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Do Laws with Weak Penal Provisions Work?
Assessing the Effectiveness of The Child Marriage
Restraint Act (1929)

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Abstract

This paper examines whether laws with inadequate penal provisions can still work towards eradicating undesirable social customs. Using data on age at marriage from family genealogies in India from 1905 to 1980, the paper examines the effectiveness of the Child Marriage Restraint Act (1929). We find that though the law lacked adequate penal clauses, it still contributed towards increasing the age at marriage. It worked because a cultural shift towards later marriages was already taking place, which we model. The law worked by reinforcing the cultural change. The paper draws attention to the role of systematic “cultural engineering” in order to induce social change that would otherwise not happen.

Key words: Assurance Games, Age at marriage, Conventional Behaviour, Law.

JEL classification: O17; N35

Introduction

Farmers in Palanpur face a typical problem. They start sowing well after the date on which sowing would have been optimal. This happens because no single farmer wants to be the first; if yours is the only field that is sowed, birds will devastate your crops whereas if you are one among many, the birds pick a little from everyone. When asked why the farmers don't cooperate and coordinate their actions, a farmer's reply was “If we knew how to do that, we would not be poor”. This is the classical coordination problem. The problem of coordination is at the center of many an inefficient outcome and has

Table 1: The Palanpur Farmer Game

	Sow Early	Sow Late
Sow Early	5,5	3,1
Sow Late	1,3	4,4

acquired a name in the literature: The classical constitutional conundrum².

Such situations are generally modeled as games with multiple equilibria which can be Pareto ranked. The society can be stuck at any of the many equilibria, with no endogenous mechanism for escaping from them. In some cases, coordination is not possible because individuals are not sure whether others will coordinate unilaterally. For example, the Palanpur situation can be modeled as a 2×2 game involving two players each of which have two pure strategies, sow early and sow late. The idea represented in the payoffs is that when farmers sow at different times, both get all the predators and hence payoffs to row when he sows late and column sows early is lower than when both sow at the same time. If farmers coordinate their sowing so that everybody sows at the right time, everybody is better off. Yet, that is generally not possible as evidenced by the farmer's reply. The following is the normal form representation of the game:

This game has two Nash equilibria, i.e, (Sow Early, Sow Early) and (Sow Late, Sow late). The first is Pareto superior to the other. Society can either enjoy being in an equilibrium where both the players sow early, or might be caught in a poverty trap where both sow late. It will be impossible to tell

²Bowels(2005), page 24.

a-priori which one of the two will occur without knowing the society's belief structure. If the society is trapped in the Pareto inferior equilibrium, the challenge to governance is how to shift it to the Pareto superior equilibrium. Moving the economy to the Pareto superior equilibrium will be difficult if decentralized decision making agents cannot manage a coordinated move. If coordination is not possible, then making the shift is too risky for any given individual. This equilibrium might persist for a very long time and become a convention. If it is a socially sanctioned convention to sow late, then it would be rational even for farmers who know that everybody will be better off by sowing early to sow late, given the structure of payoffs. The tradition of sowing late will continue to be maintained. The late sowing equilibrium may become more entrenched by the growth of secondary conventions around it like sowing time rituals. This will make it even more costly for a given individual to make a unilateral shift to the Pareto efficient equilibrium. Even when individuals realize that the convention ought to be broken, no one might be able to move.

Conventions like foot-binding, female genitalia mutilation and child marriages, which are all strategies for control of women's sexuality, arose in specific circumstances and continued to exist even when these conditions no longer existed because they were entrenched as conventions. Gerry Mackie (1996) argues that foot-binding arose in China when polygamous elite attempted to prevent their wives from having sexual contacts outside marriage. However, it became a status marker and persisted long after the initial conditions had gone. Similarly, it has been argued that female genitalia mutilation arose among slave traders as a way of avoiding sexuality among female slaves

as virgin slaves brought more money. It became a marker of status and persisted even among nuclear urban households. Because of the features of the associated game, such conventions cannot be changed by individuals acting alone. The costs of unilateral moves are too high. Abdalla (1982) surveyed seventy female and forty male university students in Somalia and found that though sixty percent women and fifty-eight percent men thought that female genital mutilation should be abolished, sixty-six percent women and fifty percent men said that they would mutilate their daughters.

How does civil society attempt to change these conventions? In particular can legislation be effective at all in such cases? Have there been instances when societies have successfully legislated a convention into oblivion? If so, what can we learn from the successes? These are the questions that this paper attempts to answer. In general, the literature on law and economics looks at the economic rationale of specific laws like tort laws. However, legislating social change might be an important objective in many cases.

In this paper, we analyze the effectiveness of the Child Marriage Restraint Act which was enacted in India in 1929. The final enactment of the bill raised the age at marriage for girls to fourteen. Rao Sahib Haribilas Sarda moved a bill in the Constituent Assembly on 1st February 1927. This bill, which aimed at restraining the solemnization of child marriages came to be known as the Sarda bill. The process of enacting the bill, right from its initial conceptualization till the final enforcement in April 1930, was shot through by controversy. The bill was finally passed in the Constituent Assembly on 20th September 1929 by a large majority and became an act on 1st October of the same year. It came into force on 1st April, 1930 Some sections of

the orthodox opinion saw the law as another instance of entirely avoidable invasion of Indian religious feelings by an alien government. Protesting the bill, the *Bhala*, an orthodox newspaper wrote “It is a question of the utmost importance whether Government has a right to interfere with a religious affair like marriage, which is one of the sixteen sacraments of the Hindus. We strongly hold the view that an alien Government should on no account be allowed to settle religious questions. If bills like this are passed by the legislative Assembly, the Hindus will have to say that they lost their religious freedom in 1929, just as they lost their political freedom in the past”³. Not only Hindu, but Muslim orthodoxy was also opposed to the bill, which applied to all major communities in India.

