

# Inheritance Law Reform, Empowerment, and Human Capital Accumulation

Second-Generation Effects from India

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## Abstract

This paper uses evidence from three Indian states, one of which amended inheritance legislation in 1994, to assess first- and second-generation effects of inheritance reform using a triple-difference strategy. Second-generation effects on education, time use, and health are larger and more significant than first-generation effects

even controlling for mothers' endowments. Improved access to bank accounts and sanitation as well as lower fertility in the parent generation suggest that inheritance reform empowered females in a sustainable way, a notion supported by significantly higher female survival rates.

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# **Inheritance Law Reform, Empowerment, and Human Capital Accumulation: Second-Generation Effects from India**

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# **Inheritance Law Reform, Empowerment, and Human Capital Accumulation: Second-Generation Effects from India**

## **1. Introduction**

Parental bequests of material wealth or human capital are a key way to transfer assets across generations that affects patterns of accumulation and overall development by affecting resource access (Becker and Tomes 1979; Stiglitz and Weiss 1981), individuals' wealth, and economic opportunities (Blinder 1973). While inheritance laws affect the nature and overall size of intergenerational bequests (Ellul *et al.* 2010), in most contexts they will also affect gendered patterns of wealth. This is particularly relevant if traditional norms provide men with preferential access to key household resources through inheritance and if females attach higher values to family needs or children's welfare and thus devote more of the resources at their disposal to these (Behrman 1990; Strauss *et al.* 2000). In this case, the level of female wealth, including assets received via inheritance, is likely to affect future generations' human capital investment, social mobility (Davies 1982; De Nardi 2004; Kotlikoff and Summers 1980), occupational choice, and asset accumulation (Cowell 1998). In fact, the potentially far-reaching effect of legal provisions regarding divorce (Stevenson and Wolfers 2006) or access to political office (Chattopadhyay and Duflo 2004) on female empowerment in the long term is well documented in the literature.

Recognition of the potentially transformative role inheritance can play in terms of overcoming long-standing bias against females' resource access, some countries recently revised legislative provisions in this respect. But results have often been mixed. In Ghana, legal changes seems to have triggered compensatory action that in the end made intended beneficiaries worse off (La Ferrara and Milazzo 2012). In Rwanda, changes in inheritance legislation became effective on a large scale only once they were combined with a systematic land registration program (Ali *et al.* 2014). In India, some states started to amend the Hindu Succession Act as early as 1987 to make women's inheritance rights equal to those enjoyed by men. This was subsequently adopted on a national scale in 2005. One study finds that, in early adopting states, women's likelihood of inheriting land increased and indicators of female empowerment such as girls' educational attainment and age at marriage improved (Deininger *et al.* 2013). But others find that reforms may have led to compensatory behavior (Roy 2013) or, by making it more costly to raise girls relative to boys, even have reduced girls' survival ratios (Rosenblum 2012).

This paper builds on this literature by assessing not only direct but also second-generation effects from the reform. We compare the nature and magnitude of first-generation effects of inheritance reform to

second-generation effects by mothers who directly benefited from the reforms treating their daughters differently than those who were unaffected. Such second-generation effects are identified by comparing outcomes for females relative to their male siblings in the same household between households where the mother was or was not affected by reform. To do so, we use data for three generations of individuals in three Indian states, one of which implemented inheritance reforms in 1994. Outcome variables include educational inputs, particularly time spent studying, parents' educational spending, primary or secondary completion, and health outcomes. Size and significance of second-generation effects can be compared to first-generation impacts on young girls whose mother was unaffected. Beyond evidence in support of significant second-generation effects, we also find that the magnitude of such effects may well exceed that of first-generation impacts.

To assess whether second-generation effects are plausible and to trace channels through which they might materialize, we complement evidence on second-generation effects with exploration of HSAA-induced impacts on the parent generation. Although the identification strategy is less robust than that for second-generation impacts, we find that females who benefited from inheritance reform in this generation received more assets at marriage and were more empowered in terms of time use, access to bank accounts and sanitary facilities. Their reproductive choices also differed markedly from those by women who had not benefited from reform, in terms of significantly lower fertility and higher survival rates for daughters, though we also find evidence of the HSAA resulting in a lower share of females born, possibly through sex-selective abortion. This supports the notion that early amendments of the HSAA affected long-term outcomes for women, including the next generation's welfare and that improving inheritance rights can be a sustainable way for female empowerment.

The paper is structured as follows. Section 2 reviews evidence of asset transfers across generations; describes legal provisions regarding inheritance in India, including the Hindu Succession Act Amendment (HSAA); and discusses the data. Section 3 introduces issues of identification and presents results for second-generation impacts of the HSAA using a triple difference for education and health outcomes as well as some alternative strategies. Section 4 complements this with estimation of (first-generation) effects on generation II with regard to education completion, time allocation, and female empowerment using a less robust identification strategy. Section 5 concludes by drawing out implications for research and policy.

## **2. Background and motivation**

Although inheritance of key assets including land is likely to be an important determinant of women's bargaining power, empirical studies to assess the direct or indirect impact of inheritance reform are few and often weakly identified. Legal amendments to change female inheritance rights in India are an

exogenous source of variation that has been used in a number of studies to assess first-generation reform impacts. Extending such investigation to include second-generation effects is justified to assess whether, over and above direct effects in terms of resource transfers, inheritance reform can, possibly through its effect on empowerment, have a sustained impact beyond the immediate beneficiaries. To identify impacts of inheritance reforms on outcomes in terms of education and health, we use variation in whether or not the mother benefited from the HSAA and compare females to their male siblings in the same household controlling for direct resource transfers received by their mother. This is complemented with evidence on first-generation effects on education, access to a bank account, and fertility.

## **2.1 The importance of women's inheritance**

A unitary household model may not adequately describe reality if preferences are heterogeneous and the distribution of resources within the household will affect parties' bargaining power (Anderson and Eswaran 2009). Who in the household owns assets that generate key income streams or can claim access to such income will profoundly affect substantive outcomes including decisions on the use of household resources, fertility, and educational, health, and nutrition investments in future generations' welfare.

Women's bargaining power is particularly relevant for transfers of human and physical capital to the next generation if, as found in some studies, women devote higher proportions of income to family needs than men (Strauss *et al.* 2000). In this case, children benefit if their mothers control a larger share of family resources (Thomas 1990). Further support for this is provided by studies showing that (i) greater female bargaining power helped reduce fertility and child mortality in India (Dyson and Moore 1983); (ii) receipt of pensions by females but not males affected girls' anthropometric status in South Africa (Duflo 2003); (iii) higher female incomes after agricultural reforms increased girls' survival rates in China (Qian 2008); and (iv) exogenous increases in low-castes' female income significantly increased investment in schooling, particularly for girls (Luke and Munshi 2011).

The literature demonstrates long term effects from female education (Becker *et al.* 2013) and far-reaching economic impacts of regulations regarding inheritance on the level and nature of investment (Ellul *et al.* 2010). Yet, until recently, study of inheritance largely abstracted from the fact that recipients' gender may matter and the conceptual literature on inheritance abstracts from gender, focusing on other attributes instead. The wealth model (Becker and Tomes 1979) predicts altruistic parents to provide children of different ability with amounts of human capital to equate marginal returns to schooling to those from financial assets. The strategic bequest model (Bernheim *et al.* 1985) assumes parents bequeath assets to children in return for support in old-age; tests in a developed country setting lend general support to an equal allocation rule (Behrman and Rosenzweig 2004).

