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Education in India**

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# Empowering Women: Inheritance Rights and Female Education in India

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## Abstract

This paper examines the impact of property inheritance rights on education of women. Using plausibly exogenous variation created by amendments to female inheritance laws in India, I find that exposure to improved inheritance rights increased mean female educational attainment by approximately one additional year. I also provide suggestive evidence that the mechanism behind such an effect may be explained by the existence of complementarity between female inheritance rights and education in the context of household property management rather than by a relaxation of the household budget constraint owing to reduction in dowry payments following the reform.

*Keywords:* Property rights, education, gender, dowry.

*JEL Classification:* O12, K11, I21

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# 1 Introduction

The role of property rights in the process of economic development has been well-emphasized in the economic literature (North, 1990; De Soto, 2000; Besley, 1995; Banerjee, Gertler, and Ghatak, 2002; Field, 2007; DiTella, Galiani, and Schargrotsky, 2007). Property rights, through their impact on distribution of wealth, patterns of production as well as development of markets, especially credit markets, have evolved as one of the prerequisites of economic growth and poverty reduction (Besley and Ghatak, 2009). The primary focus of this literature has been to study the impact of property rights on physical investment, but the role of property rights in the context of human capital investment is relatively under-researched. Moreover, most of the existing research remains gender-neutral, with little attention to the salience of property rights for women. This paper attempts to fill these gaps by studying the impact of property rights, particularly inheritance rights, on the human capital investment of women.

The principal methodological problem faced in estimating the causal impact of property rights at the household level is that of potential endogeneity. There could be unobserved heterogeneity at the household level correlated with both female education and female property rights that may generate spurious results. For example, gender progressive parents may be more likely to invest in their daughters' education as well as give them greater rights to family inheritance. This could lead to the classic omitted variable problem that would bias the estimates of the impact of female property rights on education of women. A second complication in this regard may arise due to measurement error as it is often difficult to obtain appropriate measures of female property rights due to the fact that women in many societies lack formal titles to property (Deere and Leon, 2003; Sweetman, 2008). This may introduce further biases in the estimates of the causal impact of female property rights on female education.

To address these problems, this paper exploits plausibly exogenous variation created by a legislative change in the female inheritance law of India to evaluate the impact of improving property inheritance rights of women on their education. Like most personal laws

in India, property inheritance laws too vary by religion. The fundamental law governing present day inheritance rights of four religious communities i.e. Hindus, Buddhists, Jains and Sikhs, called the Hindu Succession Act of 1956, was designed to lay down a law of succession whereby sons and daughters would enjoy equal inheritance rights. In fact, however, significant gender inequalities persisted that disadvantaged the daughter considerably. The main source of bias came from joint family property, to which sons enjoyed right *by birth* to an independent share but daughters did not. Both had equal rights of inheritance to the separate property that their father accumulated during his lifetime. But, due to the fact that a considerable amount of property, especially land in rural areas, is still jointly owned, such biased rights had a crippling effect on the property ownership of women in India.

The first attempts at amending this law came from five Indian states, namely Andhra Pradesh, Tamil Nadu, Kerala, Karnataka and Maharashtra, between late 1970s and early 1990s, which granted daughters equal share in the joint family property just like their brothers (Agarwal, 1994).<sup>1</sup> The amendments stated that women who were unmarried at the time the reform was passed in their state could benefit from the new improved rules of inheritance, and applied only to Hindus, Buddhists, Jains and Sikhs, but not to Muslims, Christians, Parsis and Jews.

The identification strategy in this paper uses the fact that exposure to the improved inheritance rights regime was jointly determined by state of birth and year of birth. Not only did a woman have to be born in a state that passed the reform, she also had to be of school-going age when the reform was passed in her state for it to have any impact on her schooling decisions. Hence, I identify the causal effect of the reform, which I argue is exogenous<sup>2</sup>, by comparing mean educational attainment of women who were young enough to be exposed to the reform (“treated” group) to those who were too old (“control” group), between reforming and non-reforming states. The identifying assumption is that in the absence of the reform, the change in female educational attainment across cohorts would not have been systematically different in reforming and non-reforming states. Similar

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<sup>1</sup>Details regarding each state amendment is available in “The Hindu Succession Act 1956, with State Amendments (Bare Act)”.

<sup>2</sup>Concerns regarding the potential endogeneity of the reforms is addressed in section 4.1.

strategies have been used by Duflo (2001), Card and Krueger (1992), Lemieux and Card (2001) etc. to estimate the effect of education on earnings.

I use household level data obtained from multiple waves of the National Family and Health Survey of India (NFHS) for my analysis on female education. In these surveys, women aged 15-49 are interviewed on a number of socioeconomic and demographic dimensions, including age and educational attainment, which enables me to construct groups of women with varying degrees of exposure to the reform depending on their year of birth and state of residence.<sup>3</sup>

The primary finding of this paper is that an improvement in female inheritance rights was associated with an increase of approximately one additional year of education (an increase of around 26 % relative to the overall sample mean of 3.83 years) for the cohorts of women who were of primary school-going age at the time of the passage of reform. Moreover, this effect is only observed for Hindu, Buddhist, Sikh and Jain women, to whom the law applied, and not for Muslim, Christian, Jew or Parsi women who are governed by separate personal laws. In addition, no effect is observed for cohorts that were 16 years or older at the time of the reform, suggesting that the findings are less likely to be driven by correlated unobservables.

This paper also attempts to shed light on the mechanism behind the observed effect of the inheritance rights reform on female education. There could be two potential channels: the first channel is that greater female inheritance rights may increase the relative “attractiveness” of women in the marriage market and substitute for other dimensions of bridal value i.e. social status, beauty etc.<sup>4</sup> In the presence of strong preference for brides with inheritance, competition among grooms may lower dowry payments demanded from such brides.<sup>5</sup> This relaxes the bridal household’s budget constraint and, under the assumption that parents want to send their daughters to school and are only prevented by their budget

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<sup>3</sup>There may arise concerns regarding the endogeneity of state of residence in relation to migration, but as section 3.2 argues later, the extent of inter-state migration in India is very low.

<sup>4</sup>A groom’s family is likely to place a higher value on a potential bride if she stands to inherit property from her parental family, owing to the obvious future financial implications of such inheritance for the groom’s family.

<sup>5</sup>Dowry payments, which represent a form of transfer from the bride’s family to the groom’s family, constitute an integral component of marriage in many traditional societies, in particular India.

constraint, an expansion of female inheritance rights may stimulate greater investment in the education of daughters.

An alternative channel may be that an increase in female inheritance rights may provide parents with direct incentives to invest more in the education of their daughters, owing to the complementarity between education and female inheritance rights in relation to household property management, that directly affects their future household income. In order to disentangle the mechanism at work here, I study the effect of the inheritance rights reform on dowry payments of these women made at the time of their marriage. If the effect of the reform on female education operates through the dowry channel, then one should observe dowry payments to decline for the cohorts of women that were of marriageable age at the time the reform was passed. Since these women were too old to go to school at that time, the complementarity channel does not apply in their case, which allows me to identify the effect of the dowry channel. Using individual level data obtained from the Rural Economic and Demographic Survey (1999), I find no impact of the reform on the mean dowry payments paid by the cohorts of women who were of marriageable age at the time of the reform, which rejects the dowry channel. On the other hand, cohorts of women who were of primary school-going age at the time of reform paid significantly lower dowries. This implies that improved female inheritance rights did not reduce dowry payments for the cohorts of women whose education was not affected by the reform, indicating that the effect goes through education to dowries which, in turn, provides suggestive evidence in favour of the complementarity channel.

However, it is important to point out that the above results cannot be claimed to provide conclusive proof against the dowry channel if it was the case that knowledge regarding the reform was not well-disseminated immediately after its enactment. Moreover, the above approach of identifying the underlying mechanism also assumes that the dowry response to the reform is the same across different cohorts of women. If later cohorts exhibited differential effects on dowry payments following exposure to the reform compared to earlier cohorts, then too the above result cannot be taken as conclusive refutation of the dowry channel.

This paper lies at the intersection of two literatures. First, several scholars have focused on the role of property rights in enhancing investment incentives in agricultural land (Banerjee, Gertler, and Ghatak, 2002; Besley, 1995) etc., residential investment (Field, 2007), entrepreneurial investment of retained earnings (Johnson, McMillan, and Woodruff, 2003) etc. To the best of my knowledge, this paper is one of the first attempts to explore the impact of property rights on human capital investment, within the specific context of inheritance. The only other paper that is related in this context is Deininger, Goyal, and Nagarajan (2010), who study the impact of the Hindu Succession Act Amendment (1994) in the Indian states of Maharashtra and Karnataka on women’s ability to inherit land and their socio-economic status, proxied by age at marriage and education. Exploiting micro-level variation in the timing of the death of the father, Deininger, Goyal, and Nagarajan (2010) find that following the reform, the likelihood of women inheriting land in their parental household increased significantly relative to their brothers in these two states. In that sense, my paper is complementary to Deininger, Goyal, and Nagarajan (2010) as it builds on their findings by providing evidence at the all-India level that the reform led to an increase in the average educational attainment of women, which may be understood as a direct fall-out of their improved ability to inherit parental property, via the complementarity channel discussed above.

This paper also relates to the literature on dowry and marriage markets. A number of papers focus on the role of dowry as a spot price that clears the marriage market characterized by assortative wealth matching (Becker, 1981; Anderson, 2003, 2007; Rao, 1993; Edlund, 2001). Dowry is also looked upon as a “pre-mortem” bequest (Anderson, 2004; Goody, 1973). In this context, it has been argued that change in the environment for producing bridal wealth, in the form of labour market expansion, may lead to reduction in prevalence of dowry (Botticini and Siow, 2003). My paper fits well with such a line of argument as it shows that a legal reform in inheritance rights can serve as an alternative way of increasing bridal wealth, with similar consequences on dowry payments.

The remainder of the paper is organized as follows: Section 2 describes the institutional background of Hindu inheritance law in India. Section 3 outlines the data and identification

strategy. Section 4 presents results on female education, while Section 5 discusses possible mechanisms behind the observed effect by looking at dowry payments. Section 6 looks at the impact of the reform on male education. Section 7 concludes.

## 2 The Institutional Background

### 2.1 The Hindu Personal (Inheritance) Law

As mentioned earlier, the laws for inheritance of property in India differ by religion. The inheritance rights of Hindus are governed by the Hindu Succession Act (HSA) of 1956, which also governs the rights of Buddhists, Jains and Sikhs.<sup>6</sup> The Act was built on the foundation of ancient legal doctrines that have prevailed in India since the 12 century A.D., and purported to lay down a law of succession that gave equal rights of inheritance to sons and daughters. In fact, however, significant gender inequalities remained.

A key feature of the legal structure of Hindu inheritance in India is the distinction between “joint family property” and “separate property”.<sup>7</sup> Generally speaking, joint family property “consists principally of ancestral property (that is, property inherited from the father, paternal grandfather or paternal great-grandfather), plus any property that was jointly acquired or was acquired separately but merged into the joint property”. Separate property, on the other hand, “includes that which was self-acquired (if acquired without detriment to the ancestral estate) and any property inherited from persons other than father, paternal grandfather or paternal great-grandfather” (Agarwal, 1994, p. 85-86).

According to the Hindu Succession Act of 1956, daughters of a “Hindu” male dying intestate (i.e. without leaving a will)<sup>8</sup> were equal inheritors, along with sons, of only their

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<sup>6</sup>These religions are considered to be offshoots of Hinduism and hence are looked upon as being “Hindu-like” religions.

<sup>7</sup>The joint family here is a legal concept and need not coincide with the joint residence or any other aspect of a common household economy that may be implied in a sociological use of the term (Agarwal, 1994).

<sup>8</sup>According to Deininger, Goyal, and Nagarajan (2010), the proportion of people who die without making a will in India is very high (around 65%, and probably even higher in rural areas), suggesting that the Hindu Succession Act is what ultimately determines inheritance patterns within the family. Deininger, Goyal, and Nagarajan (2010) also point out that the amendments to the Hindu Succession gave females an independent share in the household property that could not, in any case, be willed away. See Section



father's separate property and his "notional" portion of joint family property, but had no direct inheritance rights to joint family property itself.<sup>9</sup> Sons, on the other hand, not only inherited their share of the father's own property and his "notional" portion of joint family property, but also had a direct right *by birth* to an independent share of the joint family property. In fact, all persons who acquired interest in the joint family property by birth were said to belong to the "Hindu coparcenary", which is conceptually similar to an exclusive male membership club in relation to the issue of inheritance to which women had no access.

