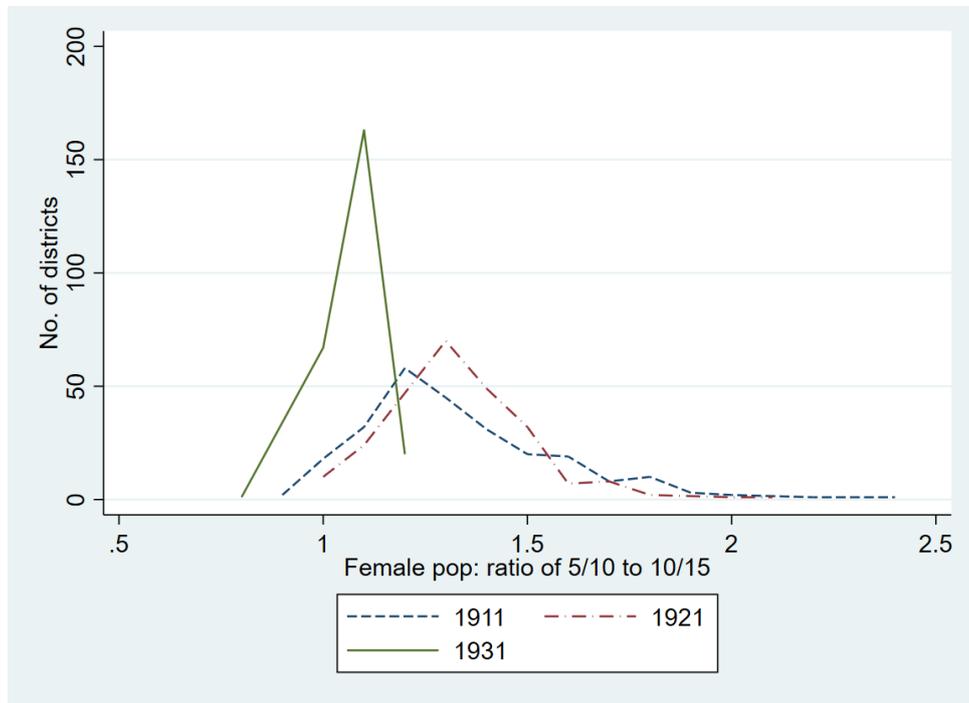
(b) Boys
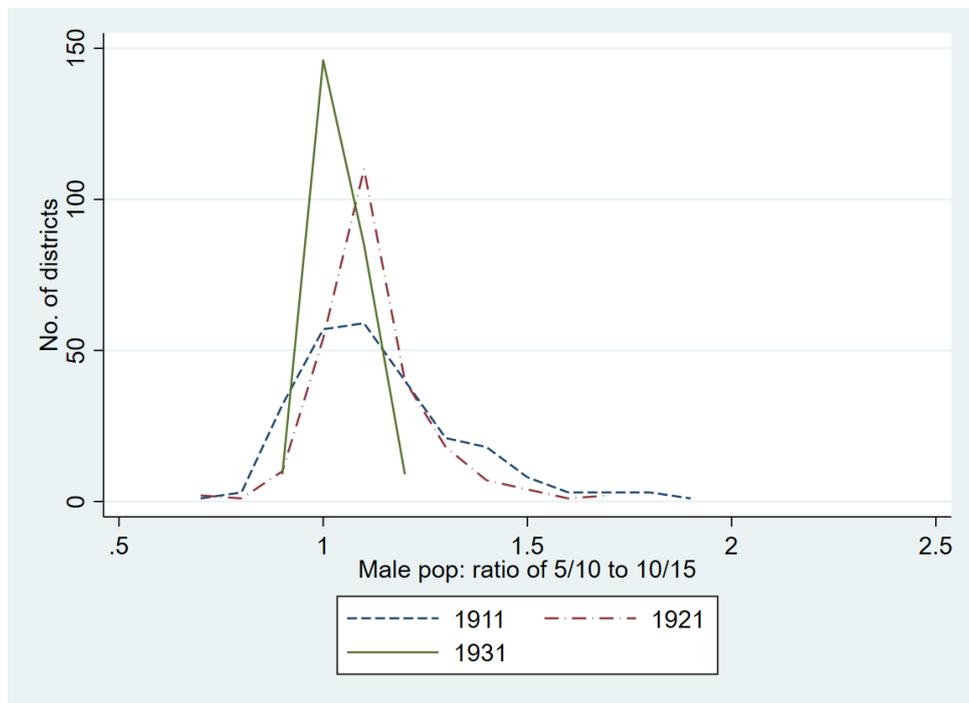
Note: The graph plots the distribution of reported age structure at the district level in the Census of India (1911-1931). It plots a histogram for the ratio of 5-10 years old to 10-15 years old in each district by gender. Panel (a) plots a histogram of age structure for girls for each district; Panel (b) plots a histogram of the age structure for boys with the same measure for each district. For each bin indicated on the x-axis, the y-axis indicates the number of districts that have reported age structure that corresponds to that bin.