While land is a key asset all over the world (Deininger 2003; Doss *et al.* 2012), many traditional societies restrict women's ability to independently own or inherit it (Platteau and Baland 2001). Gendered patterns of land inheritance thus have been identified as a key determinant of women's economic opportunities and their ability to cope with risks (Deere *et al.* 2013). While land inheritance is affected by a range of factors (Goetghebuer and Platteau 2010), it will impact social and economic outcomes (La Ferrara 2003). The value and nature of assets which a female brought to a marriage is an important determinant of women's bargaining power in Ethiopia (Kumar and Quisumbing 2012) and Tanzania (Peterman 2011). For 15 countries in Sub-Saharan Africa, less than half of widows report inheriting land (Peterman 2012)<sup>1</sup> and widows' ability to hold on to their husband's land is highly unpredictable (Chapoto *et al.* 2011).

This, together with the fact that land conflicts, many due to inheritance, disproportionately affect women (Deininger and Castagnini 2006), has led experts to highlight the scope for using legal provisions to make women's inheritance rights more secure to reduce long-standing gender discrimination and improve outcomes (Cooper and Bird 2012). But as legal interventions often had limited impact (Anderson 2003) and property rights reforms proved difficult to sustain over time (Galiani 2011), evidence of tangible and sustained impact will be essential to making a case for such reforms.

Empirically, a key issue is that women's economic opportunities and their bargaining power are affected by a host of factors including relative endowments and production technology, so that identification will be difficult (Quisumbing 2001). Empowering females, especially if it allowed them to make choices that were concealed from their husbands, clearly affected contraceptive choice in Zambia (Ashraf *et al.* 2014). Exogenous changes in legal provisions that affect women's ability to control key family assets can help fill this void and advance understanding of intra-household bargaining.

Changes of US divorce laws that made exit easier for women are analytically equivalent to an asset transfer (Chiappori *et al.* 2002) and raise similar analytical issues. Studies often use states' adoption of such provision at different points in time to achieve identification (Allen 1992; Friedberg 1998; Peters 1986; Wolfers 2006). Results suggest far-reaching impacts on spouses' bargaining power in existing marriages and outcome variables such as domestic violence (Stevenson and Wolfers 2006) and female labor force participation (Stevenson and Wolfers 2007).

## **2.2 Women's inheritance rights in India**

Despite the Constitution mandating gender equality, inheritance in India was traditionally strongly biased against women. The 1956 Hindu Succession Act (HSA) distinguishes individual property from joint ancestral assets which include land (Agarwal 1994). The fact that rights to the latter are limited to a group

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<sup>1</sup> These countries are Benin, Congo/Brazzaville, Democratic Republic of Congo, Guinea, Mali, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Uganda, Zambia, and Zimbabwe.

-the coparcenary- that comprises only males severely limits females' ability to inherit joint property.<sup>2</sup> To eliminate the gender inequality inherent in this practice, a number of states amended this Act by passing substantively similar amendments -referred as Hindu Succession Act Amendments or HSAA- starting from 1987. This stipulated that coparceners' daughters will acquire coparcenary rights by birth,<sup>3</sup> thereby making their status equal to that of sons. While the HSAA was adopted at a national level in 2005, the fact that early amendments were adopted only by a select set of states and that in 2011 when our survey was conducted children in non-reform states were still too young to have benefited from the HSAA in any meaningful way thus allows us to explore whether changes in inheritance legislation improved access to physical and human capital by women who were the intended beneficiaries from such legislation.

A number of studies indeed explored first-generation effects of the HSAA. Comparing males and females in the same household for those that did and did not benefit from the reform suggests that the HSAA markedly increased the likelihood of inheriting land for direct beneficiaries (Deininger *et al.* 2013). Use of repeated cross sections suggests that the reforms may have given rise to compensatory behavior in the sense that they increased educational attainment but reduced the likelihood of girls inheriting land (Roy 2013).<sup>4</sup> Yet, the finding that, for landowning households, inheritance reform reduced girls' survival ratios, possibly by making it more relatively costly to raise girls vs. boys (Rosenblum 2012) points towards potential unintended second-generation effects. While slow changes in social norms may be one reason for this, this suggests that second-generation effects deserve more in-depth analysis.

### **2.3 Data, sample composition, and descriptive statistics**

To analyze effects of inheritance reform, we use data from a 2011 follow up to the 2007 Rural Economic and Demographic Survey (REDS) conducted by India's National Council for Applied Economic Research (NCAER) in Maharashtra, Uttar Pradesh and Orissa. The Household survey collected information on three generations, the head and spouse at the time of the survey (generation II), their parents (generation I), and their children (generation III). The total sample comprises 1,209 households with 3,193 generation III descendants. Figure 1 plots the density distribution of birth years for the sample, pointing towards an average age of 79, 49, and 19 years for individuals in generations I, II, and III, when data were collected.

Beyond the information routinely collected in multi-purpose household surveys (e.g., year of birth and years of schooling), our survey includes data on time use during a typical day for all individuals in generations II and III. For those in generation II, we have information on the value of all assets (including

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<sup>2</sup> Our focus on intestate inheritance is justified by the fact that rural Indians lack both the knowledge and the resources to have a will registered.

<sup>3</sup> The Act was amended in 1986 in Andhra Pradesh in 1989 in Tamil Nadu, and in 1994 in Maharashtra and Karnataka. Kerala had abolished the joint family property system in 1976 (Agarwal 1994).

<sup>4</sup> Education results may partly be due to potential state- and gender-specific trends independent of the inheritance reform and results on inheritance and dowry may be driven by the fact that at the time when data were collected girls in the sample exposed to the reform were still relatively young (15 years in KA and MA; 20 years in TN, 23 years in AP, and 33 years in KE) when data were collected in 1999 and that women who had inherited land may no longer live with their parents.



land) brought into the marriage, access to an individual bank account, spending on education for each co-resident child, and the survival status or year of death of each parent. This is complemented with household-level data on the amount of resources were spent for each child on education (books/stationery, transport/hostel and private coaching/tuition) and to cure preventable diseases as well as presence of a latrine, a variable we use as a proxy for attention to preventive rather than curative health. Moreover, the survey also includes the number of children born and still alive by gender for all generation II women below the age of 60, providing information on fertility (no of children and share of daughters born) as well as sons' and daughters' survival rates. For generation III individuals, including not co-resident ones, information on the extent of primary or secondary school completion is also available.

Descriptive statistics on characteristics of interest for generation II and III individuals by reform status are in table 1 (see appendix table 1 for values of the same variables by state). The HSAA applies to those whose father is still alive or died after 1994. We note that 62% of generation II males' fathers and 76% of generation II females' fathers passed away after 1994 or are still alive so that the HSAA would apply, providing sufficient variation to identify inheritance-induced effects. While the impact of the HSAA has to be estimated based on time variation with controls and fixed effects as needed, comparing between reform and non-reform states provides some illustration of the data.

