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**Empowering Women: Inheritance Rights and  
Female 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 women's property inheritance rights on their education. Using exogenous variation created by state level reforms to the inheritance law in India, I find that mean educational attainment of women who were of primary school-going age at the time of reform increased by 0.5 years in reforming relative to non-reforming states. The impact is present only for women in landowning and "Hindu" households, with no concomitant impact on men. I also provide suggestive evidence on the underlying mechanism that in order to prevent fragmentation of household property, parents compensate daughters by investing in their education.

*JEL Codes:* O12, K11, I21

*Keywords:* Inheritance, education, women, dowry payments

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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. 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 legislative changes to the central inheritance law in India as a source of exogenous variation in female inheritance rights. Like most personal laws in India, 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 (HSA) 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 daughters 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 earliest attempts at amending this law were made by five Indian states, namely Andhra Pradesh, Tamil Nadu, Kerala, Karnataka and Maharashtra, between late 1970s and early 1990s. The amendments stated that women who were unmarried at the time the reform was passed in their state would be granted claims equal to that of their brothers in the joint family property, including the right to a share by survivorship (Agarwal, 1994).<sup>1</sup>

The basic identification strategy in this paper uses the fact that exposure to the improved inheritance rights regime following the amendments 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

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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)”.

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 using a difference-in-differences methodology that compares 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 strategies have been used by Duflo (2001), Card and Krueger (1992), Lemieux and Card (2001) etc. to estimate the effect of education on earnings.

However, if there exists unobservable factors that affect female education and are also correlated with the passage of the reform, then the difference-in-differences estimates would be biased. Therefore, in order to address this concern, I employ a triple differences strategy by exploiting another source of variation within each state-cohort, namely land ownership status, religious affiliation and gender. For example, in case of triple differences using land ownership, I estimate the difference in mean educational outcomes between women in the “treated” group relative the “control” group, for land-owning versus non land-owning households in reforming relative to non-reforming states. This would control for two kinds of potentially confounding trends: changes in educational outcomes of women belonging to landed households across states (that have nothing to do with the reform) and changes in educational outcomes of all women in the reforming states (e.g. due to other state policies that affect everyone’s education). I do the same for “Hindu” versus “non-Hindu” households, as well as between women and men.

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<sup>2</sup>Concerns regarding the potential endogeneity of the reform process is discussed in Section 2.2.

I use individual 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 exposure to the inheritance rights reform was associated with an increase of approximately 0.5 years of education (an improvement of around 0.2 standard deviations) for cohorts of women who were of primary school-going age at the time of the passage of reform. On the other hand, 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.

Moreover, using triple differencing by land ownership, I find that the entire effect comes from women who belong to land-owning households, and the estimated coefficient is larger at approximately 0.8. Similarly, using triple differencing by religion, I find that the impact to be present only for those women who were either Hindu, Buddhist, Sikh or Jain (to whom the law applied), and the estimated coefficient is even larger at approximately 1.5. Finally, using triple differencing by gender, I find the impact to be present only for daughters with the estimated coefficient being 1.3-1.6, indicating that the reform was successful in narrowing the gap in education between boys and girls.

This paper also attempts to shed light on the mechanism behind the

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<sup>3</sup>This may give rise to concerns regarding the endogeneity of state of residence in relation to migration, but as Section 2.2 argues later, the extent of female inter-state migration in India is very low.

observed impact of the inheritance rights reform on female education. Using individual-level data from the 1999 wave of the Rural Economic and Demographic Survey (REDS), I find that the reform had virtually no impact on women's likelihood of inheritance. However, this is not altogether surprising because incentives exist for parents to prevent the fragmentation of jointly owned family land (e.g. economies of scale in production, virilocality and village exogamy<sup>4</sup>, etc.), that has resulted in daughters continuing to be deprived of their share of inheritance in joint family property even after the reform in the law. Indeed, ethnographic evidence documented in Bates (2004) finds that the enunciation of progressive legislative changes to inheritance law in Maharashtra had no impact on women's inheritance in practice.

Instead, my findings suggest that parents were compensating their daughters for their disinheritance by transferring to them alternative forms of wealth. Traditionally, dowry payments have constituted the most common form of such transfers - a pre-mortem bequest to daughters in South Asia (Anderson, 2004; Goody, 1973). Using the REDS 99 dataset, I find that for those women who were past primary school-going age at the time of reform but not yet old enough to be married, dowry payments did rise by 0.4 percentage points, indicating that parents were still compensating these daughters in the traditional way for disinheriting them from joint family property. However, for women who were of primary school going-age at the time of reform, dowry payments are 0.36 percentage points lower compared to the control group. But note that this is the same group of women who also enjoyed higher education as a result of exposure to the reform, suggesting that for them the

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<sup>4</sup>In virilocal societies, married daughters leave their parents' home whereas married sons continue to live with their parents. Village exogamy, on the other hand, implies that daughters are married outside their village of residence. Both together imply that parents run the risk of losing control over their household property if their daughters inherit a share.

compensation from parents took the form of increased investment in their education. This is consistent with the findings of Quisumbing and Otsuka (2001) in Sumatra who argue that land inheritance and schooling constitute different forms of intergenerational transfers and observe a narrowing of the gender gap in schooling with the evolution of land tenure systems.

My findings therefore suggest that although progressive legislation aimed at improving inheritance rights of women in India did not have the desired first order effect, intrahousehold dynamics may have ensured that parents compensated their daughters for such disinheritance in a manner that resulted in an unintended but positive impact on female education.

This paper relates to two different strands of literature. The literature on property rights has focused on the role of property rights in enhancing investment incentives in agricultural land (Banerjee, Gertler, and Ghatak, 2002; Besley, 1995), 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 women's inheritance. The only other paper that is related to mine is Deininger, Goyal, and Nagarajan (2010), which examines the impact of the amendment to the Hindu Succession Act (HSA) 1956 on women's ability to inherit land and their socio-economic status (proxied by age at marriage and education) in two Indian states viz. Maharashtra and Karnataka. Apart from the fact that my analysis uses data from all the states of India and hence has greater external validity, the datasets and empirical methodologies used by the two papers are also different.<sup>5</sup> Both Deininger,

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<sup>5</sup>Deininger, Goyal, and Nagarajan (2010) use the 2006 wave of the Rural Economic and Demographic Survey, while I use multiple rounds of the National Family and Health Survey of India for my education results and the 1996 wave of the Rural Economic and Demographic Survey for my inheritance and dowry results.



Goyal, and Nagarajan (2010) and I find positive impact of the inheritance rights reform on female education, in which sense the two papers are complementary. However, compared to Deininger, Goyal, and Nagarajan (2010), I obtain an opposite result regarding probability of inheritance by women which, together with my analysis on dowry payments, allows me to identify an explicit mechanism underlying the increase in female educational attainment due to the inheritance rights reform, and is a key innovation of my paper.

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). On the other hand, dowry has also been studied 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 have similar consequences on dowry payments through its impact on education, an alternative form of wealth transfer.

The remainder of the paper is organized as follows: Section 1 describes the institutional background of Hindu inheritance law in India, while Section 2 outlines the data and identification strategy. Section 3 presents results on female education, and Section 4 discusses a potential mechanism underlying the observed effect by looking at the likelihood of inheritance by women and their dowry payments. Section 5 concludes.

