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## **Women's inheritance rights and time use**

Evidence from the Hindu Succession Act in India

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**Abstract:** This paper examines the impact of the Hindu Succession Act on married women's time use in India. The Hindu Succession Act was amended between 1976 and 2005 by giving equal inheritance rights to women for inheriting property. To estimate the effect of the equal inheritance reform, I devise a difference-in-difference strategy by exploiting the features of the reform. Using the nationally representative Time Use Survey 2019, I find that women exposed to the reform are investing 46 minutes per day more in employment. Moreover, women exposed to the reform are spending 44 minutes per day less time on home production, with no change in their leisure time. By looking at the individual components of home production, I find that the reduction in home production is driven on account of a decline in time spent on domestic chores, with no change in childcare work. In addition, I find that women exposed to reform devote slightly more time to learning. This implies that the reform has led women to substitute their time from home production to market work. These findings are consistent with an increase in women's autonomy effect. I also find evidence of intra-household substitution of home production work for exposed women through sharing the burden of home production by other household members, especially the male members. This suggests that inheritance reform could be a form of reversal of the devaluing of women's domestic and reproductive labour.

**Key words:** time use, equal inheritance reform, women, India, Hindu Succession Act

**JEL classification:** D13, J22, O17, Z13

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# 1 Introduction

Gender inequality has been a longstanding issue in developing countries. One reason for sustained gender inequality is the discriminatory nature of historical legal inheritance rights, which have favoured sons more than daughters. In South Asia, 50 per cent of countries continue to have unequal inheritance rights that do not favour females (World Bank 2012).<sup>1</sup> In such a scenario, women's legal inability to inherit property can adversely affect their access to economic opportunities as well as their economic independence. According to World Bank (2012), legal reforms such as the equal inheritance reform have the potential to improve women's economic outcomes and strengthen their economic empowerment.<sup>2</sup>

In this paper, I empirically examine how granting equal inheritance rights to women alters the time-use allocation decisions among married women. Specifically, I examine the effects of the amendments to the Hindu Succession Act on the time allocation of women who were exposed to it. The Indian government made amendments in the Hindu Succession Act 1956 (HSA) that gave women the legal right to inherit the ancestral 'joint' property. This was done in a phased manner in different states between 1976 and 2005.<sup>3</sup> An increase in women's ability to inherit property can be interpreted as an increase in their potential unearned income, which could alter the time-use allocation of women in the household. There might be two opposing effects on their time use. On one hand, a strong income effect can generate a labour-leisure trade off, thereby resulting in a decrease in labour supply and an increase in leisure time. On the other hand, an increase in women's unearned income raises her control over resources and thereby raises her gain from working outside (Heath and Tan 2020). This induces an increase in her labour supply, with a corresponding decline in home production or leisure. Given the presence of traditional gender-specific roles in India, if an increase in time spent in wage labour is compensated by a decline in her leisure time without any compensatory decline in time spent on home production, then it could create an additional burden on her. Hence, there is a possibility that they may be working even more. Therefore, the effect of the equal inheritance right on women's time use is *a priori* ambiguous and needs to be investigated.

This paper uses the nationally representative data from Time Use Survey 2019 for the analysis. Because the data are cross-sectional, I use two features of the reform to devise a difference-in-difference strategy for estimating the effect of HSA on women's time use. First, the HSA is only applicable to four religious communities: Hindu, Sikhs, Jains, and Buddhists (I call this as Hindu or treated religion), and second, the amendments of the HSA were only for those women who were unmarried at the time of reform. Therefore, I identify the treatment effect by comparing the time use of women who were younger than the 10<sup>th</sup> percentile of the age of marriage distribution at the time when the reform was passed in their state to those women who were older than the 90<sup>th</sup> percentile of the age of distribution and comparing this difference in women of treated religion to the difference in women of non-treated religion.

The primary outcome variable this paper considers is time spent by women per day in employment, home production, and leisure. This paper finds that exposure to the HSA increased women's involvement in employment; that is, women exposed to the reform are spending 42 minutes per day more in

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<sup>1</sup> Unequal land inheritance is prevalent in many other developing economies, along with South Asian countries. In all Middle East and North African countries, 34 per cent of sub-Saharan countries and one-fourth of East Asian and Pacific countries have unequal inheritance reform that disfavour females.

