

Princely states and gender differential in human capital investment

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1 Introduction

Gender inequality in education is part of traditional cultures in many developing countries, where women get married earlier, are less educated and have poorer health outcomes than men (World Bank, 2012). Besides being a serious concern in terms of equality of opportunity, it may also slow down economic growth (Klasen, 2002).¹ Our paper investigates whether the regions of India that have historically had legal institutions that fostered women's rights have better gender outcomes in the modern day. The analysis provides the basis for direct policy interventions on gender-biased social norms and practices in society. This is the first paper, to our knowledge, that investigates historical legal reforms to understand their long-run impact on gender outcomes.

The paper contributes to the literature on the impact of colonial institutions on modern day outcomes. While the literature on colonial institutions mainly focuses on changes in modern institutions (Acemoglu et al. (2001); Acemoglu and Johnson (2005)), our paper is closer to within country analysis, as in Michalopoulos and Papaioannou (2013) and Dell et al. (2015), showing that modern economic outcomes can be explained by the persistence of informal institutions. We contribute to the literature by studying the long-run impact of colonial institutions on household decisions on education and marriage, holding modern institutions constant. First, we map gender inequality in terms of education and marriage in modern India to historical

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¹Klasen (2002) finds that gender inequality in education is correlated with slower economic growth, both directly by lowering average human capital, and indirectly through its impact on investment and population growth.

political institutions. Next, we closely examine the short run and the long run impact of legal reforms introduced in two different polities.

After England took over India in 1858, India was divided into two different administrative institutions: the Princely States and British Provinces. This division ceased to exist post-independence; the State Re-Organisation Act 1956 re-divided India on the basis of linguistic identity. This led to a quasi-random distribution of Princely States and British Provinces within each modern state that made up independent India. Herein, we compare, within each modern state, the gender differential human capital investment between the regions that were under direct British rule and those that were Princely States in pre-independent India. Most of the variations in formal institutions are at the state level in India after independence. This implies that a comparison between regions within a state would allow us to control for almost all differences in formal institutions. Furthermore, the re-division of India along the lines of linguistic ethnicity allows us to further compare the impact of colonial social reforms on groups that share very similar ethnic identities. We compare gender-related outcomes between regions that were once under the direct rule of the British, termed as British Provinces, and regions that were ruled by hereditary Indian rulers, known as native states or Princely States. We find that in former British Provinces, 5% fewer females marry under the current legal age of 18 years, and females have 1.6% higher chance of attending school between the ages of 10-16 years than those in the Princely States. This shows that regions that have different historical experiences behave differently, even after coming under the same common law.

Our hypothesis is that the legal reforms introduced by the British rulers forcibly changed the behaviour of the natives in the British provinces resulting in a positive long term effect on gender equality in India today. Before examining the long term effect of British laws, we first test the short run impact of the law using historical data to determine whether the introduction of legal reforms in British provinces in the past changed the behaviour of the natives in that region in the past. To examine this we use historical census data on marriage and literacy from 1911-1931 to estimate the impact of Child Marriage Restraint Act (1929) using the difference-in-differences strategy. The Child Marriage Restraint Act 1929, passed on 28 September 1929 in the British India Legislature of India, fixed the age of marriage for girls at 14 years and boys at 18 years. It is popularly known as the Sarda Act, after its sponsor Harbilas Sarda. It came into effect six months later on April 1, 1930 and it applied to all of British India. This created significant incentives for families to marry their children before April 1930. We use the Census data of 1911 to 1931 to capture the effect of the announcement of the law, with the Princely States as our control group. We find that announcement of the law increased the likelihood of

girls married at age 5-10 by 2.8 percentage point more among the natives in British provinces, compared to the natives in the Princely States.

Next, we examine whether the regions that exhibited bunching in marriage in 1929-30 have different marriage and education outcomes today as compared to the regions that did not. One may argue that the British provinces where the natives married their girls off early in response to the announcement of the child marriage abolition bill being passed were different in an unobservable way and this also affected marriage outcomes in the long run. Therefore, we instrument for the awareness of the law by using distance from the birthplace of the reformers who advocated for the law. The relevance of the instrument comes from the assumption that a reformer would have family links to the place of birth and would be more likely to go and spread their propaganda against child marriage in their birth place. So, the people living in places (even urban places) that are far away from the places of birth of the reformer are less likely to be aware of the law and hence are less likely to respond to the legislation. We use the instrument to estimate the impact of long run effect of Sarda Act (1931) on marriage under legal age and schooling decision in 2002, controlling for regional variation in the practice of child marriage up to 1921.

The OLS estimates of the long run impact of the Sarda Act show that regions that were more aware of the law in 1929-1930 were less likely to marry their girls at young age for the cohorts born in 1958-1984. If a district had one percentage point larger proportion of girls married between 5-10 years old in 1921, in later cohorts female were 0.45% more likely to marry between 14-17; however, one percentage point increase in the proportion of married girls from 1921 to 1931 predict that female are 0.2% less likely to marry between 14-17 subsequently. The IV estimates show the same pattern and are larger in magnitude. Our estimates provide evidence that the awareness of the law reduce the degree of child marriages in the long run, it also suggest that a significant part of child marriage in India has a strong historical root going beyond 1921.

Our findings highlight the importance of understanding social background when we think about how society responds to the development of the labour market. Social norms in society can persist for many years and can affect the decision to participate in education and the labour market for certain demographic groups. Even with the same formal institutions and economic environment, a society riddled with prejudices may not take full advantage of its economic transformation and development. Our paper also explains a significant part of the large regional variations in the degree of gender bias in India. The regions that were formerly

British Provinces have better female education outcomes and fewer females marrying under the legal age compared to former Princely State regions. This allows for both academic and policy discussions about gender in India to go beyond geographical differences by states or by social class. We provide some explanations regarding why such differences continue to persist, but are unable to clearly determine the impact of each historical law. This would require a more elaborate analysis of historical data, which we hope to accomplish in future work.

The paper is divided as follows. Historical background is provided in Section 2, followed by a conceptual framework in Section 3. The data and empirical strategy are described in Sections 4 and 5 respectively. The Results and Discussions are provided in Sections 6 and 7, followed by a conclusion.

2 Historical Overview

The British first arrived in India through a trading company called the East India Company. They signed their first commercial treaty in the year 1612, granted by the Mughal Emperor Jahangir. 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 maximise their commercial profits and minimise their administrative liabilities. Some states were brought directly under their control and some states entered into political and commercial treaties with the British. This experiment came to an end with the Great Revolution of 1857, when Queen Victoria took control. The Queen divided areas under British rule into two territories: British India and Native (or Princely) States. British India represented all territories under the Majesty's dominion that were ruled by the Queen through the Governor-Generals. The Native States represented independent kingdoms of all 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 rested upon the laws passed by the British Parliament and the legislative powers of those laws 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 (The Interpretation Act 1889, British Parliament). Although the East India Company enforced indirect control 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 pursuing. (Ramusack, 2003).

India became independent in 1947, at which time it was still administratively divided into regions of British India, regions ruled by other European colonisers like the French or Danish and the Princely States. This division rendered it difficult for the administrators to rule the country. The State Re-Organisation Act was passed in 1956 that re-divided India on the basis of linguistic ethnicity. This is discussed further in the identification section.

2.1 Social reforms

Before the British came to administer the Indian territories, matters of marriage, maintenance, succession and legitimacy were solved using different religious laws, such as Dayabhaga and Mitakshara law for Hindus, literary traditions of Ithna Ashari and Hanafi for Muslims, and several customary laws for tribal communities. When the British took control of India, they promised not to interfere with personal laws such as marriage, succession etc. (Carroll, 1983). However, they reserved the right to intervene using statutory laws, which would override all religious laws in personal matters. Social reforms that were introduced by the British depended upon the discretion of the Governor-Generals in charge and the native social reformers (see Chitnis and Wright (2007)). All the British reforms that were introduced by the Governor-Generals were in direct conflict with the existing laws of Indian society (Lord William Bentinck (1829), Carroll (1983)). Most of the social reforms were not in the interest of the British, as they created tension between the natives and their British rulers. However, the laws were passed after much deliberation by the reformist Governor-Generals. 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 uncivilised and would continue this custom if the British did not bring forward a legal reform making it a punishable offence. In a speech in 1829, he pointed out that Britain could afford to abolish Sati without fearing 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 Provinces but were not enforced in 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). It was introduced with the rationale of reducing female infanticide (Law Commission, 1837) and was very unpopular among the natives. The law, however, deprived childless widows of inheritance (Law Commission Report, 1856).

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 the British Provinces. In 1891, the Age of Consent Law was passed that raised the age of consent to 12 years. This bill created a lot of tension among the native population (Chitnis and Wright (2007); Ramusack (2003)). The reforms were slow. It took the British almost forty years to pass the Child Marriage Abolition Act (also called the Sarda Act) in 1929, which raised the age of consent to 14 years.

