Can improving women's inheritance rights improve the welfare of women?

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Abstract

This paper examines the effects of improving women's right to property on their education and intra-household allocation towards daughters. The Hindu Succession (Amendment) Act of 2005 extended ancestral property rights to unmarried daughters, however, five southern states in India had already passed the same amendment by 1994. Using this variation in policy implementation, we employ a difference-in-differences strategy using two rounds of the NSSO. We find that women who were of ages 11-15 during the time of the reform experienced an increase in the probability of educational attainment. Further, we find mothers who were exposed to the reform had a positive impact on the probability of their children increasing their level of educational attainment. Examining various consumption categories, we find that households with mothers exposed to the reform have decreased spending on education, whereas spending on jewelry has increased.

JEL Codes: D13, H31, I38, J18, J13, K36

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1 Introduction

One of the goals of the Millennium Development Goals is to "Promote Gender Equality and Empower Women" in countries in the developing world. To that extent, India has passed a variety of policies that are geared towards improving the welfare of the girl child. For e.g., the state of Bihar and Tamil Nadu recently implemented programs that give families with daughters money for them to buy cycles so that they can go to school. To increase the female to male sex ratio, India banned sex determination using ultrasound in 1991. In spite of all these progressive policies, there exists significant gender gap between girls and boys in Indian households. Zimmerman (2012) finds that households in India tend to decrease allocation of resources towards daughters as their age increases. In this paper, we evaluate the welfare of the girl child by looking at the impact of changes in inheritance rights on their education and household resource allocation.

The Hindu Succession (Amendment) Act of 2005 (HSAA) changed inheritance rights for women, especially for unmarried women. Previously, the Hindu Succession Law of 1956 gave equal rights to daughters and sons when separate property (property directly earned by father) was concerned. The new amendment to the law altered the rules for the inheritance of ancestral property, which usually can be generalized as an increase in tenancy rights for these women. However, five southern states in India, Andhra Pradesh, Kerala, Karnataka, Maharashtra, and Tamil Nadu, had already altered the amendment to allow for daughters to inherit ancestral property.[1]

To identify the impact of the amended Hindu Succession Law on women's education and household resource allocation, we take advantage of the state-cohort variation in exposure to the reform. For there to be any effect on women's education, we define treated cohorts as women who were below the age of 18 at the time of the reform in the state that changed the law, and control cohorts as those above 18. We then examine, using a difference-in-differences strategy, how the HSAA impacted mothers' education and education of the children in

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[1]The details of the years of policy changes for each states is listed in the Background Section.

households where mothers who were exposed to the reform. Our analyses tries to find a causal link between increased "income" (in this case, increased property) and a woman's bargaining power in the household. Furthermore, we look at the changes in household resource allocation by looking at various consumption categories (as described below), also by conditioning on the gender composition of the children in the household. We hypothesize that households with a boy and a girl should experience the most impact from having a mother who has increased access to new property. This could be attributed to the fact that households with only sons and only daughters might be behaving in a gender neutral manner. However, households with one son and one daughter, in the absence of HSAA, might favor the son. A mother who has, on the other hand, been exposed to the reform, might have an incentive to shift resources and shift resources away from the son to the daughter.

There is growing literature on the impacts of the HSAA on the welfare of women. Roy (2013) finds that the women in the HSAA states, on average experienced a 0.5 year increase in educational attainment relative to the non-HSAA states. She also, however, finds that with increased inheritance rights, families tend to either increase their daughters' human capital investment or increase their dowry expenditure. Once a woman is able to inherit more property, the boy's side can negotiate for more dowry in the marriage market. This could lead to more discord within households before and after marriage. Anderson and Genicot (2014) find that an increase in property rights, in fact, has increased the number of male and female suicides (however, the gap between these two numbers has decreased). They attribute this to a possible increase in discord in the households and hence leading to suicides. The authors also find that domestic violence increases in households with women who have increased access to property. Goyal et al. (2013) find results that are similar to Roy(2013). They find that a daughter's educational attainment significantly increases post HSAA implementation. The authors also find that while women are more likely to inherit land from their fathers, the bias between sons and daughters is not completely erased.

Literature, thus far, has concluded that a household's decision is not based on the unitary

model. Anderson and Eswaran (2009) find that in rural Bangladesh, women have greater autonomy within households with earned income compared to unearned income. An important factor in this result is that women are more autonomous when they work outside their husbands' farms. Using a difference-in-differences model, Heath and Tu (2014) examine the impact of a woman's increased bargaining power measured by the HSAA on her labor market supply. They find a significant increase in a woman's labor force participation, especially into jobs that are high paying in nature. A greater labor force participation by women may increase her contribution to earned income and this increase in formal payment for work also allows women to know exactly their contribution to the total household budget. This may increase their bargaining power in household decision making as seen in Qian (2008) and Jensen and Miller (2010). Also, the increase in her contribution may lead to more weight being given to her preferences in household resource allocation decisions. When mother's bargaining power increases, it is potentially welfare enhancing for the children. Dahl and Lochner (2012), and Milligan and Stabile (2011) find that children's test scores increase significantly due to an increase in family income (measured by changes in income guarantee programs). If mothers prefer to invest more in their children's health and education relative to father's (Blumberg (1988), Duflo (2003), Thomas (1990), Hoddinott and Haddad (1995), Thomas et al. (2002) Quisumbing and Maluccio (2003)), then one should see changes associated with improvement in child outcomes.