# 1 The Institutional Background

## 1.1 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

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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. For the rest of the paper, I will use the term “Hindu” to denote Hindus, Buddhists, Sikhs and Jain, that is all religions to which the HSA 1956 applied.

<sup>7</sup>The joint family here is a legal concept and need not coincide with the joint residence or 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

with sons, of only their 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 10</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.<sup>11</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 I). Let us assume 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). Bold letters indicate membership of the "Hindu" coparcenary.

The process by which inheritance rights to this ancestral/joint family in rural areas), suggesting that the Hindu Succession Act is what ultimately determines inheritance patterns within the family.

<sup>9</sup>The "notional" portion of the father'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.

<sup>11</sup>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.

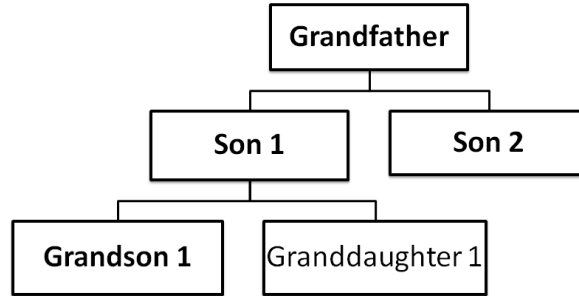


Figure I: Ancestry

property will be determined in this family is as follows (see Figure II):

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 (panel A of Figure II). Moreover, Son 1 shares his third equally with his own son, Grandson 1, since the latter is 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 Grandson 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 now increases to a sixth (his coparcenary share) plus another sixth (inherited from his father), which totals to a third.<sup>12</sup> Next, when Son 1 dies (panel D), his total share is split equally between Grandson 1 and Granddaughter 1,

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<sup>12</sup>Strictly speaking, the grandfather does not have to actually *die* for this so-called “partitioning” to be made: the inheritance shares are decided in a “notional” sense, as described in the earlier footnote. However, in practice, the most common reason behind a split or partition has to do with the death of the household head or patriarch (Foster and Rosenzweig, 2002).

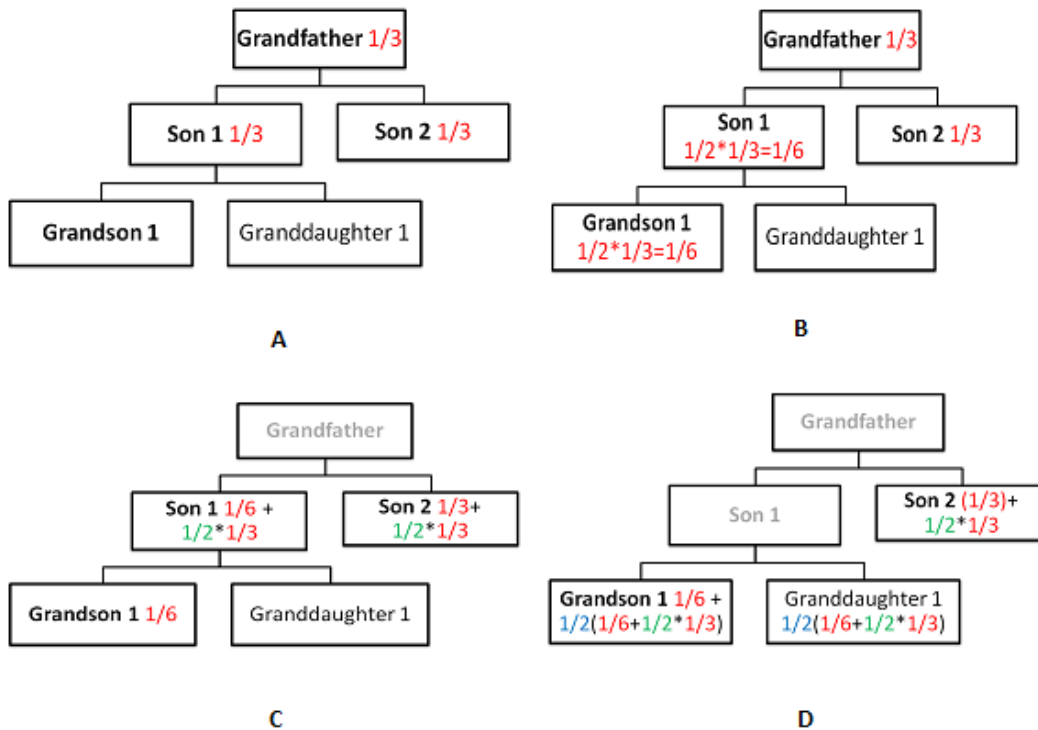


Figure II: Inheritance

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 HSA 1956. 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 fundamental right of equality as guaranteed to her by the Indian Constitution (Ramanujam, 2005).

## 1.2 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, although the HSA 1956 is a central law, 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 and sought to, at least partially, redress the concern of gender bias inherent in the original central law. I exploit these legislative amendments as a “natural experiment” to study the impact of a potential improvement in female inheritance rights on female education in India.

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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, most of the findings of this paper are robust to the exclusion of Kerala.

## 2 Data and Identification Strategy

### 2.1 Data

To estimate the causal impact of the inheritance rights reform on female education, I use household-level 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 all individual members of the household. 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 from my analysis and are left with 28 states.

I first focus on women who are daughters of the head of the household and who are at least 22 years of age at the time of survey (this ensures that women in the sample have completed their education).<sup>16</sup> <sup>17</sup> There are

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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.

<sup>16</sup>The findings of this paper are robust to different cut-offs regarding age at time of survey.

<sup>17</sup>Some of the mothers of these women may have been young enough to be exposed to the reform themselves, especially those born after 1965 in 1998 wave and those born after 1972 in 2005 wave. To avoid any confounding impact on outcomes of daughters through their mothers, I calculate the minimum age that mothers need to be in order to be *unexposed* to the reform: this is 44 years at the time of survey, which means that for example, in the 2005 wave, these women had to be born on or before 1961 such that they would be 15 or older at the time of the earliest reform (Kerala in 1976). Hence I restrict

18,691 such women in my sample, with year of birth spanning 1943 to 1984.<sup>18</sup> Summary statistics are presented for this sample in Table 1. Mean age for this sample of women is 27 years, while average level of education is 8.14 years of completed education (6 years of education correspond to completion of primary school). Almost half of the sample women belong to households that own some land, 83 percent are “Hindu” and 45 percent live in urban areas.

## 2.2 Identification Strategy

The basic 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 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 the NFHS is a repeated cross-section, this approach amounts to a difference-in-difference (DD) strategy over cohorts and 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 impact of inheritance rights

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my sample to those daughters who were not only themselves at least 22 years old at survey but whose mothers were also at least 44 years old at survey.

<sup>18</sup>Of the total 18,691 women, 5,613 obtain from the 1992 round, 6,128 from the 1998 round and 6,950 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).



would suffer from attenuation bias. A bigger concern, however is that 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. According to the 2001 Census of India, female inter-state migration in India varies between 5-10 percent, but using the Rural Economic and Demographic Survey of 1999, I do not find any evidence of significant differences in inter-state female migration between the reforming and non-reforming states in the pre-reform period. In fact, nearly 80 percent of women reside after marriage in the same district or other district of the same state as their parental household. This is also supported by the findings of Rosenzweig and Stark (1989) that in the ICRISAT villages, the mean distance between a woman's original residence place and marital place of residence is around 30 kilometers. Hence, the possibility of systematic migration across states seems relatively remote in this particular context.