On average, generation II males received more than six years of education, but generation II females lag behind their husbands by some three years. Amounts of gifts received at the time of marriage were almost equal between males and females on average. Females have higher levels of endowments with human capital (3.81 vs 3.36) and physical assets (0.48 vs 0.45) in Maharashtra than non-reform states, a pattern that is reversed for males, lending prima facie evidence support to the HSAA having been effective. If increases in endowment and impacts induced by the HSAA through channels including actual or potential inheritance translated into bargaining power within the household for females, our variables measuring intra-household bargaining power should capture some systematic differences between Maharashtra and non-reform states. Females spent more time on productive work<sup>5</sup> (0.17 vs 0.07) and less time on household work<sup>6</sup> (0.36 vs 0.42) in the reform as compared to non-reform states. Households in the reform state are more likely to have a latrine (by 36%), a good which has been shown to be strongly preferred by females.

As inheritance legislation is likely to affect reproductive choices, we use information on number and sex ratio of children by females in generation II by drawing on survey information regarding the pregnancy history for ever married women aged 15-60. At a descriptive level doing so points towards significantly

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<sup>5</sup> Productive work includes salaried employment and agricultural as well as non-agricultural wage labor and self-employment.

<sup>6</sup> Household work includes sewing and knitting, cooking, child care, care of the elderly, grinding and pounding, collecting fuel, fetching water, making dung cakes, and others household work.

lower levels of fertility (2.78 vs. 3.46) but insignificant differences in survival rates or sex ratios and we will check this in a regression framework.

### 3. Second-generation effects of inheritance reform: Approach and empirical evidence

We briefly present the triple-difference approach used to assess second-generation effects of the HSAA and then present empirical evidence with respect to time allocation, educational spending, completion of primary or secondary education, and resources spent on curing preventable diseases, possibly due to insufficient preventive care, for generation III individuals.

#### 3.1 Analytical approach

To identify second-round effects of inheritance reform, we use a triple difference estimation strategy where the three relevant differences are (i) between generation III males and females within the same (generation II) household; (ii) between generation III individuals whose mothers' fathers died before 1994 and those who died after 1994 or are still alive; and (iii) between generation III individuals from the reform state (Maharashtra) and non-reform states of Orissa and Uttar Pradesh. The estimating equation is:

$$Y_{ij} = \alpha_j + \delta_1 F_{ij} + \delta_2 F_{ij} * MD_j + \delta_3 M_j * F_{ij} + \delta_4 M_j * F_{ij} * MD_j + \varphi_{ij} + \epsilon_{ij} \quad (1)$$

where  $Y_{ij}$  represents the outcome variable of interest as discussed above<sup>7</sup>,  $\alpha_j$  is a household-level fixed effect that controls for any time-invariant characteristics of generation II households.  $F_{ij}$  and  $MD_j$  are indicator variables, respectively, for generation III females (compared to their male siblings), and whether their mothers' fathers died before or after 1994 so that mothers in the reform state either did not or did benefit from the reform, and  $\delta_3$  and  $\delta_4$ , the coefficients on their interactions with a reform dummy  $M_j$  are key parameters of interest that capture first- and second-generation impacts of HSAA induced empowerment of generation II females, respectively,<sup>8</sup> and  $\varphi_{ij}$  is a vector of gender and state specific year of birth fixed effects to control for time-variant aggregate effects or shocks by gender and state, As  $\delta_3$  and  $\delta_4$  may pick up the effect of resource transfers triggered by the HSAA, we also report results from specifications where, in addition to the above variables, assets brought into the marriage and the difference in education between the spouse and her husband are controlled for.

#### 3.2 Evidence on time allocation and educational inputs

The samples to explore how the HSAA might have affected generation III girls' outcomes either directly or by empowering their (generation II) mothers, differ slightly from each other due to different age

<sup>7</sup> For school completion, we focus on generation III individuals 15-30 years old who were less than 14 years old in 1994 for primary education, and generation III individuals 19-34 years old who were less than 18 years old in 1994 for secondary education.

<sup>8</sup> Note that fathers of generation III individuals, i.e., generation II males were all alive at the time of the survey, so we expect generation III females directly benefit from the reform as generation II females whose fathers died after 1994 or were still alive at the time of the survey.

cut-offs. To test for HSAA-induced impacts on time allocation and education expenses, we use data from 1,226 generation III individuals from 6 to 18 years old in 557 generation II households (sample one). To examine school completion, information from 2,172 generation III individual 15 to 34 years old in 823 generation II households is used (sample two). Finally, to estimate the incidence of HSAA-induced health effects, measured as the need of treating diseases that could have been prevented with proper care, we use 1,399 generation III individuals 0 to 18 years old in 625 generation II households (sample three).

Results for time allocation in generation III are reported in table 2 with panels A and B referring to individuals in the 6 to 14 and 15 to 18 age groups,<sup>9</sup> and results from base and augmented specification in columns 1, 3, 5 and 7 and 2, 4, 6 and 8, respectively. We note that, compared to their male siblings and after including dummies for parents' year of birth by gender, 6-14 year old girls in the reform state whose maternal grandfather is still alive or passed away after 1994 so that their mothers were affected by the HSAA spent some 7% more time on study (col. 5) than those in households where mothers had been unaffected by the HSAA. This suggests a strong second-generation effect of the reform that is robust to inclusion of other covariates and, with about 1.66 h/day of additional time spent studying (including school attendance), of non-negligible magnitude. It is almost entirely compensated for by an equivalent reduction of leisure (col. 7).<sup>10</sup> This suggests that the HSAA empowered mothers beyond the assets transferred to them, thereby helping to increase the amount of education consumed by girls vs. boys, in line with recent emphasis on the far-reaching impacts of female empowerment (Diebolt and Perrin 2013). By comparison, estimated first-generation effects are uniformly weak with the possible exception of girls who directly benefited from the reform spending more on leisure.

For the 15-18 year age group in panel B of table 2, estimated direct and indirect impacts go in opposite directions. Compared to male siblings, the HSAA is estimated to have led adolescent females to increase the amount of time spent on productive work by more than 30%, mainly by reducing time spent on schooling and household chores.<sup>11</sup> Though low historically (Fulford 2014), returns to female secondary education in India seem to have increased recently (Jensen 2012) but girls' awareness of these may still not widespread enough to have affected decisions (Chari and Maertens 2014; Jensen 2010). Interestingly, the HSAA is estimated to have had a strong and significant second-generation effect in the opposite direction, possibly because mothers are cognizant of non-monetary (empowerment) benefits from higher levels of secondary education. In households where the mother had benefited from the HSAA, females spent some 34% more on study (col. 7) and 12% less on household chores (col. 4) than male siblings if

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<sup>9</sup> We focus on two age ranges as young and old children will have different patterns of time allocation. For those below 14, labor may conflict with school attendance but females in the 15 to 18 year group old may value the independent income they may earn from this.

<sup>10</sup> With a sample mean of 28% for the variable (time spent studying), this represents an economically very meaningful increase of almost 30%.

<sup>11</sup> Note that for all regressions except that for productive work, the estimated coefficient for the direct HSAA-effect (M\*F) loses significance if once controls are introduced although the magnitude remains largely the same.

other factors are controlled for. Having a mother who benefited from the reform more than doubles the amount of time spent studying by girls compared to their brothers, highlighting the importance of second-generation effects. The positive and large coefficient on the share of endowments brought into the marriage by women also suggests that, in addition to the intangible effect of female empowerment through inheritance reform, access to tangible assets affects intra-household decisions on allocation of educational resources in important ways. The pattern found for education is mirrored by that for productive work where a strong and positive direct reform effect is to some extent countered by indirect effects in the opposite direction for girls from mothers who benefited from the HSAA.