On the other hand, there were others who believed that legal intervention was absolutely necessary in order to overcome societal prejudices. Some even envisaged a special role for the law in this regard. For example, while commenting on the Bill in the Assembly, Srinivas Iyengar argued “Members of this legislature must create an opinion; and in the matter of this description, the opinion must go down from the legislature to the populace rather than from the populace to the legislature.”⁴. By and large, public opinion seems to have favoured the bill as evidenced by the number of people and associations that supported it when the government circulated it for public opinion. Forty out of the forty-nine opinions that were thus received were in favor of raising the age at marriage by law. Indeed, even before the law was enacted, the age at first marriage, at-least for upper caste women, had already had been moving upwards during the first three decades of the 20th century.

³Quoted in Warraich(2003), page 58.

⁴Quoted in Warraich, *ibid*, page 39.

The law as it came into force in 1930, provided for a fine of Rs. one thousand in addition to imprisonment up to one month for adults solemnizing the marriage of a girl under fourteen years of age. In case the groom was above twenty one years of age, he too could be imprisoned. In spite of these provisions, there is reason to doubt the credibility of the penal clause. The fine could hardly be a deterrent if it was considered as just another expense to be incurred in connection with the marriage. Also, it is unclear who would have complained to the authorities against such a marriage. In particular, complaints lodged within one year of the marriage alone were valid. The complainant would have to execute a bond of Rs. one hundred to compensate if the complaint turned out to be false. Women, even if convicted, were not to be imprisoned. Adults solemnizing such a marriage could always argue that they were “under the impression” that the girl was over legal age. In a system with inadequate documentation to prove the actual age, such a claim could easily see such adults through. Thus, the punishment stipulated under the law could hardly be considered a credible deterrent for a determined parent. Indeed, the law has been difficult to implement in spite of amendments to penal provisions over the last seventy five years. The number of cases brought to court for all India as a whole was 85 in 2001, 113 in 2002 and 63 in 2003. These are miniscule numbers given that the practice of child marriage is very wide spread in large parts of India.

The longer term factors that had nothing to do with law were already raising the age at marriage for women even before the enactment of the law, at least upper caste women. Did the law lead to an increase in the age at marriage over and above this long-term change? Did it reduce the

percentage of girls marrying under the age of fourteen beyond what could have happened because of the secular change that was already in progress? Given that the economy has no in-built mechanisms which can help escape the Pareto- inferior equilibrium, why was the age at marriage increasing even before the enactment of the law? These are some of the question explored in this paper. The paper is organized as follows. Section 1 outlines a simple rudimentary model of social criticism that predicts that laws without credible punishment threats will not succeed. Section 2 describes the data used in this study and outlines the test procedure used in this study. Section 3 presents the empirical findings and the conclusion draws lessons for policy.

Section 1

Assume that rational individuals who are altruistic about their daughter's welfare would not like to marry her off unless she reached some threshold age X . Suppose the current practice is to marry off daughters at an age substantially below X . Any parent not doing so is assumed to be sure to face very severe social criticism, which might even lead to social ostracism. One possible fall-out could be that the younger siblings might find it very difficult to find spouses. We can capture this in the following simple game theoretic formulation. We assume that the parent, player 1 in this game, is playing a game against another player (player 2). Both the players have the following two pure strategies : MAA_i = marry daughters off over the age X , MUU_i = marry daughters off under the age X . The players decide on one of the pure strategies in an uncoordinated simultaneous play. Depending upon

Table 2: The Marriage Game

	MUU1	MAA1
MUU2	0,0	0,-3000
MAA2	-3000,0	100,100

the strategy combinations that come about, a judge called “rest of society” awards them payoffs. Suppose the payoffs are given as follows with player 1’s payoff being written first and player 2’s payoffs second:

This is a game very similar to the Palanpur farmers game. In this game, both the parents can become better off by delaying marriage. However, if one does and another does not, then the one who delays receives a very strong negative payoff in terms of social criticism. Note that no single player can unilaterally commit to MAA in a credible fashion.

In this game, there are two Nash equilibria, (MAA1, MAA2) and (MUU1, MUU2). The first is Pareto superior. However, which one will occur depends upon the society’s belief structure. If the (MUU1, MUU2) equilibrium is being played historically, then no one will want to unilaterally deviate from it. Thus, society might remain trapped into this equilibrium, even if all rational agents, who evidently care for their children, are convinced of the advantages of delayed marriage and the drawbacks of early marriage. No single individual can credibly unilaterally commit to the delayed marriage strategy as is clear from the payoffs. Empirically, this was shown by the fact that even an eminent social reformer like Mahadev Govind Ranade was forced to marry a young girl as his second wife, in spite of initially holding that he

would marry an older widow. Under such a situation, nobody wants to be the first to move away from the convention, even when people are convinced of its evils. Female genital mutilation is a convention followed in parts of Africa that can be similarly modeled. Families are looked down upon if they do not mutilate their daughters. People might stick to conventions not because they have a different world view from those who do not, but because they dare not risk being the only people to act otherwise. It is not a matter of culture alone, though culture does create additional stickiness. Even individuals who see the drawbacks of conventions might be forced to stick to them because of the difficulty of coordination.

One way to evolve coordinated movements from the Pareto inferior to Pareto superior equilibria is to legislate such a change. How will a law with a credible punishment mechanism work in the case of the marriage game? It is simply supposed to rule out the possibility of MUU1 and MUU2 being played at all by taking them out of the space of legitimate strategies. This is how the nineteenth century rationalist thinker Gopal Ganesh Agarkar, writing at the end of the 19th century, thought of the potential of legal intervention in this matter. "It is not that only those unaware of the effects of this evil custom get their daughters married before this age; even those who are fully aware of this evil have to start worrying about their children's marriage as soon as their daughters are 7-8 years old or their sons become 12. The moral of the story is that, even though many might be convinced that the convention of child marriage is harmful, they might be doubtful whether others think similarly, and being concerned about their children's welfare, a serious obstacle is created in bringing their thoughts into practice. This

obstacle might be removed by this law. If the law can guarantee that no girl will be married before becoming 10-12 years old and no boy before he becomes 16-17 years old, everybody's concern will be addressed and we will move at least one step ahead." (Agarkar 1994).