The empirical analysis, as mentioned above, tests for the 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 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 women who were already well past school-going age by the time the reform was enacted in their state, i.e. were 21 years or older. The reform ought to have no effect on their educational achievement. Thus, the basic

identification strategy is a difference-in-differences between the “treated” or “younger” cohorts and the “control” or “older” cohorts, for reforming relative to non-reforming states. Such a difference-in-differences estimate may be interpreted as the causal impact of the reform, under the assumption that in the absence of the reform, the change in educational attainment of women across cohorts would not have differed systematically between the reforming and non-reforming states.

However, the identification assumption should not be taken for granted. What if the pattern of change in female education across cohorts did vary systematically between the reform and non-reforming states? 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 at the time of reform to that of women who were 21 or older at that time (control group), between reforming and non-reforming states. Since the former group would also have been out of school by the time the reform was passed in the reforming states, the change in educational attainment for women in this age-group relative to the control group should not, therefore, vary systematically across states.

Within a regression framework, I therefore estimate the following equation:

$$\begin{aligned}
e_{isk} = & \alpha_s + \beta_k + \gamma_s k + \delta_1 D_{is,(k \geq k' - 5)} + \delta_2 D_{is,(k' - 10 \leq k \leq k' - 6)} \\
& + \delta_3 D_{is,(k' - 15 \leq k \leq k' - 11)} + \delta_4 D_{is,(k' - 20 \leq k \leq k' - 16)} + X_{isk} \eta + \epsilon_{isk}
\end{aligned} \tag{1}$$

The dependent variable  $e_{isk}$  denotes the educational attainment of woman  $i$  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  $D_{is,(k \geq k' - 5)}$  is a dummy indicating whether

woman  $i$  belonging to cohort  $k$  was 5 years old or younger when the reform was passed in her state. Similarly,  $D_{is,(k'-10 \leq k \leq k'-6)}$  is a dummy indicating whether she was between 6 and 10 years old,  $D_{is,(k'-15 \leq k \leq k'-11)}$  indicating whether she was between 11 and 15 years old and  $D_{is,(k'-20 \leq k \leq k'-16)}$  indicating whether she was between 16 and 20 years old respectively. As mentioned earlier, the group consisting of women who were 21 years or older at the time of the reform constitute the omitted category.  $\alpha_s$  represents state fixed effect which accounts for state-specific characteristics that do not vary across cohorts,  $\beta_k$  represents cohort of birth fixed effect that accounts for the fact that individuals born in different years may be exposed to different macro shocks, while  $\gamma_s k$  captures state-specific linear trends over cohorts.  $X_{isk}$  is a vector of individual-level control variables that would affect education: parental age, parental education, land ownership, religion, number of household members and place of residence (urban/rural).  $\epsilon_{isk}$  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).

The coefficients of interest are  $\delta_1$  and  $\delta_2$ , which capture the mean effect on education of being exposed to the inheritance rights reform for the “treated” or “young” cohorts.  $\delta_3$  and  $\delta_4$ , on the other hand, capture the effect of the reform on older cohorts. The oldest cohort category (16 to 20 years) is specifically included as a falsification test - 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 impact on their educational attainment.

However, if there existed other unobservable factors affecting female education that were correlated with the passage of the reform itself, then the identification assumption underlying the difference-in-differences approach

would 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 difference-in-difference estimate discussed 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. State policies affecting female education but varying systematically between reforming and non-reforming states would be another example.

To address this concern, I conduct a difference-in-difference-in-difference (DDD) analysis by introducing a separate within-state-cohort control group. Three variants of such a control group are explored: women belonging to non-landed (versus landed) households, “non-Hindu” (versus “Hindu”) women, and men (versus women).

Thus, the expanded version of equation 1 that I estimate is:

$$\begin{aligned}
e_{isk} = & \alpha_s + \beta_k + \gamma_s k + \delta_1 D_{is, (k \geq k' - 5)} + \delta_2 D_{is, (k' - 10 \leq k \leq k' - 6)} \\
& + \delta_3 D_{is, (k' - 15 \leq k \leq k' - 11)} + \delta_4 D_{is, (k' - 20 \leq k \leq k' - 16)} + \delta'_1 D_{is, (k \geq k' - 5)} * C_i \\
& + \delta'_2 D_{is, (k' - 10 \leq k \leq k' - 6)} * C_i + \delta'_3 D_{is, (k' - 15 \leq k \leq k' - 11)} * C_i \\
& + \delta'_4 D'_{is, (k' - 20 \leq k \leq k' - 16)} * C_i + \mu C_i + X_{isk} \eta + \epsilon_{isk} \quad (2)
\end{aligned}$$

where  $C_i$  denotes either land ownership status, “Hindu” or gender of the individual. The coefficients of interest are  $\delta'_1$  and  $\delta'_2$ , which capture, e.g. in case of triple differences by land ownership, the differential impact on education for “treated” compared to “control” women that belong to landed relative to non-landed households in reforming versus non-reforming states.

The rationale behind using these groups for triple differencing is as follows. Firstly, the amendment to the Hindu Succession Act 1956 would have a bite in the reforming states only if the parental household of the woman owns any joint family property to begin with. Land is the most commonly held form of joint family/ancestral property, hence it makes sense to exploit variation along the dimension of land ownership status of the woman's household to improve identification. Now, since a household's land ownership status obtained at the time of survey, the underlying assumption is that this status has remained unchanged over time. If this assumption does not hold in reality, then measurement error would lead to attenuation bias in the triple differences estimates.<sup>19</sup> A biggest concern, however, is that land ownership status maybe correlated with the reform. The identifying assumption of the triple differences strategy is that the difference in educational outcomes between "treated" and "control" women belonging to landed relative to non-landed households in reforming states is on account of the reform. If, however, gender progressive parents had acquired additional land in anticipation of the reform, then this assumption would be violated. But it is important to note here that the reform related to ancestral property, and not to separate property acquired by the father in his lifetime, which allays fears of strategic land procurement by parents that could bias the results.

Secondly, owing to the fact that the HSA 1956 applied differentially across religion in India, only women who were either Hindu, Buddhist, Sikh or Jain

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<sup>19</sup>To elaborate on this, two possibilities could arise: one, it could be that the woman's family did not own land when she was young but does own land now (at the time of survey) and second, the family owned land when she was young but does not now. In the first case, reform would not have had any impact on the woman's education and including her as being landed introduces downward bias in my estimates. Moreover, the fact that the family did not own land earlier implies that the land was in most probability newly acquired and hence cannot represent ancestral property. In the second case, the reform would have had an impact on the woman's education and excluding her also leads to downward bias.

should benefit from the reform.

Finally, since the reform to HSA 1956 relates to the issue of inheritance of women, men of similar age group categories may be used as a counterfactual to examine the impact of exposure to the reform on the gender gap in education. However, there may arise concerns that since change in inheritance rights constitute a zero-sum game within the family (more rights for daughters implies less for sons, given a fixed amount of ancestral property), there may occur some compensating impact of the reform on men. This issue is discussed in further detail in section 3.2.3.