Results for total educational spending as well as spending on books and stationary, the main category of such expenses, in table 3 point towards strongly positive second generation effects from reform. Having a mother who benefited from the HSAA is estimated to double spending on daughters' education through a female empowerment effect, more than outweighing any bias against educational spending for females that may have existed.

Results for different types of educational spending (total, books and stationary, and only by the mother) in table 3 point towards strongly positive second-generation effects from reform throughout and, for the case of total and mother's spending, also in the first generation. For overall spending, having a mother who benefited from the HSAA is estimated to more than double spending on daughters' education through a female empowerment effect, more than outweighing any bias against educational spending for females that may have existed. There is also evidence of a positive direct reform effect and a positive education gap between mother and father reinforces this tendency. The highly significant and negative coefficient on 'female' in cols. 5 and 6 suggests that, surprisingly, mothers are more likely to expend resources on education of boys rather than girls. Inheritance reform is estimated to eliminate this bias via a combined first- (coefficient of 0.66) and second (coefficient of 0.46) generation effect.

### **3.3 Impacts on school completion and health outcomes**

Results for completion of primary and secondary education in table 4 point towards considerable bias against females compared to males in the same household for primary (-0.36) or secondary (-0.17) completion. Estimates of positive direct (14% to 20%) and second-generation effects (8% to 7%) suggest the HSAA helped to more or less eliminate this bias against girls for primary education, a tendency that was to some extent reinforced by positive education gaps between mother and father. At the same time, we find evidence of a significant and large (point estimate of -28%) direct effect of being affected by the HSAA on completing secondary education. This is partly countered by an indirect effect (point estimate of 13% to 9%) of having a mother who benefited from inheritance reform. This, together with the significant and large coefficient on the share of assets brought to the marriage by the mother (0.32) and a

smaller coefficient the mother-father education gap, suggests that mothers' rather than their daughters' empowerment is a key driver underlying equalization of opportunities related to secondary education between girls and boys.

Although we lack detailed health outcomes in our data, insufficient preventive care is likely to lead to greater incidence of otherwise preventable diseases, including the need to spend resources on dealing with these. Contrary to the finding of inheritance reform having increased second-generation female mortality (Rosenblum 2013), results for the sample of 1,399 individuals below age 18 in table 5 point towards clear direct as well as indirect effects whereby mothers' or their daughters' exposure to the HSAA reduced the likelihood of having had to treat preventable diseases. Separately estimating this for children below and above the age of 6 suggests that second-generation effects dominate for the former and first-generation effects for the latter, though sample sizes become quite small. The HSAA thus seems to have reduced the likelihood of daughters contracting preventable diseases directly and by empowering their mothers.

#### 4. First-generation effects of inheritance law reform for generation II

To assess first-generation impacts that could underpin the above indirect effects, we explore how the HSAA affected outcomes by females in generation II measured by females' educational completion, share of assets brought into marriage, time allocation, having an independent bank account, proper sanitation, and reproductive choices. Although lack of information on generation II siblings makes use of household fixed effects impossible, resulting in estimates that are less robust than those discussed above, evidence of significant first-generation effects associated with the HSAA supports the hypothesis of 'first-generation' effects on generation II underpinning the second-generation HSAA effects discussed earlier.

##### 4.1 Analytical approach

For school completion, we use a double difference where the first difference is between 'young' and 'old' age groups, defined as those who should have completed relevant education decisions before or after the HSAA came into effect in 1994 and the second difference between states that did or did not change the HSA.<sup>12</sup> With subscripts,  $i$ ,  $j$  and  $k$  denoting individuals, households and villages, the DID estimation equation for school completion is:

$$Y_{ijk} = \alpha_k + \beta_1 G_{ijk} + \beta_2 M_k G_{ijk} + \epsilon_{ijk} \quad (2)$$

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<sup>12</sup> The young cohort for school completion is younger than those for assets brought into marriage. People completed primary and secondary schools at about 14 and 18, respectively, and education decisions are relevant before that ages. However, people normally got married at around 20 when marriage decisions including the gift transfer are made. Not surprisingly, there is no difference in the timing of father's death for the young cohort (all of them had a father alive in 1994) so to maintain comparability and consider only individuals who would have unambiguously benefited from the HSAA, we also exclude individuals whose fathers died before 1994 from the old cohort.

where  $Y_{ijk}$  is an indicator variable of whether or not the individual completed primary or secondary education,  $\alpha_k$  is a village-level fixed effect controlling for time-invariant characteristics at this level,<sup>13</sup>  $G_{ijk}$  is a dummy that equals one if the individual is in the ‘young’ cohort that should have been affected by the HSAA (those 15 to 30 years old in 2011 for primary and those aged 19 to 34 in 2011 for secondary implying that they were below 14 or 18 years of age in 1994, respectively), and  $M_k$  is a dummy for the reform state. We estimate equation (2) for male and female samples separately and note that in the female sample  $\beta_2$  denotes the estimated first-generation impact of the HSAA on educational completion.

For other assets transferred at time of marriage, a triple difference strategy is used with differences between (i) reform and non- reform states; (ii) ‘young’ and ‘old’ cohorts whose date of marriage (after or before 1994) implies decisions on asset transfers were or were not informed by the HSAA; and (iii) whether or not the father died before 1994 so that an inheritance had already been triggered. The estimation equation is:

$$Y_{ijk} = \alpha_k + \beta_1 D_{ijk} + \beta_2 G_{ijk} + \beta_3 G_{ijk} * D_{ijk} + \beta_4 M_k * D_{ijk} + \beta_5 M_k * G_{ijk} + \beta_6 M_k * G_{ijk} * D_{ijk} + \lambda_{ijk} + \epsilon_{ijk} \quad (3)$$

where, in line with earlier notation,  $Y_{ijk}$  denotes the value of assets including land brought into the marriage,  $D_{ijk}$  is a dummy of whether the individuals’ fathers died before 1994 so s/he would not have benefited from the reform even in the reform state,  $G_{ijk}$  is an indicator variable for the ‘young’ cohort (generation II individuals below age 48/38 in 2011 who were less than 30/20 years in 1994 so that their marriage decisions were affected by the reform),<sup>14</sup>  $\lambda_{ijk}$  is a vector of state specific year of birth fixed effects to control for time-varying shocks or aggregate effects by state and other variables are defined as in equation (1). Equation (3) is estimated separately for female and male samples; for the female case,  $\beta_6$  is the estimate of the direct first-generation impact of the HSAA on assets brought into the marriage. A similar strategy can be used for time allocation, empowerment, and reproductive choices.

## 4.2 Empirical results

Results for primary and secondary school completion by generation II females (cols. 1 and 3) and males (cols. 2 and 4) in table 6 point towards significant and quantitatively large effects on primary completion. The estimated HSAA-induced increase in the likelihood of primary completion by females is, with 15.1 percentage points, large, compared to the point estimate for a secular trend towards greater completion of

<sup>13</sup> Note that we cannot include household fixed effects in this regression as males and females are from different households and match endogenously in the marriage market. See the discussion on this below.

<sup>14</sup> We do not know the year of marriage for generation II individuals, so we use age for proxy supposing people got married before 30, assuming that age 20 is young enough to exclude most of the married individual in 1994. Note that we lose variation in terms of the timing of father’s death when we focus on a younger sample..

primary school by females of 7.7 points. While point estimates of the relevant secondary education is positive for females, compared to being negative for males, neither is significant.