Table 1: Short-Run Difference-in-Differences

(a) Ln Married female ratio 5-10

	Ln Married female ratio 5-10			
	(1)	(2)	(3)	(4)
BI × Saradact/1931	0.200***	0.217*	0.291***	0.286**
	(0.0741)	(0.118)	(0.0917)	(0.126)
Observations	849	849	750	750
Number of Districts	337	337	259	259
Year FE	Y	Y	Y	Y
District FE	Y	Y	Y	Y
Prov. trend	N	Y	N	Y
Ln pop. (1911) x year trend	N	N	Y	Y

(b) Married female ratio 5-10

	Married female ratio 5-10			
	(1)	(2)	(3)	(4)
BI × Saradact/1931	0.0153*	0.0164*	0.0125	0.0187*
	(0.00910)	(0.00941)	(0.0112)	(0.0110)
Observations	849	849	750	750
Number of Districts	337	337	259	259
Year FE	Y	Y	Y	Y
District FE	Y	Y	Y	Y
Prov. trend	N	Y	N	Y
Ln pop. (1911) x year trend	N	N	Y	Y

Note: The table presents estimates for equation (1) with additional controls. The sample includes panel data at district level for 1911-1931. The outcome variable is log proportion of females married between 5-10 years of age for panel (a) and in level for panel (b). *BI* is an indicator for districts under British India. $SardaAct(1931)$ is an indicator for the year 1931. Controls include log total population at age 10-15 years. Column (2) controls for province-specific year trend; column (3) controls for log population (age 10-15 years) in 1911 interacted with year trend; column (4) includes both as controls. Regions are defined according to the historical definition in the Census of India between 1911-1931. The sample includes Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, CP, Gwalior, Hyderabad, Madras, Punjab, Ra, and UP, excluding Mysore. This also represents the list of historical provinces in the sample. Standard errors are clustered at district level.

Table 2: Medium-Run Difference-in-Differences

	Ln Married female 10-15	Married female 10-15
	(1)	(2)
BI × Sarda Act (1931)	0.176***	0.0186
	(0.0554)	(0.0119)
BI × Post (1961-1981)	-0.506***	-0.0466**
	(0.131)	(0.0225)
Observations	1486	1486
Number of Districts	286	286
Year FE	Y	Y
District FE	Y	Y

Note: The table presents estimates of equation (2). The sample includes panel data at district level for 1911-1931 and 1961-1981. The outcome variable is the log proportion of females married between 10-15 years of age for column (1) and in level for column (3). *BI* is an indicator variable for districts under British India. *SardaAct* is an indicator for the year 1931, and *Post* is an indicator for the period 1961-1981. Controls include log total population for males at age 10-15 years. The sample includes Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, CP, Hyderabad, Madras, Punjab, Ra, UP and Mysore. Standard errors are clustered at district level.