<sup>2</sup> Many studies argue that granting property rights to women increases their bargaining power and improves their economic as well as non-economic outcomes (Carranza 2012; Deininger et al. 2013; Jain 2014; Roy 2015; Harari 2019; Bahrami-Rad 2021).

<sup>3</sup> For example, Kerala introduced amendments in 1976, Andhra Pradesh in 1986, Tamilnadu in 1989, and Maharashtra and Karnataka in 1994. Later on, it was ratified in other remaining states by the federal government in 2005 by giving equal property rights to women.

employment, which amounts to an increase of 69 per cent. This is consistent with the fact that an increase in unearned income increases her autonomy in the household that dominates the standard income effect; therefore, she prefers to invest more time in market work. Further, I find that women exposed to the reform are devoting less time to home production by 44 minutes per day, and there is no change in their leisure time. This implies that women are freeing up their time from home production and diverting this time to market work without any change in their leisure. The evidence shows that a reduction in home production is driven on account of a decline on time spent in domestic chores, with no change in childcare work. In fact, the evidence also suggests that other members of the household are sharing the burden of home production for these newly empowered women.

Although the total time spent in leisure does not change, there is a reallocation of women's time across different kinds of leisure activities. For instance, women are shifting away their time from religious activities to socializing and self-care because of exposure to the inheritance reform. Finally, I find a shred of evidence that women exposed to reform devote slightly higher time to learning. Next, I present a series of robustness checks to establish the validity of the results.

This paper relates to several strands of literature. A vast body of literature shows that property rights and control over assets enhance investment decisions (Goldstein and Udry 2008), individual autonomy (Wang 2014), and labour supply (Field 2007). This paper relates to the literature on women's inheritance reform, which examines its effect on different aspects of women's status in the context of India (Jain 2014; Anderson and Genicot 2015; Bahrami-Rad 2021) as well as other developing countries (Carranza 2012; Harari 2019). While the women's inheritance reform has increased women's status in other countries, the results are somewhat mixed for India. While the literature on inheritance reform has focused on a wide variety of women's outcomes including education (Deininger et al. 2013; Roy 2015; Calvi 2020), autonomy (Mookerjee 2019), fertility and mortality, and labour force participation (Heath and Tan 2020), no paper has examined the effect on women's time use. This paper contributes to this literature on how inheritance reform affects women's time-use allocation, which is one of the key economic outcomes.

This paper also relates to the literature on time use, labour force participation, and gender division of labour (Becker 1981; Fafchamps and Quisumbing 2003; Eswaran et al. 2013; Afridi et al. 2019) and highlights the role of economic and social policies as one of the determinants of women's labour supply decisions along with individual and household characteristics. In addition, a handful of studies see how the pro-women policies influence their labour force participation and time use by altering their activity patterns (Gray 1998; Maity 2020; Heath and Tan 2020). For example, Gray (1998) shows that the unilateral divorce-law adoption that favoured women in the US prompts married women to increase their labour hours and reduce time in home production. Maity (2020) finds that the access to paid employment opportunities provided by NREGA reduces the women's time spent on domestic chores. But so far, no paper has examined how inheritance policy that favours women can alter their time-allocation decisions. This paper fills that gap.

The rest of the paper is organized as follows. The next section provides a brief literature review and highlights the contribution. Section 3 lays down the institutional context of the HSA. Section 4 describes the data and descriptive statistics. The empirical strategy is described in Section 5. Section 6 explains the results and robustness checks. In the last section, I conclude.

## 2 Related literature

Giving access and ownership of assets to women increases women's bargaining power in the household (Agarwal 1994; Wang 2014) and generates many opportunities for their well-being (Field et al. 2016) as

well as increases the welfare of future generations (Duflo 2003). The equalization of women's rights is therefore expected to be an effective policy tool for empowering women and enhancing their well-being. In the context of other countries, for instance, Carranza (2012) finds that equal inheritance reform in Indonesia decreased son preference and fertility. Similarly, Harari (2019) finds that inheritance reform in Kenya improved women's outcomes on several dimensions like education, health, age at marriage, fertility, and bargaining power.