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.1. Since I focus on women who were 22 or older at the time of survey, the youngest cohort of women were born in 1984 (coming from the 2005 sample).<sup>20</sup> Hence, the variation in  $D_{s,(k \geq k' - 5)}$  primarily comes from Andhra Pradesh, Kerala and Tamil Nadu, while all five reforming states contribute to the variation in the remaining cohort categories.

## 3 Impact on Female Education

### 3.1 Difference-in-Differences Results

Results obtained from estimating equation 1 are presented in Table 2. Without controlling for any covariates, fixed effects or linear trends, mean education of women who were 10 years or younger at reform appear to be significantly higher relative to the control group (column 1), although the coefficient for even those aged 11-15 at reform is quite large but statisti-

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<sup>20</sup>A small proportion of interviews in the 2005 wave were carried out in 2006, hence the youngest cohort is that of 1984 rather than 1983.

cally insignificant. Adding individual level covariates and state and cohort of birth fixed effect reduces the sizes of the coefficients for all cohort groups, but the results remain qualitatively similar (columns 2 and 3 respectively). Column 4 presents the most rigorous specification here, with the inclusion of state-specific linear trends by cohorts. The suggested effect is that exposure to the reform increased mean educational attainment of the 5 or younger group by 0.57 years, and that of the 6-10 group by 0.5 years. This represents an improvement of approximately 0.02 standard deviations for both these “treated” groups relative to the control group. I cannot reject the equality of these two coefficients ( $\delta_1$  and  $\delta_2$ ), but can reject (at 1 percent level) the equality of each of them to the coefficient for the 16-20 group ( $\delta_4$ ), which is statistically insignificant as well as small in magnitude. Since women in the 16-20 group in the reforming states were already past school-going age by the time the reform took place, they would not be expected to benefit differentially in terms of education relative to the non-reforming states. This falsification exercise thus increases our confidence that the results are less likely to be driven by correlated unobservables, as well as allows us to rule out the concern that improvements in female education could have led to the passage of the reform in the first place (reverse causality). The coefficient for the 11-15 group ( $\delta_3$ ) is much reduced and no longer statistically significant.

The individual-level control variables have the expected signs. Focussing on column 4, we observe that “Hindu” women have significantly higher mean educational attainment compared to “non-Hindus”, while parental education is positively correlated with education of daughters. The coefficient for maternal age is also positive and highly significant, and is probably picking up the effect of older mothers possessing greater bargaining power that may in turn be correlated with better child outcomes. Women belonging to landed

households<sup>21</sup> in general have higher educational achievement, as do those living in urban areas. Number of household members, which is used as a crude proxy for number of siblings, is negatively correlated with education of women.

## 3.2 Triple Differences Results

But as outlined earlier, these difference-in-difference estimates do not control for unobservable factors correlated with the passage of the reform that could also affect female education. Hence, I turn to the triple differences approach, using a third source of variation within state-cohorts.

### 3.2.1 Land Ownership

Table 3 presents the results from estimating the triple differences using equation 2, where the third dimension of variation is in terms of land ownership status of the household the woman belongs to. Column 1 replicates the difference-in-differences result from column 4 of Table 2 for ease of reference, while column 2 provides the triple differences result. In the latter column, the coefficients for the uninteracted cohort groups capture the impact of the reform on women belonging to non-landed households in the reforming states (the  $\delta$ s in equation 2), while those for the cohort groups interacted with the variable “owns land” capture the differential impact of the reform on women who belong to landed households in the reforming states (the  $\delta$ 's in equation 2). Both specifications control for state fixed effects, cohort of birth fixed effects and state-specific linear cohort trends.

No impact is observed on the education levels of non-landed women in

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<sup>21</sup>Land ownership is also used as a proxy for income status of the household in the absence of income data in the NFHS.



any of the age groups in the reforming states, but there exists a positive and significant impact for those who were 5 years or younger and between 6-10 years old at the time of the reform and belonged to landed households in these states. The suggested effect is that being exposed to the reform increased mean educational attainment of women who were of primary school-going age at the time of reform by 0.7-0.8 years in landed relative to non-landed households in the reforming states, an increase of approximately 0.02 standard deviations. No such differential impact is observed for women who were 16-20 years old ( $\delta'_4$ ) at the time of reform, thereby increasing our confidence in the validity of the results. Moreover, the  $F$ -test also rejects the equality of the coefficients for 5 or younger and 16-20 groups for the landed ( $\delta'_1$  and  $\delta'_4$ ) at 5 percent and that for the 6-10 and 16-20 groups ( $\delta'_2$  and  $\delta'_4$ ) at 10 percent level.

### 3.2.2 Hindu

Table 4 presents the results from estimating the triple differences using equation 2, where the third dimension of variation is whether or not the woman belonged to a “Hindu” family. Column 1 replicates the difference-in-difference result from column 4 of Table 2 for ease of reference, while column 2 provides the triple differences result. As in Table 3, the coefficients for the uninteracted cohort groups in column 2 capture the impact of the reform on “non-Hindu” women in the reforming states (the  $\delta$ s), while those for the cohort groups interacted with the variable “Hindu” capture the differential impact of the reform on “Hindu” women in the reforming states (the  $\delta$ 's). As in Table 3, I control for state and cohort fixed effects, but now also add state-religion-specific linear cohort trends to allow for the fact that “Hindus” and “non-Hindus” may have evolved differently across cohorts in different

states.

Once again, no impact is observed on the education levels of “non-Hindu” women of any age group in the reforming states, and the coefficients are actually all negative in sign. For the Hindu women in these states, on the other hand, we find a positive impact on the education level of those who were 5 years or younger and between 6-10 years old at the time of the reform. Note that although the coefficient for the 5 or younger group is significant only at the 10 percent level, its magnitude is quite large. The suggested effect is that being exposed to the reform increased mean educational attainment of “Hindu” women who were of primary school-going age by 1.4-1.5 years compared to “non-Hindu” women in reforming states, an increase of approximately 0.05 standard deviations. No such differential impact is observed for women who were 16-20 years old at the time of reform. The  $F$ -test only barely fails to reject the equality of the coefficients for the 5 or younger and 16-20 groups of “Hindus” ( $\delta'_1$  and  $\delta'_4$ ) ( $p=0.11$ ) but can reject the equality of the coefficients for the 6-10 and 16-20 groups of “Hindus” ( $\delta'_2$  and  $\delta'_4$ ) at 5 percent level.

### 3.2.3 Gender

Along with the sample of women used for the above analyses, I also observe their brothers in the NFHS dataset, i.e. the sons of the head of the household. Just like in case of the women, I restrict the sample to include only those men who were at least 22 years of age at the time of survey. There are 70,466 such men in my sample, with year of birth spanning 1943 to 1984.<sup>22</sup> For triple differences using gender, I compare “treated” and “control” cohorts between women and men for reforming versus non-reforming states, and the results are

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<sup>22</sup>Of the total 70,466 men, 22,831 obtain from the 1992 round, 23,946 from the 1998 round and 23,689 from the 2005 round.

presented in Table 5. In each column, the coefficients for the uninteracted cohort groups capture the impact of the reform on men in the reforming states (the  $\delta$ s), while those for the cohort groups interacted with the variable “daughter” capture the differential impact of the reform on women in the reforming states (the  $\delta'$ s).