A critical determinant of the success of such laws is their ability to preclude (MUU1, MUU2). This will have to entail severe penal clauses and the provision that such marriages, once discovered, are immediately reversed. Indeed, this was one of the provisions of the Sarda bill as it was initially proposed. However, most individuals and organizations thought that recourse too draconian as it was thought to hurt the girl and hence it was deleted from the law as it was finally enacted. In the controversy leading up to the implementation of the bill, issues about whether to legislate on this matter heavily outweighed the discussion about how to actually credibly implement the law. Discussion about the difficulties of enforcement was conspicuous by absence. There were several difficulties in precluding the play of (MUU1, MUU2), that have already been alluded to above. For these reasons, the punishment stipulated under the law could hardly be considered a credible deterrent for a determined parent. This implies that (MUU1, MUU2) would continue to remain the Nash equilibrium associated with the game outlined above.

The analysis so far then leads us to posit the hypothesis that the enactment of the law could not have possibly led to an increase in the age at marriage over and above the increase that was taking place because of other reasons that were not connected with the law. This motivates the following hypothesis:

Hypothesis : If society is stuck at the Pareto-inferior Nash equilibrium in an assurance game, enactment of a toothless law will not move the society to the Pareto-superior Nash equilibrium.

In the next section, we outline a procedure to test this hypothesis.

Section 2

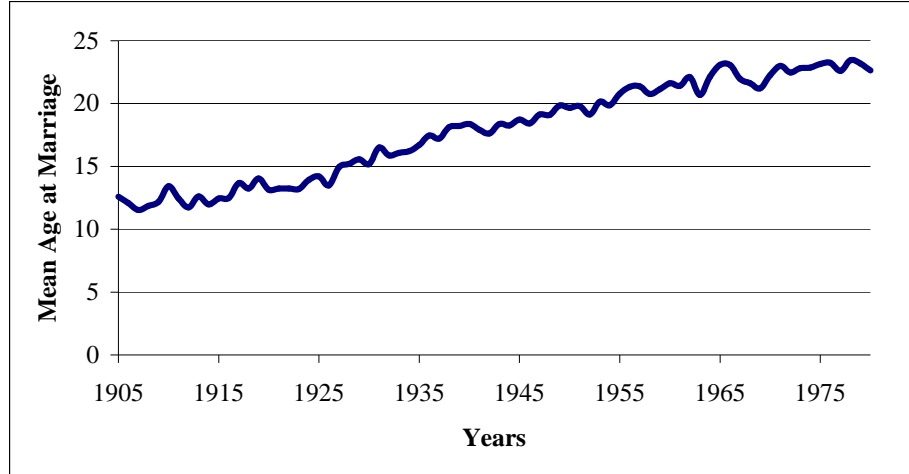
The data that we have used have been collected from various Kulvritantas published by Maharashtrian Brahmin clans over the period 1940 to 1994. The kulavritantas are family genealogies that are mainly concerned with the male lineage. However, some of them do provide us information on women. Typically, the following information on any given woman is found: a) the year of birth, b) the marriage year, c) level of education, if any, d) the dates of birth of male and female children, e) the birth date of the husband and f) father's and husbands occupations and addresses. Our sample is not even remotely representative of the entire gamut of Indian womanhood. We doubt very much whether any such sample can exist. Nevertheless, it is important to keep the salient features of our sample in mind. The households considered in this sample have a much larger proportion of urban households in comparison to the all India average. The level of literacy is also much higher, this being a sample of Brahmin households that have had a strong background of literacy for historical reasons. For example, in 1926-27, in the Bombay Presidency, 9.2 % of "advanced Hindu" girls were under instruction in various communities, as against 1.4 % for intermediate and 0.8% for backward Hindu communities. In 1931-32, these proportions had reached 11.1 % , 1.7

% and 1.0 % respectively. Though much lower than Parsis, Europeans and Anglo-Indians, the numbers for “advanced Hindu castes” indicates the unrepresentativeness of our sample as far as women in general are concerned⁵. As a result of their urban location and higher literacy, these groups are likely to have been more keenly aware of the discussion about the disadvantages of early marriages in particular and women’s status that were going on at that time. There are clear economic status differences too. In the sub-sample of rural households, agriculturist households are typically land owners and there are no landless agricultural workers in the sample. The other rural occupations of husbands and fathers are restricted to teaching, priesthood and shop-keeping. The urban occupational structure is more diverse, with service occupations being predominant. For this reason, it is obvious that our sample is not representative of the all India population.

We collected data on 6200 women born between 1818 and 1960. In this study, we are concentrating on the 2566 women whose year of marriage was t for $t = 1900, 1901 \dots 1980$ and for whom the birth year as well as the year of marriage had been recorded. Thus, we have an average of 31 women whose year of marriage is t for each X . However, the distribution across time is rather uneven. Appendix 1 gives the values the number of observations for each year. Appendix 2 gives the details of the method used by us to estimate the mean age at marriage for each t . We have assumed that the time till marriage follows the Weibull distribution. This distribution is commonly used to model life time data. For example, the time taken for a functioning machine to fail for the first time is typically modeled using the Weibull distribution.

⁵Government of India(1932) page 159.

Figure 1: Estimated Mean Age at Marriage (1905 - 1980)



We have used this distribution to model time till marriage. We have computed the Weibull parameters for each of the years from 1905 to 1980 and then used these parameters to compute the mean age at marriage for each of the years. Since the number of observations for some years before 1905 was very small, we have used the data from 1905 to estimate the parameters.