A large body of literature has examined the impact of the HSA on different aspects of women's status including human capital outcomes and intra-household bargaining. While Deininger et al. (2013), Roy (2015), and Bose and Das (2017) find that HSA reform increases the education among women who were of school-going age or unmarried at the time of reform, Rosenblum (2015) argues that the reform has increased the cost of having daughters, which reduces the parents' incentive to invest in their daughter's health, thereby leading to an increase in female mortality. Moreover, Roy (2015) finds that parents are compensating their young daughters who are of school-going age or marriage age either by giving them more education or more dowries to avoid giving them a share in the property.<sup>4</sup> Therefore, the effect of inheritance reform on women's human capital investment is not unambiguously positive. On one hand, it increased the investments in women's education and their access to assets (Roy 2015), but on the other hand, it decreases the investment made by parents in young girls' health (Rosenblum 2015). In addition, the evidence suggests that this reform has increased female foeticide and intensified son preference (Bhalotra et al. 2020). Similarly, Anderson and Genicot (2015) argue that increasing women's property rights may have increased the intra-household conflicts due to the backlash effect and thereby increased suicide rates among men and women.

Many studies examined how property rights like HSA affected women's bargaining power in their marital households. It is believed that women who own property have a strong option outside marriage, and this raises their bargaining power within marriage (Roy 2008; Mookerjee 2019). Exposure to HSA has increased women's control over income, thereby raising her gains from working, and this results in an increase in her labour supply (Heath and Tan 2020). Moreover, women's empowerment granted by HSA increased the age at marriage (Heath and Tan 2020), improved women's nutritional outcomes and lowered their risk of death (Calvi 2020).<sup>5</sup> This shows that inheritance reform has an impact on a variety of economic and non-economic outcomes. In this paper, I explore the time-use effect of such reform.

Recent studies have highlighted that gender norms and status concerns are important determinants of women's time allocation and their work (Fafchamps and Quisumbing 2003; Eswaran et al. 2013; Bertrand et al. 2015; Bernhardt et al. 2018; Jayachandran 2021), besides the standard factors. In South Asian countries, the norm that women should do domestic chores and childcare is very strong and, therefore, leaves fewer hours for women to work (Jayachandran 2021). This limits their employment and productive opportunities.<sup>6</sup> Married women working outside the home is not considered a reverential activity. Desire for higher 'family status' in the families induces women to withdraw from the labour market (Eswaran et al. 2013). Sometimes women spend fewer working hours in employment rather than to completely go missing from the labour market because of gender norms (Bertrand et al. 2015). Such

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<sup>4</sup> This is because parents view education and dowry payments as an alternative way of transferring wealth, so they invest more in women's education and increase the marital transfers to avoid the defragmentation of land.

<sup>5</sup> Moreover, Deininger et al. (2019) find that HSA not only benefitted the women exposed to the reform, but their children also benefitted by improving their education and health outcomes, especially for girls. On the contrary, Bose and Das (2017) find that HSA does not have any effect on girls' education in households with mothers exposed to the reform but observes a significant decline in boys' education.

<sup>6</sup> Bertrand et al. (2015) show that the 'norm that wife earns more than husband' significantly lowers the wife's probability of participating in the labour market. Moreover, there is a gap between her potential income and realized income because she reduces her labour supply in market work by working fewer hours to circumvent the gender role reversals in earnings.

distortions in the women's labour supply are visible only in their time-use allocation. The differences in time use are not only restricted to gender but may still exist between members of the same gender (Fafchamps and Quisumbing 2003; Gupta and Negi 2021).

Policy options that aim to empower women and change the gender attitudes may alter women's economic role over time by changing their activity status from home production to market work. For instance, Maity (2020) finds that access to paid employment opportunities provided by NREGA has altered the time-use patterns among Indian women. She finds that women's participation under NREGA reduces her time spent on domestic chores. Gray (1998) shows that the unilateral divorce-law adoption by US states increases women's autonomy and prompts married women to increase their labour hours by releasing their time from home production hours.<sup>7</sup> Similarly, policies that affect the distribution of resources within the household can also affect the labour supply decisions of the family members. In this context, Heath and Tan (2020) developed a theoretical non-cooperative bargaining model to see how the distribution and control over resources affect women's consumption and labour decision.