Column 1 presents results without controlling for any fixed effects or cohort trends, while column 2 includes state fixed effects, gender-specific cohort of birth fixed effects (to allow for the fact that education of girls and boys evolved differentially across cohorts) as well as state-specific linear cohort trends. Focusing on column 2, we find that the impact of the reform on the 5 or younger group of women is positive and highly significant, while that on the corresponding group of men is actually negative and significant. I can reject the equality of these two coefficients ( $\delta_1$  and  $\delta'_1$ ) at the 1 percent level. The coefficient for the 6-10 group of women is also large but only marginally significant. Nonetheless, I can still reject the equality of this coefficient with the corresponding one for men ( $\delta_2$  and  $\delta'_2$ ) at the 5 percent level. In addition, both  $\delta'_1$  and  $\delta'_2$  are significantly different from  $\delta'_4$ , which passes the falsification test. The suggested impact is that compared to men, women who were exposed to the reform gained approximately 1.1-1.3 additional years of education in the reforming states, which represents an improvement of approximately 0.03 standard deviations.

The specification in column 2 uses variation in gender across households. Since the sample contains a lot more men than women, it is possible that girls and boys live in different types of households, and the estimates are picking up some of these unobserved differentials that are correlated with education. To address this concern, I introduce household fixed effects in column 3. I restrict the sample to only those households that have at least

two children, which reduces the sample size somewhat. The coefficient for the 5 or younger group of women continues to remain highly significant and is indeed slightly larger in magnitude compared to column 2, and I am also able to reject the equality of this coefficient with the corresponding one for men at the 5 percent level. The coefficient for the 6-10 group of women is also similar in magnitude and level of significance to that in column 2. It is also interesting to note that after controlling for household fixed effects, the coefficients for all age groups of men is positive, although statistically insignificant, which is different compared to what was obtained in column 2. This indicates that there is little evidence of any compensating behaviour on part of the parents towards their sons in response to the inheritance rights reform.

## 4 Mechanism

So far, I provide evidence that being exposed to the inheritance rights reform in India was associated with an increase in mean educational attainment for women. But what explains this effect? In an attempt to shed light on the underlying mechanism of this observed effect, I first examine the impact of exposure to the reform on the likelihood of women to inherit property. Unfortunately, the NFHS does not collect information on inheritance. Therefore, I use the 1999 wave of the Rural Economic and Demographic Survey (REDS),<sup>23</sup> which is a representative survey of households from 16 major states of India.<sup>24</sup> The REDS dataset is unique in that it contains retrospective information on

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<sup>23</sup>The REDS dataset is collected by the National Council of Applied Economic Research in India (NCAER).

<sup>24</sup>The states that are excluded here but are included in NFHS are Arunachal Pradesh, Chattisgarh, Goa, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, New Delhi, Sikkim and Tripura. All my education results presented earlier go through if I restrict the number of states in NFHS to match those in REDS 99.

topics like inheritance and marriage for all members of the household, including for daughters who have married and left the household. Here, too, I focus on women who are daughters of the head of the household and at least 22 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 HSA 1956 and thereby were affected by the reform), since almost 92 percent of the women in this sample belong to these religions. This leaves me with a sample size of 4,964 women.

Using a triple differences methodology with respect to land ownership, I analyze the impact of exposure to the inheritance reform on probability of inheritance by women. Inheritance typically occurs when the head of the family dies and the property is partitioned. Since the reform relates to ancestral property, the relevant event in this case is the death of the grandfather in the family, following which the father would become head. The REDS 99 dataset contains information on whether the father became the head of the family following the death of the grandfather or not. If for instance, the father set up his separate household while the grandfather was alive, then the question of partition of property and inheritance would be less relevant. Hence, I focus on only those daughters whose fathers became head of family following the grandfather's death. Ideally, we would also need to know if the grandfather died after the reform was passed for it to have any bite on inheritance, but unfortunately, the REDS 99 does not contain this information. This remains a caveat of the analysis presented below.

## **4.1 Inheritance**

For the inheritance analysis, the two “treated” groups used in the education analysis above have been merged to create a single “treated” group - women

who were 10 or younger at the time of reform. This is because for the group 5 or younger, there is no variation by land ownership in the REDS 99 sample and hence the impact of the reform on women belonging to landed and non-landed households cannot be identified separately for this group. The results are presented in Table 6. The dependent variable is a binary variable that is one if the daughter inherits any land and zero otherwise. According to the amendment of the Hindu Succession Act (1956), *unmarried* women (at the time of the reform) were eligible to inherit ancestral property. Since the mean age at marriage in this sample is approximately 18 years, one would expect that women in the groups 10 or younger and 11-15 would display increased likelihood of inheritance, while those in the group 16-20 would not.

Focusing on column 4 that controls for state and cohort fixed effects as well as state-specific trends, we however find no differential impact on the likelihood of inheriting land for women who were of primary school-going age (10 or younger) at the time of reform and belonging to landed households relative to non-landed ones in the reforming state. Similarly for women in the 11-15 group. If anything, the coefficients are negative, and the former is marginally significant. I cannot reject the equality of the coefficient estimate for the 10 or younger group for landed households with that for the corresponding 11-15 and 16-20 groups and for that matter, with the coefficient for the 10 or younger group for non-landed households. Hence it appears that daughters have continued to be disinherited from ancestral property, and the law did not have any impact along the dimensions it was intended to, at least in the short run.<sup>25</sup>

A potential reason behind this may be related to the existence of incen-

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<sup>25</sup>This would, however, not be the first example of a gender progressive law biting the dust when it comes to practical implementation - the Dowry Prohibition Act (1961) is another law that is regularly flouted in practice.

tives for parents to prevent fragmentation of household property, especially land.<sup>26</sup> In India, daughters typically leave the household of their parents after marriage and live with their husband's family, known as virilocality. This creates two problems: firstly, parents may fear loss of control over their household land to the daughter's husband's family if the daughter is allowed to inherit a share. This may be further reinforced by the notion of women being "guests" in their natal (parental) home till they are married and that they really only belong to their husband's family (Kramarae and Spender, 2000). Hence, household land is typically passed along the male line alone so as to keep it within the family. Secondly, Botticini and Siow (2003) discuss how giving daughters equal share in household property would create disincentives for sons (who have a comparative advantage in working with family assets compared to their married sisters) regarding provision of optimal effort in extending family wealth, as they would no longer be able to enjoy the full benefits of their effort.