The steady increase in the estimated age at marriage can be directly seen from the above graph. Our aim is to test if the enactment of the law hastened the process beyond the rate at which the change was already occurring. To do this, we estimate the following regression:

$$\ln(\text{age}(t)) = \alpha + \delta * \text{dummy} + \kappa * t + \eta * t * \text{dummy} + \mu * \ln(\text{age}(t-1)) + \varepsilon(t) \quad (1)$$

where $\ln(\text{age}(t))$ is the natural logarithm of the estimated age at marriage at time t , dummy is a variable which takes values 0 from 1905 to 1929 (the

year in which the Bill was brought before the Constituent Assembly) and 1 thereafter, t is a time index stretching from 1905 to 1980, and ε is the error term. The lagged dependent term has been introduced to take care of autocorrelation. The null hypothesis of no impact of the law over and above the secular change already taking place corresponds to the following restrictions on the estimated parameters:

$$\delta = 0, \eta = 0 \quad (2)$$

We report below the estimated regression:

$$\ln \text{age}(t) = 1.4217 + 0.10823 * \text{dummy} + 0.0064818 * t$$

(6.310) (3.864) (4.657)

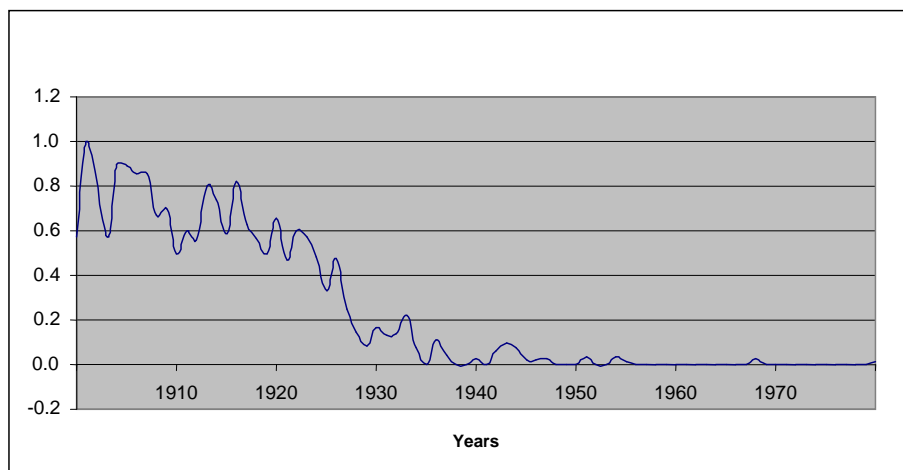
$$-0.002 * t * \text{dummy} + 0.41511 * \ln \text{age}(t - 1)$$

(-1.744) (4.40)

R-bar square = 0.978. Figures in brackets are the estimated t values. All the estimated coefficients are significant at 1%, except the coefficient on the interactive dummy which is significant at 10%.

The restriction implied by the null hypothesis was strongly rejected. The associated F value of the test was 8.75, which was significant at 1% with 2 and 70 degrees of freedom. Since the variance of the estimated mean age depends upon the number of observations used to estimate the parameters, the above regression parameters have to be adjusted for heteroskedasticity (see Appendix 2). The estimated t values therefore are based on Whites' heteroskedasticity consistent variance - covariance matrices. The coefficient on the interactive term is negative, which would seem to be surprising. However if one takes account of the fact that higher the age at marriage, the

Figure 2: Proportion of Girls Marrying Under 14 Years of Age (1900 - 1980)



subsequent growth is likely to be comparatively slower (specially given that the age at marriage seems to have a terminal bound somewhere in the early twenties), the negative coefficient would seem to be less surprising. It should also be noted that this coefficient is significant only at 10 %.

The Sarda Bill sought to prevent marriages of girls under fourteen years of age. It might be instructive to see how the proportion of girls who got married under fourteen years of age to the total marrying in a given year was changing with time. This proportion, shown in Figure 2, is highly relevant to our study because the law only applied to marriages under fourteen years. It was declining in the period before the act came into force, but the decline seems to have much sharper towards the end of the 20's, precisely at the time when the discussion about the act was featuring prominently in the public sphere.

We might be interested in testing whether the percentage of girls who

married below 14 years of age declined after the act came into force. This can be done by replacing the dependent variable in equation 2) with the proportion of girls marrying under the age of fourteen every year, which we will call $\text{propor}(t)$. The restriction 2) will continue to apply as the maintained null hypothesis. In this case too, the t values are based on heteroskedasticity consistent variance covariance matrix. The following is the estimated regression equation:

$$\begin{aligned} \text{propor}(t) = & 0.59519 + 0.38159 * \text{propor}(t - 1) \\ & -0.01499 * t - 0.5261 * \text{dummy} + 0.01394 * t * \text{dummy} \end{aligned} \quad (3)$$

Adjusted R-square = 0.93, all the variables except the interactive dummy, are significant at 1%. This equation implies that the proportion of girls marrying before reaching fourteen years of age in our sample became almost zero after the implementation of the law. Again, restriction 3 is not accepted, the F statistic turning out to be 8.6, significant at 1%.

The law then seems to have worked. This finding is seemingly counter-intuitive given the arguments in section 1. Why did the law work when the model outlined in Section 1 predicts that a toothless law like the Child Marriage Restraint Act was incapable of solving the assurance game? The next section attempts to provide an explanation.

Section 3

We saw that the penal propositions of the Child Marriage Restraint Act, as it came into force in 1930 were not very enforceable. Breaches of legislation were

not observable publicly because no parties to the transaction had an incentive to complain to the authorities. In addition, proving guilt in a court of law might be difficult because the recording systems might be poor. Rational individuals then, even when they care for the well-being of their children, would have chosen the (MUU1,MUU2) equilibrium. Society should have persisted with the Pareto-inferior equilibrium. Contrary to this, we found in section 2 that the enactment of the law increased the age at marriage and helped end marriages of girls under fourteen years of age. In practice, the enactment of the law led to a faster reduction in the proportion of girls marrying below the legal age. Also, the proportion of girls marrying under fourteen seems to have been driven to zero rather quickly after the enactment of the law.

There is evidence that when conventions end, they end rapidly. Mackie (1996) examined the convention of foot-binding among Chinese women which had persisted for centuries in spite of the equilibrium where women have normal feet being superior to all concerned. Mackie argues that the convention emerged through increased resource polarization and the desire of individuals for children which were biologically their own. Feet-binding was an attempt by wealthy polygamous individuals to minimize sexual philandering by their several wives, whereas status maximizing households from lower socio-economic strata evolved an interest in supplying women whose feet were bound. Gradually, conventions emerged which used the size of the foot as a social status marker: "Smaller the foot, better the family". These conventions created belief traps where the affected see their inferior equilibrium as "normal". Such belief traps are common in other contexts too. One of

the effects of genitalia mutilation of women is to make urination difficult. Lightfoot-Klien(1989) reports that to the question about whether urination was difficult, women correspondents answered that urination was “normal”. Yet, the answer to the question about how long does urination take, the answer was “normal...about fifteen minutes”. Such belief traps are typical of Pareto-inferior conventions. All these are societal mechanisms that bolster the Pareto-inefficient equilibria in genitalia mutilating Sudan, foot-binding China or child marrying India. Yet, foot-binding, where it vanished, vanished very quickly in China as shown by Mackie. How does this become possible? In terms of the games in section one, the society has shifted from the Pareto-inferior equilibrium to the Pareto-superior equilibrium.