Our paper adds to this literature by connecting women's access to property rights and the welfare of her children, specifically looking at the intergenerational impact of the reform. Although Roy (2013) and Goyal et al. (2013) have looked at similar questions, this paper differs in the following methods. To our knowledge, we are the first paper to look at the impact of the HSAA on intra-household allocation and also teasing out any gender biases that might exist in household decision making processes. Moreover, we also look at the intergeneration effect of the HSAA by examining the education of the children of the mother who was exposed to the reform. We use a much richer sample from the National Sample

Survey data on consumption expenditure. Our estimates are both at the individual level and also at the household level observations. In rural areas, earnings do not provide a clear indicator of poverty since people get paid both in cash and in kind, and hence consumption is a better measure of the well-being of the household. Households also partake in the production of goods within their households as well and hence the income measure might not fully capture the dynamics of changes in living standards. Additionally, for the poor, any increase in household income will translate to increases in household consumption of goods and services. Therefore, the consumption data set allows us to evaluate the welfare of the household as a result of the mother being exposed to the reform, which increased her income.

We find that women who were in the reform states and below the age of 18 at the time of the reform, see no overall impact of the HSAA on their education. However, cohort specific results indicate that women who were of ages 11-15 at the time reform were 4 percent more likely to increase their education. Mothers who were exposed to the reform also had a positive and significant impact on their children's likelihood of increasing their level of education. These results hold particularly true for households with some share of land ownership. This result is meaningful since the HSAA largely impacted households with some land ownership. Looking at various consumption categories, we find evidence that there is an overall decrease in education spending, with the results holding true for the different types of households. Interestingly, we also find some evidence of a substitution away from education spending to asset creation through jewelry purchases especially in households with two daughters and two sons.

The rest of the paper is organized as follows. Section **??** talks about the two policies we look at, NREGA and the Hindu Succession Act, followed by a detailed literature review. We then detail our methodology in Section **??**, the data in Section **??** and discuss our results in Section **??**. Finally, we conclude in Section **??**.

2 Women's Inheritance Rights in India

In India, the Hindu Succession Act of 1956 has been the governing law for all matters with respect to property inheritance for all Hindus.[2] For the purposes of this Act, the term *Hindus* encompasses a broad set of religions - Hindus, Buddhists, Jains and Sikhs.[3] The three other religions are considered to have branched out from Hinduism, and hence are included in the definition of Hindus. The Act is applicable to all the states in India, except for the state of Jammu & Kashmir. Both the *Mitaksara* and *Dayabhaga* schools of Hindu doctrines are governed by this consolidated and comprehensive inheritance law. The 1956 law specifically applies to inheritance in the case of a male dying intestate (without a will or settlement). This is of particular interest since rural households in India very rarely have any formal wills. Goyal et al. (2013) reports that 65% of the population in India die without wills, and this percentage is presumed to be higher for rural households. The Act prescribed provisions for women to inherit property and promoted equality among sons and daughters, however, there were distinct inequalities: women could not inherit joint family property and were not allowed to inherit land (Agarwal, 1994; Anderson and Genicot, 2014).

Hindu property is categorized into two kinds - *coparcenary* (ancestral) property and *separate* property. Coparcenary property or joint family property implies property that has been inherited through generations; for examples, something that has been passed from great grandfather to grandfather to father and so on. This could be an ancestral house, or land that has been passed through generations. Separate property, on the other hand, is any property that is purchased or inherited from people other than father and ancestors and self-acquired (Agarwal, 1994).

In 2005, the Hindu Succession (Amendment) Act (HSAA) was introduced to promote gender equality with respect to women and men inheriting property. Before the amendment, brothers and sisters were allowed to claim equal share to their father's separate property.

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[2]Different religions in India have different inheritance rules. In fact, Muslim and Christian inheritance laws are considered to be far more progressive than that of Hinduism (Subramanian, 2010).

[3]The rest of the paper will just term all four of these religions together as Hindus.