Table 3: Long-Run Effect - Mean Age of Marriage

Outcome:	Mean age of marriage	
	(1)	(2)
BP	0.452*	0.423*
	(0.233)	(0.223)
Observations	67	64
Mean	19.51	19.49
Block FE	Y	Y
Economic controls	N	Y

Note: The table presents the estimates for equation (4). The outcome, mean age of marriage, is the district level mean age of marriage from DLHS 2002-2004 (from UNICEF DevInfo). *BI* is an indicator for districts formerly in British India. Controls include distance to coast and latitude, column (2) include in addition Ln GDP pc (2000) as control. Robust standard errors are reported in parenthesis.

Table 4: OLS Regression of Girl / Boy Enrollment Ratio: 2005-2013

| | Outcome: Ratio of girl/boy enrollment | | | |
| | Class 7 | Class 6 | Class 5 | Class 4 |
	(1)	(2)	(3)	(4)
BI	0.0354**	0.0322*	0.0239**	0.0113
	(0.0158)	(0.0170)	(0.0106)	(0.00895)
Controls	Y	Y	Y	Y
Block FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

Note: The table presents estimates of equation (3) for class 4-7. The outcome variable is the ratio of number of girls enrolled to the number of boys enrolled in each district, year and class, for the period 2005-2013. *BI* is an indicator for districts formerly under British India. Additional controls include Class 1 girl-to-boy enrollment ratio, proportion of rural schools, average number of classrooms; latitude and distance to coast; Ln GDP per capita is district level GDP measured in the year 2000. Standard errors are clustered at district level.

Table 5: Intergenerational Persistence of Age at Marriage

	Daughter Unmarried (=1 if yes)		
	(1)	(2)	(3)
Age at First marriage of Mother	0.00206*	0.0105***	0.0178***
	(0.00109)	(0.00165)	(0.00101)
Sample Age Group	12 to 14 years	14 to 18 years	10 to 21 years
Observations	8,794	15,864	42,507
Controls	Y	Y	Y
District*Urban/Rural F.E	Y	Y	Y

Note: The table presents estimates for equation (5) on a sample of girls aged between 10-21 years of age. The controls in the table contain age of the mother, fixed effects for religion, caste, mothers' highest education level, exposure of mothers to outside events such as whether the mother watches television every week, listens to radio every week, whether mothers' partner ever attended school, total children, sex of household head fixed effect, age of household head, household ownership of radio, television, refrigerator, bicycles, motorcycles, cars and access to electricity. The regressions also include a set of district-rural-urban fixed effects. The outcome variable is a dummy variable that takes the value 1 if the daughter at age-group "x" is unmarried at the time of the interview. Standard errors are clustered at district level.

Appendix

A Additional Figures and Tables

Table A.1: Marriage Ratio of Females Aged 5-10 Years in 1911 and 1931, by Historical Province

Marriage ratio: 5-10 female			
Year	1911	1921	1931
Assam	0.02	0.01	0.07
Baroda	0.15	0.08	0.14
Bengal	0.11	0.08	0.27
Bihar and Orissa	0.17	0.13	0.26
Bombay	0.18	0.15	0.24
Central India Agency (CIA)	0.14	0.13	0.23
Central Province	0.16	0.14	0.29
Gwalior	.	0.12	0.21
Hyderabad	0.25	0.21	0.36
Madras	0.04	0.04	0.09
Mysore	0.01	0.01	0.04
Punjab	0.07	0.08	0.13
Rajputana	0.07	0.08	0.18
United Province	0.10	0.10	0.23
All	0.11	0.10	0.20

Note: The table presents the average proportion of females married at age 5-10 years in 1921 and 1931 for each historical province in our sample. The proportion of females married is measured as the number of married or widowed females divided by the total population of females aged 5-10 years at district level. Data are from the Census of India 1911-1931.