In our paper , we will closely examine the impact of the Sarda Act on both historical and modern marriage outcomes. The Child Marriage Restraint Act 1929, passed on 28 September 1929 in the British India Legislature of India, fixed the age of marriage for girls at 14 years and boys at 18 years. It is popularly known as the Sarda Act, after its sponsor Harbilas Sarda.² It came into effect six months later on April 1, 1930 and it applied to all of British India.³ With protests from the Muslim organisation in undivided India, a personal law called as Shariat Act was passed in 1937 that allowed child marriages among Muslims with the consent of the child's guardian. Family matters were in general governed by personal religious laws such as the Shastric law for Hindus, and Shariat law for Muslims etc. The British social reforms mostly interfered with Hindu Shastric law, using statutory laws to override customary religious laws (Carroll, 1983). Hence our analysis focuses on the Hindu population of both the British provinces and the Princely States.

First we compare the impact of the Sarda Act on marriages in the British Provinces and the Princely states. However, due to paucity of census data in 1941 and 1951, we can only

²Before the Sarda Act (1931), a cult group called Brahma Samaj pioneered by Raja Ram Mohan Roy abolished the marriage of girls below 14 years of age in 1872 under an act called as the Native Marriage Act. But it only applied to the members of that group

³Hatekar et al. (2007) found that after the Sarda Act the probability of girls marrying below the age of 14 years dropped dramatically among the upper caste using micro data from family genealogies.

analyse the effect of the announcement of the law. To further analyse the causal impact of the awareness of the law on marriage outcomes we use an IV strategy using distance from the birth places of the reformers who pushed for the bill to be passed in the legislative assembly.

The Sarda Act was the first social reform that was brought about by the efforts of organised women committees (Raman, 2009; Mukherjee, 2006). Pro-reform politicians, such as Motilal Nehru, were caught off guard when the organised women's association met with leaders to ask for their support in the bill. The members of All-India Women's conference (AIWC), Women's Indian Association and National Council of Women in India pressured politicians for their support to the bill, standing outside their delegations holding placards and shouting slogans such as 'if you oppose Sarda's bill, the world will laugh at you'. It was also this group who pushed for, and eventually succeeded in having Gandhi address the evils of child marriage in his speeches. Apart from the members of organised associations, there were civil servants, academics and members of other reformist group such as the Brahma Samaj that propagated the ideas of child marriage as a social evil. The reformers came from both the British provinces and the princely states (Mukherjee, 2006) . However, the reformers could pass the child marriage reforms only in the British provinces (Sinha, 2006; Mahmood, 2002).

In contrast to the reforms in the British Raj, there were very few gender reforms in the Princely States. The only Princely States that implemented gender-related reforms were the Mysore and Kathiawar Agency of Baroda. Dewan Sheadari Iyer of Mysore in 1894 abolished the marriage of girls below the age of 8, and marriage between girls under 16 years old to men over 50. This law was less stringent than the British Sarda Act. In the face of widespread discontent among the masses, the Mysore Princely State mostly implemented this reform by occasionally prosecuting the powerless lower castes (Ramusack, 2003). The political agent, Alexander Walker, of Kathiawar agency tried to abolish female infanticide among the Jhareja and Jetwa tribes, with little success. (Walker, 1856)

3 Conceptual framework

The social reforms implemented under the British rule in India may explain the differences in educational outcomes between the former Princely State regions and those that were under direct British rule, through more than one channel. We first discuss how specific reforms in British India directly affected the decision-making of the household, before discussing three potential mechanisms that could generate the long-term persistence of gender inequality, years

after Indian independence from the British rule: the persistence of social norms, an information friction channel and the impact on the re-allocation of household resources.

Early marriages bring monetary savings and reduction of effort cost to the families of daughters, as after marriage, they will no longer need to be taken care of at home. If parents are happy to see their daughters married at an early age, they may only choose to educate their daughters when the net return on education is very high. Raising the legal age of marriage increases the total amount of time the daughters stay at home, and thus the cost of raising them. If there exists economic opportunities for skilled labour, the households will have an incentive to educate their daughters to participate in the labour market to reduce the cost of looking after them for a prolonged period.

With the passing of the State Reorganisation Act, the Princely States and the British Provinces came under the same jurisdiction and laws. Observed differences in gender bias in education after this reunification could either be explained by differences in the perceived return of education *specific for female* or the historical persistence of cultural bias/dis-utility generated by female participation in activities outside the household.

Our empirical exercise attempts to highlight that social reforms have a slow but persistent effect. One possible explanation is the multiple equilibrium nature of social norms. The emergence of a particular social norm depends upon the social practice that is used by most people in the society. A legal reform might change the existing social norm by requiring everyone to follow an alternative. If most adhere to the legal requirement, it becomes optimal for individuals in that community to follow the new norm. In our context, the British reforms changed the traditional practices of female education. In a traditional society, a household that sends girls to school may be looked down upon by the community members if it is not a common practice. This dis-incentivises the households from sending girls to school. On the other hand, in a community where the majority of girls attend school, these social norms may encourage households to send their girls to school. The British legal reforms acted as exogenous shocks that introduce modern social norms to a traditional society. This may make households more inclined to educate their daughters even if the net economic return of education remains unchanged. The powerful implementation of legal reforms that improve the rights of women in British-ruled areas may have shifted the communities into an equilibrium where educating girls is more the norm than an exception.

Another explanation for the persistent gap may be due to information friction. Correctly inferring the returns of education could be costly, and households may only make inferences

based on limited experiences of other members of the same village. A larger initial stock of human capital among females could help the community identify market opportunities that are suitable for females. Thus, differences in initial human capital stock generated by historical reform in British India could translate into differences in the perceived returns of education, particularly when the return of human capital rose rapidly after trade liberalisation in India.

A third explanation could be linked to current debates on the subject of women empowerment (Duflo (2012) provided an in-depth discussion). Higher female education may have a direct impact on resource allocation and decision-making within the household (e.g. Quisumbing (1994) found that better educated mothers invested more in girls; Breierova and Duflo (2004) found evidence of female education on reductions in fertility and child mortality). If the mechanism holds, an exogenous shock that increases female education would have intergenerational persistence simply because better educated mothers allocate more resources to educating their daughters. This intergenerational transmission mechanism will have a larger effect if the other two mechanisms are also in operation.

With the mechanisms discussed, we test the hypothesis that regions that were historically under British rule have better gender outcomes in the short run and in the long run, compared to regions that were Princely States. In the following sections, we discuss the data and empirical strategy used.

4 Data

Our main source of information on the administrative division between the Princely States and the British Raj is Baden-Powell (1892), which included a detailed map on the division between the Princely States and areas under direct British rule together with the year of acquisition for each district. As the landscape of the Princely States and direct British rule was mostly settled by 1857, we define a district to be under British direct rule according to Baden-Powell (1892), otherwise it is defined as a Princely State. The geographical distribution is presented in Figure 2.

Our measure of human capital investment comes from two independent sources: District Information System for Education and the National Sample Survey. The District Information System for Education (DISE) provides administrative records for enrolment at the school level in India. The data is 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 the distinction between the Princely States and regions of direct British rule is mostly at the district level, we aggregate the information at the district level.⁴ 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 2005-2013; this gives us estimates of the ratio of male to female students enrolled in each class in each academic year for 433 districts. Summary statistics are reported in Table 1. On average, the schools in India have 9 % more boys enrolled in Class 6 compared to girls.⁵

The National Sample Survey (NSS) 64-66th round (2007-2008; 2009-2010) is another important data source that allows us to measure school attendance at the individual level. We focus on school attendance for children aged between 10-16 years old to study human capital investment decisions beyond basic literacy. It gives us approximately 155,989 individual records (of 10-16 years old) regarding their principal activities in the past 365 days, including school attendance, participation in domestic work, and casual waged work. We report the summary statistics in Table 2 for the sample we used. The average school attendance rate is 0.85, with, however, very high variance.

We further look into the percentage of marriages under the legal age in the year 2006-2007 at the district level from the District Level Household and Facility Survey (DLHS Round 3) by the Ministry of Health and Family Welfare of India. The data reported marriages under the legal age of 18 for women and recorded all marriage ceremonies held during the three years preceding the survey, covering 570 districts.⁶ We use the micro data of the survey for the year 2002-2004 (DLHS Round 2) to conduct analysis with respect to Hindu female who are beyond the age of 18 at the time of interview, there are 86,214 individuals that we could merge where they are now with the historical census data we have.

In addition, we obtained the district level GDP per capita from the Planning Commission of the Government of India. The geographical controls, such as latitude and distance to the coast⁷ for each district, are defined at the centroid of the districts.