However, only sons could claim coparcenary (ancestral) property. The Amendment in 2005 changed that; women were now eligible to inherit coparcenary property as well, including married women. Inheritance law in India is "concurrent" in nature,i.e., both the central and state government can alter these laws. Andhra Pradesh amended the law in 1986, Tamil Nadu in 1989, Kerala in 1976 and Maharashtra and Karnataka in 1994; the state amendments gave women the same claim to ancestral property as that of their brothers (Figure **??**). The Hindu Succession (Amendment) Act of 2005 extended this gender equal claim to ancestral property to all other states.[4]

3   Methodology

3.1   Conceptual Framework

In this section, we present a simple model detailing the rationale behind the decision making behavior of a household with respect to various consumption expenditure categories. Consider a simple model:

$$C_{ht} = f(HSAA_h, G_{ht}, X_{ht}) \tag{1}$$

where C_{ht} is consumption of household h in time t. $HSAA_{ht}$ denotes whether the mother in the household was exposed to the reform in household h has the access to the new property rules stated under the amendment and X_{ht} are household level control variables. Most importantly, a household's decision on diversifying its expenditure (for the purposes of our paper) will depend on the gender of the children within the household. This is denoted by G_{ht}, the gender composition of the children in the household. The motivation behind this is that households with only girls, will behave differently than households with only boys, who are completely different than households who have boys and girls. Studies have

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[4]The amendment in 2005 essentially removed Section 6 of the 1956 Hindu Succession Law which pertained to coparcenary property

shown that an increase in a household's income is generally associated with an increase in expenditure in the household, and we analyze the causality behind that. It is also not uncommon to assume that credit market failures in rural areas usually hinder a household's savings mechanism and so what they earn is what they consume (Deaton and Grosh, 1998). Thus, we employ expenditure on various consumption categories as a proxy to gauge the welfare of the household.

There are various channels that could guide parents' decisions to transfer wealth to daughters. On the one hand, parents could invest in girls' human capital formation (education). They could, on the other hand, transfer wealth in the form of dowry payments during weddings. The last channel is that of inheritance, where the parents give some property to the daughter. In this paper, we explore the change in inheritance laws and how an increased access to property could alter the welfare of the girl child. With the new amendment in the Hindu Succession Law, parents could switch away from other types of property transfers to ancestral (joint) property, assuming they put equal weight on all types of property. This also assumes that various property items are easily substitutable. If there is complementarity between land holding and human capital, then parents might be more inclined to invest in daughters' education. One negative effect could be that households shift resources away from boys to daughters, especially those that are on the margin. Thus, within a household, the direction of the impact of the policy on children's welfare is theoretically ambiguous. Further, the overall effect of the reform on women's well-being is also ambiguous.

3.2 Empirical Strategy

3.2.1 HSAA on Educational Attainment

In this paper, we analyze the effects of improving women's inheritance rights (primarily access to land), on their own welfare and also how it affects their own daughters. Before we look into other measures of welfare for girls, we first explore the changes in education outcomes brought about by the HSAA. We hypothesize that women who were of school going

age at the time of the reform in their state could have experienced an increased towards their own education. Our approach to estimate this is similar to what Roy (2013) and Goyal et al. (2013) have employed. We employ a difference-in-differences strategy where we have two sources of variation: a cohort variation, which identifies the status of the woman at the time of the reform and a state variation, which identifies the state in which the mother resided and whether that state has already passed the amendment or not.[5] All mothers who were below 18 years of age form our treatment group, while anyone above 18 years of age (the legal age of marriage of women in India) form our control group.[6] The treatment states are the states of Andhra Pradesh (1986), Maharashtra (1994), Kerala (1976), Karnataka (1994) and Tamil Nadu (1989). The control states are the other 14 states in our data set that passed the amendment in 2005. We further break down the mother's age into various cohorts to examine the differential effects of the program on different ages. The primary equation we estimate is the following:

$$y_{ics} = \alpha_1 + \beta_1(HSAA_{ics}) + \lambda_s + \delta_c + \gamma_s * (cohort_c) + \epsilon_{ics} \qquad (2)$$

where y_{ics} is the education of the mother i who belongs to cohort c in state s. $HSAA_{ics}$ is the treatment variable that takes on the value 1 for treated cohorts c in the reform state s. The treated cohorts are the following: 0-5 (primary school), 6-10 (middle school), 11-15 (high school) and 16-18 (grades 11-12). The omitted group is the cohort above 18 at the time of the reform. λ_s controls for state trends, δ_c are cohort fixed effects. To account for any differential effects, we include the term $\gamma_s * (cohort_c)$ to control for state specific cohort trends. Finally, ϵ_{ics} is the error term. To control for serial correlation and heteroskedasticity, the standard errors are clustered at the state level. The coefficient of interest is β_1 which gives the differential impact of education for each of the cohorts compared to women above

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[5]As noted in Roy(2013), migration to a state that has a reform is not a problem since the percentage of migration to different states is close to being negligible.

[6]Although the legal age of marriage for women is set at 18, it is not uncommon for girls to get married before 18 years of age. This practice is particularly prevalent in rural areas in India.

18 years of age at the time of the reform.