In addition to inheritance, sons could also demand partition of the joint family property while daughters could not. E.g. if the joint family property was a dwelling house, sons (as part of the coparcenary) could demand a partition of the same but daughters were only allowed right of residence but no right of ownership or possession. Hence, the HSA 1956 was by no means a gender neutral law.<sup>10</sup>

In order to elaborate, I explain the scenario using a simple example. Let us consider a family consisting of a grandfather and his two sons, Son 1 and Son 2 (see Figure 1). It is assumed that the family line begins with the grandfather, such that he has no predecessors. The first son has a son of his own (Grandson 1) as well as a daughter (Granddaughter 1), while for simplicity, I assume the second son is childless. The ancestral/joint family property owned by this family is say 1 acre, and nobody acquires any additional property during his/her lifetime i.e. "separate" property of any individual is zero (for simplicity).

The process by which inheritance rights to this ancestral/joint family property will be determined in this family is as follows (see Figure 2):

During the lifetime of the Grandfather, he himself along with his two sons, Son 1 and Son 2, each have a share of a third in the ancestral property each (panel A of Figure 2). Moreover, Son 1 shares his third equally with his own son, Grandson 1, since the latter is

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2.2 for further details on this point.

<sup>9</sup>The "notional" portion of a person's share in the joint family property would be ascertained under the assumption of a "notional" or hypothetical partition of that property, as if the partition had taken place just before his death.

<sup>10</sup>In case of a Hindu woman dying intestate, all her property devolves equally upon her sons and daughters and husband, if alive. If she has no children or other heirs with first right to her property, then the property devolution takes place according to the source of acquisition.

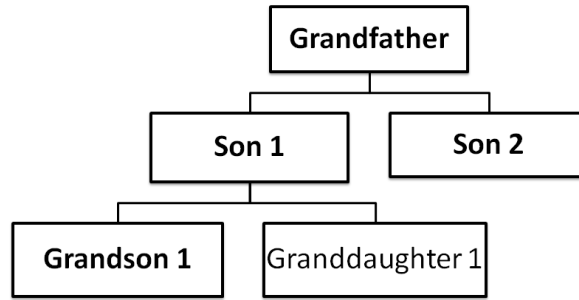


Figure 1: Ancestry

a member of the male coparcenary (along with his grandfather, his father and his uncle in this example) and hence has a right by birth to an “independent” share to joint family property (panel B). Hence Son 1 directly gets a sixth of joint family property as a male coparcener. Granddaughter 1, on the other hand, does not get any share of the joint family property directly.

Now when Grandfather 1 dies (panel C), his share of a third gets split equally between his two living sons, Son 1 and Son 2, such that Son 1’s share (as well as Son 2’s) now increases to a sixth (his coparcenary share) plus another sixth (inherited from his father), which totals to a third<sup>11</sup>. Then when Son 1 dies (panel D), his total share is split equally between Grandson 1 and Granddaughter 1, i.e. each get a sixth. So, ultimately, Granddaughter 1 is entitled to a share of one-sixth (inheritance from her father) while her brother, Grandson 1, not only gets that one-sixth (inheritance from his father) but an additional one-sixth which is his coparcenary share. Thus Grandson 1’s final share is one-third, which is double that of his sister.

Hence, it is apparent that the daughters suffered from discrimination in terms of inheritance under the Hindu Succession Act.<sup>12</sup>

<sup>11</sup>The grandfather, or for that matter any ancestor, does not actually have to *die* for for this so-called “partitioning” to be made: the inheritance shares are decided in a “notional” sense, as described in footnote 9 in page 8 earlier.

<sup>12</sup>Various explanations have been put forward to explain the historical existence of unequal rights to inheritance for males and females in India. One view is that “the absence of daughters right of inheritance to natal (parental) family property stems from the notion of “temporary” membership of women in their natal home and the transfer of control over their sexuality, fertility and labour to a different lineage” (Kramarae and Spender, 2000). An alternative view, due to Botticini and Siow (2003), argues that this is

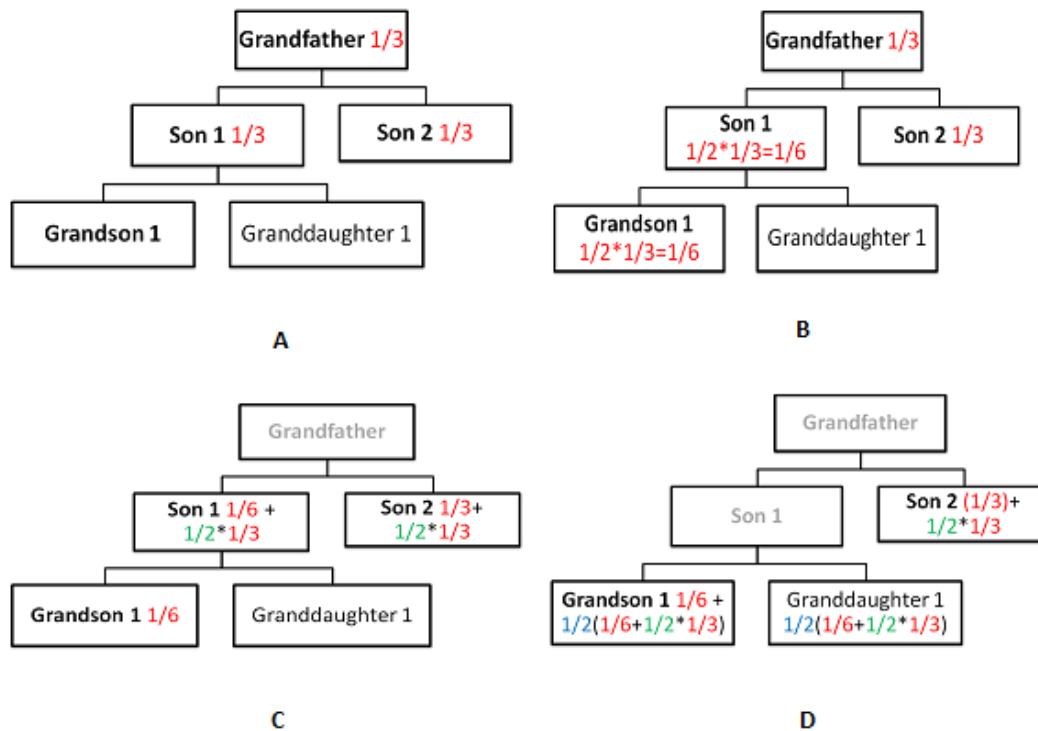


Figure 2: Ancestry

The reason why such gender inequality in inheritance rights becomes an important issue is due to the potential threat of disinheritance that daughters may be exposed to as a result. E.g., if a father renounced his rights in the coparcenary property or converted his separate or self-acquired property into coparcenary property, his daughters would be unjustly penalized, but not his sons. Similarly, after partition of the coparcenary, if the father made a gift of or willed his share in the coparcenary to his sons, the rights of his female inheritors would again be defeated. Moreover, for the millions living in rural India, the most common form of property is land that is typically family-owned, which makes the gender bias in inheritance rights quite a significant phenomenon. Thus the law, by excluding the daughter from participating in the coparcenary ownership of ancestral property, not only discriminated against her on grounds of gender, but also led to a negation of her

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reflective of parents' attempt to solve a free-riding problem between siblings in a *virilocal* society (where married daughters leave their parental home to live with their husbands' family but married sons do not), whereby parents give bequests to sons in the form of inheritance rights to household property but exclude daughters, paying them dowry instead (as a form of pre-mortem bequest) at the time of their marriage.

fundamental right of equality as guaranteed to her by the Indian Constitution (Ramanujam, 2005).

## 2.2 State Amendments to the Hindu Succession Act

The topic of inheritance in India is a “concurrent” one, i.e. one over which both the central and the state governments have legislative authority. Thus, some of the states have subsequently amended the HSA 1956. In particular, Kerala amended in 1976, Andhra Pradesh in 1986, Tamil Nadu in 1989, Maharashtra and Karnataka in 1994, following which daughters were granted *independent* inheritance rights and the right to a share by survivorship in joint family property, equal with their brothers, but only if they were unmarried at the time of the reform.<sup>13</sup> Such a reform opened up the entry of women into what had till now been an exclusively male preserve. Joint coparcenary for women now meant that their shares in ancestral property would be held intact even if they were disinherited from their father’s own property in his will, due to the fact that the father has testamentary rights, i.e. right to make alterations via will, to only his separate and “notional” share of joint family property, but no right to infringe on the the share of other members of the coparcenary, which after the reform included his daughters as well. These state amendments thus sought to, at least partially, redress the concern of gender bias inherent in the original central law, and I exploit these amendments as a form of “natural experiment” to study the impact of female inheritance rights on female education in India.

However, just because a law is amended does not necessarily imply that it will be well-enforced, as is evident from the continued prevalence of dowry in India despite its official abolition in 1961. Hence, it is important to examine the extent to which the inheritance rights reform was implemented in the reforming states and whether it actually had any discernible effect on women’s share of inheritance. Indeed, Deininger, Goyal, and Nagarajan

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<sup>13</sup>Kerala passed a slightly different amendment in the form of the Kerala Joint Hindu Family System (Abolition) Act that recognized all family members with an interest in the undivided family estate as being independent full owners of their shares from then onwards, i.e. abolished joint family property altogether. But since the spirit of this amendment was similar to those passed by the other reforming states, and could be expected to favourably affect the inheritance of the daughter, I club them together. However, as discussed later in section 4.1, the findings of this paper are robust to the exclusion of Kerala.

(2010) find that women who were affected by the reform were 22 percentage points more likely to inherit land compared to those who were not, which indicates a significant impact of the amendments to HSA 1956 on women’s likelihood of inheriting land. My dataset, however, does not contain information on actual shares of property inherited by individuals, hence the analysis presented here will be in the spirit of “an intention to treat”, i.e. the potential of individuals (in this case, women) to inherit, rather than actual increase in inheritance. However, I argue that it is indeed more relevant to examine the effect of “potential” rather than “actual” inheritance since schooling decisions that parents take for their daughters respond to what they perceive their daughters’ share of inheritance is going to be following the reform, rather than what it finally is after the actual partition of the property.

### 3 Data and Identification Strategy

#### 3.1 Data

To measure the impact of the inheritance rights reform on female education, I use data from multiple rounds of the National Family Health Survey of India (NFHS) conducted in 1992, 1998 and 2005.<sup>14</sup> The NFHS is designed along the lines of the Demographic and Health Surveys (DHS) that have been conducted in many developing countries around the world, and are repeated cross-sections.

The NFHS surveys, which are representative at the state level and have an overall response rate of 98 percent, contain detailed information, including educational attainment, on ever-married women in India aged between 15 and 49 years. 29 states of India are covered in the sample.<sup>15</sup> However, the Hindu Succession Act (1956) did not apply to Jammu and Kashmir (Agarwal, 1994). Hence I drop that state in my analysis and are left with 28

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<sup>14</sup>The NFHS is carried out by the Ministry of Health and Family Welfare, Government of India.

<sup>15</sup>The 3 newest states of India, i.e. Chattisgarh, Uttarakhand and Jharkhand, were created in 2000, out of Madhya Pradesh, Uttar Pradesh and Bihar respectively. They are part of the NFHS wave of 2005, but not of the waves of 1992 and 1998. Additionally, Sikkim is not a part of the 1992 wave. Smaller Union Territories like Lakshadweep, Andaman and Nicobar Islands, Pondicherry etc. are also excluded.

states.

I first focus on women who are wives of the head of the household and who were at least 23 years of age at the time of survey (this ensures that women in the sample have completed their education).<sup>16</sup> There are 138,675 such women in my sample, with year of birth spanning 1943 to 1983.<sup>17</sup> Summary statistics are presented for this sample in Table 1, Panel A. Average level of education for the entire sample is 3.83 years of completed education (6 years of education correspond to completion of primary school), while average age at marriage is 17.5 years. I also look at the sample of women who are daughters of the head of household, who were at least 18 years of age at the time of survey in order to conduct robustness checks.<sup>18</sup> There are 41,393 such women in my sample, with year of birth spanning 1943 to 1986.<sup>19</sup> Summary statistics for this sample of women is presented in Table 1, Panel B. Average level of education for these women is 7.86 years, greater than their mothers, which indicates that educational attainment among women has been increasing over time.