To study the persistence of the marriage pattern and the impact of the Sarda Act in 1929, we digitized the data from the Census of India regarding the population and marriage status of male and females at the district level for 1901-1941, covering the major British provinces and

⁴We excluded Karnataka in the analysis in this sample due to the lack of data availability at the time of writing.

⁵This is the ratio of raw enrolment, i.e. it does not take into account the gender ratio of the population; taking the NSS estimates of the proportion of females from 10-16 reported in 2 as 0.464 (which is by itself a number that shows very high gender bias), there are 15 % more boys than girls in this age range.

⁶The data is released through DevInfo 6.0 by UNICEF.

⁷Physical distance instead of travel distance.

Princely States.⁸ The census data are available at ten years interval for 1901, 1911, 1921, 1931 and 1941. We mainly limit our analysis to the data from 1911-1931, as the data were available for all major provinces and have consistent definition of variables across years, while in 1941 data do not exist for some regions and the definitions are inconsistent with those reported in previous years. There are changes in district names since the independence. To map the historical data to modern data, we geocode the historical district name, and compute which modern district it falls into. If more than one historical district falls into the same district in administrative division post-independence, we associate the average of records from the historical districts to the modern district. This maps into 126 modern districts.

We document the reformers for the Sarda Act. The reformers were coded by recording the names of the members from All India's Women Conferences (AIWC), Women's International Conference and National Council of Women in India who were directly associated with the Sarda Act. The information came from various journal articles on the Child Marriage Restraint Act, supplemented by information from Wikipedia. Apart from the women members of organized women groups, other reformists groups such as the Brahma Samaj, members of civil service, journalists and politicians were involved in supporting the Act and attempted to create a strong public opinion against child marriage. These names were similarly extracted from articles on the Child Marriage Restraint Act. For each reformer, we coded the birth place, birth year, places where they were active and the reforms they were involved in.

5 Empirical strategy

To study the long run impact of social reforms on human capital investment, a common challenge is to control for modern institutions and ethnicity. Different ethnic groups may be starting with different social norms. Moreover, each ethnic group may have different laws and social institutions that endogenously emerge according to the customs and culture of the group. We will describe how the State Re-Organisation Act of 1956 could help us control for both ethnicity and modern institutions.

After independence in 1947, the State of India was divided into three main regions: regions that were formerly British Provinces, regions that were under the rule of hereditary Indian rulers, and regions that were formerly under other European rulers. This division proved difficult for administrative purposes. Thus, the government of India decided to divide India on the

⁸This includes Madras, Bombay, Bengal, Rajputana, Central Provinces, Central India Agencies, Mysore, Travancore, Hyderabad, Ajmer and Punjab

basis of linguistic ethnicity. This proposal was very popular among the masses. The Telegu-speaking people formed the state of Andhra Pradesh, Marathi-speaking people formed the state of Maharashtra, and Kannada-speaking people formed the state of Karnataka, etc.

Linguistic ethnicity is an important determinant of identity in India. Modern India is adversely affected by conflict and riots triggered on the basis of differences in language. Since the 1920s, there has been conflict between Assamese and Bengali-speaking people. In recent times, Bihari-speaking people have been targeted in Assam. In Maharashtra, Marathi-speaking people target migrants from Bihar and South India. In recent times, there has been a movement towards the compulsory use of the Marathi language in Mumbai, including in the Municipal Corporation. (see Baruah (2003); Weiner (2015); Murthy (2006); Menon (1989); Mitra (1995))

Therefore, each modern state in India has people speaking the same language but with different historical experiences in terms of direct and indirect British rule. Residents of each state were subjected to same state law after 1956; this is our key source of identification. We argue that the distribution of Princely States and British Provinces are quasi-random within each state. We assume that the British did not select groups of people with a particular type of gender preferences within ethnicities to subject them to direct British rule. People with the same ethnicity tend to share norms. It is hard to imagine that people that were subjected to direct British rule had systematically different gender preferences to those of the same ethnicity living in native states at the beginning of the British India era.

In this section, we investigate the effect of Princely States (as opposed to being directly ruled by the British) on modern gender differential human capital investment. The key differences between the two forms of control were the gender-related social reforms that were highlighted in the historical section of this paper. However, there are potential confounding factors, such as differences in income and geographical characteristics, which we try to control for.

We use the following specification to test the impact of the rule of Princely States on the male/female enrolment ratio in the DISE data.

$$MFR_{sdct} = \alpha * I[princelystates]_{sd} + X'_{sd}\xi + \delta_s + \gamma_t + \mu_{sdt} \quad (1)$$

MFR_{sdct} measures the ratio of male/female students enrolled in class c in district d within state s in year t . α , the coefficient of interest, captures whether in Princely States there are systematically more male children enrolled in school. δ_s is the state fixed effect that captures the systematic differences between states, such as the gender ratio, unobserved gender bias in

social norms, and the provision of schools. X'_{sd} is the district level controls that 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), and latitude and distance to the coast. γ_t is the year fixed effect that controls for yearly variations in gender differences in school enrollment.⁹

Moreover, we use the following specification to test the impact of the rule of Princely States on school attendance and participation in waged work of women aged 10-16 years in 2006-2010 using the NSS data.

$$y_{sdi} = \beta * I[\textit{princelystates}]_{sd} * \textit{female}_i + \gamma_s + \phi_s * \textit{female}_{sdi} + X'_{sdi}\eta + D'_{sd}\sigma + \epsilon_{sdi} \quad (2)$$

Where y_{sdi} is an indicator of school attendance/participation in waged work¹⁰ as the principal activity in the 365 days before individual i in state s of district d was interviewed. $I[\textit{princelystates}]_{sd}$ is a district level indicator of whether district d in state s belonged to a Princely State. The coefficient of interest is β , which is the coefficient for interaction term between $I[\textit{princelystates}]_{sd}$ and \textit{female}_i , which is a female dummy variable for person i . This captures whether females do worse in Princely States compared to direct British-ruled regions. γ_s is the state fixed effect for school attendance that captures state level differences in school attendance, such as different levels of provisions of schools. ϕ_s is a state-specific female fixed effect. This state-specific female fixed effect would mostly capture the different degrees of gender bias that exist in different states, which could be attributed to differences in gender norms between different ethnicities or differences in the labour market return of females. X_{sdi} is a set of socioeconomic controls that include the age of the child, the age of the head of the household, and the square of the age of the household head, an indicator for Muslim, Christian and other religions, an indicator of rural areas, and an indicator of the landownership of the households. D_{sd} is the geographic controls for district d in state s , which includes latitude and distance to the coast.

Moreover, we use the district level aggregate of the District Level Household and Facility survey to test the impact of Princely States' rule on the number of girls that marry under the legal age. We estimate the following equation:

$$M_{sd} = \sigma * I[\textit{princelystates}]_{sd} + X'_{sd}\Phi + \kappa_s + \tau_{sd} \quad (3)$$

M_{sd} is a continuous measure of the percentage of marriages under the legal age in 2006-

⁹All standard errors are clustered at district level

¹⁰This includes casual wage labor and not regular salaried work, and should be more relevant for the age range in our sample

2007 for district d in state s , σ is the coefficient of interest as it tells us whether in former Princely State regions, more marriage are carried out under the legal age. X_{sd} is the district level controls that include latitude, distance to the coast and log GDP per capita (in 2000). κ_s is the state-fixed effect which controls for systematic differences across the states.

5.1 Response to Sarda Act

In this paper we argue that British legal reforms affected the behaviour of the natives in British provinces by abolishing their traditional customs. To show the impact of the British legal reforms on the behavior of the natives, we begin with the study of the effects of the Sarda Act, the child marriage abolition law in 1929-1930. Figure 3 plot the percentage of male/female married in the age group of 5-10 and 10-15 from 1901-1931 for the whole of India. The marriage pattern were stable from 1901-1921, while in 1931 the proportion of females married increase dramatically for all young age groups, particularly among the female. This is most likely due to the anticipation effect in the six months between its announcement and implementation. (Census of India 1931) Figure 4 shows the geographical distribution for the proportion of female married at age 5-10 in 1921, as well as the change from 1921-1931. It is not clear that places that experienced the highest increase in child marriage in 1931 were those that traditionally practiced child marriage in most numbers . Using historical census data, we estimate the following equation to test whether historical institutions explains the change in marriage pattern from 1921 to 1931.

$$M_{pdt} = \alpha * I[Britishdirectrule]_{pd} * I[t = 1931] + \gamma_p * t + \phi_t + \sigma_d + \tau_{pdt} \quad (4)$$

M_{pdt} is the percentage of female who already got married at the age 5-10 in district d of pre-independent province p (i.e. political division before State-Reorganization Act) in year t between 1911-1931.¹¹ $I[Britishdirectrule]$ is an indicator which equals 1 if the district were under British direct rule.¹² α captures the differential changes in marriage pattern from 1921 to 1931 between former British direct rule regions and Princely States. Assuming there is no other factors that affect marriage pattern of the two regions differently between 1921-1931, α identify the effect of anticipation of actual implementation of the law. We control for the province specific trend ($\gamma_p * t$), district fixed effect (σ_d) and year fixed effect (ϕ_t).