Coupled with the education results, this therefore suggests that parents were compensating daughters for disinheritance from ancestral land (that they were now legally entitled to) by investing in their education. Quisumbing and Otsuka (2001) also find evidence of land inheritance and schooling being treated as different forms of intergenerational transfers in Sumatra. However, such compensation would only be possible for those daughters who were of school-going age at the time of reform - more specifically, those who were of *primary* school-going age at that time, i.e. 10 or younger. Education of those daughters who were already past primary school-going age, i.e. 11-15 group, could not be improved if they had never been to school at all or had

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<sup>26</sup>In fact, fragmentation was one of the key arguments presented against extending equal rights of inheritance to joint family property for women in India in the original Hindu Succession Act of 1956 (Agarwal, 1994).

dropped out long back. For the latter group, compensation ought to take a different form. One possibility could be dowry payments made at the time of marriage of the daughter. A number of existing studies have analyzed dowry as a form of “pre-mortem” bequest. Botticini and Siow (2003) in fact discuss how parents’ decision to give dowries to their daughters and bequests (of e.g. assets like land) to their sons constitute an optimal incentive scheme when married daughters leave the parental household after marriage while sons stay back and enjoy a comparative advantage in working with family assets. If parents seek to compensate daughters in the 11-15 group in terms of dowry at marriage, then we should observe dowry payments to increase for women belonging to this group in landed households relative to the non-landed ones in reforming states.

## 4.2 Dowry Payments

REDS 99 contains information on nominal dowry payments made by parents at the time of the daughter’s marriage. The nominal dowry payments in the dataset are converted to real values using the Indian Consumer Price Index (base: 1966 = 100).<sup>27</sup>

Table 7 presents results for log of real dowry payments at the time of marriage. Focusing on column 4, we find that indeed mean dowry payments for women in the 11-15 group increases by 0.4 percentage points for the land-owning households compared to the non-landed ones in reforming states (equality of these two coefficients is rejected at the 5 percent level). Interestingly, the mean dowry payments of the 10 or younger group declines

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<sup>27</sup>I use Consumer Price Index for Agricultural Workers as the deflator since the REDS dataset focuses on a rural sample. I thank Robin Burgess for generously granting me access to his Indian states data for this purpose. Also, over 90 percent of the families in my sample pay dowry and receive nothing, hence I only focus on dowry payments.



by 0.36 percentage points. This could have two potential explanations: parents choose to compensate daughters only along one dimension, so since the 10 or younger group gains in terms of education in exchange of inheritance rights, they are paid less pre-mortem bequest. This explanation views education and dowry payments as competing channels of compensating daughters for disinheriting them from their rightful share in ancestral property. Alternatively, if dowry is interpreted as a price that clears marriage markets, then higher education could substitute for dowry payments as more educated brides enjoy higher valuation in the marriage market and hence has to pay lower dowries to secure the groom of their choice.

In column 5, I restrict the sample to include only those daughters whose fathers became the head of the household following the grandfather's death, in order to maintain parity with the likelihood of inheritance results presented in Table 6. This reduces the sample size considerably, but the results are still very similar to those in column 4. Although the coefficient for the 11-15 group in landed households in reforming states is no longer significant at conventional levels, the coefficient is still similar in magnitude and sign to that in column 4. I can also reject the equality of this coefficient with that for the non-landed in reforming states at the 10 percent level. The coefficient for the 10 or younger group continues to be negative and highly significant.

However, the question remains as to why parents switch from dowry to education as a means of compensating daughters across cohorts? One potential explanation could be that although dowry is often interpreted as a pre-mortem bequest given to the daughter at the time of her marriage, it hardly remains under the control of the daughter after her marriage, and hence does not necessarily improve her welfare in reality (Suran, Amin, Huq, and Chowdhury, 2004). Education, on the contrary, is inalienable as an in-

vestment in the daughter and hence may be preferred by parents as a means of compensation when available. However, it cannot be ruled out that parents may be responding to a scenario of changing returns to female education in a growing Indian economy.

## 5 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 makes a unique contribution to economic growth (Behrman, Foster, Rosenzweig, and Vashishtha, 1999). This paper studies the impact of women’s property inheritance rights on their human capital attainment by exploiting exogenous variation generated by state level amendments to the central inheritance law in India. I use a difference-in-differences approach that takes advantage of the fact that different states reformed the law at different points in time for identification. In particular, I compare educational outcomes of women who were of primary school-going age at the time of reform (exposed or “treated” group) to those who were too old to go to school (“control” group), between reforming and non-reforming states. I find that being exposed to the reform was associated with a significant improvement in the mean educational attainment of women. In order to improve identification, I also use a triple differences strategy to compare the difference-in-differences estimate by land ownership status of households, religious affiliation and gender. I find that the positive impact on education exists only for women (compared to men) and that too, only for those women belonging to landed (compared to non-landed) and

“Hindu” (compared to “non-Hindu”) households.

This paper also attempts to shed light on the underlying mechanism of this observed effect. I find that even though the reform entitled daughters to inherit equal shares in joint family property as sons, in reality, this did not happen. In other words, I find no impact of the reform on likelihood of inheritance by women. Instead, parents appear to be compensating their daughters for disinheriting them such by investing in their education as a form of alternative transfer of wealth. For those daughters who were already past school-going age at the time of the reform, the compensation takes the form of higher dowry at the time of their marriage.

Thus, the findings obtained in this paper have policy implications beyond the Indian context 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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Table 1: Descriptive Statistics

	Reforming			Non-Reforming	All
	$\geq 21$	$\leq 5$	All		
Female	0.31 [0.46]	0.20 [0.40]	0.24 [0.43]	0.19 [0.39]	0.21 [0.40]
For Females:					
Age	31.05 [7.00]	24.67 [2.87]	27.33 [5.55]	26.82 [5.30]	26.96 [5.39]
Years of education	6.55 [5.58]	10.78 [5.58]	8.65 [5.40]	7.94 [5.85]	8.14 [5.74]
Father's age	63.61 [9.38]	58.88 [7.00]	61.19 [8.56]	60.48 [8.56]	60.68 [8.56]
Mother's age	55.40 [7.70]	50.99 [5.49]	53.12 [6.76]	53.76 [7.03]	53.58 [6.96]
Father's education	5.35 [4.88]	6.26 [4.60]	5.99 [4.80]	5.96 [5.33]	5.97 [5.20]
Mother's education	2.92 [3.95]	5.31 [4.48]	4.05 [4.36]	3.25 [4.48]	3.48 [4.46]
Land ownership	0.44 [0.49]	0.28 [0.45]	0.36 [0.48]	0.52 [0.49]	0.48 [0.49]
Hindu	0.76 [0.42]	0.76 [0.43]	0.78 [0.41]	0.64 [0.47]	0.83 [0.36]
HH members	7.76 [3.71]	6.55 [3.08]	7.09 [3.29]	7.63 [3.44]	7.48 [3.41]
Urban	0.48 [0.49]	0.44 [0.49]	0.50 [0.50]	0.42 [0.49]	0.45 [0.49]

*Notes:* \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. Numbers in square brackets denote standard deviations. "Reforming" denotes states that passed the amendment to the HSA 1956 (i.e. Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka), 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  $\leq 5$ ). "Non-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: Impact of Inheritance Reform on Female Education:  
Difference-in-Differences