The NFHS dataset asks in which year the woman was born as well as in which state she resides, which allows me to construct groups of women with varying degrees of exposure to the reform depending on their year of birth and state of residence. For my analysis, I collapse the datasets by state and year of birth to obtain a state-cohort panel, and present cohort-level results.

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<sup>16</sup>The results are robust to different cut-offs regarding age at time of survey; more details are provided in section 4.1.

<sup>17</sup>Of the total 138,675 women, 46,370 obtain from the 1992 round, 39,362 from the 1998 round and 52,943 from the 2005 round. Chances of double counting of individuals in successive surveys are very small since NFHS follows a two-stage cluster sampling, whereby it first samples clusters with probability proportional to population size (PPS) sampling, and then it samples households in each cluster using random sampling (IIPS, 2007). The likelihood that the same cluster is sampled is not very high. Even if the sample cluster chosen in one wave is sampled again in the next, exactly the same household is unlikely to be interviewed again as there could be upto 500 households in a single cluster out of which 20-30 are typically sampled (IIPS, 2007).

<sup>18</sup>If the cut-off is restricted to 23 years or older at survey, like in the case of wives, then the sample size is drastically reduced, hence a slightly lower cut-off is chosen. More details are provided in section 4.3.2.

<sup>19</sup>Of the total 41,259 women, 12,751 obtain from the 1992 round, 13,280 from the 1998 round and 15,228 from the 2005 round.

## 3.2 Identification Strategy

The identification strategy used in this paper exploits the fact that exposure to the inheritance rights reform was jointly determined by a woman’s state of birth and her year of birth. Not only did a woman have to be born in a state that passed the reform, she also had to be of school-going age when the reform was passed in her state for it to have any impact on her schooling decision. Given that my dataset is a repeated cross-section, this approach amounts to a difference-in-difference (D-I-D) strategy over cohorts and geographical areas i.e. states.

The NFHS dataset does not contain information on an individual’s state of birth but it does collect data on state of residence. Hence my empirical analysis uses state of residence instead of state of birth. If this gives rise to measurement error then my estimates of the effect of greater inheritance rights on female education would suffer from attenuation bias. A second concern that arises in this regard is the possibility of systematic variation in migration behaviour in response to the reform. If gender progressive parents marry their daughters to grooms in the reforming states to take advantage of the favourable laws, then too the estimates would be biased. However, according to the 2001 Census of India, overall inter-state migration in India is quite low at 2% of the population.<sup>20</sup> Additionally, Rosenzweig and Stark (1989) point out that in their sample of ICRISAT villages, the mean distance between a woman’s original residence place and marital place of residence was 30 kilometers, which belies the concern of cross-state movement for the purpose of marriage. Hence the possibility of systematic migration across states seems relatively remote in this particular context.

The empirical analysis, as mentioned above, tests for effect of the reform on “treated” age cohorts. I define the “treated” group as cohorts of women who were of primary school-going age when the reform was passed in their state. In India, children normally attend primary school between the ages of 5 and 10, middle school between the ages of 11 and

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<sup>20</sup>The Census of India (2001) points out that in India, “the largest volume of migration is confined to migration from one part of the state to another.” It is also pointed out that “migration on account of change of residence by women after marriage constitutes a significant proportion of such intra-state migration.” See [http://censusindia.gov.in/Ad\\_Campaign/drop\\_in\\_articles/08-Migration.pdf](http://censusindia.gov.in/Ad_Campaign/drop_in_articles/08-Migration.pdf)

13 and high or secondary school between ages of 14 and 15. Hence, my “treated” group consists of cohorts of women who were 10 years or younger at the time of the reform since they were “young” enough for the reform to have affected their education choices. The control group, on the other hand, would consist of all the women who were already well past school-going age by the time the reform was passed in their state, i.e. were 21 years or older. The reform ought to have no effect on their educational achievement. Thus, the identification strategy is a difference in difference between the “treated” or “younger” cohorts and the “control” or “older” cohorts, for reforming and non-reforming states.

The basic idea behind the identification strategy is explained in Table 2 by using a simple two-by-two table for one of the reforming states, Kerala, for illustrative purposes. Kerala reformed in 1976. In panel A, I compare the mean educational attainment of women who were fully exposed to the reform (they were 5 years or younger in 1976 i.e. born after 1971) to that of women who were never exposed to the reform (they were 21 or older in 1976 i.e. born before 1955), in Kerala and the rest of India.<sup>21</sup>

For both cohort groups, Kerala does better than the rest of India. This is not surprising as Kerala is well-known for its achievements in the domain of female education (Sen, 1990). What is interesting is that in both regions, average female educational attainment increased over time (cohorts), but it increased significantly more in the reforming state compared to the non-reforming ones. The difference in these differences, which is positive and significant, may be interpreted as the causal impact of the reform in Kerala, under the assumption that in the absence of the reform, the increase in educational attainment of women would not have differed systematically between Kerala and rest of the Indian states.

However, the identification assumption should not be taken for granted. What if the pattern of increase in female education varied systematically between Kerala and the rest of India? To address this concern, I test for an implication of the identifying assumption where I compare mean educational attainment of women who were between 16 to 20 years old in 1976 to that of women who were 21 or older at that time (control group). Since the former

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<sup>21</sup>In this illustrative example, “Rest of India” does not include the other (later) reforming states, i.e. Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka.



group would also have been out of primary school by the time the reform was passed in Kerala, the change in educational attainment between cohorts in this age-group should not, therefore, vary systematically across states, in comparison to the control group. I present the result of this “control” experiment in Table 2, Panel B. The estimated difference in differences is indeed close to zero and insignificant.

This empirical strategy is now extended to exploit the variation from all the reforming states, whereby I estimate the following equation:

$$e_{sk} = \alpha_s + \beta_k + \gamma_s k + \delta_1 D_{s,(k \geq k' - 5)} + \delta_2 D_{s,(k' - 10 \leq k \leq k' - 6)} + \delta_3 D_{s,(k' - 15 \leq k \leq k' - 11)} + \delta_4 D_{s,(k' - 20 \leq k \leq k' - 16)} + \epsilon_{sk} \quad (1)$$

The dependent variable  $e_{sk}$  denotes the mean years of education of women in state  $s$  belonging to cohort  $k$  (i.e. born in year  $k$ ). Let the reform be passed in year  $k'$  in state  $s$ . Then  $D_{s,(k \geq k' - 5)}$  is a dummy indicating whether the women belonging to cohort  $k$  were 5 years old or younger when the reform was passed in their state. Similarly,  $D_{s,(k' - 10 \leq k \leq k' - 6)}$  is a dummy indicating whether they were between 6 and 10 years old,  $D_{s,(k' - 15 \leq k \leq k' - 11)}$  indicating whether they were between 11 and 15 years old and  $D_{s,(k' - 20 \leq k \leq k' - 16)}$  indicating whether they were between 16 and 20 years old respectively. As mentioned earlier, the group consisting of cohorts of women who were 21 years or older at the time of the reform constitute the omitted category.  $\alpha_s$  is a state fixed effect,  $\beta_k$  is a cohort of birth fixed effect, while  $\gamma_s k$  captures state-specific trends over cohorts.  $\epsilon_{sk}$  is the error term. To address serial correlation concerns and to allow for heteroscedasticity, the standard errors are clustered at the state level (Bertrand, Duflo, and Mullainathan, 2004). All regressions are weighted by state-cohort cell size.

The coefficients of interest are  $\delta_1$  and  $\delta_2$ , which capture the effect of being exposed to improved inheritance rights on the “young” cohorts. The hypothesis is that  $\delta_1 > 0$  and  $\delta_2 > 0$ , i.e. when inheritance rights improved following the reform, female education increased.  $\delta_3$  and  $\delta_4$ , on the other hand, capture the effect of the reform on the “older” cohorts. The oldest cohort (16 to 20 years) is specifically included as a falsification test

(akin to the “control” experiment described above for Kerala) - the members of this cohort would have left school by the time the reform was passed in their state and hence would not be expected to experience any effect on their educational attainment.

Before proceeding to the results, I would like to point out the contribution of each reforming state to the cohort categories constructed above, provided in Table A.3. Since I focus on women who were 23 or older at the time of survey, the youngest cohort of women were born in 1983 (coming from the 2005 sample).<sup>22</sup> Hence, all the variation in  $D_{s,(k \geq k' - 5)}$  primarily comes from Andhra Pradesh and Kerala, while all five reforming states contribute to the variation in the remaining cohort categories.<sup>23</sup>

## 4 Effect on Female Education

### 4.1 Basic Results

An interesting starting point for the empirical analysis is the comparison of the evolution of mean educational attainment of women (by cohorts) in reforming states to that of non-reforming states. Since each of the reforming states reform in a different year, I plot the evolution of female educational attainment separately for each state against that of the non-reforming states taken together, shown in Figure 3. The solid vertical line indicates the year in which the reform was passed in that state, while the dashed vertical line indicates 15 years prior to the reform.<sup>24</sup> In Kerala, mean female education was always higher compared to the non-reforming states across all cohorts of women, but the gap begins to increase from around the time of the cohort born in 1961, who were 15 years old when the reform

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<sup>22</sup>A small proportion of interviews in the 2005 wave were carried out in 2006, hence the youngest cohort is that of 1983 rather than 1982.

<sup>23</sup>I check for robustness of the results reported later in the paper to the exclusion of Kerala and find that the effect of the reform on women for each of the age categories continue to hold, although the magnitude of the coefficients is now marginally smaller (but still highly significant). This allays, to some extent, the potential concern that a “Kerala” effect may be driving the results. Such a robustness check is also important in light of the fact that the reform carried out in Kerala was slightly different in content compared to the ones carried out by the later reformers (as explained in section 2.2 above).

<sup>24</sup>The reason behind the choice of 15 years instead of 10 has to do with the fact that the results obtained in estimating equation 1 (reported in Table 3) shows a small but significant impact on cohorts aged 11-15 at the time of reform. More details are provided below.

was passed in the state. In Andhra Pradesh, mean educational attainment was actually lower than the corresponding non-reforming average, but increased substantially above the latter after 1971, which is again the cohort of women who were 15 years old at the time of the reform in the state. The picture is similar for Tamil Nadu as well. The figures for the last two reforming states, i.e. Maharashtra and Karnataka, are less informative since I only have data till 1983 and hence can look at a truncated window of exposed women i.e. those who were 11-15 at the time of reform but not at those who were 0-10 years old. However, it is still reassuring to see that even with the limited data, both these states seem to depict a similar picture with regard to the evolution of female education as the other reforming states.<sup>25</sup>

The graphical analysis suggests that mean educational attainment of women in a reforming state, who were young enough to benefit from the reform, improved after the reform was passed in that state. In order to obtain a quantitative estimate of the effect of the reform on female education, I now present regression results obtained by estimating equation 1 and reported in Table 3. Without controlling for any fixed effects or linear trends, all the cohort groups appear to have benefited from the reform (column 1). However, once state fixed effects, cohort of birth fixed effects and state-specific linear trends over cohort are controlled for (column 3), the picture that emerges is more consistent with our expectation. Exposure to the reform increased mean educational attainment of the 0-5 cohort by one year (the average education in the sample is 3.83 years) and that of the cohort aged 6 to 10 by 1.06 years. However, I cannot reject the equality of these two coefficients.<sup>26</sup>

This result relies on the assumption that there are no omitted state-specific effects that vary over cohorts and are correlated with the passage of the reform. However, if improvement in female education was instrumental in *causing* the passage of the reform in the first place (reverse causality), then this identification assumption will be violated. But

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<sup>25</sup>It should be noted here that the fact that Kerala, Tamil Nadu and Maharashtra appear to have higher mean education across all cohorts compared to the non-reforming states is addressed by the inclusion of state level fixed effects in the regression analysis presented below. It is also apparent from Figure 3 that the trend for the non-reforming states shows a slight dip during the late 1970s, which is, in turn, addressed by the inclusion of state-specific linear trends.

<sup>26</sup>The sample of women used in this analysis consists of those who were 23 years or older at the time of survey. However, the results are robust to choosing a higher or lower cut-off age at survey.

as is evident from Table 3, the “oldest” group of cohorts aged 16-20 at the time of reform do not exhibit any differential impact on education (relative to the control group) in the reforming states compared to the non-reforming one, indicating that reverse causality is less of a concern in this case.