¹¹It is defined as the number of married female at age 5-10 divided by the total number of female at age 5-10, reported by the Census

¹²so $I[Britishdirectrule] = 1 - I[princelystates]$, the variables we used in the specification described earlier

5.2 Long run impact of Sarda Act

In this section we test the hypothesis that the awareness of the Sarda Act has long run impact on female marriage and education outcome, as measured in the DLHS 2002 for Hindu female aged above 18.

The equation of interest would be

$$y_{sdi} = \beta L_{sd} + \beta_2 M_{sd,1921} + X'_{sdi} \sigma + \epsilon_{sdi} \quad (5)$$

y_{sdi} are outcome variables measured in DLHS in 2002, for individual female i in state s , district d . It includes outcomes for marriage and education: indicator of marrying below the age of 14, marrying in the age range of 14-17 and marrying under the age of 18, indicator for any level of schooling and a continuous measure of years of schooling. L_{sd} is a measure of awareness of the Sarda Act for district d in state s since 1929. If the awareness of the Sarda Act reduces the probability of early marriage for female and increases the educational outcomes for females in the long run, we expect β to be positive. β_2 captures the accumulative effect of traditions and historical reforms before 1921 that could explain outcome in 2002.

Without a direct measure of L_{sd} , we use $M_{sd,1931}$ as proxy, and estimate the following equation

$$y_{sdi} = \eta M_{sd,1931} + \gamma M_{sd,1921} + X'_{sdi} \sigma + \mu_{sdi} \quad (6)$$

$M_{sd,1921}$ and $M_{sd,1931}$ are the percentage of female who already got married at the age 5-10 in district d of state s in year 1921 and 1931 respectively, constructed by mapping new districts with their historical counterparts.

Given the historical context, $M_{sd,1931}$ should be positively related to L_{sd} , in the sense that in the districts with higher awareness of the law, more females in age range of 5-10 would be married as measured in 1931. This implies that η in equation 6 would have the same sign of the effect of β in equation 5.¹³ One can argue that there are unobserved factors that determine how much a district would react to the legislation in 1929-1930, and influence the age of marriage and education in 2002 at the same time. For example a district could be conservative to begin with, where many girls may have married in a rush in 1929-1930, while the same culture could make girls more likely to marry young in 2002. Therefore to estimate the equation 6 consistently, we need instruments that determine the awareness of the legislation of a

¹³We can assume formally that $M_{sd,1931} = \alpha L_{sd} + M_{sd,1921} + v_{sd}$, where $\alpha > 0$. Then one can rewrite $y_{sdi} = \eta \alpha L_{sd} + (\eta + \gamma) M_{sd,1921} + X' \sigma + \eta v_{sd} + \mu_{sdi}$. Therefore $\eta \alpha = \beta$, and $\eta + \gamma = \beta_2$, with the assumption that $\alpha > 0$, η and β follow the same sign. Thus, η is well-identified but α and β is only identified up to scale.

district and are unrelated to unobserved factors that affect the female marriage and educational outcomes after 1921.

The abolition of the child marriage in the 1920s was mostly influenced by women and husbands of women in the All India Women’s Conference (AIWC). The members of AIWC were the first ones to support the legalization of the abolition of the traditional norm of child marriage. The members of the Women’s Indian Association and National Council of Women in India also participated. But the leadership of these two organizations was hesitant about state involvement in matters of marriage and traditional customs. The AIWC fiercely promoted the legislation and articulated arguments in favour of the legislation to be put forward in front of the Joshi Committee, which was evaluating the bill proposed in the Central Legislative Committee. To construct an instrument for the awareness of the act, we make use of the birthplace of the reformers who advocated this law. The underlying assumption being that the place the reformers were born is unrelated to the practice of child marriage. Child marriage was prevalent throughout India across all castes and religion. Individuals that have gone on to become feminist reformers were mostly influenced by the peers in the cities or in the colleges where they might get educated, which were mostly away from their birth places. The relevance of the instrument comes from the assumption that a reformer would have family links to the place of birth and would be more likely to go and spread their propaganda against child marriage in their birth place first. So, the places (even urban places) that are far away from the places of birth of the reformer are less likely to be aware of the law and hence are less likely to respond to the legislation.

Equation 6 is then estimated using D_{sd} , the distance of district d to the nearest birth place of any reformers, and $I[Princelystates]_{sd}$, an indicator of Princely States as instrumental variables.

6 Results

6.1 DISE

The OLS results for equation 1 of school enrolment are presented in Table 3. Column 1 reports the estimates for equation 1 for the ratio of gross enrolment of boys to girls in Class 6; the coefficient suggests that on average there are 2 % more boys enrolled in schools than girls in former Princely States versus British-ruled regions. The availability of larger schools measured by the number of classrooms predicts lower boy to girl enrolment ratio. We also included log GDP per capita to control for the provision of schools and household budget constraints across

districts within the same state, however, it is only marginally significant. Column 2 reports the same measure for Class 5, where the coefficient is very small and insignificant; this suggests that the results in Column 1 are mainly due to the dropping out of girls in higher grades rather than being driven by the differences in the gender ratio.

In Table 4, we report equation 1 estimated by each class from 1 to 8. Comparing across columns, it is clear that the gender enrolment ratio only starts differing at Classes 6, 7 and 8, at which time the decision to attend school is more closely related to a human capital investment decision beyond basic literacy. The magnitudes of the coefficients across Columns 6, 7, and 8 are quite consistent at around 2-3 %, suggesting that Class 6 is a critical time when, if girls drop out of school, they may not return, whereas those that stay in education are likely to proceed with similar probability to boys.

6.2 NSS

Table 5 reports the estimates of equation 2 on the main activities of children aged 10-16 years from the NSS data. Columns (1)-(2) report the estimates for school attendance, Columns (3)-(4) report the estimates for participation in waged work, and Columns (5)-(6) report participation in domestic work. The estimated interaction term Princely States*female is significant for school attendance, which shows that girls in Princely States are 1.6 % less likely to attend school compared to girls in British-ruled regions within the same modern state. We do not see similar significances in other outcome variables once we include the state female fixed effect to control for gender bias at the state level. The main effect of the Princely State for paid work participation (Columns (3) and (4)) is only significant when we exclude the interaction term with females, and the magnitude is small (0.5 % difference in the probability of market participation between Princely States and British-ruled regions). This could potentially be explained either by the lower age of marriage in Princely States or a small difference in the availability of market work.

However, our estimates on school attendance cannot be solely driven by the availability of market work. We further report estimates of equation 2 by Hindus and Muslims, as the historical overview section has shown that there were stark differences in how Hindus and Muslims responded to the social reforms in British-ruled regions. Column (1) in Table 6 reports the estimate for Hindus only. The coefficient is highly significant with a magnitude higher than that in the sample including all religions - females among the Hindu population are 2.1 % less likely to attend school in former Princely States, greater than the equivalent estimate of 1.6 % for the whole population. Moreover, the main coefficient of the Princely States is

positive and is marginally significant for Hindus, which means that males are *more* likely to attend school in Princely States - this supports the hypothesis that the fundamental cause of the observed difference is driven by the persistence of cultural practices rather than the availability of education. On the other hand, the same estimate for Muslims in Column (2), despite its smaller sample size, is not only statistically insignificant but the sign of Princely States*female turns positive with a very large standard error. Instead of explaining the difference by time invariant inherent cultural differences between Hindus and Muslims, we tend to associate this difference in our estimates by how cultures interact with the implementation of the law in British-ruled regions before Independence.

In Figure 6 we plot the percentage of married female at age 10-15 for districts that now belong to Madhya Pradesh - there were historically huge differences in how Hindus and Muslims responded to the Sarda Act of 1929 and Age of Consent Law of 1891.

6.3 Marriage under legal age

Table 7 reports estimates of equation 3 using the district level aggregate of the percentage of marriages under the legal age for females in 2006-2007. The coefficients estimated are positive, highly significant and robust upon inclusion of log GDP per capita (Column (1) and (2)). Our estimates suggest that Princely States have approximately 5 percentage points more marriages under the legal age for females. In Column (3) and (4), we report the results using the mean age of marriage in 2002-2004 as an outcome variable; it can be seen that districts formerly belonging to Princely States have a lower mean age of marriage by 0.4 years. An average of 22.66 % of all marriages in India take place under the legal age for female ¹⁴; our estimated 5 percentage points difference between Princely States and direct British-ruled regions explains a significant number of underage marriages in India.