Generalized increasing returns⁶ refer to a situation where the costs or benefits of engaging in a activity vary directly with the number of people engaged in that activity. For example, if most people are following a convention, then the costs of breaking from the convention might be very high for any single individual, but such costs might fall with the number of people who break from the convention. In some versions of generalized increasing returns, there are two equilibria, one in which everybody follows the norm and another where nobody follows it. This implies that there will be a critical minimum mass of people who are required to break away from the norm in order to set in place a self -propelled move towards the new equilibrium. If the number of people who are convinced that the norm should be broken is less than this number, then no one including the opponents of the norm, will break it. On the other hand, if the number of opponents exceeds this number,

⁶See Bowles(2005), page 6.

no one will follow the norm. Schelling (1978) has been one such influential version.

Does the Schelling model of multiple equilibria and critical minimum mass help us explain the efficacy of the Child Marriage Restraint Act? It seems possible if enactment of the law pushes the number of people who will break the convention beyond the critical mass. Yet, the story with the multiple equilibria model is not particularly suited to our situation since it precludes smooth changes in the number of people choosing delayed marriage. In the multiple equilibria model, either everybody marries early or no-body does. Though the “law pushing the critical mass” is consistent with the disappearance of marriages of girls less than fourteen years of age after the enactment, it is not consistent with the smooth decline in that proportion before the law, nor with a steady increase in the mean age at marriage. We need to explain the rise in the age at marriage that was underway even before the law was enacted.

Another argument that we might profitably examine is that as women’s education improves, the value of educated brides goes up because educated women obtain higher labor market returns. So income maximizing households demand more educated brides, and consequently, bride-supplying households invest more in the their daughter’s education because of competition, thereby delaying marriage. This process could lead to an increase in the age at marriage for women.

It can certainly be argued that the number of Brahmin girls attending educational institutions was expanding rapidly in this period. The number of Brahmin girls attending colleges in Bombay Presidency increased from 106

in 1925 to 201 in 1932. Similarly, the number of girls in secondary schools increased from 1172 to 3256 while those in primary schools increased from 28,464 to 41795 in the same period⁷. But the actual increase in the average levels of education that is observed in our sample is rather small, in spite of a noticeable increase in the absolute numbers. For example, sixty-one percent of women marrying in 1920 were reported illiterate whereas sixty-three percent women marrying in 1930 were reported illiterate. There was just one post-graduate in a sample of thirty women in 1930, as against none in 1920. Even for those who went to school, education upto marathi fourth class seems to have remained the usual level of education. The number of women studying to become lawyers was just one in 1925, which increased to three in 1932. The number of women studying medicine increased from six to twenty-seven in the same period. In terms of professional education, the number of girls had not become large enough to substantially impact the average age at marriage. Labour market returns driving the age at marriage upwards does not look like a plausible hypothesis on this cursory examination of the data. On the other hand, it is possible to argue that the increase in the age at marriage was not because more girls acquired skills that could give them a job. The causality could have run in the opposite direction, as the following observation by the Inspectress of Girl's School, Bombay and Northern Deccan seems to indicate: "The number of older girls attending primary schools has become very noticeable within the last two years. There are various reasons for this, chief of which is I think, the raising of the marriage age. Rather than keep their girls at home doing nothing, parents now send them to school till

⁷Government of India (1932), page 250; Government of India (1925).

it is time to get them married”⁸.

Thus, instead of education raising the age at marriage, the law raising the age at marriage seems to have raised the years of schooling. The higher labour market returns for educated women hypothesis can be rejected simply because there were not that many women in the labour market.

We posit another tentative hypothesis which seems to be more in conformity with the evidence. This is based on a supposed cultural shift in what was regarded on the part of bride demanding households as desirable characteristics of brides. Suppose households regard educated brides as positional, status goods rather than mere economic goods. In traditional society, brides are valued for their chastity. Households wealthy enough to be able to afford losing women’s labour would seclude women and also look for younger and younger women in their search for more and more chaste women. Bride supplying households have an incentive to supply younger and younger brides because of the better socio-economic status that marrying into a high-status family confers. Over the years, this norm becomes entrenched, and moving away from this norm becomes costly for individuals, even when they want to. This leads to the marriage game posited above, captured so well by Agarkar. Now, suppose this society starts getting exposed to Western education and values. Bride demanding households now start demanding more “modern” and “companionate” wives. This starts initially with western educated households that also are able to acquire better socio-economic status as a result of their education. This might reflect a value change in the grooms’ households where younger, more chaste wives are replaced as status goods by more

⁸Government of India (1925), page 165.

“modern” wives. Men’s education might lead them to value educated women more as better mothers and homemakers. As the Education Report 1922-27 states, “The women of India of all communities are rapidly awakening to the urgent necessity of educating their daughters not necessarily for employment or high scholarship but at least to be able to take a more intelligent share as mothers and wives in the training and upbringing of children and in the daily affairs of rural and urban life”⁹. At times, this shift was entwined with the sense of an emerging nationhood. It is easy to find examples of this cultural shift in the literature of the late 20s. For example, the popular domestic magazine “Manoranjan” published a story titled “Grihini Sachivah” in its issue of December 1929 (Kulkarni (1929)). This is a story of a couple where the husband is shown living in a happy paradise with an educated wife who is also an excellent cook and enjoys literature and the theater. He continuously seeks her opinion about literary and artistic matters and feels enlightened. But he keeps her away from all the financial matters. The wife persuades him, very gently, to allow her to look after the financial affairs too, and finally rescues the husband from a long-cheating money lender. The story ends with the plea that all husbands should allow their wives to handle domestic financial matters. It is interesting to note that the discussion about handing over financial control to the wife is couched in the language of the imperial government allowing greater and greater political autonomy to Indian men. National politics and the domestic sphere seem to reflect one another. Indeed, the idea of an emerging nation, and the need to have progeny that is mentally and physically sound also seems to have driven the demand for delayed mar-