Secondly, if other factors that potentially effect female education are also correlated with the passage of the reform, then too the identification assumption will be violated. For example, Clots-Figueras (2011) find that election of lower caste women leaders is positively correlated with the probability of passage of female-friendly laws in India, of which the amendments to the HSA 1956 would be an example. If lower caste women leaders also invest more in female education, then the results presented above could just be picking up the effect of an increase in the presence of such women leaders in state legislatures who were responsible for both the passage of the reform as well as investment in female education in these states. However, using the same dataset as Clots-Figueras (2011)<sup>27</sup>, I find no evidence of a differential trend in the election of women leaders between reforming and non-reforming states coinciding with the time of the passage of reform, or even one year prior to that.<sup>28</sup> Moreover, as the robustness results presented later in section 4.3.1 indicate, the reform has no impact on the mean education levels of “non-Hindu” women (comprising of Muslims, Christians, Parsis and Jews) who were not governed by HSA 1956 but by their own set of personal laws, which further rules out the possibility that omitted factors correlated with the passage of the reform and female education could be driving the results. This point shall be revisited in greater detail in section 4.3.1.<sup>29</sup>

Interestingly, the relatively older cohort of women who were 11 to 15 years old when the reform was passed in their state also seems to benefit from the reform - their mean education rises by almost 0.6 years. There could be two potential explanations for such

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<sup>27</sup>I am grateful to Irma Clots-Figueras for sharing her data with me.

<sup>28</sup>These results are not presented in the paper but available on request.

<sup>29</sup>I conduct a further robustness check restricting the sample to only the reforming states, i.e. Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka. Since this drastically reduces my sample size, identifying separately the coefficients for all four cohort groups as done above becomes problematic. Therefore, I look at two cohort groups - those aged 15 years or younger, and those who were 16-20 years old at the time of reform. The control group continues to be those who were 21 or older at the time of reform. I find a positive and significant effect of the reform on the education of the 15 or younger group but an insignificant (and marginally negative) effect for the 16-20 group.

an effect: firstly, in India, age categories for schooling levels are often not very strict, such that it is not very uncommon to find older children studying with younger ones for a given grade. Thus, although children are supposed to complete primary schooling by the time they are 10 years old, many would actually complete at a somewhat older age. Moreover, students who fail their class would typically complete primary education at an older age too, and given that quality of schooling in many primary schools (especially public ones) is quite poor (Duflo, Hanna, and Ryan, 2008), failure may be common. Hence the cohort of women aged 11 to 15 at the time of the reform may have been able to benefit from it because they were probably still enrolled in primary school. Secondly, these results are also consistent with the explanation that the effect of the reform continued into secondary school for this group of women. Girls who had dropped out after completing primary school may have re-enrolled in secondary school once the incentives for female education changed within the family following the inheritance rights reform.<sup>30</sup>

Thus, overall results seem to suggest that the effect of the reform on female education increased with the extent of exposure to the reformed inheritance laws. However, the “oldest” group of cohorts aged 16 to 20 at the time of the reform did not benefit from it, as expected. Not only is the coefficient for this group insignificant but the magnitude is also quite small. This falsification exercise thus increases our confidence in the validity of the identification strategy and the results.

## 4.2 Cohort-by-Cohort Analysis

Next, I generalize the identification strategy used so far to obtain a more disaggregated picture of the effect of the inheritance rights reform on female education by each cohort.

Consider the following relationship between the mean education ( $e_{sk}$ ) of a cohort of women in state  $s$  and born in year  $k$ , and their exposure to the reform:

$$e_{sk} = \alpha_s + \beta_k + \gamma_s k + \sum_{j=0}^{20} D_{sj} \cdot \delta_j + \epsilon_{sk} \quad (2)$$

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<sup>30</sup>Around 25% of women in my sample have some secondary education.

where  $D_{sj}$  is a dummy that indicates whether the cohort of women in state  $s$  is of age  $j$  at the time the reform was passed in her state (a year-of-birth dummy). Cohorts of women aged 21 and above at the time of the reform form the control group, and this dummy is omitted from the regression. Each coefficient  $\delta_j$  can be interpreted as an estimate of the impact of the reform on a given cohort. This is a generalization of equation 1 to estimate cohort-by-cohort effects of exposure to the reform.

A reasonable testable restriction on the pattern of the coefficients  $\delta_j$  maybe obtained as follows. Since women aged 16 and older at the time of the reform should not benefit from the reform, the coefficients  $\delta_j$  should be 0 for  $j \geq 16$  and positive and increasing for  $j \leq 10$ .<sup>31</sup>

Figure 4 plots the  $\delta_j$  from the above equation 2. Each dot on the solid line is the coefficient of a dummy for being a given age at the time the reform was passed, with 95-percent confidence intervals indicated by the broken lines. These  $\delta_j$ s fluctuate around 0 until age 15 and then start increasing from age 14. As expected, the reform had no effect on the education of the oldest cohorts, but it had a positive effect on the education of the younger cohorts. All coefficients are significantly different from 0 from age 11, except those for age 5 and 6.

The results from estimating equation 2 are also reported in Table A.1 in the appendix. Controlling for state and cohort fixed effects and state cohort trends (column 3), I find that the coefficients are all positive and significantly different from 0 from age 11 upwards (except 5 and 6) and generally increase with year of birth (decrease with age) except for a dip between ages 11 and 10 and 9 and 5.

The estimates in column (3) suggest that exposure to the improved inheritance rights increases the mean educational attainment of the very youngest cohort i.e. that born in the year of the reform by 1.72 years, which represents a 45 percent increase compared to the overall sample mean.<sup>32</sup>

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<sup>31</sup>Strictly speaking, this should be the oldest age at which a woman could have been exposed to the reform (i.e. be of primary school-going age) and still benefit from it.

<sup>32</sup>I did not examine the impact on cohorts born after the reform was passed because the number of such women fall drastically 2 years after the year of the reform, as is evident from Table A.1.

## 4.3 Robustness Checks

### 4.3.1 Hindus vs Non-Hindus

Next, I conduct two robustness checks of the empirical results obtained above. The first exploits the religious differences among these women. As mentioned earlier, the original Hindu Succession Act (HSA) 1956 only applied to people belonging to certain specific religious communities i.e. the Hindus, Buddhists, Sikhs and Jains. Muslims, Christians, Jews and Parsis, who constitute the remaining major religious groups in India, are governed by their own set of personal laws in matters of inheritance. Hence, I estimate the effect of the reform on these two groups of women separately: for the sample of “Hindus” (including Buddhists, Sikhs and Jains) and the sample of “non-Hindus” (Muslims, Christians, Jews and Parsis).

The results are reported in Table 4. Column 1 replicates the results from column 3 in Table 3. Column 2 then looks at the effect of the reform on Hindu women, and finds very similar effects compared to the full sample. Column 3, on the other hand, reports the results for the non-Hindu women. As expected, no significant effect of the reform is observed for this group. The coefficients are also quite small, and even negative for the “older” cohorts.

Such a result allows me to rule out the existence of any common trend in female education across religions. This also addresses further omitted variable concerns that the inheritance rights reform could be part of a larger package of reforms that were correlated with female education and hence yield biased estimates. If this was true, one should observe the effect on non-Hindu women as well, unless these packages were differentially targeted at Hindu women only. There is, however, little evidence of policies being targeted solely at the Hindus.<sup>33</sup> Admittedly, there could still remain a possibility of the existence of non-policy

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<sup>33</sup>This may be primarily due to the fact that it may prove challenging to enact policies that benefit the majority Hindu population while ignoring the minority non-Hindu, and in this case, disadvantaged population as it contradicts the ideals of secularity and equality laid down in the Indian constitution. In fact, even a proposal of introduction of oriental education relating to the history of Hinduism met with fierce opposition at the National Parliament in New Delhi a few years back on grounds of being non-secular (Upadhyay, 2001).

oriented differential trends across Hindus and non-Hindus biasing the results that is not addressed by this analysis.

### 4.3.2 Including Household Controls

The second robustness check involves controlling for household level covariates of female education. However, the NFHS dataset does not contain information on the natal (parental) family of the sample of women that were used in the above results, i.e. wives of the head of household. Therefore, I focus on the daughters of these women, belonging to the same household. Since NFHS collects detailed information on the heads of household, this provides me with detailed data on various household level and parental characteristics relating to these daughters which I can then use as controls in the education regression. In this case, I restrict my sample to daughters who were 18 years or older at the time of survey (to ensure completion of education by these women) and present cohort-level results.<sup>34,35,36</sup>

The results for female education, after including household level controls like father's age, father's education, household wealth, land ownership, household size and location, are reported in Table 5. Controlling for state and year of birth fixed effects as well as state linear trends (column 3), I find that the effect of the reform on the younger cohorts of daughters (0-5 and 6-10) to be quite similar in sign and magnitude to those obtained for the mothers in the Table 3. The coefficients for the Hindu daughters are slightly higher in magnitude but equally significant to those obtained for the sample of mothers (column 4), while there is no significant effect on the sample of non-Hindu daughters (column 4). There is no significant effect on either of the older cohort groups (11-15 and 16-20) throughout. Thus, it appears that the effect of the inheritance rights reform on female education are robust

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<sup>34</sup>Table A.4 in the appendix shows the contribution of each reforming state to the variation in exposure to reform in this sample of daughters. Kerala, Andhra Pradesh and Tamil Nadu contribute to the variation in  $D_{s,(k \geq k' - 5)}$  while all 5 reforming states contribute to the variation in the older cohort groups.

<sup>35</sup>The reason for using the cut-off age at survey to be 18 years for daughters instead of 23 for mothers is that only 30% of the daughters in my sample are over 23, while 50% are over 18. However, the results are robust for the cut-off being 19 or 20 years.

<sup>36</sup>In order to ensure that the mothers of these daughters were themselves not exposed to the reform, I restrict the sample to women whose mothers are 44 or older at the time of survey, implying that they were 15 or older at the time the reform was passed in Kerala, the earliest reforming state, and hence too old to benefit from the reform.



to controlling for household level determinants of female education. It is also reassuring to note that the coefficients on the household characteristics have the expected signs, and that these are mostly similar for Hindus and non-Hindus, while the reform's effect is different across these two groups.

## 5 Effect on Dowry Payments

So far, I provide evidence that being exposed to the inheritance rights reform was associated with an increase in mean female educational attainment. But what explains this effect? I attempt to shed light on the underlying mechanism of this observed effect in this section.

There could be two potential channels through which female inheritance rights may affect female education - a dowry channel and a complementarity channel.

Dowry payment is most commonly understood as a “groomprice”, i.e. the price that a bride's family has to pay to secure a “desirable” match for their daughter, conditional on her attributes. Greater female inheritance rights may increase the relative “attractiveness” of women in the marriage market and substitute for other dimensions of bridal value i.e. social status, beauty etc. In the presence of strong preference for brides with inheritance, competition among grooms may lower dowry payments demanded from such brides.<sup>37</sup> This relaxes the bridal household's budget constraint and, under the assumption that parents want to send their daughters to school and are only prevented by their budget constraint, an expansion of female inheritance rights may stimulate greater investment in the education of daughters.<sup>38</sup> This constitutes the dowry channel, where the effect of the reform on female education goes through dowries.

Alternatively, an increase in female inheritance rights may provide parents with direct

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<sup>37</sup>An alternative viewpoint considers dowry as a form of “pre-mortem” bequest given to the daughter at the time of her marriage since patrilineal norms of inheritance stipulate that only sons can inherit family property. The new reform, by directly endowing women with full right of inheritance, makes dowry less salient, such that one should observe a reduction in dowry payments made at the time of a daughter's marriage.