6.4 Sarda Act using Census Data 1911-1931

Above we provide a mapping of gender inequality to different political institutions. In this section we focus on the impact of the legal reforms under two different political rule that affected behaviour in the past.

The estimates for equation 4 are presented in Table 8. The coefficient of *Princely states*1931* is statistically significant in column (2) where we control for province specific trend. The coefficient estimate is 2.8, which shows that among girls aged between 5-10, there are on average 2.8 percentage more girls among natives in British provinces who got married in 1931. The

¹⁴From our district level aggregate not weighted by population share in each districts

natives in British provinces feared the implementation of the act in the coming months and millions of girls under the age of 14 were married off. This result is also well documented in the census reports of the British. The Sarda Act applied to only British India, however in Princely States such as Mysore and Baroda also tried to enact laws abolishing child marriages.¹⁵ We observe a slight bunching in female child marriages in the Princely States, but in British provinces it is on average more severe.

Compare to column (1), which we did not include province specific trend, the coefficient in column (2) is more significant and with a larger magnitude, this suggesting that provinces may have differential trends before 1931.

Table 9 reports the estimates for equation 6, both in OLS and IV using distance to nearest reformers and Princely States dummy. Column (1) and (2) in Panel (a) report the estimates for the outcome of marrying below 14, where the coefficients for both $M_{sd,1931}$ and $M_{sd,1921}$ are insignificant, suggesting that the historical marriage pattern does not explain the probability of marrying below 14 in 2002. Column (3) and (4) report the estimates for the outcome of marrying between 14-17, and the coefficient for $M_{sd,1931}$ and $M_{sd,1921}$ are both statistically significant but of *opposite sign*. The estimate for $M_{sd,1921}$ in column (3) for the OLS is 0.00445, which could be interpreted as one percentage point increase in the proportion of females married at the age of 5-10 in 1921 predicts a 0.45 higher probability of a girl marrying below the legal age in 2002. The magnitude of the coefficient suggest that a significant part of child marriage in India has a very strong historical roots, going far beyond 1921.

Moreover, the estimates for $M_{sd,1931}$ is negative and also statistically significant in column (3). It shows that one percentage point increase in the proportion of female married in 1931 (between 5-10) predict a smaller probability of a girl getting married below legal age post-independence. Column (4) report the IV estimates, and the coefficients for $M_{sd,1931}$ and $M_{sd,1921}$ both become larger in magnitude and highly statistically significant, and remains in opposite sign. With the assumption that an increase in child marriage in 1931 proxy for a high awareness of the Sarda Act, the estimate provide evidence that the Sarda Act reduced child marriages in the long run. In column (1) of Panel (b), we find that 1 % more girls married at the age 5-10 in 1921 predicts a 0.6% lower chance of females getting at least some education measured in 2002; and 1 % more girls married at the age 5-10 in 1931 predicting a 0.44% higher chance of females getting some education in 2002.

¹⁵Mysore in 1894 abolished child marriage below the age of 8. Many reformers from Mysore who pushed for the legislation of the Sarda Act could not raise the age of marriage for girls in Mysore. Therefore, in Mysore there was a weak form of child marriage restraint reform.

In table 10 we further control for state fixed effect. The coefficient for $M_{sd,1921}$ remains significant and positive in most OLS specification, while the coefficient for $M_{sd,1931}$ remains negative but become statistically insignificant except in the OLS regression for year of schooling in column (3) of panel (b). This may be due to low power of the instrument once we control for state fixed effect.

We find regions that experienced bunching of marriages in 1931 have fewer girls marrying below legal age and are more likely to have experienced schooling post-independence, controlling for cultural variation across regions up to 1921. One interpretation of this long run effect could be that in British provinces the natives anticipated the implementation of the law in 1931 and did not wish to get affected by it. Therefore, the generation most affected by the Sarda Act and it's the later generations are more likely to conform their behaviour to any new law. This may explain why regions that got affected by legal reforms imposed by a foreign administrative body behave differently than regions that are culturally similar but did not get affected by the reform.

7 Discussion and robustness check

7.1 Robustness check - Princely States that potentially undergone reform

As discussed in the previous section, it was documented that in two of the Princely States (Mysore and the Kathiawar Agency of Baroda), there were reforms related to child marriages independent of similar reforms in the British Provinces. In the previous section, where we estimated equation 2 and 3 (school attendance in NSS and marriage under the legal age), we did not exclude Mysore and the Kathiawar Agency of Baroda because their implementation is weak from the historical description. We present the estimates for equations 2 and 3, excluding these two Princely States as a robustness check, in Table 11 and 12.

In Table 11, we report the estimates for school attendance in the NSS data excluding Mysore and Kathiawar Agency of Baroda in Column (2). The coefficient of the Princely States indicator increases slightly from 1.6 to 1.8, which implies a bigger difference in female school attendance among 10-16 years old between the Princely States and the British Provinces. Similarly, in Table 12 we report the estimates of equation 3 for the percentage of marriages under the legal age and the mean age of marriage, excluding Mysore and Baroda. The coefficients again increased slightly upon the exclusion of the two districts (in Columns (2) and (4)), which is what one would expect if Mysore and Baroda had weak social reforms that were similar in nature to those in the British Provinces.

8 Conclusion

In this paper we show that two regions that have had different legal reforms in the past behave differently when placed under the same modern institution. In particular we find that girls are more likely to go to school in regions that have had gender reforms in the past. 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 prejudice behaviour by showing its positive long term impact. Providing infrastructure by the social planner might not be enough for economic growth, we also need to change the bottlenecks on the demand side.