### 3 The institutional background of the Hindu Succession Act

Although the Indian constitution treats every citizen equally, the inheritance rights in India remained gender biased. Before the colonial period, inheritance rights were mainly governed by the *Mitakshara* system in the country. Under *Mitakshara*, there was a distinction between a male's joint ancestral property and private property. Joint ancestral property primarily refers to property that has been inherited from the ancestors or grandfathers or great-grandfathers, along with any property that has been acquired jointly or any private property that has been included in the joint property. Joint ancestral property is held as coparcenary shares. Private property refers to property purchased by an individual on his own. Under the *Mitakshara* system, sons were given the coparcenary rights by birth and thus allowed to inherit joint ancestral property. These inheritance rights were not applicable in the case of private property, which could be bequeathed only as per the owner's wish or at will. However, daughters were not given any coparcenary rights by birth for inheriting joint ancestral property. Daughters or widows were allowed to inherit ancestral property only in the absence of male heirs (Agarwal 1994).<sup>8</sup>

Later on, all the traditional inheritance schemes were amalgamated into the HSA of 1956, which clarified women's right over inheriting private property. Daughters and widows were given equal rights in a male's private property and his notional share of joint ancestral property in case of intestate. In other words, if a male died intestate, then his wife and daughters along with his sons are given an equal legal right to inherit his private property and his 'notional' share of joint ancestral property. But the inequalities remained, and daughters were still given the coparcenary rights in 'joint' ancestral property. Only the sons or male heirs continued to have coparcenary rights by birth over joint ancestral property. This implies that even after the HSA of 1956, inheritance rights were gender biased and discriminated against women in India. However, the position has improved from gross inequality to a fair degree of inequality, but the inheritance reforms remain gender biased.

Inheritance is a concurrent subject in the Indian constitution where both federal and state governments have legislative authority; therefore, in subsequent years, various states introduced amendments to the HSA to make daughters coparceners in the joint family property. For example, Kerala introduced amendments in 1976, Andhra Pradesh in 1986, Tamilnadu in 1989, and Maharashtra and Karnataka in 1994,

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<sup>7</sup> In addition, technological factors like the introduction of electrification may make households more productive in time-consuming household activities, thereby making available more time for them for employment activity (Dinkelman 2011)

<sup>8</sup> Women were allowed to inherit their father's or husband's property only in the absence of four generations of agnatic male heirs.

and subsequently, in 2005, the Indian central government ratified it in the remaining states in a similar manner by removing the gender inequality in inheritance rights. The HSA amendments apply to only women who are Hindu, Sikh, Jain, or Buddhist and only to those women who were unmarried at the time of reform. Since more than 90 per cent of the total property belong to the 'joint' family property (Roy 2015), reforms related to inheritance are important in determining asset ownership.

## 4 Data and descriptive statistics

### 4.1 Data

I use the nationally representative Time Use Survey (TUS) conducted by the National Statistical Office (NSO). It is the first nationwide survey that entirely covers India, except a few villages of Andaman and Nicobars.<sup>9</sup> The primary objective of TUS is to measure the information on time disposition by men and women in different paid and unpaid activities. It is carried out during January–December 2019, covering 138,799 households spread over 9,945 first-stage units (FSU) in both rural and urban sectors. The sample is drawn using a stratified two-stage design. In the first stage, the villages and urban towns of given states are divided into various FSUs that have been selected, and in the second stage, a certain number of households have been surveyed within each FSU.