<sup>38</sup>This assumes that following the reform, any reduction in household income due to sons getting lower inheritance share is more than compensated by the savings made from lower dowry payments during the daughters' marriage.

incentives to invest more in the education of their daughters, due to the existence of complementarity between education and female inheritance rights in relation to able management of household property, that directly affects their future household income. The hypothesis is that parents invest in the human capital of their children with an eye towards not only the returns that will accrue to their offspring, but also their own future returns arising from such investment. Specifically, I refer to the expected transfers that will accrue to retired parents from their children, which will be a function of the latter's human capital investment. In patriarchal and virilocal<sup>39</sup> societies, sons are typically expected to take in and care for parents in old age (Levine and Kevane, 2003; Yueh, 2001). Thus, investment in sons' education enhances their future productivity and income which, in turn, determines the amount of expected transfers parents may obtain from them in future. Daughters, on the other hand, are traditionally expected to marry and migrate to their husband's household, such that the returns from the investment in their human capital do not accrue to their natal (parental) families. Thus there is less incentive to educate daughters. However, with the introduction of greater female inheritance rights to family property, parents are now able to enjoy a return on their daughters' education in the form of better property maintenance, given the acknowledged complementarity between education levels and economic activity (Foster and Rosenzweig, 1996; Rud, 2009), that in turn would translate into greater future household income for the parents. This generates incentives for parents to invest more in their daughters' education. This constitutes the complementarity channel, where the reform directly affects female education, and the impact on dowries is derived therefrom.

Now, school-leaving age for children in India is 15 while the mean age at marriage of women in my sample is 17 (some even marry at 16). Owing to such a short gap between the age at which a girl leaves school and the age at which she marries, education and dowry payments are jointly determined for most women in my sample. In other words, it is challenging to identify whether lower dowries following exposure to the reform led to an in-

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<sup>39</sup>Virilocality is a social norm that prescribes that daughters move away from their natal (parental) families upon marriage, to reside with the husband's family.

crease in education of these women (dowry channel) or higher education following exposure to the reform led to reduction in their dowries at the time of marriage (complementarity channel).

However, for a subset of these women i.e. for those who were too old to go to school but were of marriageable age (16-20) at the time of the reform, these two effects can be separated. This is because the complementarity channel is not applicable for this group of women. In other words, if dowries are found to fall for these women, it cannot be due to an increase in education following exposure to the reform, since these women were too old to go to school at the time the reform was passed. Dowries could only fall for this group if the reform directly led to a reduction in dowry, in line with the argument of the dowry channel presented above. In other words, if the mechanism of the reform works through the dowry channel, then one should observe dowries to fall for the group of women who were of marriageable age (but too old to go to school) at the time of the reform. This is key for the identification of the underlying mechanism of the reform's effect on female education.

For the analysis of dowries, I use the Rural Economic and Demographic Survey 1999 (REDS).<sup>40</sup> This dataset, also representative at the state level, covers around 7,500 households from 250 villages in 16 major states of India.<sup>41</sup> Usually household survey data only contain marriage information on current household members. However, the REDS dataset is unique in that it contains retrospective information on marriages, including information on daughters who have married and left the household. Here, I focus on women who were daughters of the head of the household and at least 23 years of age at the time of survey. Also, I restrict the sample to Hindu, Buddhist, Sikh and Jain women (i.e. those who were governed by the original inheritance law HSA 1956 and thereby were affected by the reform), since more than 90% women my sample belong to these religions. This gives me a sample size of 4,640 women. Here, too, I first collapse the dataset by state and woman's year of birth and analyze the impact of the reform on the dowry payments of the eligible

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<sup>40</sup>NFHS do not collect information on the amount of dowry payments made at the time of marriage for the women in its sample. The REDS dataset is collected by the National Council of Applied Economic Research in India (NCAER).

<sup>41</sup>The states that are excluded are Arunachal Pradesh, Chattisgarh, Goa, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, New Delhi, Sikkim and Tripura.

cohorts of women by running a similar estimation as equation 1 above:

$$d_{sk} = \alpha'_s + \beta'_k + \gamma'_s k + \delta'_1 D_{s,(k \geq k'-5)} + \delta'_2 D_{s,(k'-10 \leq k \leq k'-6)} \\ + \delta'_3 D_{s,(k'-15 \leq k \leq k'-11)} + \delta'_4 D_{s,(k'-20 \leq k \leq k'-16)} + \epsilon'_{sk} \quad (3)$$

where  $d_{sk}$  denotes mean dowry paid (in rupees) at the time of marriage of women in state  $s$  belonging to cohort  $k$ . In this case too, all regressions are weighted by state-cohort cell sizes. The coefficients  $\delta'_1$ ,  $\delta'_2$  and  $\delta'_3$  capture the effect of the reform on the dowry payments of women who were of school-going age at the time of the reform while  $\delta'_4$  captures the same on the dowry payments of women who were out of school and of marriageable age at the time of the reform. Testing the hypothesis  $\delta'_4 = 0$  allows me to identify the underlying mechanism of the reform's effect.

The nominal dowry payments in the dataset are converted to real values using the Indian Consumer Price Index (base: 1966 = 100).<sup>42</sup> The results regarding the dowry effect are shown in Table 6. Controlling for state fixed effects, cohort fixed effects and state-specific cohort trends (column 3), I find no significant impact of the reform on mean dowry payments on the 16-20 cohorts, and the coefficient is also quite small. On the other hand, mean dowry payments for the cohorts aged 5 or less at the time of the reform is lower by approximately 10272 1966 Rupees while that for cohorts aged 6 to 10 is lower by around 7706 Rupees, relative to the comparison group. There is no significant effect on the dowry payments of the 11-15 cohort.

This shows that improved female inheritance rights did not reduce dowries for the cohorts of women whose education is not affected by the reform, indicating that the effect goes through education to dowries. This provides some suggestive evidence in favour of the complementarity channel in explaining the impact of the inheritance rights reform on female education.

It is, however, important to exercise some caution in this regard. The above results

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<sup>42</sup>I use the Consumer Price Index for Agricultural Labourers (available at [www.indiastat.com](http://www.indiastat.com)) as the deflator since the REDS dataset focuses on a rural sample. Also, over 90 percent of the families in my sample pay dowry and receive nothing, hence I only focus on dowry payments.

cannot be claimed to provide conclusive proof against the dowry channel if it was the case that knowledge regarding the reform was not well-disseminated immediately after its enactment, which could also potentially lead to the dowry effect on the 16-20 group of women to be muted and insignificant. Moreover, the above approach of identifying the underlying mechanism also assumes that the dowry response to the reform is the same across different cohorts of women. If later cohorts exhibited differential effects on dowry payments following exposure to the reform compared to earlier cohorts, then too the above result cannot be taken as conclusive proof against the dowry channel.

## 5.1 Cohort-by-Cohort Analysis

To obtain a cohort-by-cohort picture of the effect of the reform on real dowry payments, I next consider the following relationship between the mean dowry ( $d_{sk}$ ) of a cohort of women in state  $s$  and born in year  $k$ , and their exposure to the reform:

$$d_{sk} = \alpha'_s + \beta'_k + \gamma'_s k + \sum_{j=0}^{20} D_{sj} \cdot \delta'_j + \epsilon'_{sk} \quad (4)$$

Figure 7 plots the  $\delta'_j$  from the above equation 4. Each dot in the graph is the coefficient of a dummy for being a given age at the time the reform was passed, with 95-percent confidence intervals indicated by broken lines. These  $\delta'_j$ s fluctuate around 0 until age 14, and then decline from 13 onwards. In line with the results obtained earlier, the reform had a strong negative impact on the real dowry payments of the younger cohorts, with the effects being significantly different from 0 from age 9 onwards. However, there is a small but significant impact on some of the oldest cohorts, especially those aged 17 and 18. This indicates that probably there was some concomitant benefits of the reform on women who were in the marriage market at the time of the passage of the reform in terms of the dowry they had to pay, but the magnitude of this effect is far smaller than that enjoyed by the younger cohorts.<sup>43</sup>

The results from estimating equation 4 are also reported in Table A.2 in the Appendix.

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<sup>43</sup>Details on cohort sizes are given in Table A.5 in the Appendix.

Controlling for state and cohort fixed effects and state cohort trends (column 3), I find that the coefficients are all negative and significantly different from 0 from age 9 and generally increase in absolute terms with date of birth (decrease with age) except for a high value at ages 4 and 1. Thus the dowry results by cohorts match well with those for education presented in Table A.1, which is reassuring.

The estimates in column (3) of Table A.2 suggest that exposure to the improved inheritance rights reduced the mean real dowry payment of the very youngest cohort by around 22,000 1966 Indian Rupees.

## **5.2 Robustness Check**

### **5.2.1 Including Household Controls**

As a robustness check, I control for household level variables that may be correlated with dowry payments, like caste status, household income etc. The results are reported in Table 7.

The impact of the reform, after including household controls, continues to be similar to the results presented in Table 6, although the magnitudes of the coefficients is marginally smaller, except for the 16-20 category, which is now positive but still insignificantly different from zero. Among the household level controls, caste is often considered as an important determinant of levels of dowry payment. Hindu Brahmins are the omitted category in this case, and it appears that marriages in lower caste groups typically require higher dowry (except OBC) as compared to the high castes but the effects are not significant.

Having more daughters shrinks the amount of dowry available for each daughter and hence has a negative coefficient, although not significant. Household income seems to have no significant impact on dowry payments. This maybe explained by the fact that caste hierarchy is often strongly correlated with income status and the effect of income on dowry is absorbed in the caste variables.

## 6 Effect on Male Education

I also examine the impact of the reform on education of sons in order to investigate the possible existence of any spillover effects, since change in inheritance law is a zero-sum game for the family. In other words, improved inheritance rights for daughters necessarily imply lower rights for sons. Anticipating this, parents may want to compensate their sons by investing more in their education (positive spillover). But on the other hand, with sons getting less, future household income might be adversely affected if expected income from daughters with better inheritance rights is not large enough, leading to a tightening of the budget constraint.<sup>44</sup> With parents now having to educate their daughters in order to equip them with the necessary skills required to be productive on their share of property under the new inheritance regime, this may lead to a reduction in the investment in education of sons at the margin (negative spillover).

To that extent, I use the sample of sons of the wives of the head of household, who are also 18 or older at the time of survey. The total sample size is 110,100. The results for education of sons is presented in Table 8. Controlling for state fixed effects, year of birth fixed effects and state-specific linear cohort trends, I find no evidence that exposure of women to the inheritance rights reform had any impact on the education levels of their brothers on average (column 3). It is interesting to note that there appears to be a small negative impact on the education level of sons for the Hindu sample (column 4), but this is not significant. This suggests that expected gain in terms of future income from daughters following their empowerment through the reform more than compensated for the loss in terms of future income from sons, such that the household budget constraint was relaxed, leading to an increase in the educational investment of daughters without any adverse effect on that of sons.

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<sup>44</sup>One way in which this could happen is following Botticini and Siow (2003), whereby because sons have to now share their inheritance with their sisters, they have less incentive to put in effort that can, in turn, have a negative effect on the income generated on their share of family property.

## 7 Conclusion

Human capital investment is widely considered to be one of the most important drivers of economic growth. This is especially relevant in the case of women as it is well-acknowledged that greater schooling of women enhances the human capital of the next generation and thus make a unique contribution to economic growth (Behrman, Foster, Rosenzweig, and Vashishtha, 1999). This paper studies the impact of female property rights, in particular inheritance rights, on the human capital attainment of women by exploiting plausibly exogenous variation generated by an amendment to female inheritance laws in India. Using repeated cross-sectional data from the National Family and Health Survey of India, I find that exposure to the reform that guaranteed improved rights of inheritance for women led to an increase of approximately one year in mean female educational attainment in India.

Regarding the mechanism behind this effect, this paper argues that there could be two potential channels. Firstly, female inheritance rights may increase the relative “attractiveness” of women in the marriage market and hence lower dowry payments, which relaxes the bridal household’s budget constraint and in turn leads to greater investment in the education of women. On the other hand, there could exist a direct complementarity between education and female inheritance rights in an environment where women have a greater interest in family property and its management, recognizing which parents invest more in their daughter’s education. Analyzing the impact of exposure to the reform on dowry payments made at marriage, I find suggestive evidence in favour of the complementarity channel. Hence the contribution of this paper is to identify the impact of inheritance rights on female education levels as well as attempt to shed light on the possible mechanism behind such an effect.

It is important to point out that the estimates obtained in this paper regarding the effect inheritance rights reform on female education is substantially large. A potential explanation behind this might be that skewed property rights are often looked upon as one of the primary causes behind the general low educational achievement of women in Indian society (Agarwal, 1994). Since property traditionally devolved through sons, and social



rules stipulated that daughters reside with the husband's family post marriage, parents had little incentive to allocate resources for their daughters' education. By amending the inheritance laws to make them more gender equal, this reform changed the fundamental rule of property devolution and hence it should not come as a huge surprise that the impact on female education has also been quite sizeable.