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9 Figures and Tables

Figure 1: Timeline of key historical events

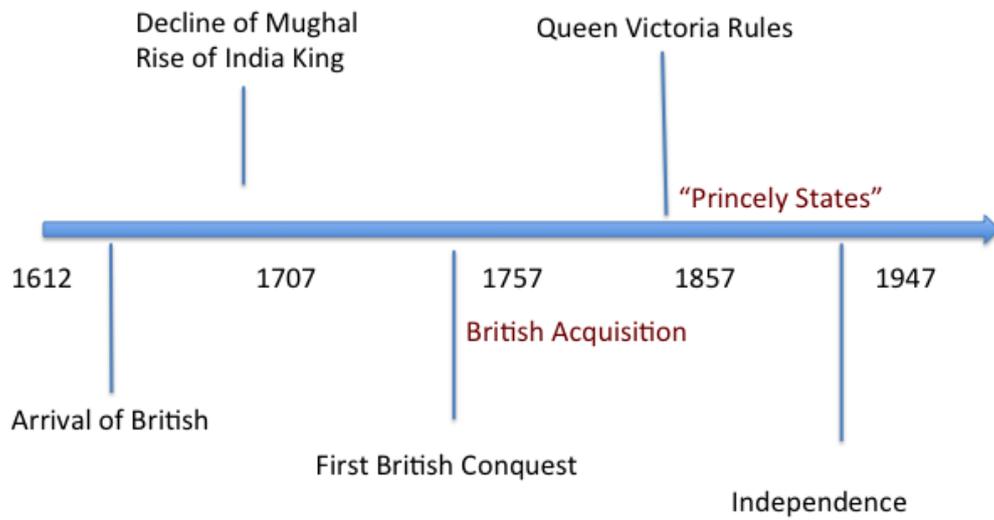
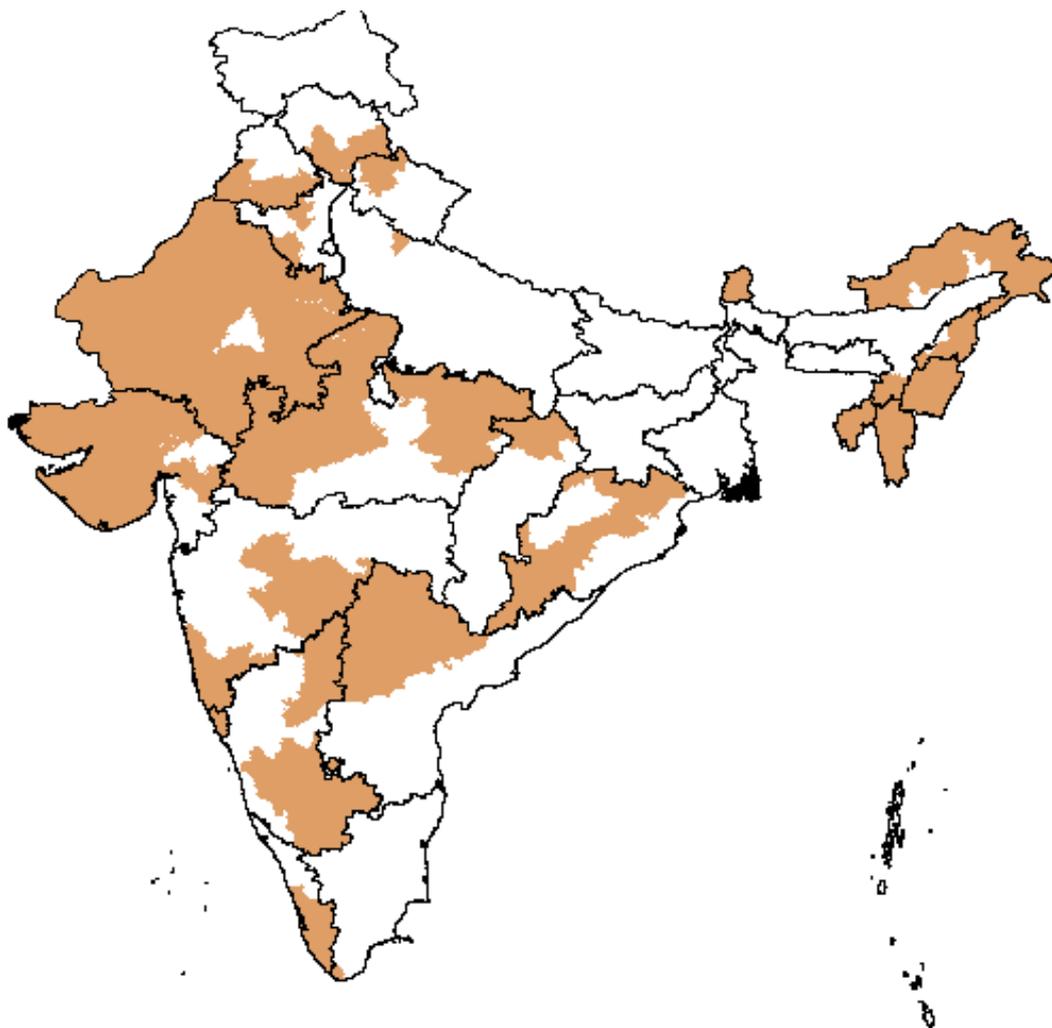
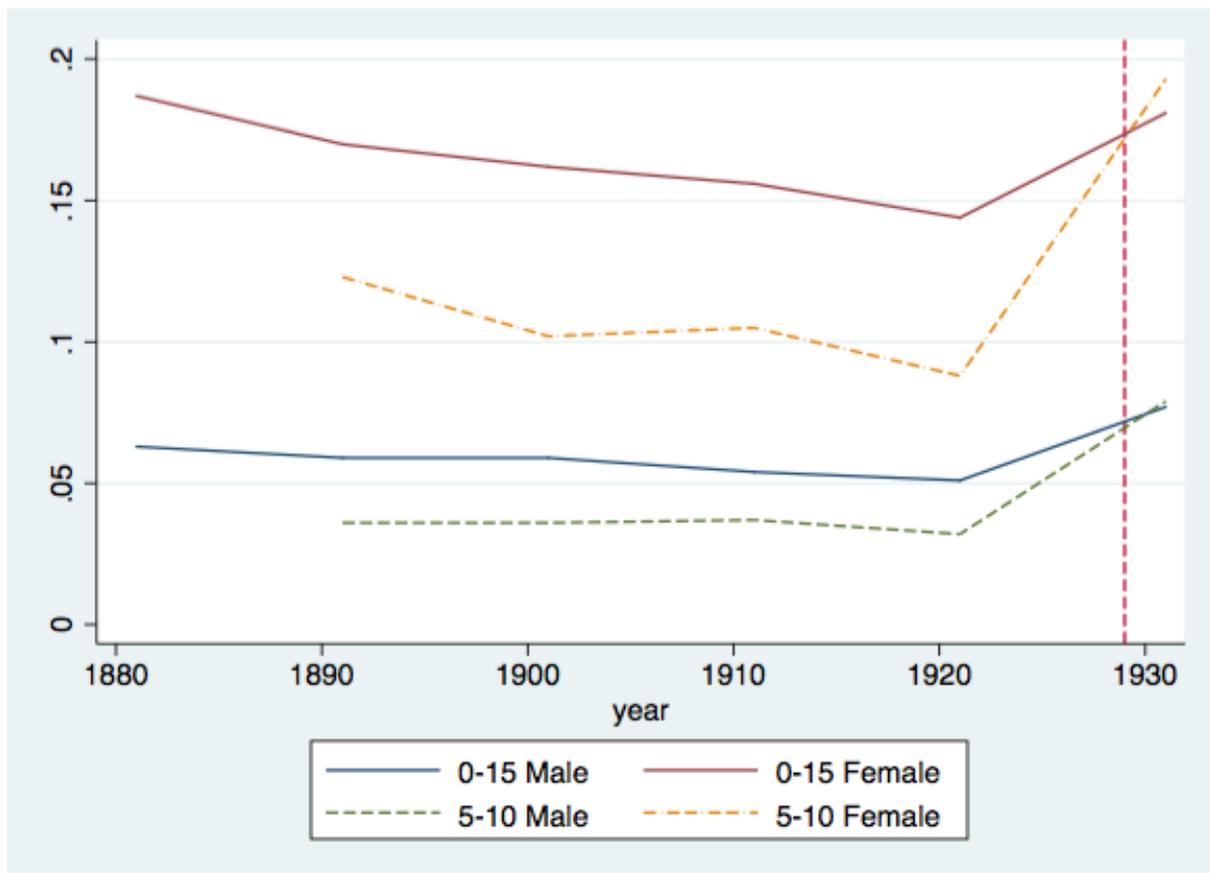


Figure 2: Distribution of Princely States and British direct rule regions



Note: The shaded parts were districts that belonged to Princely States and the white parts are districts that were under British direct rule.

Figure 3: Marriage pattern in 1929-1930: time series



The graph plots the proportion of children married in each Census year, by gender and age group, for India as a whole.

Figure 4: Distribution of proportion of female married at 5-10

(a) Girls married 5- 10 (%): 1921

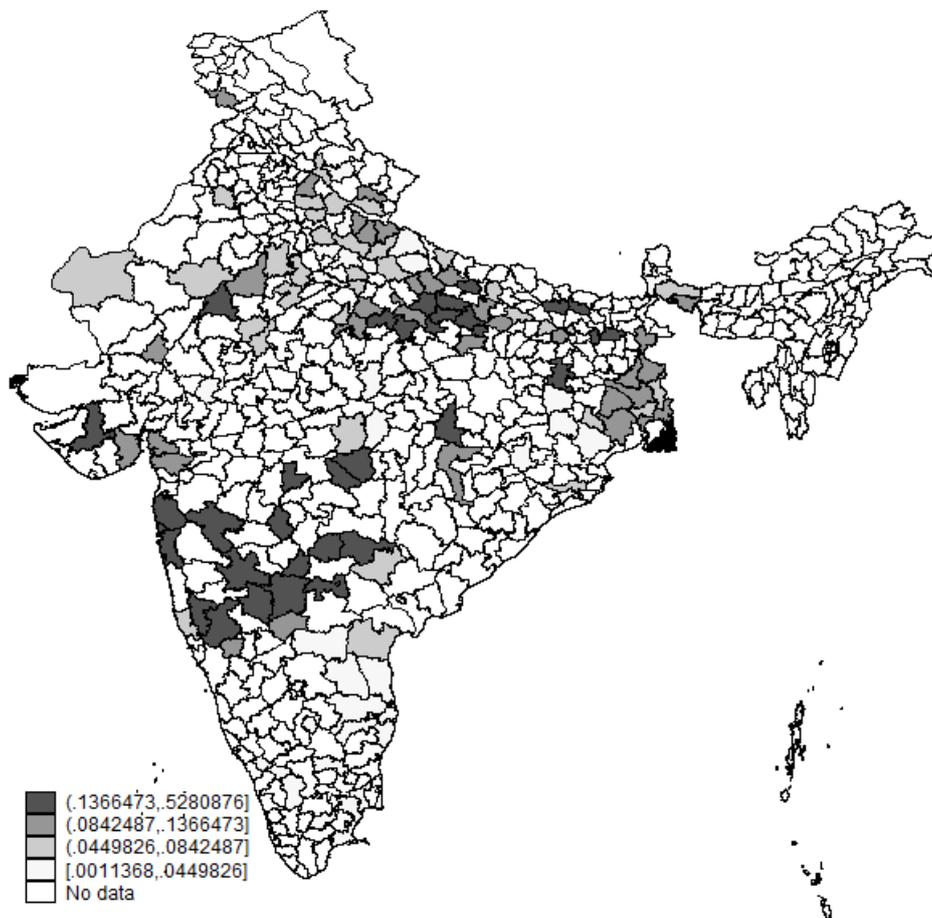
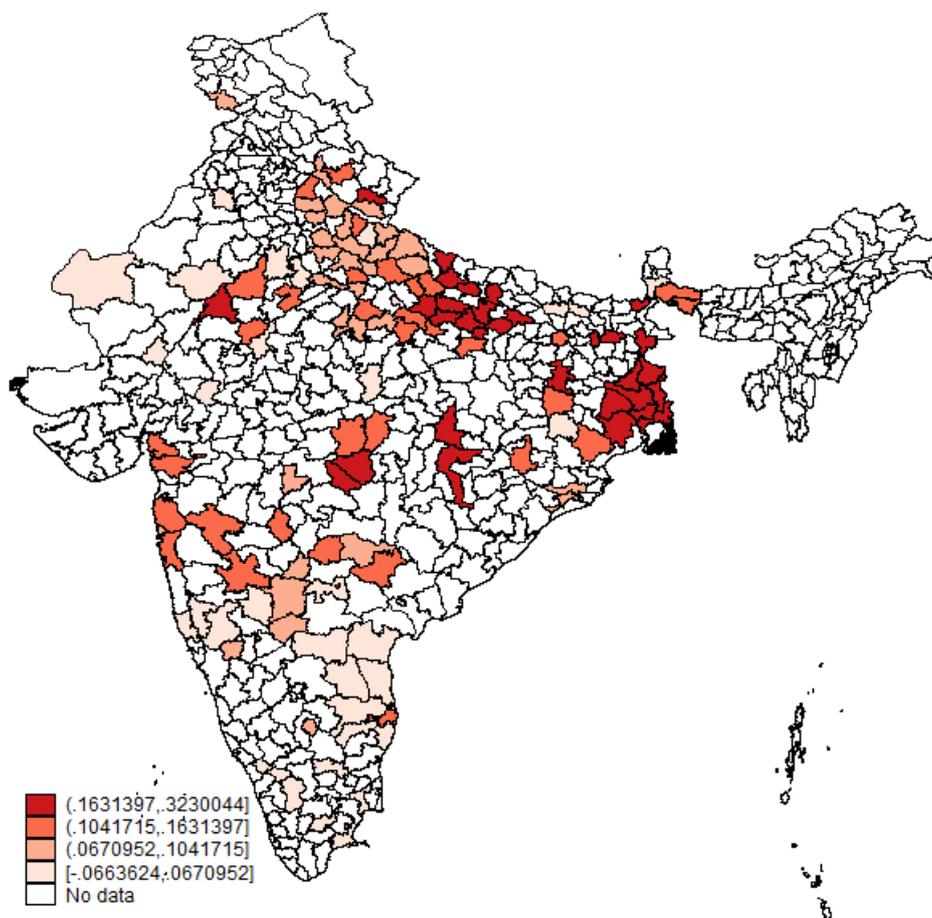
(b) Δ Girls married 5- 10 (%): 1931- 1921