Table A.2: Summary Statistics - British India and the Princely States

	British India Mean	Princely states Mean
District level characteristics		
Distance to coast (km)	479.2	388.2
Ln GDPPC (2000)	2.585	2.844
Manufacturing share of GDP (2000)	0.102	0.111
School characteristics		
Total girl / total boy enrollment in class 6	0.935	0.913
Total girl / total boy enrollment in class 5	0.939	0.923
Proportion of rural schools	0.883	0.869
Number of classrooms	4.415	5.023

Note: The table presents summary statistics for our sample analyzed in Section 6.3. The top panel shows district level variables: Log district level GDP per capita is measured in the year 2000. Distance to coast is measured in kilometers from the centroid of each district. The bottom panel presents data aggregated at district level from DISE school records, forming a district-level (unbalanced) panel for 2005-2013. The sample does not include Kerala.

Table A.3: Marriage Ratio of Females Aged 10-15 years in 1911 and 1981, by Historical Province

	Marriage ratio: 10-15 female					
Year	1911	1921	1931	1961	1971	1981
Assam	0.17	0.15	0.20	0.02	0.01	0.01
Baroda	0.46	0.34	0.32	0.06	0.03	0.02
Bengal	0.58	0.50	0.51	0.17	0.05	0.02
Bihar and Orissa	0.50	0.44	0.46	0.27	0.16	0.01
Bombay	0.58	0.50	0.42	0.14	0.06	0.03
Central India Agency (CIA)	.	.	0.43	0.42	0.32	0.18
Central Province	0.54	0.50	0.50	0.23	0.13	0.05
Gwalior	.	0.52	0.46	0.48	0.35	0.21
Hyderabad	0.69	0.59	0.58	0.36	0.21	0.11
Madras	0.25	0.21	0.21	0.07	0.03	0.01
Mysore	0.21	0.18	0.18	0.05	0.03	0.01
Punjab	0.38	0.33	0.31	0.09	0.06	0.03
Rajputana	0.43	0.40	0.40	0.32	0.25	0.18
United Province	0.52	0.50	0.46	0.28	0.20	0.11

Note: The table presents the average proportion of females married at age 10-15 years in 1911 and 1981 for each historical province in our sample. The proportion of females married is measured as the number of married or widowed females divided by the total population of females aged 10-15 years at district level. Data are from the Census of India 1911-1981.

Table A.4: Short-Run Difference-in-Differences - Test of Parallel Trend

	Ln Married female (%) 5-10	
	(1)	(2)
BI × Year 1921	-0.0475	-0.103
	(0.0744)	(0.0760)
Observations	508	508
Number of Districts	259	259
Year FE	Y	Y
District FE	Y	Y
Ln pop. (1911) x year trend	Y	Y
Prov. trend	N	Y
	Married female (%) 5-10	
	(1)	(2)
BI × Year 1921	0.00292	-0.00861
	(0.00833)	(0.00545)
Observations	508	508
Number of Districts	259	259
Year FE	Y	Y
District FE	Y	Y
Ln pop. (1911) x year trend	Y	Y
Prov. trend	N	Y

Note: The table presents estimates for testing the parallel trend assumption for equation (1) - The *Sarda Act* dummy is replaced with an indicator for year 1921, and the sample includes panel data at district level for 1911-1921. *BI* is an indicator for districts in British India. $BI \times year1921$ tests whether there is a differential trend between districts in British India and the princely states from 1911 to 1921. The outcome variable is the log proportion of females married at 5-10 years of age. Controls include log total population at age 10-15 years. The provinces are defined according to the historical definition in the Census of India (1911-1931). The sample includes Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, CP, Gwalior, Hyderabad, Madras, Punjab, Ra, and UP, excluding Mysore. Standard errors are clustered at district level.