Thus, the results obtained in this paper have policy implications with regard to how socio-personal laws can affect economic outcomes. To the extent that inequality in opportunity for women can be traced to legal provisions, changes in inheritance legislation have the potential of addressing gender imbalances and influencing a wide range of outcomes for women, with economy-wide implications.

However, a relevant question to ask in this regard concerns the scalability of such amendments in order to ensure that the benefits can be reaped by a bigger share of the population. Indeed, the amendment to the Hindu Succession Act 1956 as described in this paper was extended to the whole of India in 2005, and it will be interesting to explore if the benefits enjoyed by the women in the first set of reforming states are subsequently shared by the rest of the country's female population.

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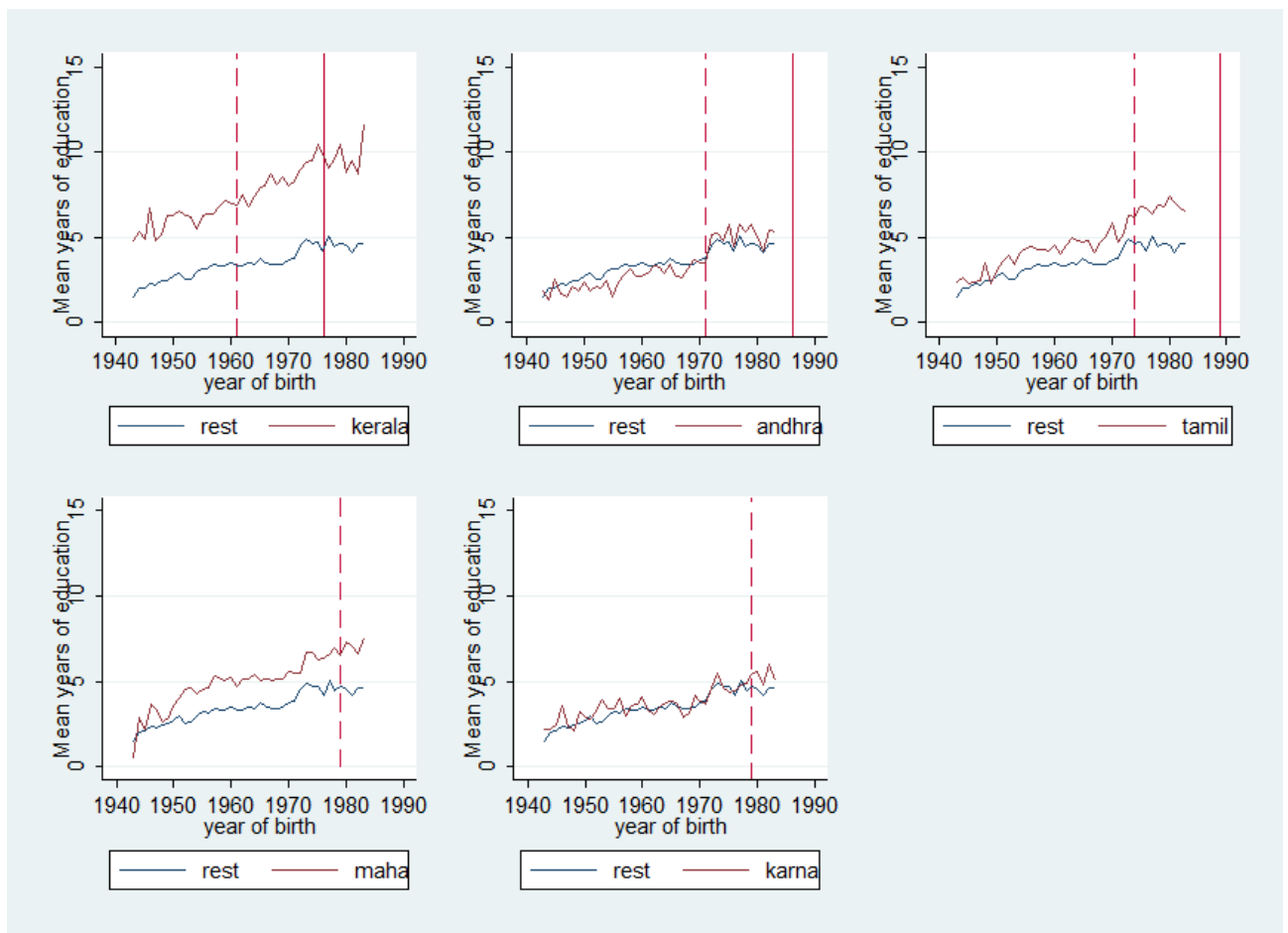


Figure 3: Trends in Mean Education by Cohorts: Reforming Vs Non-reforming States

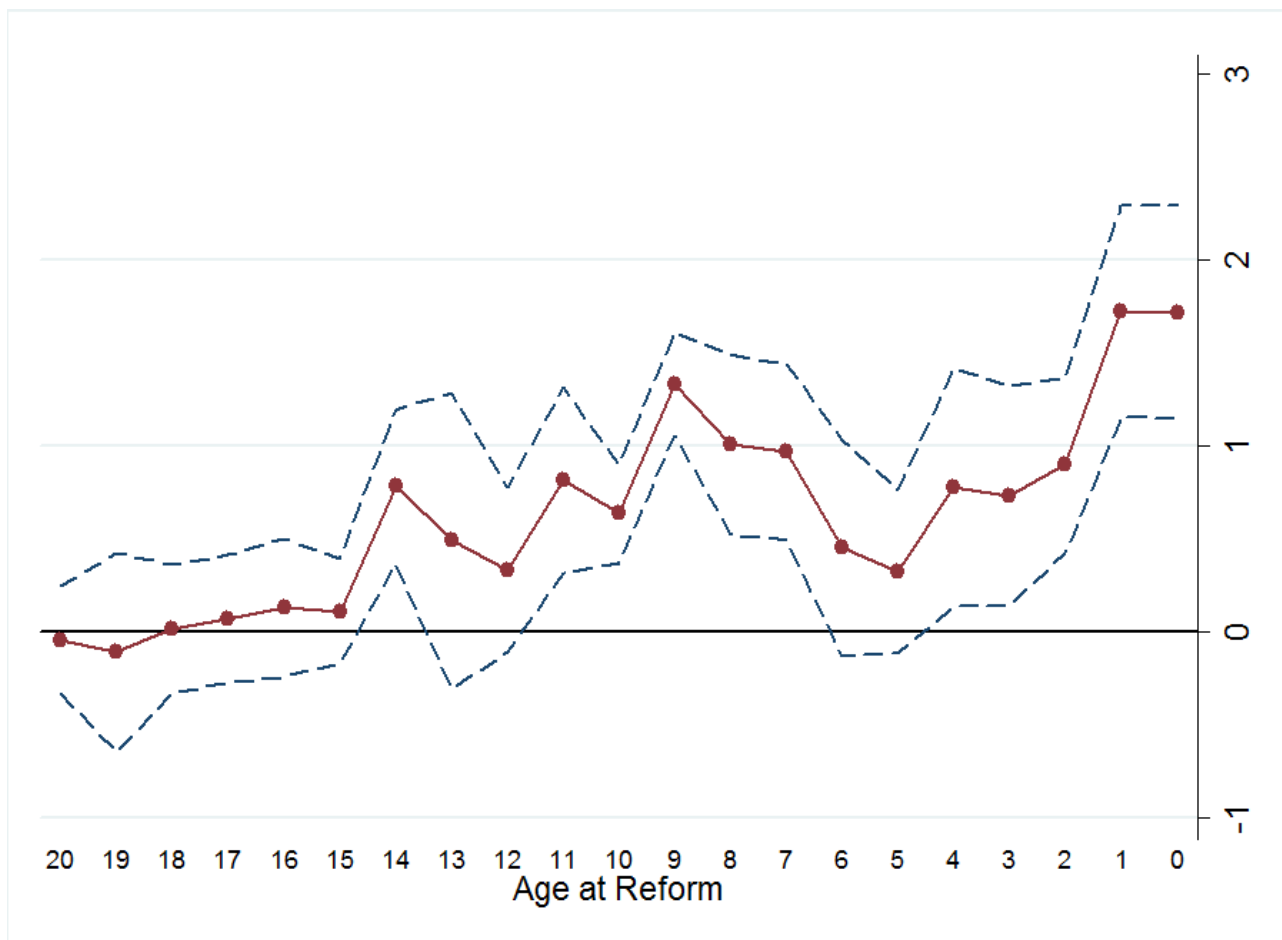


Figure 4: Coefficients of Age at Time of Reform in the Education Equation

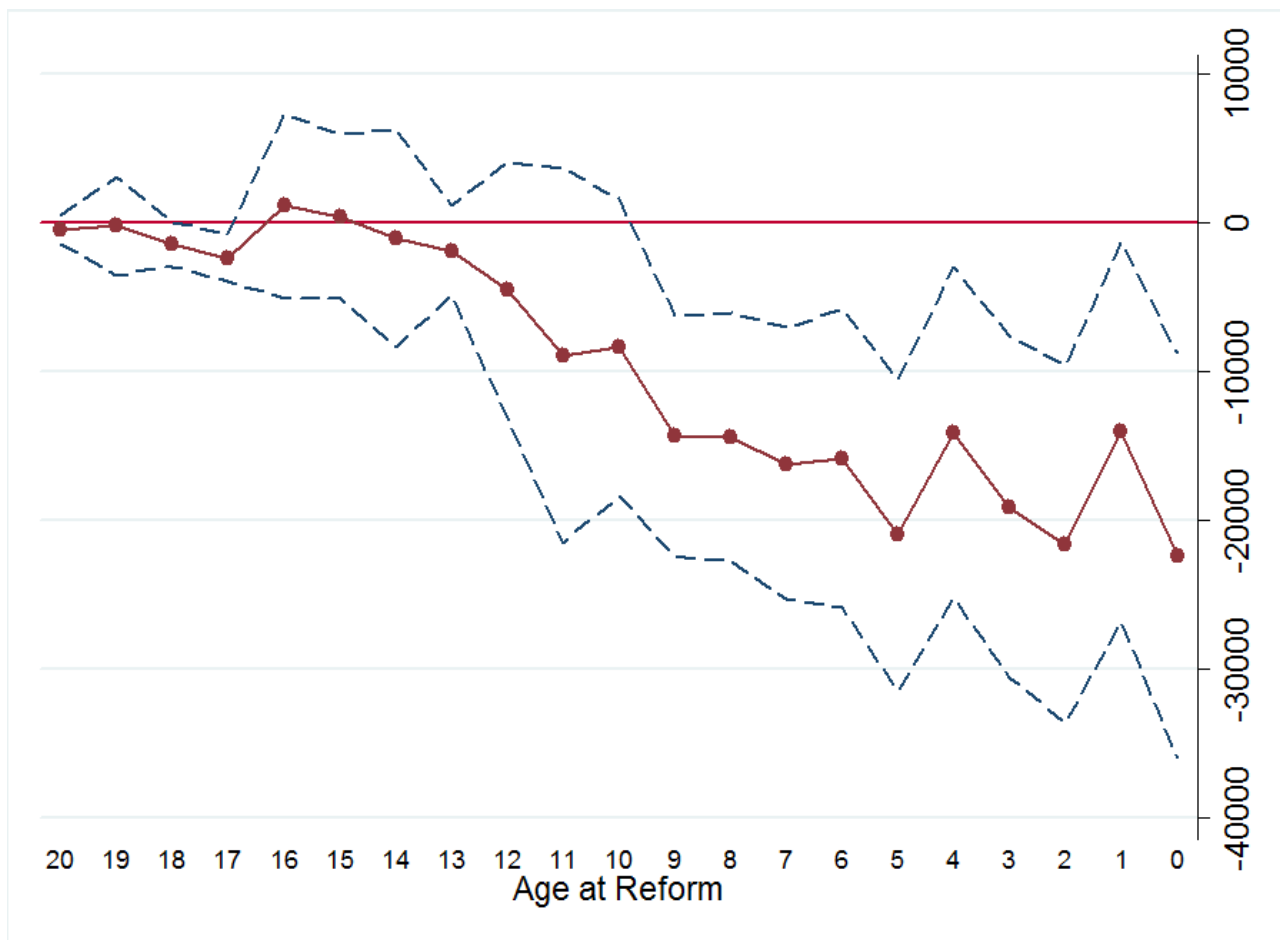


Figure 5: Coefficients of Age at Time of Reform in the Dowry Equation



Table 1: Descriptive Statistics

	Reforming			Non-Reforming	All
	$\geq 21$	$\leq 5$	All		
<b>Panel A</b>					
Years of education (mothers)	4.15	7.27	4.73	3.50	3.83
Age at marriage (mothers)	17.27	18.42	17.50	17.40	17.50
<b>Panel B</b>					
Years of education (daughters)	6.16	10.05	8.29	7.70	7.86
Father's age	62.97	57.43	59.46	58.56	58.80
Mother's age	57.66	50.88	53.40	53.24	53.38
Father's education	5.40	6.35	6.05	5.97	5.99
HH wealth	4.20	2.17	3.10	3.23	3.19
HH members	7.37	7.00	7.13	7.57	7.45
Urban	0.46	0.31	0.43	0.38	0.39
Hindu	0.83	0.63	0.76	0.75	0.75

*Notes:* \* denotes significant at 10%, \*\* denotes significant at 5%, \*\*\* denotes significant at 1%. "Mothers" denote the sample of individuals in the household survey who are wives of the head of the household, and descriptive statistics relating to them are reported in Panel A. "Daughters" denote the sample of individuals who are daughters of the head of the household, and descriptive statistics relating to them are reported in Panel B. For mothers, the sample is restricted to those 23 years or older at the time of survey, while for daughters the sample is restricted to those who are 18 or older at the time of survey. "Reforming" denotes states that passed the amendment to the HSA 1956, under which summary statistics are presented separately for groups of women who were 21 or older at reform (denoted by  $\geq 21$ ) and those who were 5 or younger at reform (denoted by  $\leq 5$ ). "None-reforming" denotes all the states that did not reform, but a similar split by age at reform is not possible for this category as year of reform varies by state.