Table 1: Summary statistics of the DISE data

	mean	sd
Total boy / total girl enrollment in class 1	1.079	0.093
Total boy / total girl enrollment in class 2	1.070	0.099
Total boy / total girl enrollment in class 3	1.068	0.107
Total boy / total girl enrollment in class 4	1.069	0.115
Total boy / total girl enrollment in class 5	1.076	0.130
Total boy / total girl enrollment in class 6	1.088	0.157
Total boy / total girl enrollment in class 7	1.094	0.176
Total boy / total girl enrollment in class 8	1.103	0.195
Distance to coast	475.330	332.864
Proportion of rural schools	0.885	0.129
Princely states	0.261	0.439
Number of classrooms	4.418	1.778
Observations	2749	
Number of districts	433	

Note: Distance measured in km; Data aggregated at district level from school records, forming a district level (unbalanced) panel for 2005-2013; Kerala not in the sample

Table 2: Summary statistics - NSS 64th and 66th round

	mean	sd
School attendance	0.850	0.357
Female	0.464	0.499
Age	12.972	2.040
Scheduled caste	0.149	0.356
Scheduld Tribe	0.170	0.376
Head literate	0.724	0.447
Head complete primary	0.304	0.460
Head complete secondary	0.133	0.339
Head complete higher than secondary	0.185	0.388
Land ownership	0.895	0.306
Observations	155989	

Note: Sample includes child age 10-16

Table 3: OLS Regression of Boy / Girl enrollment ratio at class 5/6: 2005-2013

Outcome: Ratio of boy/girl enrollment		
	Class 6	Class 5
	(1)	(2)
Princely states	0.0201** (0.00993)	0.00839 (0.00722)
Proportion of rural schools	-0.0814** (0.0407)	-0.0486 (0.0368)
Number of classrooms	-0.0201*** (0.00565)	-0.0131*** (0.00476)
Ln GDPPC (2000)	-0.0303* (0.0166)	-0.0176 (0.0132)
Observations	2749	2749
State FE	Y	Y
Year FE	Y	Y

Note: Standard error clustered at district level; Outcome variable is number of boys enrolled/number of girls enrolled; Other controls include latitude and distance to coast; Ln GDP per capita measured at 2000

Table 4: OLS Regression of Boy/Girl enrollment ratio at all class: 2005-2013

	Outcome: Ratio of boy/girl enrollment							
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
Princely states	0.00280 (0.00589)	-0.00142 (0.00593)	-0.00374 (0.00602)	0.0000208 (0.00656)	0.00841 (0.00723)	0.0201** (0.00993)	0.0300*** (0.0114)	0.0256** (0.0123)
Proportion of rural schools	0.0552** (0.0259)	0.0228 (0.0269)	0.00334 (0.0290)	-0.0205 (0.0318)	-0.0478 (0.0369)	-0.0814** (0.0408)	-0.0865** (0.0432)	-0.113** (0.0472)
Number of classrooms	0.00596** (0.00269)	0.000161 (0.00287)	-0.00387 (0.00319)	-0.00744** (0.00367)	-0.0132*** (0.00473)	-0.0201*** (0.00558)	-0.0234*** (0.00597)	-0.0266*** (0.00586)
Ln GDPPC (2000)	-0.00785 (0.00747)	-0.00905 (0.00840)	-0.00938 (0.00986)	-0.0141 (0.0114)	-0.0173 (0.0132)	-0.0303* (0.0166)	-0.0382** (0.0176)	-0.0511*** (0.0185)
Observations	2749	2749	2749	2749	2749	2749	2749	2658

Note: Standard error clustered at district level; Outcome variable is number of boys enrolled/number of girls enrolled in the respective class; Other controls include latitude and distance to coast; Ln GDP per capita measured at 2000

Table 5: Activity of 10-16 years old: NSS 64 - 66th round

	School (1)	School (2)	Waged work (3)	Waged work (4)	DW (5)	DW (6)
Princely states=1	-0.00152 (0.00597)	0.00601 (0.00580)	-0.00565** (0.00264)	-0.00432 (0.00286)	0.000973 (0.00262)	-0.000434 (0.00162)
Princely states=1 × Female=1		-0.0160** (0.00630)		-0.00284 (0.00298)		0.00299 (0.00532)
Observations	150084	150084	150084	150084	150084	150084
state*female FE	Y	Y	Y	Y	Y	Y

Note: sample includes child age 10-16. The outcome variables in column (1)-(2),(3)-(4) and (5)-(6) are indicators of school attendance, casual wage labor and domestic work as the principal activity in the year before survey respectively; column an indicator for casual waged labor standard error clustered at district level; Controls include age FE, rural, muslim, christian sikh, other religion indicator; age of household head, education level of household head, district distance to coast and Latitude; all regression control for state FE; scheduled caste, schedule tribe and other backward caste indicators

Table 6: School attendance - NSS - by religion

	School		Waged work		DW	
	Hindu (1)	Muslim (2)	Hindu (3)	Muslim (4)	Hindu (5)	Muslim (6)
Princely states=1	0.0115* (0.00638)	-0.0123 (0.0146)	-0.00559 (0.00340)	-0.00958 (0.00641)	-0.0000947 (0.00137)	-0.000354 (0.00325)
Princely states=1 × Female=1	-0.0217*** (0.00746)	0.0147 (0.0236)	-0.00250 (0.00371)	0.00268 (0.00873)	0.00405 (0.00534)	0.00986 (0.0159)
Observations	109689	23137	109689	23137	109689	23137

Note: sample includes child age 10-16. The outcome variables in column (1)-(2),(3)-(4) and (5)-(6) are indicators of school attendance, casual wage labor and domestic work as the principal activity in the year before survey respectively; column an indicator for casual waged labor standard error clustered at district level; Controls include age FE, rural, muslim, christian sikh, other religion indicator; age of household head, education level of household head, district distance to coast and Latitude; all regression control for state FE; scheduled caste, schedule tribe and other backward caste indicators