Table A.5: Medium-run Difference-in-Differences: Test of Parallel Trend

	Ln Married female ratio 10-15	Married female ratio 10-15
	(1)	(2)
BI × Year 1921	0.0318	0.0118
	(0.0222)	(0.00748)
Observations	484	484
Number of Districts	250	250
Year FE	Y	Y
District FE	Y	Y

Note: The table presents estimates for testing the parallel trend for equation (2), replacing the indicators for 1931, and post, with an indicator for year 1921. $BI \times year(1921)$ tests for whether there is a differential trend in between districts in British India and princely states from 1911 to 1921. The sample includes panel data at the district level for the period 1911-1921. The outcome variables are the log proportion of females married at the age of 10-15 years for column (1) and in level for column (3). Controls include log male population aged 10-15 years. The sample includes Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, CP, Hyderabad, Madras, Punjab, Ra, UP. and Mysore. The number of districts in the table differ from the sample used in Table 2 because for some districts, data for 1911-1921 are not available. Standard errors are clustered at district level.

Table A.6: Short-Run Effect on (DiD) on Age Structure

Outcome: no. of female 5-10/10-15		
	(1)	(2)
BI × Saradact (1931)	0.0199	-0.00202
	(0.0215)	(0.0264)
Observations	850	850
Number of Districts	337	337
District FE	Y	Y
Year FE	Y	Y
Province-specific trend	N	Y

Note: The table presents estimates of equation (6) where the outcome is age structure, measured as the ratio of number of girls at age 5-10 to number of girls at age 10-15 for each district of each census year 1911-1931. Sample include Assam, Baroda, Bengal, Bihar and Orissa, Bombay, CIA, CP, Gwalior, Hydebarad, Madras, Punjab, Rajasthan, and UP. Standard errors are clustered at district level.

Table A.7: Medium-Run Difference-in-Differences, Yearly Effects

	Ln married female 10-15		Married female 10-15	
	Sample			
	1911-1961	1911-1981	1911-1961	1911-1981
	(1)	(2)	(3)	(4)
BI × Sarda Act (1931)	0.109***	0.175***	0.0175	0.0187
	(0.0391)	(0.0555)	(0.0109)	(0.0120)
BI × Year 1961	-0.433***	-0.373***	-0.0684***	-0.0574***
	(0.104)	(0.111)	(0.0207)	(0.0214)
BI × Year 1971		-0.544***		-0.0524**
		(0.150)		(0.0239)
BI × Year 1981		-0.626***		-0.0263
		(0.152)		(0.0252)
Observations	1007	1486	1007	1486
Number of Districts	285	286	285	286
Year FE	Y	Y	Y	Y
District FE	Y	Y	Y	Y

Note: The table presents estimates of equation (2) with flexible year indicators for 1961, 1971, and 1981. The outcome variable is the log proportion of females married between 10 and 15 years of age for column (1)-(2) and level of proportion of female married between 10 and 15 years of age for column (3)-(4). BI is an indicator variable for districts formerly under British India. $Sarda Act$ is an indicator for the year 1931. Control includes (log) total population of males at age 10-15 years. Column (1) and (3) include samples from years 1911-1931, and 1961. Column (2) and (4) include samples from years 1911-1931 and 1961-1981. Standard errors are clustered at district level.

Table A.8: Migration at province level: summary statistics

	Emigrants per 1,000 population of origin					
	Total		Destination BP		Destination PS	
Origin province	1921	1931	1921	1931	1921	1931
BP (share of pop in BI: 83-100%)	25.29	24.34	19.59	18.4	5.66	5.89
sd	(12.42)	(9.52)	(13.94)	(10.92)	(5.61)	(5.63)
N			8			
PS	68.29	60.03	48.23	41.4	20.03	9.61
sd	(36.13)	(30.51)	(33.78)	(26.25)	(27.64)	(10.26)
N			6			

Note: The table presents summary statistics for the number of emigrants per 1,000 population in each of the provinces/states. The top (bottom) panel presents the statistics for British provinces (princely states). The data is available at province level from Census. In the British provinces, the majority of population are in districts that belong to British India (83%-100%), while it also includes districts that belong to princely states. Column (1)-(2) present average number of emigrants per 1,000 population for year 1921 and 1931 respectively, column (3)-(4) are the average number of emigrants to British Provinces (per population at the origin provinces). Column (5)-(6) are average number of emigrants to princely states, per population at the origin provinces. Standard deviation are presented in parenthesis.