For assets brought into the marriage (equation 4), table 7 presents results for young and old age groups as defined above in cols. 1-2 and 3-4, respectively. Estimates point towards a HSAA-induced increase in the level of assets brought into the marriage by females of about 50% (point estimates are 0.584 in col. 1 and 0.484 in col. 3, depending on the age cut-off used), compared to no appreciable change in the amount of assets contributed by husbands. To the extent that the share of assets brought into the marriage will affect individuals' future bargaining power, this would be consistent with the notion that the HSAA empowered direct female beneficiaries, thus increasing the plausibility of downstream second-generation effects.

Using a similar specification, table 8 presents results for time allocation by females (panel A) and males (panel B) in generation II with basic and augmented specifications in cols. 1, 3, 5 and cols. 2, 4, 6, respectively. Coefficients in panel A suggest that, compared to those in non-reform states, females in the reform state affected by the HSAA reduced time spent on productive work by 3-4 percentage points (cols. 1 & 2) and increased time for leisure by roughly the same amount (cols. 5 & 6). The fact that results remain robust to inclusion of direct asset transfers and education suggests that this is over and above any HSAA-induced effects via direct transfers of human or physical capital. The interpretation of this being attributable to shifts in intra-household bargaining power is supported by coefficients in panel B which suggest that males whose wives benefited from reforms as defined above spent more time on household chores, although the magnitude of the estimated effect remains modest.

Results for the likelihood of females having a bank account or the household having a sanitary latrine in table 9 suggest that the HSAA increased the likelihood of females having an individual bank account by around 4% (4.8% for the base specification and 3.8% for the augmented one). Households where the female spouses had benefited from the HSAA were also by 11 to 13 percentage points more likely to have sanitary latrines, a good that is strongly preferred by women (Stopnitzky 2014). This is consistent with an intra-household externality whereby lack of authority may preclude women's preferences from translating into action similar to what was found elsewhere for cook-stoves (Miller and Mobarak 2013), suggesting that external forces that empower women may help translate preferences into action,

It has been suggested that, even if it improves outcomes for girls who are alive, the HSAA may affect reproductive choices and female mortality. To test for such effect, data on the number of children and the share born to 717 female spouses aged 15-60 in our sample as well as their sons' and daughters' survival rates. Results, in table 10, point towards a significant HSAA-induced reduction in fertility by 17 to 23 percentage points, consistent with female empowerment reducing fertility as found in the literature (Duflo 2012). While there is evidence of some reduction in the share of daughters born, possibly a result of

sex-selective abortion, we note an unambiguous increase in girls' survival rate whereas boys' survival rates remain essentially unchanged. This is quite different from increased female mortality (Rosenblum 2013), though in line with a model whereby parents invest in children mainly for old age security which, in the context of South Asia is provided by boys but not girls, so that greater female autonomy may lead to reduced fertility and higher survival rates for girls but also sex-selective abortion (Eswaran 2002).

## **5. Conclusion and policy implications**

We add to the literature on the impact of inheritance reform by comparing the magnitude and significance of first- and second-generation effects of such a measure. The latter accrue to direct beneficiaries' offspring, possibly via increased intra-household bargaining power by women who directly benefited from reforms. Results point towards significant second-generation effects that are often larger in magnitude than first-generation effects on female child labor, educational spending and attainment, and health status. Evidence of first-round effects of inheritance reform on female empowerment in the parent generation via assets received at marriage, females' access to own bank accounts and sanitary facilities, and fertility decisions support the plausibility of such effects. While the share of daughters born to females who benefited from reforms appears to have decreased, survival rates by daughters increased as a result of inheritance reform. Beyond the first-round impact on the amount of resources transferred to women at the point of (intestate) inheritance, reform of the inheritance regime thus affected future generations' welfare through a number of other empowerment-related channels.

Evidence on long-term effects of inheritance law reform beyond the immediate beneficiaries is relevant for India and beyond. At a global level, understanding of longer-term impacts of such a measure will help appreciate the potential and limitations of inheritance reform, compared to other measures and policies, as a means to promote gender equity. For India, an ability to more precisely gauge HSAA-induced benefits will affect the social desirability of measures to more actively disseminate this piece of legislation or support and monitor its implementation. While assessing the extent to which the results found here carry over to other settings, including in North Indian states would be of interest. The findings suggest that, as key determinants of intergenerational resource transmission, the norms and legislative provision governing inheritance offer considerable potential to promote sustained female empowerment.