To address the welfare of the children in the household, we first examine the education level of children in a household where the mother has been exposed to the reform before she had the children. First, we restrict our sample to households that have a married woman and has at least one kid. A treated household is then identified as one where the mother was exposed to the reform before age 18, and a control household is one where the mother was older than 18 years of age at the time of the reform. We argue that within treated households, mothers may encourage increased education for their daughters compared to their sons. Our estimating regression is the following:

$$educ_{cght} = \alpha_2 + \beta_2(daughter_g * HSAA_h) + \delta_1(daughter_g) + \delta_2(HSAA_h) + \mu_t + X_{cght}\kappa + \epsilon_{cght} \quad (3)$$

where $educ_{cght}$ is the level of education attained by child c of gender g in a household h in time t. $daughter_g$ takes on the value 1 if the child is a girl, 0 if the child is a boy. $HSAA_h$ takes on the value 1 if the household is considered a treated household (the mother was exposed to the reform before age 18 in a reform state) and 0 if not. $X_{cght}\kappa$ is a set of control variables at the individual (child) level, including caste of the child, the household size, parents' age, parents' education and land owning household. Finally, μ_t are year fixed effects and ϵ_{cght} is the error term. The coefficient of interest is β_2 which gives the differential impact of HSAA on educational attainment between daughters and sons in a treated household, δ_2 gives the effect of the reform on sons' education.[7]

3.2.2 HSAA and Intra-household Allocation

This study attempts to connect the issue of women's inheritance rights and how this increased empowerment can impact household allocation decisions. This is particularly interesting in households with daughters, since we hypothesize that households with daughters

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[7]The overall effect of the HSAA on daughters' education is the sum of the coefficients $\beta_2 + \delta_2$.

tend to spend less on them than those with sons. Our analysis could be considered as an informal test of the unitary model of household and also of the gender bias that exists in rural households in developing countries.

To better understand the effects of HSAA on household allocation, and how the additional income could potentially help a daughter's well-being, we divide our sample into three kinds of households - ones with only boys, with only girls and households with a boy and a girl. If gender bias does exist within households, we should find evidence of households with daughters spending less money on, for example, education, than households with sons. This question becomes particularly interesting in households with a son and a daughter, and thus, gender composition of the children in the household becomes an important factor to consider in household allocation.[8] As stated in the conceptual framework section, if a mother already had access to ancestral property, her bargaining power in a household could be more than a mother who did not have access to this additional property. We hypothesize that for households with only boys, there maybe either no effect or a positive effect. On the one hand, parents of two boys might be already spending more towards them, hence the marginal effect of the additional income might be negligible. On the other hand, these parents might want to increase their bargaining power for dowry when their sons are in the marriage market. We could find similar results in households with two girls as well. Households with gender progressive parents might not change their behavior when there is an increase in income (assuming that they were spending more on them in the first place). However, there could also be a positive marginal impact in which, in the presence of a mother's increased bargaining power, parents might invest more either towards their education or towards marriage expenditure. The bargaining power might have the most impact within a household where there is a boy and a girl, since now the mother can *fight* for more expenditure towards her daughter.[9] Since we do not have individual level data, the

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[8]One drawback in our analyses is that we do not have individual consumption level data, and thus we are not able to estimate the within household differences.

[9]Our current analysis does not take into account the birth order of the children. We wish to investigate this in a later version.

effects could be ambiguous. If substitution of resources towards daughters is large, then we could see an overall positive effect (driven by the daughter) or a negative effect (driven by the loss in expenditure towards the son) or no effect at all, since the marginal increase might be very negligible.

$$cons_{ht} = \alpha_3 + \beta_3 HSAA_h + \theta_t + X_{ht}\eta + \epsilon_{ht} \tag{4}$$

where $cons_{ht}$ are the various consumption categories that a household h spends on in time t. θ_t are year fixed effects, X_{ht} are household level control variables (listed in the above section).

4 Data

We assess the impact of Hindu Succession (Amendment) Act on education and household well-being by focusing on education and consumption expenditure data. We use the nationally representative household data in India from the Consumption Expenditure Survey conducted by the National Sample Survey Organization (NSSO) for 2001- 02 and 2003. The NSSO collects information on households and their consumption expenditure every year and covers nearly all the districts in India. These annual cross-sectional surveys are administered using a stratified multi-stage random sampling where the lowest identifiable geographic unit for households in the sample is the district. The NSSO also contains information about household characteristics: caste, religion, household size, head of the household, land possession, age and sex of members, and education level each individual member of the household.[10]

The NSSO collects information on consumption expenditure every year and covers nearly all the districts in India. We use the 19 major states of India and restrict the sample to rural households and focus on the rural areas. The States are: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttaranchal, Ut-

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[10]The data set that we use does not have the years of education; it only reports the level of education completed by each member of the household.

tar Pradesh and West Bengal.[11] Jammu and Kashmir and the Northeastern states have not been included since they have very different economic and political characteristics from the other states in the country.[12] NSSO uses a recall period of one month for consumer goods, rent and monthly medical expenditure items, and a 365-day recall period for durable goods, education and institutional medical expenditures. The main categories in the consumption expenditure survey are 'food', 'fuel and light', 'clothing and footwear', 'education and medicine' and 'durable goods'. The questionnaire used to collect the data is comparable across the various rounds since they use the same recall period for the different consumption categories. We focus on the following household expenditures in this paper - monthly per capita consumption, education, intoxicants (such as alcohol), clothing, and jewelry.