Table 2: Means of Education by Cohort: Kerala vs Rest of India

<b>Panel A: Experiment of interest</b>			
	Kerala	ROI	Difference
	(1)	(2)	(3)
Aged 5 or less in 1976	9.30 (0.17)	4.76 (0.03)	4.54 (0.22)
Aged 21 or more in 1976	5.91 (0.11)	2.76 (0.03)	3.15 (0.12)
Difference	3.39 (0.21)	2.00 (0.04)	1.39 (0.24)
<b>Panel B: Control Experiment</b>			
	Kerala	ROI	Difference
	(1)	(2)	(3)
Aged 16 to 20 in 1976	6.79 (0.13)	3.52 (0.03)	3.27 (0.15)
Aged 21 or more in 1976	5.91 (0.11)	2.76 (0.03)	3.15 (0.12)
Difference	0.88 (0.17)	0.76 (0.04)	0.12 (0.19)

*Notes:* Kerala reformed in 1976. ROI denotes Rest of Indian states. These do not include the other reforming states i.e. Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka.

Table 3: Effect on Female Education

	Years of education		
	(1)	(2)	(3)
Aged 5 or less at time of reform	3.64** (1.63)	1.36*** (0.33)	1.00** (0.43)
Aged 6 to 10 at time of reform	3.13*** (0.85)	1.38*** (0.16)	1.06*** (0.22)
Aged 11 to 15 at time of reform	2.63*** (0.54)	0.77*** (0.14)	0.57*** (0.16)
Aged 16 to 20 at time of reform	1.39* (0.73)	0.21* (0.11)	0.07 (0.08)
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj. R-sq	0.15	0.78	0.80
No. of observations	2118	2118	2118

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The omitted category is cohorts of women aged 21 years or more at the time of reform. Data is collapsed by state and woman's year of birth. All regressions are weighted by cell sizes.

Table 4: Effect on Female Education: Hindus vs Non-Hindus

	Years of education		
	All	Hindu	Non-Hindu
	(1)	(2)	(3)
Aged 5 or less at time of reform	1.00** (0.43)	0.99* (0.58)	0.21 (0.69)
Aged 6 to 10 at time of reform	1.06*** (0.22)	1.06*** (0.30)	0.40 (0.62)
Aged 11 to 15 at time of reform	0.57*** (0.16)	0.65*** (0.16)	-0.15 (0.31)
Aged 16 to 20 at time of reform	0.07 (0.08)	0.09 (0.08)	-0.13 (0.16)
State FE	YES	YES	YES
Cohort of birth FE	YES	YES	YES
State cohort trend	YES	YES	YES
Adj. R-sq	0.80	0.91	0.86
No. of observations	2118	1070	1048

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The omitted category is cohorts of women aged 21 years or more at the time of reform. Hindu denotes Hindus, Buddhists, Sikhs and Jains while Non-Hindus denote Muslims, Christians, Parsis and Jews. Data is collapsed by state, woman's year of birth and Hindu. All regressions are weighted by cell sizes.

Table 5: Effect of on Female Education: With HH Controls

	Years of education				
	All	All	All	Hindu	Non-Hindu
	(1)	(2)	(3)	(4)	(5)
Aged 5 or less at time of reform	2.32*** (0.42)	2.08*** (0.30)	0.94** (0.46)	1.40** (0.64)	-0.95 (1.73)
Aged 6 to 10 at time of reform	0.69* (0.40)	1.57*** (0.27)	0.93** (0.41)	1.26*** (0.33)	-0.63 (1.10)
Aged 11 to 15 at time of reform	0.27 (0.42)	0.68*** (0.16)	0.35 (0.28)	0.44 (0.34)	-0.31 (0.66)
Aged 16 to 20 at time of reform	-0.00 (0.38)	0.23 (0.19)	0.04 (0.21)	0.06 (0.21)	-0.19 (0.44)
Father's education	0.53*** (0.09)	0.47*** (0.03)	0.48*** (0.03)	0.39*** (0.04)	0.40*** (0.05)
Father's age	-0.05* (0.02)	0.03* (0.02)	0.03* (0.02)	0.03 (0.02)	0.02 (0.02)
HH wealth	0.24* (0.12)	0.37*** (0.05)	0.36*** (0.05)	0.36*** (0.07)	0.58*** (0.10)
Owns land	-0.82 (0.90)	-0.03 (0.40)	0.03 (0.43)	0.01 (0.34)	-0.06 (0.55)
No. of HH members	-0.49*** (0.11)	-0.12*** (0.04)	-0.13** (0.05)	-0.02 (0.05)	-0.05 (0.06)
Urban	0.69 (0.63)	0.91** (0.35)	0.99*** (0.35)	1.24*** (0.40)	0.79 (0.60)
State FE	NO	YES	YES	YES	YES
Cohort of birth FE	NO	YES	YES	YES	YES
State cohort trend	NO	NO	YES	YES	YES
Adj. R-sq	0.53	0.78	0.78	0.85	0.73
No. of observations	1029	1029	1029	606	423

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. This table uses the sample of daughters of the head of the household aged 18 or more at the time of survey. The omitted category is cohorts of women aged 21 years or more at the time of reform. The HH wealth variable is an index constructed on the basis of ownership of 13 household assets i.e. type of house, tv, radio, fridge, bicycle, motorcycle, car, sewing machine, clock, sofa, fan, vcr and electricity. Data is collapsed by state, woman's year of birth and Hindu. All regressions are weighted by cell sizes.

Table 6: Effect on Real Dowry Payments

	Dowry Payment		
	Hindu (1)	Hindu (2)	Hindu (3)
Aged 5 or less at time of reform	6549.43*** (474.61)	-1891.30 (1106.11)	-10271.78*** (3176.60)
Aged 6 to 10 at time of reform	4948.83*** (1491.32)	-2645.35** (1072.82)	-7705.96** (2996.72)
Aged 11 to 15 at time of reform	3366.63 (3170.94)	732.53 (1983.77)	-549.64 (1577.07)
Aged 16 to 20 at time of reform	1405.23 (1421.04)	151.89 (817.79)	-69.53 (866.16)
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj R-sq	0.21	0.50	0.54
No. of observations	328	328	328

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The REDS 99 dataset is used in this table. Dowry payments are deflated using 1966 prices. The sample of women used in this table is restricted to only Hindu women since more than 90% of the women in the sample are Hindus, and who are 23 years or older at the time of survey. The omitted category is cohorts of women aged 21 years or more at the time of reform. Data is collapsed by state and woman's year of birth. All regressions are weighted by cell sizes.

Table 7: Effect on Real Dowry Payments: With HH Controls

	Dowry Payment		
	Hindu (1)	Hindu (2)	Hindu (3)
Aged 5 or less at time of reform	6023.14*** (733.75)	-2267.42** (1044.85)	-9454.89*** (3048.69)
Aged 6 to 10 at time of reform	4223.88** (1574.78)	-2957.54** (1053.73)	-7200.29** (2778.78)
Aged 11 to 15 at time of reform	3045.90 (3348.60)	181.56 (1819.42)	-494.10 (1489.58)
Aged 16 to 20 at time of reform	1630.18 (1793.79)	32.84 (867.74)	137.76 (952.03)
No. of daughters	-487.87 (296.55)	-647.35* (363.74)	-664.60 (455.10)
HH income	64.53 (48.84)	53.41 (41.49)	61.88 (49.16)
Non-Brahmin upper caste	6113.50*** (1938.85)	175.68 (1428.31)	875.64 (1461.85)
SC	5121.76*** (1115.63)	531.56 (1558.80)	283.58 (1428.14)
ST	383.73 (2675.54)	2031.18 (3073.80)	762.20 (3336.63)
OBC	4557.21* (2563.54)	-562.25 (1262.21)	-290.85 (1148.31)
Non-classified Hindus	6088.89* (3038.53)	1107.68 (1904.64)	2871.98 (1932.22)
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj R-sq	0.24	0.53	0.58
No. of observations	395	395	395

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The omitted category is cohorts of women aged 21 years or more at the time of reform. The REDS 99 dataset is used in this table. Dowry payments are deflated using 1966 prices. Sample restricted to only Hindu women since more than 90% of the women in the sample are Hindus. Brahmin, non-Brahmin upper caste (UC), scheduled caste (SC), scheduled tribes (ST), other backward castes (OBC) and non-classified (NC) Hindus denote the caste classification of Hindu society. The HH wealth variable is an index constructed on the basis of ownership of 13 household assets i.e. type of house, tv, radio, fridge, bicycle, motorcycle, car, sewing machine, clock, sofa, fan, vcr and electricity. Data is collapsed by state and woman's year of birth. All regressions are weighted by cell sizes.

Table 8: Effect of on Male Education: With HH Controls

	Years of education				
	All	All	All	Hindu	Non-Hindu
	(1)	(2)	(3)	(4)	(5)
Aged 5 or less at time of reform	1.01*** (0.26)	1.53*** (0.32)	-0.04 (0.21)	-0.12 (0.23)	-0.14 (0.61)
Aged 6 to 10 at time of reform	0.64** (0.29)	1.19*** (0.26)	0.13 (0.18)	-0.02 (0.18)	0.01 (0.56)
Aged 11 to 15 at time of reform	0.21 (0.25)	0.57** (0.23)	0.03 (0.08)	-0.01 (0.13)	-0.18 (0.46)
Aged 16 to 20 at time of reform	0.26 (0.29)	0.31** (0.12)	0.00 (0.04)	0.05 (0.05)	-0.36 (0.24)
Father's education	0.57*** (0.06)	0.51*** (0.05)	0.52*** (0.06)	0.40*** (0.03)	0.26*** (0.07)
Father's age	0.05*** (0.02)	0.01 (0.02)	0.00 (0.01)	0.04 (0.03)	0.00 (0.02)
HH wealth	0.18** (0.07)	0.13** (0.05)	0.14*** (0.04)	0.21*** (0.04)	0.29*** (0.08)
Owns land	1.27* (0.72)	1.27*** (0.41)	1.20** (0.45)	0.12 (0.43)	0.23 (0.39)
No. of HH members	-0.19*** (0.04)	-0.11** (0.05)	-0.13*** (0.04)	0.07** (0.03)	-0.04 (0.06)
Urban	0.88* (0.44)	0.74 (0.49)	0.60 (0.49)	1.21*** (0.35)	1.23*** (0.41)
State FE	NO	YES	YES	YES	YES
Cohort of birth FE	NO	YES	YES	YES	YES
State cohort trend	NO	NO	YES	YES	YES
Adj. R-sq	0.55	0.70	0.73	0.83	0.67
No. of observations	1414	1414	1414	829	585

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. This table uses the sample of sons of the head of household who were 18 or older at the time of survey. The omitted category is cohorts of these sons aged 21 years or more at the time of reform. The HH wealth variable is an index constructed on the basis of ownership of 13 household assets i.e. type of house, tv, radio, fridge, bicycle, motorcycle, car, sewing machine, clock, sofa, fan, vcr and electricity. Data is collapsed by state, person's year of birth and Hindu. All regressions are weighted by cell sizes.