⁹Government of India (1929), page 158.

riages. In 1910, Manoranjan invited its readers to give their opinion about the then existing age at marriage. Twenty-four readers replied and at least twenty-three of these readers were in favour of delayed marriages, the most common reason given being the potential harm caused to the nation by the offspring of mentally and physically under-prepared parents. The February and March 1919 issues of this magazine carried two articles, both by highly educated unmarried women. The first was written by Indira Kelkar, a B.A, while the second was authored by Durgabai Nene. The articles reflect the idea that an “ideal” nationhood could only be based on an “ideal” family. Indira outlines a deeply moral project of nationhood, the lynchpin of which is the woman, both in her role as a mother inculcating the appropriate values in children, as well as a wife who is “well matched” with her husband, in the sense of being able to fully participate in the nation-building programme. This, according to Indira Kelkar, could not happen if the wives were too young (Kelkar (1919)).

Partha Chaterjee(1999) has examined the reasons for women’s issues being relatively less prominent in the nationalist movement of the 20th century, as opposed to their significance for the 19th century discourse. Chaterjee argues that in response to colonial criticism of the treatment of women in India, the nationalists embarked on a program of cultural emancipation within the domestic sphere, which in turn was carefully shielded from negotiations with the colonial government. This project required women with new social forms of disciplining:- orderliness, thrift, personal sense of responsibility, practical skills of literacy, accounting, hygiene, an awareness of the outside world, etc, characteristics that were clearly incompatible with very young brides of ten

or twelve years of age.

A cultural shift was then taking place, where older brides would be preferred over younger brides, not because age was valuable per se, but because the new characteristics of an “ideal” bride were not possible to find in girls who were very young. As the conservative leader N.C. Kelkar argued in the Constituent Assembly in a discussion over the Child Marriage Restraint Act, “Women are already our voters; they are appointed to high offices; they can become members of Legislative Councils and ad-hoc Commissions also. Is it right that we should say that they should not have the necessary opportunities for education? And how does education and expansion of education go with early marriage, can any one tell me that?” (Kelkar (1929)). The increase in the age at marriage was then being driven by a cultural shift that involved changing views about conjugal relationships as well as emerging notions of nationhood.

Below, we try to set up a simple formal model that can formalize this processes as it was driving the change in the age at marriage. This model will set the context in which the law operated in a formal manner, rather than explain why the law succeeded when we expected the contrary.

Assume that there are two types of bride demanding households, a “modern” type, m and a “traditional type”, t . The modern type of household values brides with “modern” characteristics, where modern characteristics are those defined by Partha Chaterjee mentioned earlier in this section. Brides not having these characteristics are traditional brides. We assume that bride supplying households want to maximize the value of the kinship networks that they are marrying into, and the kinship value of a bride demanding household

depends on its social standing and its control of economic resources. Given that a girl has crossed a threshold age, at each point t , the bride supplying household has to decide whether to invest more resources into the girl in order to make her more modern, or to marry her off. At any point t , let $n_1(t)$ be the fraction of bride demanding households which are demanding modern brides, and let $n_2(t) = 1 - n_1(t)$ be the fraction of households who are demanding traditional brides.

Let S_m be a composite bundle of modern attributes. Suppose bride supplying households obtain utility by consuming S_m (imbibing their daughters with modern characteristics) and a composite commodity X , where X is a composite of other goods and services. They obtain utility by consuming the modern good partly because they value modernity intrinsically and also because modern daughters are likely to make better matches. Let P_x be the price of X and let $(P_m/n_1(t))$ be the per unit cost of endowing a prospective bride with the modern characteristics at time t . $(P_m/n_1(t))$ here is not only the money cost but the social price that a household has to pay in order to “buy” one more unit of the modern characteristic. The idea is that as $n_1(t) \rightarrow 0$, (very few households are demanding modern characteristics), the social stigma associated with modern characteristics goes up, and in the limit becomes very large, whereas if $n_1(t) = 1$, the cost of buying an additional unit of the modern characteristic equals P_m , where P_m can be thought of as the market price of the modern bundle. This is in keeping with the generalized increasing returns hypothesis of Section 1, but avoids two extreme equilibria, one where everybody follows the convention and another where nobody follows it, as is the case with the Schelling model.

The bride supplying household is solving the following problem for a fixed t :

$$\begin{aligned} & \max U_m(S_m, X) \\ & \text{subject to } P_x * X + P_m/n_1 * S_m = R \end{aligned}$$

where R is the resource endowment of the household. We assume that U_m is a utility function with

$$\frac{\partial U_m(S_m, X)}{\partial S_m} > 0 ; \frac{\partial^2 U_m(S_m, X)}{\partial S_m^2} < 0$$

The first order condition for this problem is:

$$\frac{\partial U_m(S_m, X)}{\partial S_m} = \theta P_m/n_1$$

where θ is the Lagrange Multiplier. The concavity of U_m in S_m implies that as n_1 goes up, S_m must also increase.

It has been shown from the above problem that the consumption of modern attributes increases with n_1 . Essentially what happens is that an increase in n_1 acts as a reduction in the “price” of the modern attribute, keeping everything else constant.

We have argued above that a greater consumption of the modern attributes by the household is associated with a greater than average age at marriage. Modern attributes can be imbibed only before marriage because they are a part of the preparation for marriage. Consuming modern characteristics takes time. Let $\bar{X}(t)$ be the average age at marriage at time t . Then the dependence of the age at marriage $X(t)$ on the consumption of modern

attributes $S_m(t)$ can be modeled by the following equation:

$$X_i(t+1) = \begin{cases} \bar{X}(t) + \lambda * \frac{\partial S_m(t)}{\partial t} & \text{where } \lambda > 0 \text{ if } \frac{\partial S_m(t)}{\partial t} > 0 \\ X_i(t) & \text{otherwise} \end{cases} \quad (4)$$

This equation implies that the i -th household will wait longer than the average if $\frac{\partial S_m(t)}{\partial t} > 0$, the age at marriage for the i -th household must go up and therefore the average age at marriage must go up.