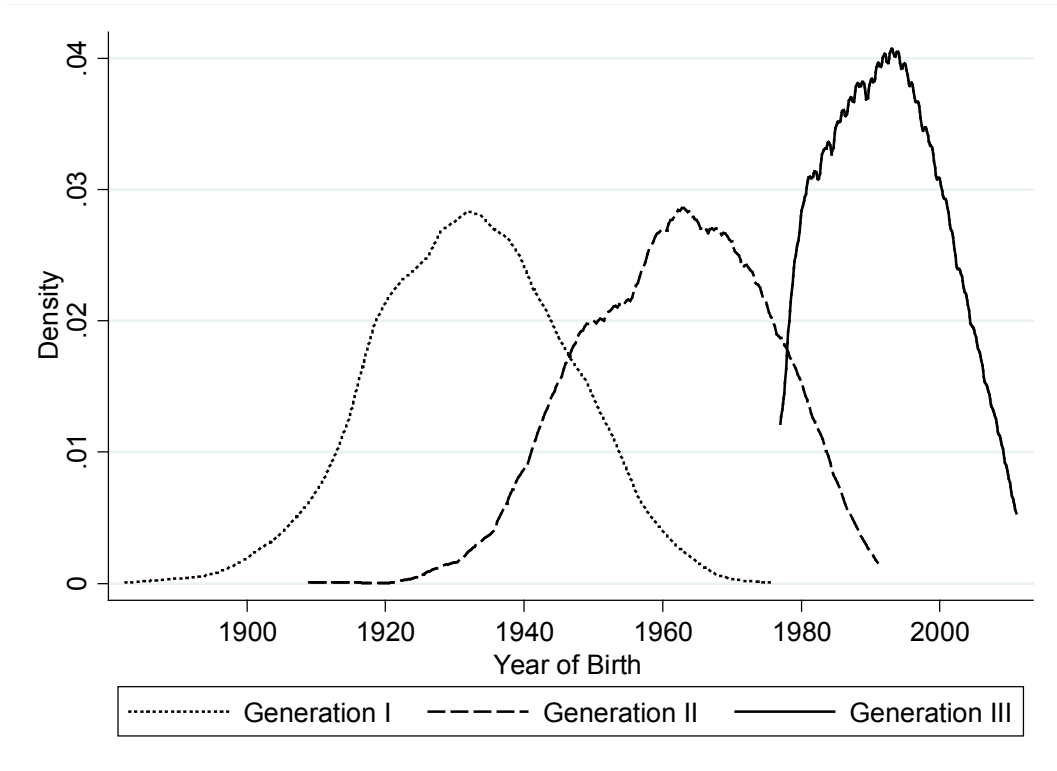


Figure 1 Age distribution of three generations

**Table 1: Descriptive statistics on relevant outcomes in different samples**

	Male			Female		
	Total	Reform	Non reform	Total	Reform	Non reform
<b>Generation II</b>						
Year of birth	1960	1959	1960	1964	1964	1964
Father died after 1994 or alive	0.62	0.62	0.62	0.76	0.76	0.76
<i>Individual characteristics</i>						
Years of schooling	6.62	5.88	7.01***	3.51	3.81	3.36*
Education gap with spouse	3.10	2.08	3.65***	-3.10	-2.08	-3.65***
Share of gifts received at marriage	0.54	0.52	0.55**	0.46	0.48	0.45**
Share of time on productive work	0.33	0.34	0.33	0.11	0.17	0.07***
Share of time on household work	0.15	0.14	0.15***	0.39	0.36	0.42***
Share of time on leisure	0.52	0.52	0.51	0.49	0.47	0.51***
Have an individual bank account				0.25	0.25	0.25
Having a sanitary latrine (household level)				0.44	0.65	0.29***
<i>Reproductive behavior</i>						
Number of children born				3.18	2.78	3.46***
Share of daughters born				0.44	0.45	0.44
Survival rate of daughters				0.97	0.97	0.96
Survival rate of sons				0.95	0.97	0.94
No. of observations	1,209	421	788	1,209	421	788
<b>Generation III</b>						
Year of birth	1992	1991	1993***	1992	1991	1992**
Years of schooling	7.76	8.03	7.65	6.63	6.80	6.56
No. of observations	1,656	470	1,186	1,537	446	1,091
<b>Sample I (6-18)</b>						
% of the total sample	39.31	36.60	40.39	37.41	34.75	38.50
Currently enrolled	0.84	0.79	0.85*	0.84	0.81	0.85
Expenses on education (Rs)	1,327	1,767	1,180***	1,103	1,363	1,011**
of which on books/stationery	0.81	0.73	0.84***	0.85	0.78	0.87***
of which on transport/hostel	0.11	0.26	0.06***	0.10	0.20	0.06***
of which on private coaching/tuition	0.08	0.02	0.10***	0.06	0.03	0.07**
Mothers' expenses on education (Rs)	121.72	284.60	67.43***	89.51	158.97	65.07***
of which on books/stationery	0.89	0.78	0.95***	0.92	0.85	0.95***
of which on transport/hostel	0.09	0.21	0.02***	0.05	0.11	0.02***
of which on private coaching/tuition	0.02	0.00	0.03	0.03	0.04	0.03
Share of time on productive work for age 6-14	0.01	0.01	0.01	0.01	0.01	0.01
Share of time on household work for age 6-14	0.07	0.06	0.07	0.09	0.08	0.09
Share of time on study for age 6-14	0.28	0.28	0.27	0.29	0.30	0.28
Share of time on leisure for age 6-14	0.64	0.65	0.64	0.62	0.61	0.62
Share of time on productive work for age 15-18	0.09	0.12	0.07***	0.04	0.05	0.04
Share of time on household work for age 15-18	0.13	0.11	0.14***	0.21	0.20	0.21
Share of time on study for age 15-18	0.22	0.21	0.22	0.23	0.24	0.23
Share of time on leisure for age 15-18	0.56	0.55	0.57	0.52	0.51	0.53
<b>Sample II (15-34)</b>						
% of the total sample	67.93	72.55	66.10	68.12	69.96	67.37
Completed primary education age 15-30	0.72	0.75	0.71	0.56	0.65	0.52***
Completed secondary education age 19-34	0.48	0.55	0.45***	0.27	0.32	0.25**
<b>Sample III (0-18)</b>						
% of the total sample	44.69	41.49	45.95	42.88	40.81	43.72
Treatment for preventable diseases	0.50	0.43	0.53**	0.56	0.54	0.57

Source: Own computation from 2011 REDS follow-up survey.

**Table 2: Determinants of time allocation by school-age children in generation III**

	Productive work %		Household work %		Education & study %		Leisure %	
<b>Panel A: 6-14 years old</b>								
Female	-0.005 (0.009)	-0.007 (0.011)	0.051* (0.013)	0.046** (0.007)	-0.063*** (0.005)	-0.054* (0.014)	0.017 (0.008)	0.014 (0.010)
Female*Mother's father died after 1994 or alive	0.004 (0.010)	0.004 (0.012)	0.013 (0.014)	0.014 (0.011)	-0.032** (0.005)	-0.035 (0.014)	0.015 (0.009)	0.016 (0.012)
Female*Education gap mother-father		-0.001 (0.001)		-0.001* (0.000)		0.003 (0.002)		-0.001 (0.001)
Female*Share of mother's gifts at marriage		-0.030 (0.050)		0.021 (0.070)		0.031 (0.094)		-0.022 (0.114)
Reform*Female	-0.003 (0.009)	-0.004 (0.011)	-0.028 (0.013)	-0.025* (0.007)	0.001 (0.005)	-0.016 (0.014)	0.030* (0.008)	0.045** (0.010)
Reform*Female*Mother's father died after 1994 or alive	-0.011 (0.010)	-0.011 (0.012)	0.019 (0.014)	0.017 (0.011)	0.069*** (0.005)	0.080** (0.014)	-0.076** (0.009)	-0.086** (0.012)
Reform*Female*Education gap mother-father		0.003** (0.001)		0.002** (0.000)		0.001 (0.002)		-0.005** (0.001)
Reform*Female*Share of mother's gifts at marriage		-0.002 (0.050)		-0.053 (0.070)		-0.022 (0.094)		0.077 (0.114)
Observations	655	655	655	655	655	655	655	655
R-squared	0.764	0.768	0.887	0.888	0.827	0.828	0.836	0.837
<b>Panel B: 15-18 years old</b>								
Female	-0.455*** (0.000)	-0.439*** (0.017)	0.094*** (0.000)	0.102*** (0.004)	0.346*** (0.000)	0.334*** (0.011)	0.014*** (0.000)	0.003 (0.010)
Female*Mother's father died after 1994 or alive	0.261*** (0.000)	0.268*** (0.004)	0.088*** (0.000)	0.089*** (0.000)	-0.261*** (0.000)	-0.264*** (0.001)	-0.088*** (0.000)	-0.093*** (0.005)
Female*Education gap mother-father		0.022 (0.019)		0.009* (0.003)		-0.015 (0.008)		-0.016 (0.013)
Female*Share of mother's gifts at marriage		0.172 (0.213)		-0.113 (0.161)		0.039 (0.463)		-0.099 (0.090)
Reform*Female	0.393*** (0.000)	0.330*** (0.017)	-0.065*** (0.000)	-0.118*** (0.004)	-0.368*** (0.000)	-0.244*** (0.011)	0.040*** (0.000)	0.032* (0.010)
Reform*Female*Mother's father died after 1994 or alive	-0.247*** (0.000)	-0.283*** (0.004)	-0.113*** (0.000)	-0.120*** (0.000)	0.333*** (0.000)	0.342*** (0.001)	0.027*** (0.000)	0.061*** (0.005)
Reform*Female*Education gap mother-father		-0.028 (0.019)		-0.007 (0.003)		0.008 (0.008)		0.027 (0.013)
Reform*Female*Share of mother's gifts at marriage		-0.494 (0.213)		-0.225 (0.161)		0.812 (0.463)		-0.093 (0.090)
Observations	408	408	408	408	408	408	408	408
R-squared	0.868	0.888	0.895	0.903	0.899	0.913	0.896	0.913

Note: All regressions include gender and state specific year of birth fixed effects and household fixed effects. Robust standard errors in brackets are clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 3: Determinants of educational expenses for generation III**