Table 7: Marriage under legal age and mean age of marriage

Outcome:	% under legal age		Mean age of marriage	
	(1)	(2)	(3)	(4)
Princely states	5.186*** (1.361)	5.018*** (1.369)	-0.399*** (0.147)	-0.329** (0.149)
Distance to coast	-0.0141*** (0.00518)	-0.0136*** (0.00512)	0.000601 (0.000586)	0.000172 (0.000529)
Latitude	1.119** (0.523)	0.967* (0.514)	-0.132** (0.0572)	-0.0910* (0.0514)
Ln GDPpc 2000		-11.91*** (1.644)		1.192*** (0.164)
Observations	568	508	570	508
mean	22.66	23.74	19.44	19.21
State FE	Y	Y	Y	Y

Note: Sample include percentage of marriage under legal age for female*100 reported in the District Level Household and Facility Survey in 2006-2007 from DevInfo 3.0; Mean age of marriage from the DLHS 2002-2004; robust standard error reported in parenthesis

Table 8: The impact of Sarda Act; Census 1911-1931; Difference-in-difference

	Outcome variable: Married female (%) 5-10					
	(1)	(2)	(3)	(4)	(5)	(6)
Sarda act/1931=1 × British Provinces=1	1.631 (1.433)	2.804** (1.311)				
Sarda act/1931=1 × Year of direct control 69-100=1			2.930* (1.505)	1.686 (1.733)		
Sarda act/1931=1 × Year of direct control 101-130=1			-2.156* (1.096)	-2.069 (1.373)		
Sarda act/1931=1 × Year of direct control 131-160=1			2.290 (2.973)	1.241 (2.577)		
Sarda act/1931=1 × Year of direct control ≥ 160=1			6.558*** (1.745)	5.836*** (1.768)		
Sarda act/1931=1 × Ln dist. to reformers					-0.442 (0.559)	-1.489*** (0.502)
Observations	694	694	694	694	525	525
District FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Province specific trend	N	Y	N	Y	N	Y

Sample includes a panel of that consists of 278 district according to pre-independence administrative division, for the three Census year from 1911 to 1931. Sarda act/1931 is a dummy for the year 1931 to capture the effect of Sarda act announced and implemented in 1929-1930. Robust standard errors reported in parenthesis; Base group in column (1)-(2) are princely states; Base group in column (3)-(4) are district where year of acquisition are not reported from the map from Baden (1898) and were under indirect control

Table 9: Long run impact of Sarda Act, 1931 marriage ratio instrumented

(a) Panel A: Marriage in 2002

	Probability of getting married at					
	<14		14-17		<18	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Married female 5-10 (%) 1931	0.000734 (0.000635)	0.00126 (0.00220)	-0.00190* (0.00110)	-0.0111*** (0.00407)	-0.00116 (0.00134)	-0.00982** (0.00499)
Married female 5-10 (%) 1921	0.00109 (0.000855)	0.000428 (0.00243)	0.00445** (0.00172)	0.0146*** (0.00454)	0.00554*** (0.00189)	0.0150*** (0.00551)
Observations	86214	84614	86214	84614	86214	84614
Number of dist.	126	123	126	123	126	123
F-stat		7.906		7.906		7.906

(b) Panel B: Schooling in 2002

	Any schooling		Year of schooling	
	OLS (1)	IV (2)	OLS (3)	IV (4)
Married female 5-10 (%) 1931	0.00440*** (0.00146)	0.0336** (0.0134)	0.0105 (0.00715)	0.0921* (0.0497)
Married female 5-10 (%) 1921	-0.00619*** (0.00197)	-0.0384** (0.0149)	-0.0145 (0.00931)	-0.104* (0.0555)
Observations	86214	86214	41843	41843
Number of dist.	126	126	126	126
F-stat		6.567		4.352

Sample include all Hindu female beyond 18 years old at the time of interview in DLHS 2002; Married female 5-10 1931 were instrumented by: Princely state $\in \{0, 1\}$ and ln distance to nearest reformers (km) in the IV specifications; other controls includes individual controls and district level distance to coast, ln GDPpc (2000), Latitude; Historical districts are mapped to modern district by taking unweighted average if more than one historical districts are belonging to one modern district; Married female 5-10 (%) are defined by the total number of married female at age 5-10, divided by the total number of female at age 5-10 reported in the Census for each district d , scaled up by 100, in the unit of %

Table 10: Long run impact of Sarda Act, 1931 marriage ratio instrumented

(a) Panel A: Marriage in 2002

	Probability of getting married at					
	<14		14-17		<18	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Married female 5-10 (%) 1931	0.000642 (0.000662)	0.00249 (0.00334)	-0.00157 (0.00113)	-0.00479 (0.00336)	-0.000931 (0.00141)	-0.00230 (0.00527)
Married female 5-10 (%) 1921	0.00120 (0.000912)	-0.00104 (0.00397)	0.00328** (0.00158)	0.00703* (0.00391)	0.00448** (0.00179)	0.00599 (0.00603)
Observations	86214	84614	86214	84614	86214	84614
Number of dist.	126	123	126	123	126	123
F-stat		5.200		5.200		5.200
State FE	Y	Y	Y	Y	Y	Y

(b) Panel B: Schooling in 2002

	Any schooling		Year of schooling	
	OLS (1)	IV (2)	OLS (3)	IV (4)
	Married female 5-10 (%) 1931	0.00122 (0.00103)	0.0321 (0.0556)	0.0109* (0.00585)
Married female 5-10 (%) 1921	-0.00248* (0.00143)	-0.0373 (0.0625)	-0.0229*** (0.00872)	0.0129 (0.0829)
Observations	86214	86214	41843	41843
Number of dist.	126	126	126	126
F-stat		0.338		0.547
State FE	Y	Y	Y	Y

Sample include all Hindu female beyond 18 years old at the time of interview in DLHS 2002; Married female 5-10 1931 were instrumented by: Princely state $\in \{0, 1\}$ and \ln distance to nearest reformers (km) in the IV specifications; other controls includes individual controls and district level distance to coast, \ln GDPpc (2000), Latitude; Historical districts are mapped to modern district by taking unweighted average if more than one historical districts are belonging to one modern district; Married female 5-10 (%) are defined by the total number of married female at age 5-10, divided by the total number of female at age 5-10 reported in the Census for each district d , scaled up by 100, in the unit of %

10 Appendix

Figure 5: Geographical distribution of birth place of pro-Sarda Act reformers



Figure 6: Percentage of married female - 10-15 years old - Madhya Pradesh

(a) All religion



(b) Hindu - Muslim



Note: Data comes from Census of India 1891-1931 and cover Central Provinces and Central India Agencies which belongs to Madhya Pradesh today; the red line denotes the enactment of the Sarda Act

Table 11: Robustness check - exclusion of Mysore and Baroda: NSS Education

	School (1)	School (2)
Princely states=1	0.00601 (0.00580)	0.00556 (0.00580)
Princely states=1 × Female=1	-0.0160** (0.00630)	-0.0186*** (0.00650)
Observations	150084	146074
Include Mysore and Baroda	Y	N

Note: Specification same as in Table 5

Table 12: Robustness check - exclusion of Mysore and Baroda: Marriage

outcome:	% under legal age		mean age	
	(1)	(2)	(3)	(4)
Princely states	5.018*** (1.369)	6.067*** (1.367)	-0.329** (0.149)	-0.375** (0.151)
Distance to coast	-0.0136*** (0.00512)	-0.0121** (0.00516)	0.000172 (0.000529)	0.000217 (0.000532)
Latitude	0.967* (0.514)	0.633 (0.529)	-0.0910* (0.0514)	-0.0896 (0.0550)
Ln GDPpc 2000	-11.91*** (1.644)	-11.75*** (1.668)	1.192*** (0.164)	1.190*** (0.167)
Observations	508	496	508	496
Include Mysore and Baroda	Y	N	Y	N

Note: Specification same as in Table 7

Table 13: Robustness check - exclusion of Princely States in the south: Marriage

outcome:	% under legal age			
	All states	Karnataka (exclu. Hyderabad)	Kerala	Exclu. Ke and Ka
	(1)	(2)	(3)	(4)
Princely states	5.018*** (1.369)	-7.346** (3.247)	-7.188 (4.657)	6.550*** (1.485)
Distance to coast	-0.0136*** (0.00512)	0.0930*** (0.0252)	0.0961 (0.0727)	-0.0112** (0.00522)
Latitude	0.967* (0.514)	3.128 (2.497)	-1.270 (1.458)	0.168 (0.553)
Ln GDPpc 2000	-11.91*** (1.644)	-8.846 (9.318)	-16.24 (21.00)	-11.03*** (1.674)
Observations	508	23	14	467

Note: Sample include information on percentage of marriage under legal age for female*100 reported by Ministry of Health and Family Welfare from the District Level Health Survey in 2006-2007 at district level; specification same as in Table 7