Table 1 provides a summary statistics of our data highlighting the differences between the HSAA states (treatment group) and non-HSAA states (control group). The two groups are not different in terms of land possession. However, in terms of household size and caste status, there was some difference among these states. The average household size in HSAA states was 5.7 while for non-HSAA states it was 7.2. In terms of Scheduled Caste and Scheduled Tribes, the HSAA states had a lower percentage of the population belonging to these groups. However, we find that there is a larger population of Other Backward Caste category in the HSAA states when compared to those who did not have the property rights reform. Finally, a greater percentage of the population had secondary and higher secondary education in the HSAA states compared to the non-HSAA states. In our difference-in-differences analysis, we control for these characteristics to get at the causal impact of being exposed to the reform on educational attainment and intra-household budget allocation.

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[11]They account for nearly 96% of India?s population in the 2001 Census.

[12]Additionally, Jammu and Kashmir was excluded from the HSAA policy. Additionally, we exclude Delhi since we are only focusing on the rural areas in this version of the paper. We also exclude the Union Territories from the sample since politically and administratively they differ from the states in India.

5   Results

5.1   Effects of HSAA on Human Capital

With the introduction of HSAA, women were legally entitled to a share of the ancestral property which they contribute to their "new" household after marriage. This increase in "income" may increase their bargaining power in household decision making as seen in Duflo (2008), Qian (2008) and Jensen and Miller (2010). In the literature, increase in women's income is associated with increases in household well-being, especially for children. A direct measure of improvements in wellbeing may be captured through education. In Tables 3 to 5, we focus on the impact of the Hindu Succession (Amendment) Act on mother's educational attainment, daughter's educational attainment, and the educational attainment of daughters relative to sons in HSAA treated households. We thus, first present results of property rights on human capital formation.

In Table 3, we focus on the impact on education as a result of being eligible for HSAA benefits. Here we analyze the impact of the amendment on mother's education in order to see if being eligible to inherit ancestral property created an incentive for her parents to increase her human capital. Also, it is important to assess the impact on mother's educational attainment since human capital is strongly transmitted inter-generationally (Black, Devereux, Salvanes (2005), Currie and Moretti (2007), Emerson and Souza (2003)). Column 1 (Table 3), shows the impact on women aged 18 or less at the time of reform the compared to those aged 18 or more, controlling for state and cohort fixed effects. We find that the HSAA has no significant impact on education. In Column 2, we focus on mothers who had been exposed to treatment by cohort (younger cohort were below 10 years during the time of reform and older cohort were above 10 years but below 18 at the time of reform), we find that only that there is a positive and significant effect only for the older cohort. The probability of increasing the level of education increases by 3 percent. For the younger cohort there is no effect of HSAA. We find similar results in Column 3, which further breaks down the

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treatment variable into different cohorts as specified in the empirical section. We find that the younger cohort does not experience any significant changes in educational achievement due to the HSAA, where as the older cohort (11-15) experiences a positive and significant effect of around 4% increase in the probability of completing another level of degree. Quite often, by age 16, most women in rural India are married off in spite of the legal marriage age for women being 18.[13] The results presented thus far likely stem from the fact that the oldest cohort may not have been in school at the time of reform. For those girls who were in school, they were likely to get married by the age of 18. Families might have decided that since their daughter was going to inherit property and have access to physical assets, there was not much benefit in investing in human capital. The substitution effect may have led to no significant outcome in terms of education for the oldest cohorts. Thus the last cohort may not have benefitted from the reform as their younger counterpart aged 11 to 15, for whom the effect is positive and significant. However, for the younger cohorts there is no impact of the reform. Therefore past educational attainment continues to matter even if for the current generation the educational gap is reduced.

How did the HSAA impact children's education? To answer this question, we employ the same difference-in-differences strategy as above but through various other mechanisms as well. The results are presented in Table 4, where we show the effect of the HSAA on the educational attainment of daughters and sons within a household. We do this by first identifying households in which the mothers were exposed to the HSAA (employing the same rules as discussed above). Firstly, Column 1 of Table 4 shows the impact of the policy on children's education from being in a state that has had the amendment. Secondly, to tease out the effect of the program further, we focus on households with mothers who were impacted by HSAA (treated households) and lastly, in Column 3 we focus on HSAA treated households with land holding. Since the amendment specifically targets the landed

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[13]The 2013 UNICEF Statistics and Monitoring Section, Division of Policy and Strategy reported that India is the top country with child brides. The official number is 10063(in thousands) woman aged 20-24 at the time of the survey who were married before 15.

households, it is important to study the effects of having land versus not having land.[14] We find that there is a negative impact for households with daughters from being in a HSAA state. However, interacting the reform state with a household owning land, we find that the impact on daughter's education is positive and significant (approximately 4 percent). These results suggest that daughters in HSAA states and who belong to households with land, benefit more than their counterparts in non-HSAA states. However, for sons there is no such effect, even when we include land into our model. One reason for girls with land benefitting in HSAA states may be due to the fact that these are gender progressive states where girls tend to have greater human capital than the other states. Additionally, families with more educated daughters who have access to ancestral property can negotiate in the marriage market. The fact that sons do not see any impact could also be a facet of the fact that the inheritance rights amendments only affected the daughters and not them. Further, it could also imply that they might have had far more educational expenditures towards them for any marginal impacts to be positive and significant.