This allows us to motivate a smooth increase in the age at marriage. As more and more bride demanding households look for modern brides, the supply response of the bride supplying households requires that they wait longer to marry off their daughters.

The working of the Child Marriage Restraint Act can now be better understood. There was already a slow movement towards relatively later marriages. For a given household, the probability that others will shift towards later marriages was now increasing. This is the crucial change that took place between the time Agarkar wrote his remarkable piece (the last decade of the 19th century) and the end of the 1920s. The standards of legitimacy had undergone a sea change. In fact, as the Report of the Select Committee on the age of consent demonstrated, nearly 45% of the girls were already marrying at ages over fourteen. The fear of having to make a unilateral shift by playing the MAA strategy was far less realistic in the late 20s. Given the changed cultural context, marriages at age below fourteen must have been seeming more and more against the current even to the conservatives who still held on to early marriages. N.C. Kelkar, himself a conservative, referred to groups who married their daughters under ten years of age as “ignorant” and “uneducated”. He argued that even hard core conservatives like Madan

Mohan Malaviya and Kumar Ganganand Sinha should have no hesitation in coercing such groups by law. Given the cultural shifts that we have outlined in the earlier sections, such groups were losing status even in the eyes of the conservatives. The law was then the last push that these groups needed. The law succeeded because it was legitimizing a social change that was already compatible with the changing incentives of the players involved.

Conclusion

We have seen how a law that lacks serious penal provisions can work if the appropriate cultural changes are taking place. The cultural transformation was rather strong and even without the law, strategies like MUU had begun to seem outdated. The law provided legitimacy to delayed marriages and must have helped push at least some of the remaining conservatives over the bridge. In fact, such was the desire to be on the right side of the law that the Times of India reported on 7th December 1929: “Before the date on which the Child Marriage Act comes into force, thousands of child marriages will have been solemnized . . . Every street and by lane is decorated with pandals and marriage festivities are in progress. The Golas, Ghanchis, Kacchias and even Muslims, all display an anxiety to celebrate the marriage in their household as soon as possible.” The analysis of this paper draws attention to one possible way out of the assurance game. Even if unilaterally no one wants to move out of the Pareto-inferior equilibrium and coordinated moves are difficult to achieve, a combination of cultural shifts and legislation might help in shifting to the Pareto superior equilibrium. Undesirable conventions can be

eradicated by persistent talk about their “undesirability”, in combination with legislation outlawing them. Persistent propaganda can be successful since it might bring generalized increasing returns into operation. Economists would generally underplay the significance of cultural shifts and ideological persuasion in favour of market incentives. In contrast, the analysis of this paper shows that cultural shifts can move societies towards Pareto efficient outcomes. Cultural shifts can be bolstered with economic incentives whenever possible. For example, in Palanpur, it might be possible to give early sowers some insurance against bird damage. At the same time, propaganda and persuasion, in order to generate the appropriate cultural shift should not be underestimated. The data in the present study refer to reasonably literate and relatively more urbanized groups. These sections of the society were very aware of the debates that were going on as the protagonists were opposing or supporting the bill. Newspaper readership was relatively higher. Perhaps it helps if the society to which the laws are going to apply is relatively more literate and is at least aware of the law being enacted. The fact that our sample is predominantly urban would also have helped because urban areas were the sites where the battles for and against ranged. Yet, it seems that literacy comes into the picture in a far more complex manner than hitherto thought. The particular social position of the group that we have dealt with in this paper was important in the final analysis. In our case, education worked through changing preferences of bride demanding households and the responses of bride supplying households. In a sense, the very lack of representativeness of our sample points to an important thing: literate, urban groups are perhaps more likely to move away from the Pareto inferior Nash

equilibrium to the Pareto superior one because they are more capable of achieving a coordinated shift.

Appendix 1

We give below the number of observations for each year that were available for estimating Weibull parameters.

Table 3: Sample Size Frequency Distribution by Year

Year	Observations	Year	Observations
1905	9	1943	50
1906	7	1944	39
1907	14	1945	51
1908	12	1946	46
1909	10	1947	39
1910	6	1948	49
1911	5	1949	41
1912	9	1950	42
1913	11	1951	30
1914	19	1952	38
1915	12	1953	42
1916	17	1954	30
1917	8	1955	63
1918	16	1956	45
1919	14	1957	34
1920	23	1958	44
1921	15	1959	42
1922	20	1960	45
1923	21	1961	35
1924	25	1962	50
1925	24	1963	40
1926	21	1964	52

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Year	Observations	Year	Observations
1927	8	1965	40
1928	27	1966	52
1929	24	1967	60
1930	30	1968	35
1931	15	1969	50
1932	22	1970	55
1933	9	1971	35
1934	26	1972	59
1935	20	1973	59
1936	18	1974	52
1937	23	1975	65
1938	30	1976	67
1939	18	1977	62
1940	35	1978	64
1941	34	1979	67
1942	46	1980	76

Appendix 2

We assume that for each t , the age till marriage is a continuous random variable following the Weibull distribution, viz;

$$f(t) = \lambda\beta(\lambda t)^{\beta-1} \exp(-(\lambda t)^\beta) \quad (5)$$

where $t > 0$ is the time till marriage and $f(t)$ is the probability density of t . In general, the Weibull distribution is used to model the time till failure of a unit under observation. We have used it to model time till marriage. The Weibull distribution has the feature that the conditional probability that unit fails at time t given that it has not failed so far increases with the

length of time lapsed till failure. β is called the “slope ” parameter, which indicates the manner in which the probability of marriage at a particular point in time increases with time. λ is the location parameter, the effect of a change in which is to change the scale of the distribution on the horizontal axis. We estimated these parameters for each of the years from 1906 to 1980, so that we have 74 values for each. The parameters were estimated by maximizing the likelihood function generated using the pdf in equation 5 following Lawless(2003). In the table 4, we give the estimated values of beta, lambda and the estimated mean age at marriage for each of the years from 1905 to 1980.