	(1)	(2)	(3)	(4)
	Years of education			
Aged 5 or less at time of reform	2.99*** (0.46)	1.98*** (0.57)	1.10*** (0.36)	0.57** (0.26)
Aged 6-10 at time of reform	2.07*** (0.64)	1.18** (0.44)	0.99*** (0.28)	0.50** (0.20)
Aged 11-15 at time of reform	1.62 (1.02)	0.71* (0.40)	0.60** (0.23)	0.15 (0.26)
Aged 16-20 at time of reform	0.61 (0.87)	0.01 (0.41)	0.28 (0.25)	-0.01 (0.25)
Hindu		-0.06 (0.22)	0.57*** (0.14)	0.58*** (0.14)
Father's education		0.42*** (0.02)	0.43*** (0.02)	0.43*** (0.02)
Father's age		-0.01 (0.02)	0.00 (0.01)	0.00 (0.01)
Mother's education		0.32*** (0.03)	0.29*** (0.02)	0.29*** (0.02)
Mother's age		0.01 (0.02)	0.03*** (0.01)	0.03*** (0.01)
Owns land		0.17 (0.18)	0.27** (0.12)	0.27** (0.12)
Urban		1.96*** (0.24)	2.07*** (0.23)	2.06*** (0.23)
No. of household members		-0.17*** (0.02)	-0.08*** (0.02)	-0.08*** (0.02)
State fixed effects	No	No	Yes	Yes
Cohort of birth fixed effects	No	No	Yes	Yes
State-specific linear cohort trends	No	No	No	Yes
Adj. R-sq	0.02	0.52	0.58	0.58
No. of observations	18653	15466	15466	15466

*Notes:* Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The "Hindu" variable denotes Hindus, Buddhists, Sikhs and Jains (to whom the Hindu Succession Act applies), while non-Hindus denote Muslims, Christians, Parsis and Jews.

Table 3: Impact of Inheritance Reform on Female Education:  
Triple Differences by Land Ownership

	(1)	(2)
	Years of education	
Aged 5 or less at time of reform	0.57** (0.26)	0.23 (0.40)
Aged 6-10 at time of reform	0.50** (0.20)	0.18 (0.28)
Aged 11-15 at time of reform	0.15 (0.26)	0.00 (0.31)
Aged 16-20 at time of reform	-0.01 (0.25)	-0.04 (0.39)
Aged 5 or less at time of reform*owns land		0.83** (0.32)
Aged 6-10 at time of reform*owns land		0.74* (0.40)
Aged 11-15 at time of reform*owns land		0.28 (0.39)
Aged 16-20 at time of reform*owns land		-0.01 (0.44)
Hindu	0.58*** (0.14)	0.59*** (0.14)
Father's education	0.43*** (0.02)	0.43*** (0.02)
Father's age	0.00 (0.01)	0.00 (0.01)
Mother's education	0.29*** (0.02)	0.29*** (0.02)
Mother's age	0.03*** (0.01)	0.03*** (0.01)
Owns land	0.27** (0.12)	0.18 (0.16)
Urban	2.06*** (0.23)	2.05*** (0.23)
No. of household members	-0.08*** (0.02)	-0.08*** (0.02)
State fixed effects	Yes	Yes
Cohort of birth fixed effects	Yes	Yes
State-specific linear cohort trends	Yes	Yes
Adj. R-sq	0.58	0.58
No. of observations	15466	15466

*Notes:* Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The "Hindu" variable denotes Hindus, Buddhists, Sikhs and Jains (to whom the Hindu Succession Act applies), while non-Hindus denote Muslims, Christians, Parsis and Jews.

Table 4: Impact of Inheritance Reform on Female Education:  
Triple Differences by Hindu

	(1)	(2)
	Years of education	
Aged 5 or less at time of reform	0.57**	-0.65
	(0.27)	(0.67)
Aged 6-10 at time of reform	0.50**	-0.61
	(0.19)	(0.64)
Aged 11-15 at time of reform	0.15	-0.09
	(0.26)	(0.49)
Aged 16-20 at time of reform	-0.02	-0.45
	(0.25)	(0.62)
Aged 5 or less at time of reform*hindu		1.57*
		(0.83)
Aged 6-10 at time of reform*hindu		1.41**
		(0.64)
Aged 11-15 at time of reform*hindu		0.28
		(0.43)
Aged 16-20 at time of reform*hindu		0.52
		(0.52)
Hindu	2.14	39.80
	(34.72)	(41.47)
Father's education	0.42***	0.42***
	(0.02)	(0.02)
Father's age	0.00	0.00
	(0.01)	(0.01)
Mother's education	0.29***	0.29***
	(0.02)	(0.02)
Mother's age	0.03***	0.03***
	(0.01)	(0.01)
Owns land	0.26**	0.27**
	(0.12)	(0.12)
Urban	2.05***	2.05***
	(0.23)	(0.23)
No. of household members	-0.08***	-0.08***
	(0.02)	(0.02)
State fixed effects	Yes	Yes
Cohort of birth fixed effects	Yes	Yes
State-religion linear cohort trends	Yes	Yes
Adj. R-sq	0.58	0.58
No. of observations	15466	15466

*Notes:* Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The "Hindu" variable denotes Hindus, Buddhists, Sikhs and Jains (to whom the Hindu Succession Act applies), while non-Hindus denote Muslims, Christians, Parsis and Jews.

Table 5: Impact of Inheritance Reform on Female Education:  
Triple Differences by Gender

	(1)	(2)	(3)
	Years of education		
Aged 5 or less at time of reform	0.72** (0.32)	-0.46** (0.22)	0.49 (0.43)
Aged 6-10 at time of reform	0.38* (0.21)	-0.26 (0.18)	0.30 (0.37)
Aged 11-15 at time of reform	0.12 (0.17)	-0.25 (0.15)	0.21 (0.30)
Aged 16-20 at time of reform	0.10 (0.17)	-0.07 (0.14)	0.14 (0.32)
Aged 5 or less at time of reform*daughter	1.85*** (0.31)	1.33*** (0.42)	1.65*** (0.47)
Aged 6-10 at time of reform*daughter	1.20*** (0.33)	1.08* (0.54)	1.15* (0.57)
Aged 11-15 at time of reform*daughter	0.99** (0.43)	0.63 (0.39)	0.55 (0.57)
Aged 16-20 at time of reform*daughter	0.14 (0.39)	0.31 (0.29)	0.08 (0.49)
Daughter	-1.50*** (0.30)	-6.51*** (1.02)	-6.11* (3.47)
Hindu	0.67*** (0.18)	0.95*** (0.18)	
Father's education	0.42*** (0.02)	0.42*** (0.02)	
Father's age	-0.01 (0.01)	-0.01 (0.00)	
Mother's education	0.23*** (0.02)	0.21*** (0.01)	
Mother's age	0.04*** (0.01)	0.04*** (0.00)	
Owns land	0.57*** (0.15)	0.64*** (0.10)	
Urban	1.45*** (0.14)	1.48*** (0.13)	
No. of household members	-0.06*** (0.01)	-0.03** (0.01)	
State fixed effects	No	Yes	No
Gender-cohort of birth fixed effects	No	Yes	Yes
State-specific linear cohort trends	No	Yes	No
Household fixed effects	No	No	Yes
Adj. R-sq	0.40	0.43	0.65
No. of observations	73276	73276	56915

*Notes:* Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The "Hindu" variable denotes Hindus, Buddhists, Sikhs and Jains (to whom the Hindu Succession Act applies), while non-Hindus denote Muslims, Christians, Parsis and Jews.