	Total		Books & stationery	
	(1)	(2)	(3)	(4)
Female	-0.635 (0.344)	-0.628 (0.465)	-0.688* (0.195)	-0.690 (0.289)
Female*Mother's father died after 1994/alive	0.298 (0.336)	0.274 (0.353)	0.306 (0.191)	0.294 (0.207)
Female*Education gap mother-father		0.011 (0.019)		0.007 (0.014)
Female*Share of mother's gifts at marriage		0.289 (0.865)		0.127 (0.621)
Reform*Female	0.452 (0.344)	0.464 (0.465)	-0.270 (0.195)	-0.147 (0.289)
Reform*Female*Mother's father died after 1994/alive	1.178* (0.336)	1.168* (0.353)	0.965** (0.191)	0.790* (0.207)
Reform*Female*Education gap mother-father		-0.003 (0.019)		-0.062** (0.014)
Reform*Female*Share of mother's gifts at marriage		-0.943 (0.865)		-0.042 (0.621)
Observations	1,015	1,015	1,015	1,015
R-squared	0.806	0.807	0.794	0.795

*Note:* Total expenses on education include expenses on books/stationery, transport/hostel and private coaching/tuition. All regressions include gender and state specific year of birth fixed effects and household fixed effects. Robust standard errors in brackets are clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 4: Determinants of generation III's rates of educational completion**

	Primary		Secondary	
Female	-0.355***	-0.373***	-0.186***	-0.165**
	(0.006)	(0.005)	(0.012)	(0.020)
Female*Mother's father died after 1994 or alive	0.028*	0.032	0.042	0.069**
	(0.009)	(0.015)	(0.028)	(0.016)
Female*Education gap mother-father		-0.005		0.008
		(0.003)		(0.005)
Female*Share of mother's gifts at marriage		-0.042		-0.276***
		(0.143)		(0.024)
Reform*Female	0.146***	0.202***	-0.278***	-0.279***
	(0.006)	(0.005)	(0.012)	(0.020)
Reform*Female*Mother's father died after 1994 or alive	0.080**	0.065**	0.131**	0.089**
	(0.009)	(0.015)	(0.028)	(0.016)
Reform*Female*Education gap mother-father		0.017**		0.022**
		(0.003)		(0.005)
Reform*Female*Share of mother's gifts at marriage		0.044		0.321***
		(0.143)		(0.024)
Observations	1,919	1,919	1,634	1,634
R-squared	0.738	0.739	0.736	0.739

*Note:* As explained in the text, the sample comprises generation III individuals 15-30 and 19-34 years old in 2011 (<14 years or < 18 in 1994) for primary and secondary education, respectively. All regressions include gender and state specific year of birth fixed effects and household fixed effects. Robust standard errors clustered by state in brackets. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 5: Determinants of treatment for preventable diseases in generation III**

	Dummy: Treatment for preventable disease					
	Entire sample		< 6 years		> 7years	
Female	0.203 (0.095)	0.074 (0.180)	0.178 (0.423)	-0.370 (0.257)	0.445*** (0.044)	0.496** (0.082)
Female*Mother's father died after 1994 or alive	-0.041** (0.007)	-0.050** (0.009)	0.265 (0.132)	0.769 (1.047)	-0.106 (0.044)	-0.128 (0.071)
Female*Education gap mother-father		0.012* (0.004)		-0.027 (0.009)		0.011 (0.004)
Female*Share of mother's gifts at marriage		0.197 (0.343)		0.769 (2.211)		0.456 (0.594)
Reform*Female	-0.646** (0.095)	-0.617* (0.180)	-0.617 (0.423)	-0.148 (0.257)	-0.179* (0.044)	-0.221 (0.082)
Reform*Female*Mother's father died after 1994/ alive	-0.236*** (0.007)	-0.221*** (0.009)	-1.047** (0.132)	-1.407 (1.047)	-0.060 (0.044)	-0.074 (0.071)
Reform*Female*Education gap mother-father		-0.015* (0.004)		-0.054** (0.009)		-0.020** (0.004)
Reform*Female*Share of mother's gifts at marriage		0.048 (0.343)		0.577 (2.211)		-0.814 (0.594)
Observations	1,399	1,399	275	275	1,124	1,124
R-squared	0.651	0.654	0.882	0.889	0.680	0.683

*Note:* All regressions include household fixed effects as well gender and state specific year of birth fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 6: Determinants of education completion of generation II**

	Primary		Secondary	
	Female	Male	Female	Male
Young	0.077** (0.016)	-0.042 (0.227)	0.090 (0.053)	0.106 (0.055)
Reform*Young	0.151** (0.016)	0.138 (0.227)	0.061 (0.053)	-0.033 (0.055)
Observations	524	388	517	384
R-squared	0.218	0.270	0.166	0.245

*Note:* Definitions are equivalent to those used in table 4 and 5, respectively. All regressions include village fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 7: Determinants of assets received at the time of marriage by generation II**

	Marriage at less than 30		Marriage at less than 20	
	Female	Male	Female	Male
Father died after 1994 or alive	0.093 (0.214)	0.268 (0.233)	0.095 (0.168)	0.232 (0.224)
Young	1.741*** (0.097)	3.482*** (0.038)	2.005** (0.270)	3.739** (0.839)
Young*Father died after 1994 or alive	-0.026 (0.105)	-0.128 (0.202)	-0.129 (0.100)	-0.001 (1.046)
Reform*Father died after 1994 or alive	-0.174 (0.214)	0.246 (0.233)	-0.025 (0.168)	0.139 (0.224)
Reform*Young	1.684*** (0.097)	0.254** (0.038)	0.143 (0.270)	1.211 (0.839)
Reform*Young*Father died after 1994 or alive	0.584** (0.105)	-0.787* (0.202)	0.484** (0.100)	-1.308 (1.046)
Observations	1,200	1,200	1,200	1,200
R-squared	0.538	0.573	0.537	0.572

*Note:* As survey data do not include the year of marriage by generation II, age is used as a proxy with two cut-offs corresponding to a marriage age of 30 (in col. 1 and 2) or 20 (in col. 3 and 4), respectively. All regressions include state specific year of birth fixed effects and village fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.



**Table 8: Determinants of time allocation by generation II**

	Productive work %		House work %		Leisure %	
<b>Panel A: Female spouse</b>						
Female spouse's father died after 1994 or alive	0.019** (0.004)	0.017* (0.005)	-0.012 (0.005)	-0.011 (0.005)	-0.007 (0.008)	-0.006 (0.009)
Education gap female-male		0.003* (0.001)		-0.000 (0.001)		-0.002*** (0.000)
Share of female spouse's gifts at marriage		0.031 (0.079)		-0.046* (0.012)		0.014 (0.067)
Reform*Female spouse's father died after 1994 or alive	-0.041*** (0.004)	-0.039** (0.005)	0.008 (0.005)	0.008 (0.005)	0.033* (0.008)	0.032* (0.009)
Reform*Education gap female-male		-0.001 (0.001)		-0.002 (0.001)		0.002*** (0.000)
Reform*Share of female spouse's gifts at marriage		-0.003 (0.079)		0.000 (0.012)		0.007 (0.067)
Observations	1,095	1,095	1,095	1,095	1,095	1,095
R-squared	0.538	0.542	0.567	0.571	0.572	0.576
<b>Panel B: Male head</b>						
Female spouse's father died after 1994 or alive	-0.000 (0.015)	-0.000 (0.016)	-0.004*** (0.000)	-0.004*** (0.000)	0.005 (0.017)	0.006 (0.018)
Education gap female-male		0.001 (0.001)		0.001 (0.001)		-0.001 (0.001)
Share of female spouse's gifts at marriage		-0.013 (0.020)		0.003 (0.028)		0.011 (0.007)
Reform*Female spouse's father died after 1994 or alive	-0.034 (0.015)	-0.034 (0.016)	0.011*** (0.000)	0.011*** (0.000)	0.024 (0.017)	0.023 (0.018)
Reform*Education gap female-male		-0.003* (0.001)		-0.001 (0.001)		0.004 (0.001)
Reform*Share of female spouse's gifts at marriage		-0.009 (0.020)		-0.031 (0.028)		0.046** (0.007)
Observations	1,092	1,092	1,092	1,092	1,092	1,092
R-squared	0.538	0.540	0.454	0.457	0.555	0.559