B Social Reform

Social reforms that were introduced by the British depended upon the discretion of the governors-general in charge and the native social reformers (Chitnis and Wright, 2007). All the British social reforms that were introduced by the governors-general were in direct conflict with the existing laws of Indian society (Lord William Bentinck, 1829; Carroll, 1983). The laws were passed after much deliberation by the reformist governors-general. The first of the most important social reforms introduced in colonial India was the abolition of Sati in 1829. Sati was only practiced by upper caste Hindus in Bengal, Rajputana, and Central India. It was a practice that involved a widow immolating herself on her husband's funeral pyre. The reform was pushed forward by a native social reformer, Raja Ram Mohan Roy. Lord William Bentinck introduced this law, arguing that the general masses of India were uncivilized and would continue this custom if the British did not bring forward a legal reform making it a punishable offense. In a speech in 1829, he pointed out that Britain could afford to abolish Sati without fearing a rebellion from the natives because the majority of Indian soldiers in the British army belonged to the tribes that did not practice Sati (Fisch, 2000). Since Sati was only practiced by few ethnic groups in India, it was possible to extend the law outside British jurisdictions. The British negotiated with the princely states to abolish Sati - Rajputana was the last native state to abolish it in 1861 (Ramusack, 2003).

Since then, most of the social reforms were implemented within British India and did not apply to the princely states. With the initiative of the educationalist Pandit Iswar Chandra Vidyasagar, the British passed the Hindu Widow Remarriage Act of 1856. Until then, widow remarriage among upper caste Hindus had been prohibited, and Hindu widows were expected to live a life of austerity (Peers, 2013).

Although Sati was abolished in all of India, as a practice, it was not as widespread as female infanticide and child marriage (Grey, 2013), which existed across all of India and in all religions. Unlike Sati, the practice of female infanticide was not restricted to upper caste Hindus. The abolition of female infanticide (1870) and child marriage were harder to implement as they went directly against the widespread age-old customs of the natives across castes and tribes (Grey, 2011). The laws related to these practices were again confined to British India. In 1891, the Age of Consent Law was passed that raised the age of consent to 12 years. This bill created much tension among the native population (Ramusack, 2003; Chitnis and Wright, 2007). The reforms were slow.

The Female Infanticide Prevention Act of 1870 was passed in British India to prevent the murder of female infants. Female infanticide was a very common practice in India because girls were perceived as an economic burden due to the dowry and other social customs (Census of India 1891, Sen (2002)).[28]

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[28]See also Baines (1893)

C   Age Structure

In this section, we examine the possibility of misreporting age in the census data of 1911-1931 and its implications for our estimation of the short-run effect of the Sarda Act.

The announcement of the Sarda Act may have created an incentive for households to misreport the age of their girls because the 1931 census was conducted close to the time that the Sarda Act was announced and implemented. Households may have overreported the age of their married daughters if they were under 14 years of age at the time the census was conducted. This overreporting may have minimized the risk for families of being penalized for organizing marriages for girls below the age of 14 years.

We examine the extent of such misreporting behavior and test whether it confounds our difference-in-differences estimates in equation (1). For each district, gender, and census year, we measure the age structure of the district using the relative number of the population of district i in year t in the age group of 5-10 to that of age group 10-15. Specifically, we compute the ratio R_{it} using:

$$R_{it} = \frac{T_{it}^{5-10}}{T_{it}^{10-15}}$$

where T_{it}^{5-10} and T_{it}^{10-15} are the population of the age group from 5 to 10 years, and 10 to 15 years, respectively.