We then shift our focus to HSAA households (treated households), where mothers were exposed to reform and we find a positive and significant effect on both sons and daughters education (Column 2, Table 4). Our results hold for the various cohort specific estimations as well. This suggests that households where mothers were impacted by reform had more a formal realization of her contribution to household assets and this may have allowed her to make more say in household decision making.[15] Our results are in line with current literature which finds that household well-being and children's outcome (in terms of education and health) improves with increases in mother's income or asset holding. For sons, parents might want to increase their bargaining power for dowry when their sons are in the marriage market in order to attract girls from families with relatively larger ancestral property. In order to achieve this, parents may believe that there are greater returns from investing in

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[14]For Columns 2 and 3, the control group consists of households that have women who were 18 or more at the time of reform and thus were not impacted by the reform.

[15]One could consider our results as a an informal study to test the hypothesis that households behave in a unitary fashion. We find that it is more of a collective decision making process.

more years of schooling and this may be the reason for increasing son's education levels. In Column 3 of Table 4, we refine our focus to look at children's education in households where the mothers who were exposed to the HSAA and that the household owns some kind of land. We find that for both daughters and sons, the probability of obtaining more education increases significantly. For daughters, the increase in probability is around 10 percent, while sons are 3% more likely to get a higher degree. These results further hold when we classify households by cohort (where the younger cohort consists of households with mothers who were exposed to the reform when they were below the age of 10, while the older cohort consists of mothers who were above the age of 10 but below 18 at the time of the reform). There is a greater percentage increase in the probability of increasing daughters level of education, irrespective of whether the mother is in the younger or older cohort.

5.2 Effect of the HSAA on Intra-Household Allocation

With the increase in the formal woman's contribution to total assets, the increase can lead to more weight being given to her preferences in household resource allocation decisions. The formal contribution to household wealth by women may lead to certain distributional changes in expenditure (Blumberg, 1988; Thomas 1990; Hoddinott and Haddad, 1995; Thomas et al., 2002), which is captured using the detailed household consumption expenditure data. To identify the effect of HSAA on intra-household budget allocation, we employ the difference-in-difference framework outlined in Section 3. We exploit the timing of the rollout of HSAA across southern states before 2005. Since the consumption data from the NSSO is at the household level, we can only identify whether a household was affected by the introduction of HSAA. We identify this by coding a household to be an HSAA household if the household identifies itself to be Hindu and if there exists an individual who is female and who was below the age of 18 at the time the Act was passed in her state.

Table 5 presents results of the impact of the HSAA on household consumption decisions. In Column 1 to 6, we focus on household monthly per capita consumption expenditure, ex-

penditure on education, milk, intoxicants, jewelry, and clothing. We first look at households with kids, then we restrict our sample to only two children households. The sample of two children households is further decomposed in terms of the gender of the children: households with only two sons, households with one son and one daughter, and households with daughters. Since our data is at the household level, we try to tease out potential gender biases in households by focusing on the gender of the children in the household. As mentioned in the methodology section, since a mother now might have access to more property, she might seem more inclined to increased spending towards the daughter than the son.

Although we find that the reform did not change overall monthly per capita consumption, the reform did affect the intra-household budget allocation. In terms of education expenditure, there was an overall decrease in spending in HSAA households versus non-HSAA households. This is true for households with two sons and households with two daughters. This is puzzling, especially, because when one looks at educational attainment, there is an increase in the probability of increasing education levels. For intoxicants (such as alcohol), there is no differential change among the HSAA and non-HSAA households. Thus the reform did not have a negative effect by increasing household budget for goods that may have negative health effects. For clothing, there is no significant increase in consumption for households with children, or households with one boy and one girl, and households with two girls. However, for households with two boys, there is an overall increase in spending on clothing.

Interestingly, there is a positive and significant effect on household consumption of jewelry. Indian households purchase jewelry, especially gold, as an instrument for savings. In rural India, where financial instruments for saving are limited, households buy gold since it is a liquid asset which can be sold easily for cash in times of need. Nearly 70 percent of the gold sold in India is purchased in rural India in the form of jewelry (Reserve Bank of India, 2013). Therefore, after the reform, women are more likely to be using their increased power in household decision making to increase purchase of jewelry which they will

be able to transfer to their children as assets. Given that increase in women's contribution to households leads to improvements for children, this result is not surprising.

6   Conclusion

This paper studies the impact of the Hindu Succession Amendment Act before 2005 on household wellbeing by focusing on educational attainment and intra-household allocation of income. We try to link a women's ability to inherit property to evaluate their impact on a household's spending behavior. Using a difference-in-differences strategy and multiple rounds of the NSSO data, we find an increase in the probability of children's educational attainment, however the difference between educational attainment between daughters and sons is negligible. When we focus on household consumption, we find interestingly that there is an increase in jewelry purchase as a result of a household being affected by the reform. We also analyze the impact of HSAA by cohorts and find that the results hold true.