Note: All regressions include village fixed effects as well gender and state specific year of birth fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 9: Determinants of female empowerment in generation II**

	<b>Dummy: Female spouse has an individual bank account</b>		<b>Dummy: Having a sanitary latrine</b>	
Female spouse's father died after 1994 or alive	-0.013 (0.005)	-0.015* (0.005)	-0.068 (0.039)	-0.063 (0.026)
Education gap female-male		-0.001 (0.008)		-0.012** (0.002)
Share of female spouse's gifts at marriage		0.078 (0.133)		0.004 (0.166)
Reform*Female spouse's father died after 1994 or alive	0.048*** (0.005)	0.047*** (0.005)	0.127* (0.039)	0.119** (0.026)
Reform*Education gap female-male		0.007 (0.008)		0.015** (0.002)
Reform*Share of female spouse's gifts at marriage		-0.147 (0.133)		-0.117 (0.166)
Observations	1,201	1,201	1,059	1,059
R-squared	0.415	0.416	0.605	0.609

*Note:* All regressions include village fixed effects as well gender and state specific year of birth fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 10: Determinants of generation II's reproductive choices**

	Number of children born		Share of daughters born		Survival rate of daughters		Survival rate of sons	
Female spouse's father died after 1994 or alive	0.182** (0.035)	0.113* (0.029)	0.013 (0.030)	0.001 (0.035)	-0.055*** (0.005)	-0.060*** (0.002)	-0.011 (0.017)	-0.007 (0.012)
Education gap female-male		0.061 (0.042)		0.006 (0.006)		0.001* (0.000)		-0.001 (0.002)
Share of female spouse's gifts at marriage		-1.166 (0.669)		0.013 (0.198)		0.041 (0.119)		-0.041 (0.135)
Reform*Female spouse's father died after 1994 or alive	-0.239** (0.035)	-0.170** (0.029)	-0.128** (0.030)	-0.113* (0.035)	0.104*** (0.005)	0.102*** (0.002)	0.004 (0.017)	0.002 (0.012)
Reform*Education gap female-male		-0.055 (0.042)		0.002 (0.006)		-0.003** (0.000)		-0.003 (0.002)
Reform*Share of female spouse's gifts at marriage		1.105 (0.669)		0.021 (0.198)		-0.198 (0.119)		0.074 (0.135)
Observations	717	717	717	717	555	555	643	643
R-squared	0.581	0.593	0.467	0.472	0.390	0.396	0.431	0.434

*Note:* All regressions include village fixed effects as well gender and state specific year of birth fixed effects. Figures in brackets are robust standard errors clustered by state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Appendix table 1: Descriptive statistics by state**

	Male				Female			
	Total	Maharashtra	Uttar Pradesh	Orissa	Total	Maharashtra	Uttar Pradesh	Orissa
<b>Generation II</b>								
Year of birth	1960	1959	1960	1960	1964	1964	1964	1965
Years of schooling	0.62	0.62	0.64	0.59	0.76	0.76	0.73	0.79
Father died after 1994 or alive	6.62	5.88	7.60	6.19	3.51	3.81	3.06	3.77
Education gap with spouse	3.10	2.08	4.54	2.42	-3.10	-2.08	-4.54	-2.42
Share of gifts received at marriage	0.54	0.52	0.57	0.51	0.46	0.48	0.43	0.49
Share of time on productive work	0.33	0.34	0.34	0.32	0.11	0.17	0.09	0.06
Share of time on household work	0.15	0.14	0.14	0.17	0.39	0.36	0.40	0.44
Share of time on leisure	0.52	0.52	0.51	0.51	0.49	0.47	0.51	0.50
Have an individual bank account					0.25	0.25	0.34	0.12
Having a sanitary latrine (household level)					0.44	0.65	0.31	0.28
No. of observations	1,209	421	458	330	1,209	421	458	330
<b>Generation III</b>								
Year of birth	1992	1991	1993	1992	1992	1991	1993	1992
Years of schooling	7.76	8.03	7.59	7.74	6.63	6.80	6.32	6.94
No. of observations	1,656	470	736	450	1,537	446	674	417
<b>Sample I (6-18)</b>								
% of the total sample	39.31	36.60	43.89	34.67	37.41	34.75	40.65	35.01
Currently enrolled	0.84	0.79	0.88	0.79	0.84	0.81	0.89	0.79
Expenses on education (Rs)	1,327	1,767	1,203	1,127	1,103	1,363	964	1,111
of which on books/stationery	0.81	0.73	0.88	0.74	0.85	0.78	0.91	0.79
of which on transport/hostel	0.11	0.26	0.06	0.06	0.10	0.20	0.05	0.08
of which on private coaching/tuition	0.08	0.02	0.06	0.19	0.06	0.03	0.04	0.13
Mothers' expenses on education (Rs)	121.72	284.60	62.89	77.82	89.51	158.97	68.50	57.83
of which on books/stationery	0.89	0.78	0.98	0.91	0.92	0.85	0.97	0.91
of which on transport/hostel	0.09	0.21	0.01	0.03	0.05	0.11	0.01	0.06
of which on private coaching/tuition	0.02	0.00	0.01	0.06	0.03	0.04	0.02	0.03
Share of time on productive work for age 6-14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Share of time on household work for age 6-14	0.07	0.06	0.07	0.08	0.09	0.08	0.08	0.11
Share of time on study for age 6-14	0.28	0.28	0.27	0.27	0.29	0.30	0.28	0.29
Share of time on leisure for age 6-14	0.64	0.65	0.64	0.64	0.62	0.61	0.63	0.60
Share of time on productive work for age 15-18	0.09	0.12	0.07	0.07	0.04	0.05	0.04	0.04
Share of time on household work for age 15-18	0.13	0.11	0.13	0.16	0.21	0.20	0.18	0.24
Share of time on study for age 15-18	0.22	0.21	0.23	0.21	0.23	0.24	0.25	0.20
Share of time on leisure for age 15-18	0.56	0.55	0.58	0.56	0.52	0.51	0.53	0.52
<b>Sample II (15-34)</b>								
% of the total sample	67.93	72.55	64.13	69.33	68.12	69.96	64.84	71.46
Completed primary education age 15-30	0.72	0.75	0.68	0.75	0.56	0.65	0.50	0.55
Completed secondary education age 19-34	0.48	0.55	0.51	0.36	0.27	0.32	0.31	0.17
<b>Sample III (0-18)</b>								
% of the total sample	44.69	41.49	47.69	43.11	48.15	40.81	44.51	42.45
Treatment for preventable diseases	0.50	0.43	0.49	0.61	0.56	0.54	0.52	0.67

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