Figure 5 plots the histogram of age structure at the district level by census year and gender. Panel (a) of Figure 5 plots the histograms of age structure for girls for the census years 1911-1931. In 1911 and 1921, the modes of the relative population size of the two age groups are around 1.2-1.3, suggesting that, on average, there were more girls at age 5-10 years in comparison with age 10-15 years. In 1931, the mode of that ratio is slightly lower than that in 1911-1921. This suggests that in 1931 there were on average fewer children aged 5-10 compared with 1921 or 1911 within each district, relative to those aged 10-15 years. Panel (b) in Figure 5 plots the same measure for boys; which reveals a similar pattern, although the magnitude of the shift is weaker for boys. This is consistent with the finding that there could be age misreporting in the 1931 census to a certain extent, or if there are other reasons for rapid demographic change between 1921 to 1931.

We then examine whether this age structure change or potential misreporting was different between British India and the princely states. We estimate the following variant of equation (1):

$$R_{it} = \beta_1 SardaAct * BI_i + \mu_i + \gamma_t + \epsilon_{it} \tag{6}$$

We report the estimates of equation (6) in Table A.6. We find that the estimate of β_1 in equation (6) is not statistically significantly different from zero. This suggests that any change in the age structure was not correlated with the princely states and districts in British India,

and it does not support the hypothesis that the Sarda Act caused natives to misreport age. The change in the reported age structure shown in Figure 5 could be related to other unobserved national factors, which would be controlled for by year fixed effect in the estimation of equation (1). We therefore consider that the possibility of misreporting age would not confound our estimation of equation (1).

D Construction of district level panel data, 1911-1981

The lists of districts in the censuses of 1911-1931 are highly consistent across years. Changes in district names and district divisions are evident between 1931 and 1961, and from 1961 onwards. We track the district name changes using district history records from Government of India district websites, and we aggregate the district splits during 1961-1981 to match with the corresponding 1931 district. In the few occurrences of district merges, we match the merged district with the original districts, our empirical analysis clustered at the merged district level in these cases.

E Migration discussion

In this section, we examine the extent of migration in the period 1921-1931 in British India and the princely states. Migration data at the province/state level are available from the Census report, which also indicates the destination provinces/states. It allows us to understand better the pattern of migration between British India districts and the princely states.

If migration over long distance for marriage reason is common and feasible for the average households, households in British India districts that have a strong inclination or preference to marry their daughters at a young age may choose to marry their daughters to nearby princely states to avoid the Sarda Act in 1931. In that case, our estimates of the short and medium-run effect could capture the sorting effect on households with different marriage practices due to migration, in addition to any effect on changing female child marriage practice of a given group.

The British India regions and princely states are defined (and analyzed) at the district level, but the migration data from the Census are reported at a more aggregate province/state level. Some provinces include districts/populations from British India and the princely states. We calculate the share of the population in a province under British India. There are two clear groups of province/states - those with 83-100% of the population belonging to British India districts and those that entirely consist of princely states. We refer to provinces that have more than 83% share of the population under British India as British provinces in this section. Focusing on the same set of provinces/states as in our district-level analysis in section 6, we have 8 British provinces and 6 princely states.

Table A.8 presents the summary statistics on migration at province/states level, in terms of the number of emigrants per 1,000 population of the origin province/state. The average level of emigrants was about 51 per 1,000 population in 1921. This suggests that about 5% of

the population migrated to provinces/states outside of where they were born. There is more out-migration in princely states on average, where emigrants per 1,000 population are 68.29, compared to 25.29 in the British provinces.

We do not find any significant changes in the average level of emigration in 1931 for either the British provinces or princely states. The number of out-migration in princely states went down slightly from 68 to 60. There was almost no change in total emigration in British provinces in 1931 compared to 1921. This suggests that migration was stable during this period of time.

In particular, the number of emigrants from British provinces to princely states was 6 per 1,000 population in 1921 and remained unchanged between 1921 to 1931. This suggests that there is no significant movement of migration from British provinces to princely states that could possibly be associated with the avoidance of the Sarda Act. The out-migration from princely states, to either the British provinces or between princely states, both went down slightly. We, therefore, observe no significant change in the migration pattern between British provinces and princely states during the period 1921-1931.