To analyze the impact of HSAA on consumption we specifically analyze the effect on households with two sons, two daughters, and one son and one daughter to assess whether there are any potential gender biases in household decision making. Using the NSSO data we do not find any significant differences in household spending decisions. Further work that uses more finely defined consumption data that identifies the level of spending on different household members would be useful to identify gender biases. Also, such a dataset would allow us to better test the unitary model of household by estimating our regressions for households that had a mother who was impacted the Hindu Succession (Amendment) Act.

For future work, we wish to further investigate the differences in expenditure between landed and landless households. Since the HSAA particularly improved land inheritance rights, this will be an important variation to explore. Furthermore, we would like to exploit the mother's age during the time of the reform, to see if she does indeed have increased bargaining power when it comes to household decisions. Since we have data for more years as well, we would like to extend our current analysis to more years and hence more individuals

that could have been impacted by the HSAA. One other potential route to explore is also the effect of NREGA in these HSAA households, to see if the employment guarantee program has further improved women's bargaining power in their household subject to having improved access to property.

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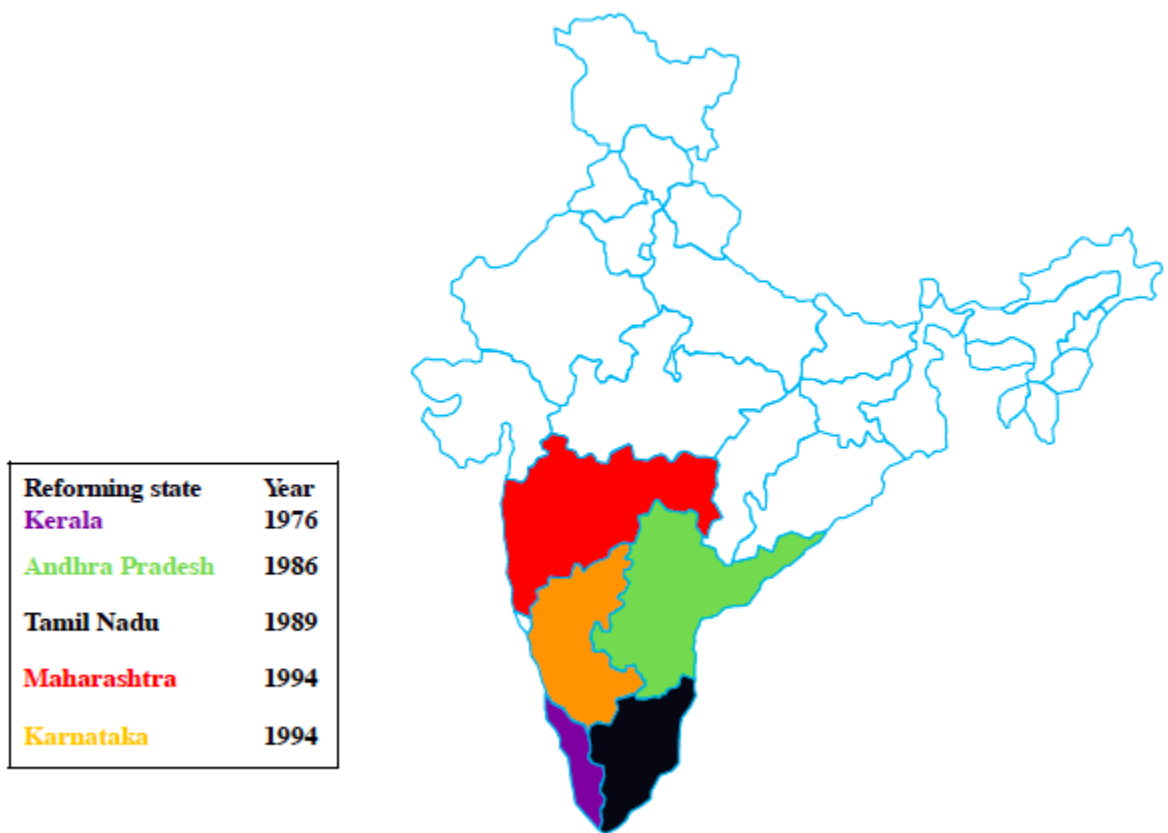
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Figure 1: <u>HSAA Early Implenters</u>

Reforming state	Year
Kerala	1976
Andhra Pradesh	1986
Tamil Nadu	1989
Maharashtra	1994
Karnataka	1994

Source: Roy(2013).

Table 1:
Descriptive Statistics

	HSAA States (1)	Non-HSAA States (2)
Education		
Primary and Less	0.28	0.38
Secondary	0.48	0.39
Higher Secondary	0.24	0.23
Land Holding		
Marginal Farmer (0.50 hectare to 1 hectare)	0.54	0.44
Small (between 1-2 hectares)	0.25	0.33
Semi Medium(between 2 - 4 hectares)	0.11	0.13
Large (greater than 8 hectares)	0.09	0.09
Caste		
Scheduled Caste	0.14	0.18
Scheduled Tribe	0.05	0.09
Other Backward Caste	0.52	0.38
Female Headed Household	0.03	0.02
Size of the Household	5.73	7.21
No. of kids	2.57	3.90

Notes: Source: National Sample Survey [2001-2002, 03 . The data is for the 19 major states. Sample restricted to households in rural areas and only Hindu households.