Table 4: Estimated Parameters of the Weibull Distribution and Mean Age at Marriage

Year	Beta (β)	Lambda (λ)	Age at Marriage
1905	3.18	0.071	12.60
1906	5.40	0.076	12.09
1907	6.60	0.081	11.53
1908	4.30	0.077	11.85
1909	7.40	0.077	12.18
1910	6.70	0.069	13.43
1911	4.60	0.073	12.45
1912	4.90	0.078	11.73
1913	7.50	0.074	12.61
1914	7.60	0.078	11.98
1915	6.90	0.075	12.44
1916	3.90	0.072	12.49
1917	10.40	0.070	13.66
1918	4.05	0.068	13.24
1919	3.30	0.064	14.03
1920	4.00	0.069	13.14
1921	12.50	0.073	13.23

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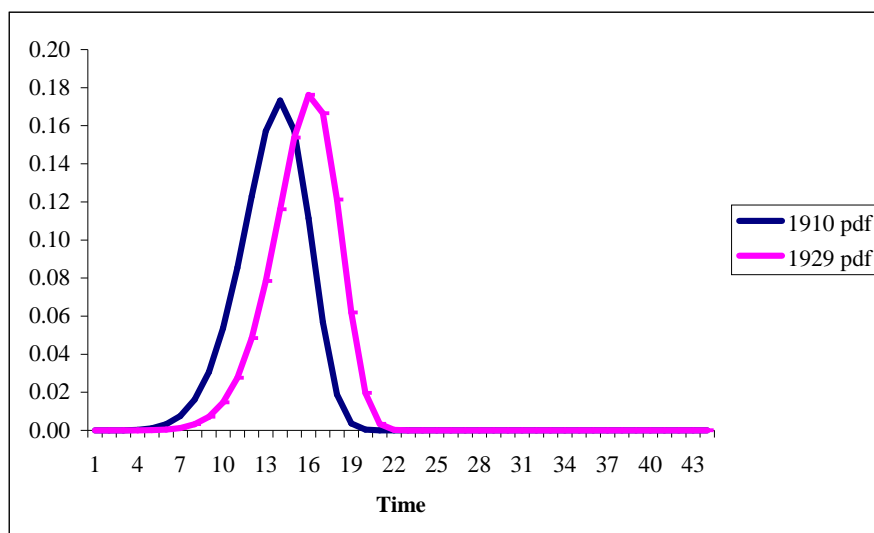
Year	Beta (β)	Lambda (λ)	Age at Marriage
1922	9.00	0.072	13.24
1923	5.50	0.070	13.20
1924	3.70	0.065	13.94
1925	4.70	0.064	14.21
1926	7.20	0.069	13.49
1927	7.20	0.063	14.96
1928	9.70	0.063	15.20
1929	7.90	0.060	15.56
1930	7.85	0.062	15.18
1931	10.10	0.058	16.51
1932	5.95	0.058	15.88
1933	8.00	0.059	16.08
1934	8.70	0.058	16.22
1935	7.80	0.056	16.70
1936	5.65	0.053	17.47
1937	6.70	0.054	17.22
1938	5.55	0.051	18.14
1939	4.80	0.050	18.21
1940	6.50	0.051	18.37
1941	5.40	0.051	17.91
1942	6.60	0.053	17.63
1943	7.18	0.051	18.37
1944	4.95	0.050	18.26
1945	6.05	0.050	18.73
1946	5.30	0.050	18.43
1947	6.70	0.049	19.14
1948	6.90	0.049	19.09
1949	7.15	0.047	19.84
1950	7.90	0.048	19.66
1951	5.75	0.047	19.80
1952	5.84	0.048	19.14
1953	7.57	0.047	20.15
1954	9.70	0.048	19.86
1955	7.30	0.045	20.77
1956	7.70	0.044	21.34

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Year	Beta (β)	Lambda (λ)	Age at Marriage
1957	9.00	0.044	21.37
1958	7.80	0.045	20.77
1959	7.30	0.044	21.14
1960	6.35	0.043	21.62
1961	8.50	0.044	21.41
1962	5.85	0.042	22.10
1963	6.65	0.045	20.67
1964	5.30	0.042	22.13
1965	4.90	0.040	23.08
1966	5.00	0.040	23.06
1967	4.13	0.041	21.96
1968	4.40	0.042	21.61
1969	7.70	0.044	21.21
1970	6.70	0.042	22.24
1971	5.40	0.040	23.01
1972	4.95	0.041	22.46
1973	4.76	0.040	22.82
1974	6.50	0.041	22.86
1975	5.25	0.040	23.15
1976	5.15	0.040	23.25
1977	7.00	0.041	22.60
1978	4.71	0.039	23.46
1979	7.00	0.040	23.19
1980	7.20	0.041	22.63

Given the Weibull pdf in equation 5, the mean age at marriage at time t is obtained as $\frac{1}{\lambda}\Gamma(1 + \frac{1}{\beta})$ where λ and β are the parameter estimates for that year. The estimated mean age at marriage is shown in Figure 1 in the main text. Once these parameters are estimated, we can compute the pdf for age at marriage for each of the years under consideration. As an illustration, the graph below shows two such estimated pdfs for the years 1910 and 1929. The

Figure 3: Weibull pdf for Age at Marriage



1929 pdf lies to the right of the 1910 pdf, indicating a change in the location parameter. This implies that between 1910 and 1929, the probability of marriage had fallen for all years upto 15 (the point where the two curves cross) while probability of marriage above 15 increased. The slopes of the two pdfs are not dramatically different over the years. Indeed, the increase in the age at marriage has corresponded to a rightward shift of the pdf and not its slope or the hazard rates. The hazard rate gives the probability of marriage at a given time t . It should be noted that for some of the years, the sample points are rather few; for example, for 1910, 1911 and 1912 they are 10, 11 and 9 respectively. Though the maximum likelihood estimates are consistent, given the small size of the sample points in years such as these, a considerable uncertainty would attach to the estimates for these years. The problem can only be solved by finding more observations for these years.