Table 6: Impact of Inheritance Reform on Likelihood of Inheritance by Women

	(1)	(2)	(3)	(4)
	Inheritance			
Aged 10 or less at time of reform	-0.03 (0.02)	0.00 (0.03)	0.06* (0.04)	0.05 (0.06)
Aged 11-15 at time of reform	-0.03 (0.02)	-0.03 (0.02)	0.06** (0.03)	0.05 (0.05)
Aged 16-20 at time of reform	-0.03 (0.02)	-0.04 (0.02)	0.05* (0.03)	0.04 (0.04)
Aged 10 or less at time of reform*owns land	-0.05 (0.03)	-0.09 (0.05)	-0.11** (0.05)	-0.08* (0.04)
Aged 11-15 at time of reform*owns land	-0.03 (0.04)	-0.03 (0.04)	-0.06 (0.04)	-0.05 (0.04)
Aged 16-20 at time of reform*owns land	-0.03 (0.03)	-0.02 (0.03)	-0.04 (0.03)	-0.05 (0.04)
Owns land	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)	0.05 (0.03)
No. of daughters		-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Non-Brahmin upper caste		-0.04 (0.03)	-0.02 (0.02)	-0.01 (0.02)
Scheduled caste		-0.05 (0.03)	-0.02 (0.03)	-0.02 (0.03)
Scheduled tribe		-0.06* (0.03)	0.00 (0.03)	0.00 (0.03)
Other backward caste		-0.03 (0.03)	0.02 (0.04)	0.02 (0.04)
Non-classified Hindu		-0.10*** (0.03)	-0.04 (0.03)	-0.03 (0.03)
State fixed effects	No	No	Yes	Yes
Cohort of birth fixed effects	No	No	Yes	Yes
State-specific linear cohort trends	No	No	No	Yes
Adj R-sq	0.01	0.01	0.10	0.11
No. of observations	2958	2843	2843	2843

*Notes:* The dependent variable is a dummy which equals 1 if the daughter has inherited any land and 0 if otherwise. Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The omitted caste category is Brahmins, the highest in the caste ladder.

Table 7: Impact of Inheritance Reform on Dowry Payments

	(1)	(2)	(3)	(4)	(5)
	Log(dowry payment)				
Aged 10 or less at time of reform	0.02	-0.12	-0.04	-0.24	-0.29
	(0.20)	(0.24)	(0.17)	(0.22)	(0.28)
Aged 11-15 at time of reform	-0.12	0.00	-0.49*	-0.47*	-0.70**
	(0.19)	(0.22)	(0.26)	(0.23)	(0.27)
Aged 16-20 at time of reform	0.28	0.44	-0.27*	-0.19	-0.35
	(0.30)	(0.28)	(0.14)	(0.15)	(0.27)
Aged 10 or less at time of reform*owns land	0.85***	0.92***	-0.03	-0.36**	-0.86***
	(0.22)	(0.22)	(0.13)	(0.15)	(0.17)
Aged 11-15 at time of reform*owns land	0.89***	0.77***	0.46**	0.40*	0.57
	(0.26)	(0.25)	(0.22)	(0.19)	(0.41)
Aged 16-20 at time of reform*owns land	-0.05	-0.05	0.01	0.06	0.17
	(0.37)	(0.34)	(0.18)	(0.18)	(0.23)
Owns land	0.24	0.18	0.36***	0.37***	0.24*
	(0.17)	(0.15)	(0.08)	(0.08)	(0.12)
No. of daughters		-0.06	-0.03	-0.03	-0.01
		(0.04)	(0.02)	(0.02)	(0.03)
Non-Brahmin upper caste		0.13	-0.12	-0.11	-0.05
		(0.10)	(0.13)	(0.12)	(0.14)
Scheduled caste		-0.45**	-0.63***	-0.66***	-0.56***
		(0.16)	(0.11)	(0.11)	(0.17)
Scheduled tribe		-1.04***	-0.96***	-0.98***	-0.95***
		(0.25)	(0.24)	(0.25)	(0.29)
Other backward caste		-0.29	-0.53***	-0.53***	-0.44***
		(0.23)	(0.08)	(0.08)	(0.11)
Non-classified Hindu		-0.06	-0.30***	-0.31***	-0.28*
		(0.20)	(0.10)	(0.08)	(0.13)
State fixed effects	No	No	Yes	Yes	Yes
Cohort of birth fixed effects	No	No	Yes	Yes	Yes
State-specific linear cohort trends	No	No	No	Yes	Yes
Adj R-sq	0.02	0.07	0.28	0.30	0.28
No. of observations	3259	3110	3110	3110	1932

*Notes:* The dependent variable is log of real dowry payments (in 1966 rupees) made at the time of the daughter's marriage. Standard errors are clustered at the state level and presented in parentheses. \* denotes significant at 10 percent, \*\* denotes significant at 5 percent, \*\*\* denotes significant at 1 percent. The omitted cohort category consists of women who were 21 years or older at the time of the passage of the reform. The omitted caste category is Brahmins, the highest in the caste ladder.

Table A.1: Distribution of Women by Age at Reform in Reforming States

Age at reform	(1) Andhra Pradesh	(2) Karnataka	(3) Kerala	(4) Maharashtra	(5) Tamil Nadu	(6) Total
-8	0	0	82	0	0	82
-7	0	0	79	0	0	79
-6	0	0	97	0	0	97
-5	0	0	92	0	0	92
-4	0	0	89	0	0	89
-3	0	0	84	0	0	84
-2	0	0	73	0	0	73
-1	0	0	169	0	0	169
0	0	0	204	0	0	204
1	0	0	153	0	0	153
2	164	0	172	0	0	336
3	132	0	139	0	0	271
4	131	0	116	0	0	247
5	175	0	236	0	128	539
6	123	0	294	0	120	537
7	99	0	301	0	110	510
8	100	0	235	0	128	463
9	103	0	241	0	92	436
10	209	151	217	286	73	936
11	108	115	176	243	78	720
12	129	127	185	227	190	858
13	119	188	130	312	194	943
14	87	117	135	202	150	691
15	122	88	86	194	152	642
16	161	124	89	188	142	704
17	140	179	71	329	115	834
18	143	269	61	425	115	1,013
19	226	134	76	244	222	902
20	107	248	29	336	208	928
21	70	140	25	213	165	613
22	115	115	35	178	193	636
23	54	328	22	377	137	918
24	166	198	15	244	120	743
25	34	285	18	280	112	729
26	53	193	15	228	66	555
27	25	223	12	219	95	574
28	19	160	8	167	56	410
29	88	115	7	124	58	392
30	23	200	5	154	34	416
31	9	109	3	120	27	268
32	21	97	4	78	66	266
33	7	94	3	93	13	210
34	41	49	0	60	28	178
35	5	81	0	56	22	164
36	8	57	0	50	8	123
37	6	61	0	63	18	148
38	4	32	0	36	9	81
39	12	14	0	23	7	56
40	2	50	0	29	4	85
41	0	18	0	30	4	52
42	0	23	0	27	8	58
43	0	12	0	18	0	30
44	0	6	0	18	2	26
45	0	12	0	9	0	21
46	0	12	0	11	1	24
47	0	17	0	11	0	28
48	0	5	0	4	0	9
49	0	2	0	5	0	7
50	0	10	0	3	0	13
51	0	1	0	2	0	3
Total	3,340	4,459	4,283	5,916	3,470	21,468