Table 2:
Economic Characteristics of Social Groups in India

	SCs (1)	STs (2)	OBCs (3)	Others (4)
Population Share	19.6	8.6	40.9	30.8
Male Literacy Rate (Rural)	64.5	60.3	71.8	80.0
Female Literacy Rate (Rural)	42.6	39.5	48.9	62.9
Marginal Land Holding (% of Total Land Holding)	91.2	73.6	77.9	73.7
Poverty Rate (Head Count Ratio)	50.8	58.3	39.3	26.9

Source: NSSO, Report No. 514, Household Consumer Expenditure among Social Groups in India, 61st Round (July 2004- June 2005). NSSO, Report No. 516, Employment & Unemployment Situation among Social Groups in India, 61st Round (July 2004- June 2005). Head Count Ratio calculations are based on the 2004-05 poverty line calculated by the Tendulkar Committee for Planning Commission, 2009.

Table 3:
Impact of HSAA on Mothers' Education

	(1)	(2)	(3)
Reform State*Age≤18	-0.039		
Reform State*Age≤10		-0.007	
Reform State*Age>10		0.030**	
Reform State*Cohort 1			-0.032
Reform State*Cohort 2			-0.002
Reform State*Cohort 3			0.044***
Reform State*Cohort 4			-0.003

Notes: ***, **, * denote significance at 1%, 5% and 10% respectively. Standard errors are in parenthesis and are clustered at the district level. The dependent variable is the level of education completed by the mother. The sample is restricted to rural areas and only Hindu households. Sample of states does not include Jammu & Kashmir. All regressions include state fixed effects, cohort fixed effects and state specific cohort trends.

Table 4A:
Impact of HSAA on Children's Education: Daughters

	(1)	(2)	(3)	(4)	(5)	(6)
Reform State	-0.06***					
	(0.01)					
Reform State*Landed Households		0.04**				
		(0.02)				
Household with treated mother			0.09***			
			(0.02)			
Household with treated mother ≤10				0.06***		
				(0.01)		
Household with treated mother >10				0.07***		
				(0.01)		
HSAA Household * Landed Household					0.101***	
					(0.01)	
HSAA Household * Land * Mother ≤10						0.095***
						(0.01)
HSAA Household * Land * Mother >10						0.082***
						(0.01)

Notes: ***, **, * denote significance at 1%, 5% and 10% respectively. Standard errors are in parenthesis and are clustered at the district level.The dependent variables are the log value of various consumption categories. The sample is restricted to households in rural areas and Hindu households. The regressions includes controls for household level characteristics such as caste, religion, education, age by gender, quadratic for age, number of children, old members and men in the household, household size.

Table 4B:
Impact of HSAA on Children's Education: Sons

	(1)	(2)	(3)	(4)	(5)	(6)
Reform State	-0.01					
	(0.01)					
Reform State*Landed Households		0.02				
		(0.01)				
Household with treated mother			0.04**			
			(0.02)			
Household with treated mother ≤10				0.06***		
				(0.00)		
Household with treated mother >10				0.07***		
				(0.01)		
HSAA Household * Landed Household					0.035*	
					(0.02)	
HSAA Household * Land * Mother ≤10						-0.002
						(0.01)
HSAA Household * Land * Mother >10						0.074***
						(0.01)

Notes: ***, **, * denote significance at 1%, 5% and 10% respectively. Standard errors are in parenthesis and are clustered at the district level. The sample is restricted to households in rural areas and Hindu households. The regressions includes controls for household level characteristics such as caste, religion, education, age by gender, quadratic for age, number of children, old members and men in the household, household size.

Table 5:
HSAA on Intra-Household Consumption Expenditure

	Full Sample	Two Children Households		
		2 Sons	1 Son and 1 Daughter	2 Daughters
	(1)	(2)	(3)	(4)
Monthly per capita Expenditure	0.02	-0.01	-0.01	0.02
	(0.01)	(0.03)	(0.03)	(0.02)
Education	-0.23**	-0.36***	-0.09	-0.47***
	(0.11)	(0.11)	(0.16)	(0.12)
Intoxicants	-0.09	0.01	-0.01	0.11
	(0.06)	(0.09)	(0.12)	(0.12)
Clothing	0.04	0.07**	0.01	0.02
	(0.02)	(0.03)	(0.04)	(0.04)
Jewelry	0.16	0.37***	0.13	0.38**
	(0.10)	(0.08)	(0.36)	(0.15)

Notes: ***, **, * denote significance at 1%, 5% and 10% respectively. Standard errors are in parenthesis and are clustered at the district level.The dependent variables are the log value of various consumption categories. The sample is restricted to households in rural areas and Hindu households. The regressions includes controls for household level characteristics such as caste, religion, education, age by gender, quadratic for age, number of children, old members and men in the household, household size.