Table A.1: Effect on Female Education by Cohort

Age at Reform	Years of education		
	(1)	(2)	(3)
0	6.27*** (0.29)	2.46*** (0.22)	1.72*** (0.29)
1	6.78*** (0.29)	2.44*** (0.25)	1.72*** (0.29)
2	5.86*** (0.29)	1.58*** (0.23)	0.90*** (0.24)
3	2.83** (1.19)	1.20*** (0.18)	0.73** (0.30)
4	3.10** (1.22)	1.27*** (0.22)	0.78** (0.33)
5	1.88 (1.30)	0.78*** (0.24)	0.33 (0.22)
6	2.82*** (0.82)	0.94*** (0.18)	0.45 (0.30)
7	3.45*** (0.78)	1.47*** (0.18)	0.97*** (0.24)
8	3.03*** (0.80)	1.44*** (0.20)	1.01*** (0.25)
9	3.86*** (0.70)	1.78*** (0.19)	1.34*** (0.14)
10	2.58** (1.01)	1.03*** (0.17)	0.64*** (0.13)
11	3.30*** (0.50)	1.12*** (0.23)	0.81*** (0.25)
12	2.80*** (0.50)	0.64*** (0.17)	0.34 (0.23)
13	2.66*** (0.40)	0.75** (0.36)	0.49 (0.41)
14	3.02*** (0.45)	1.01*** (0.16)	0.78*** (0.21)
15	1.79** (0.78)	0.35*** (0.12)	0.11 (0.14)
16	1.84** (0.79)	0.32* (0.17)	0.13 (0.19)
17	1.79** (0.73)	0.26 (0.19)	0.07 (0.17)
18	1.29* (0.65)	0.19 (0.14)	0.02 (0.18)
19	1.27 (0.79)	0.06 (0.31)	-0.11 (0.27)
20	0.96 (0.75)	0.11 (0.19)	-0.04 (0.15)
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj R-sq	0.14	0.78	0.80
No. of observations	2118	2118	2118

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The omitted category is cohorts of women aged 21 years or more at the time of reform. Data is collapsed by state and woman's year of birth. All regression weighted by cell sizes.



Table A.2: Effect on Real Dowry Payments by Cohort

Age at Reform	Dowry Payments		
	Hindu	Hindu	Hindu
	(1)	(2)	(3)
0	5492.00*** (485.03)	-2968.95* (1546.64)	-22364.82*** (6934.88)
1	12967.62*** (485.03)	4355.57*** (1412.29)	-14035.51** (6517.31)
2	3915.01*** (485.03)	-4263.35*** (1443.35)	-21559.32*** (6119.41)
3	5363.20*** (485.03)	-2925.45* (1416.77)	-19065.97*** (5844.49)
4	9576.90*** (485.03)	1026.21 (1547.78)	-14092.03** (5667.06)
5	2121.52*** (485.03)	-6826.22*** (1356.04)	-20959.59*** (5332.39)
6	6110.54*** (485.03)	-2665.44* (1481.28)	-15819.33*** (5115.68)
7	5306.27*** (485.03)	-3980.76*** (1334.00)	-16172.69*** (4651.27)
8	5438.62*** (485.03)	-3184.75** (1226.78)	-14393.58*** (4253.94)
9	5463.23*** (485.03)	-4038.15** (1427.31)	-14299.28*** (4127.30)
10	3573.29 (3876.60)	-960.95 (1380.13)	-8371.39 (5091.03)
11	1684.92 (1431.86)	-2216.36 (2274.34)	-8891.33 (6415.48)
12	2692.86 (2245.85)	977.27 (1067.47)	-4509.72 (4368.03)
13	1574.61 (1592.78)	93.01 (1682.89)	-1869.65 (1537.23)
14	4786.47 (5801.77)	1609.65 (4653.80)	-1001.42 (3732.80)
15	4642.11 (4448.10)	2147.20 (3418.17)	436.64 (2803.07)
16	6508.75 (5716.29)	3054.63 (3955.89)	1146.53 (3152.19)
17	1506.85 (1749.46)	-966.95 (1011.62)	-2340.40** (813.21)
18	204.70 (980.97)	-756.93 (449.79)	-1426.59* (760.94)
19	1498.13 (1360.71)	428.28 (1440.32)	-214.03 (1678.62)
20	230.95 (1186.23)	-7.77 (564.42)	-436.82 (489.29)
State FE	NO	YES	YES
Cohort of birth FE	NO	YES	YES
State cohort trend	NO	NO	YES
Adj R-sq	0.16	0.54	0.62
No. of observations	405	405	405

*Notes:* Standard errors, clustered at state level, are in parentheses. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%. The omitted category is cohorts of women aged 21 years or more at the time of reform. The REDS 99 dataset is used in this table. Dowry payments are deflated using 1966 prices. Analysis in this table is restricted to only Hindu women since more than 90% of the women in the sample are Hindus. Data is collapsed by state and woman's year of birth. All regression weighted by cell sizes.

Table A.3: Number of Women of a Given Age at the Time of Reform in Reforming States: NFHS

Age at reform	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Total
-7	0	0	10	0	0	10
-6	0	0	15	0	0	15
-5	0	0	13	0	0	13
-4	0	0	19	0	0	19
-3	0	0	25	0	0	25
-2	0	0	28	0	0	28
-1	0	0	47	0	0	47
0	0	0	45	0	0	45
1	0	0	48	0	0	48
2	0	0	65	0	0	65
3	103	0	41	0	0	144
4	94	0	58	0	0	152
5	221	0	107	0	0	328
6	146	0	129	0	76	351
7	137	0	153	0	99	389
8	214	0	179	0	106	499
9	115	0	175	0	145	435
10	233	0	190	0	121	544
11	103	81	199	99	135	617
12	130	74	230	131	125	690
13	116	120	229	143	166	774
14	93	108	180	125	108	614
15	332	107	233	169	140	981
16	286	120	218	142	122	888
17	300	100	226	185	153	964
18	341	152	214	225	313	1,245
19	322	120	210	173	268	1,093
20	455	126	146	181	381	1,289
21	275	108	186	187	329	1,085
22	311	113	176	176	318	1,094
23	276	242	161	351	399	1,429
24	275	262	140	378	318	1,373
25	352	298	135	435	373	1,593
26	285	301	128	396	291	1,401
27	233	287	94	398	306	1,318
28	252	324	96	416	337	1,425
29	283	352	89	412	287	1,423
30	160	303	50	363	298	1,174
31	130	310	61	354	287	1,142
32	145	295	77	358	259	1,134
33	132	275	39	333	174	953
34	148	288	0	334	155	925
35	117	256	0	326	172	871
36	128	235	0	316	160	839
37	65	227	0	292	170	754
38	46	168	0	193	139	546
39	71	163	0	206	173	613
40	37	181	0	180	74	472
41	42	151	0	168	76	437
42	49	125	0	134	80	388
43	50	140	0	151	64	405
44	0	103	0	79	67	249
45	0	57	0	37	48	142
46	0	64	0	67	46	177
47	0	69	0	66	0	135
48	0	59	0	55	0	114
49	0	64	0	43	0	107
50	0	36	0	44	0	80
51	0	9	0	14	0	23
Total	7,603	6,973	4,864	8,835	7,858	36,133

Table A.4: Number of Daughters of a Given Age at the Time of Reform in Reforming States: NFHS

Age at reform	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Total
-12	0	0	33	0	0	33
-11	0	0	36	0	0	36
-10	0	0	55	0	0	55
-9	0	0	42	0	0	42
-8	0	0	49	0	0	49
-7	0	0	34	0	0	34
-6	0	0	43	0	0	43
-5	0	0	103	0	0	103
-4	0	0	83	0	0	83
-3	0	0	99	0	0	99
-2	74	0	84	0	0	158
-1	58	0	92	0	0	150
0	91	0	87	0	0	178
1	69	0	123	0	49	241
2	72	0	200	0	57	329
3	47	0	170	0	64	281
4	43	0	167	0	78	288
5	74	0	173	0	55	302
6	77	74	152	101	65	469
7	58	60	142	107	45	412
8	63	88	123	126	108	508
9	48	43	115	94	77	377
10	61	75	110	127	96	469
11	30	55	76	96	87	344
12	79	50	82	79	84	374
13	60	138	65	166	86	515
14	88	99	61	120	57	425
15	51	127	62	139	138	517
16	42	96	38	105	118	399
17	41	60	41	101	123	366
18	42	85	29	117	97	370
19	61	98	36	109	88	392
20	37	145	21	136	73	412
21	25	120	12	115	61	333
22	26	93	24	79	68	290
23	15	109	21	123	56	324
24	33	74	10	77	32	226
25	15	104	10	69	40	238
26	21	76	8	54	23	182
27	6	50	10	47	41	154
28	7	59	8	39	28	141
29	20	32	9	27	14	102
30	8	50	5	39	11	113
31	3	31	4	22	17	77
32	10	20	2	8	17	57
33	1	27	2	18	6	54
34	17	18	2	8	11	56
35	5	17	2	10	8	42
36	4	11	4	12	8	39
37	3	14	2	7	13	39
38	2	7	4	10	5	28
39	6	6	2	7	3	24
40	0	13	0	7	2	22
41	0	8	3	9	3	23
42	0	8	1	7	3	19
43	0	2	1	5	1	9
44	2	0	0	5	1	8
45	0	3	2	1	2	8
46	2	3	0	3	0	8
47	1	5	0	0	0	6
48	1	2	0	4	0	7
49	3	3	0	2	2	10
50	1	2	0	0	1	4
51	0	0	0	0	1	1
52	0	3	0	1	0	4
53	0	1	1	1	0	3
55	0	3	0	1	0	4
56	0	1	0	2	1	4
57	0	1	0	0	0	1
58	0	0	0	2	0	2
59	1	0	0	0	0	1
63	0	1	1	0	0	2
64	1	0	0	0	0	1
Total	1,605	2,270	2,976	2,544	2,124	11,519

Table A.5: Number of Women of a Given Age at the Time of Reform in Reforming States:  
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Age at reform	Andhra Pradesh	Karnataka	Kerala	Maharashtra	Tamil Nadu	Total
0	0	0	12	0	0	12
1	0	0	14	0	0	14
2	0	0	16	0	0	16
3	0	0	12	0	0	12
4	0	0	18	0	0	18
5	0	0	17	0	0	17
6	0	0	10	0	0	10
7	0	0	15	0	0	15
8	0	0	11	0	0	11
9	0	0	10	0	0	10
10	10	0	10	0	0	20
11	12	0	11	0	0	23
12	15	0	6	0	0	21
13	6	0	3	0	25	34
14	7	0	10	0	20	37
15	5	0	9	0	34	48
16	9	0	12	0	21	42
17	8	0	6	0	21	35
18	3	31	8	19	25	86
19	5	27	10	28	23	93
20	4	40	3	26	32	105
21	10	26	13	22	21	92
22	3	24	3	19	24	73
23	4	30	3	29	19	85
24	3	20	6	19	17	65
25	2	29	3	29	22	85
26	6	21	9	18	16	70
27	5	19	1	23	15	63
28	0	19	2	9	13	43
29	1	20	3	18	10	52
30	1	14	2	20	23	60
31	1	13	3	18	8	43
32	3	8	0	14	7	32
33	0	18	0	14	5	37
34	2	10	1	15	6	34
35	0	10	0	10	7	27
36	2	6	1	6	2	17
37	0	4	0	5	1	10
38	0	4	0	8	1	13
39	0	11	0	4	3	18
40	0	3	0	4	4	11
41	1	4	0	1	0	6
42	0	2	0	6	0	8
43	0	2	0	3	2	7
44	0	3	0	2	0	5
45	0	1	0	3	0	4
46	0	0	0	1	0	1
47	0	0	0	3	1	4
48	0	0	0	3	0	3
51	0	0	0	1	0	1
Total	128	419	273	400	428	1,648