The TUS primarily records the information on time disposition in different activities carried out by an individual, who is at least six years old, during some specified reference period. The reference period starts at 4 am on a preceding day before the survey to 4 am on the survey day, equivalent to 24 hours. These 24 hours have been split into 48 time slots of 30 minutes each. Each individual is asked about their activities carried out in these assigned time slots. If an individual performs multiple activities in a given period then all the activities performed for more than 10 minutes are recorded. These activities reported by individuals have been classified, following the International Classification of Activities for Time Use Statistics, 2016. The TUS provides information on not only time spent in paid and unpaid activities (e.g., domestic work, volunteer services) but also on time spent by an individual in, for example, learning, socializing, self-care, and leisure.

In this paper, the main focus is on time spent in a day in different activities by women who are between the ages of 15 and 60 years. Broadly, these activities are employment, home production, and leisure. The employment activity mainly includes the paid activities that generate income by working outside or in the home enterprise. Home production includes time devoted to domestic chores, childcare, and caregiving to others. Leisure consists of time spent in socializing, religious practices, leisure, and self-care activities. A detailed description of these activities is given in Appendix Table B1.

The time spent by an individual in each of these activities is measured by calculating the number of minutes spent by an individual in a day in any particular activity. However, if an individual is not participating in any specific activity during the day, then the time spent in that is coded as 0. If an individual reports a single activity in a time slot, then the entire time of that slot is assigned to that activity. However, if an individual reports multiple activities in a time slot, then the entire time of that slot is assigned equally to all those activities. In addition, the data provide information on individual demographic characteristics, including age, education, and employment status, and household characteristics, including religion, social group, and monthly per-capita expenditure.

Women in India, especially married, are generally engaged in irregular informal work that can be easily done with domestic chores and childcare simultaneously at home. Women's engagement in these infor-

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<sup>9</sup> A few villages of Andaman and Nicobar Islands were difficult to access, so they were not surveyed.

mal home-based activities is not considered work and is often misinterpreted as unpaid domestic work (Hirway and Jose 2011). The standard labour force surveys consider these women as ‘non-worker’. However, the time-use survey data provide more comprehensive information on women’s work by measuring the time spent in all the activities without asking respondents directly whether they are ‘employed’ or ‘unemployed’ (Hirway 2012). This is the advantage of using the TUS in this paper.

## 4.2 Descriptive statistics

This paper explores the cross-sectional variation of the TUS to capture the effect of HSA on women’s time-use allocations. Even though the data were collected after the nationwide implementation of the HSA reform, it is still possible to estimate treatment effects by comparing cohorts of women likely to be married before versus after the HSA (Heath and Tan 2020).

Table 1 shows descriptive statistics for the women in the estimation samples across Hindu (which is also called a treated religion and includes Sikhs, Buddhists, and Jains) and non-Hindu religions. The distribution of the women in treated religion is as follows: 96.5 per cent are Hindus, followed by Sikhs (2.2 per cent), Buddhists (1.0 per cent), and Jains (0.3 per cent). Among non-treated religion, 69 per cent are Muslims, 26.5 per cent are Christians, and 4.9 per cent belong to another religion. A small fraction of women report being engaged in paid employment activity; for instance, 23.3 per cent of Hindu women and 18.8 per cent of non-Hindu women report being engaged in employment.

Looking at the time-use figures, it is observed that women spend a smaller amount of their daily time in employment activity: Hindu women devote 70 minutes and non-Hindu women devote only 46 minutes per day in employment. Women are primarily devoting more time to home production, especially domestic chores (322 minutes by Hindu women and 326 minutes by non-Hindu women), followed by childcare (52 minutes by Hindu and 69 minutes by non-Hindu). Interestingly, they spend two-thirds of their daily time, which amounts to around 960 minutes, to leisure, which includes activities like socializing, religious practices, recreation, and self-care. Most of the time spent in leisure is coming from time spent in self-care activities like sleeping, eating, and personal hygiene. The table shows that Hindu and non-Hindu women are spending 703 minutes and 695 minutes on self-care, respectively.

Interestingly, there are systematic differences in time allocations between Hindu and non-Hindu women. Hindu women are spending significantly more time on employment and less time on home production and leisure. A detailed picture of these differences across different ages is given in Figure B1.

## 5 Empirical strategy

The objective of this paper is to estimate the impact of equal inheritance reform on women’s time use in India. For this, I exploit two features of the reform to devise our identification strategy. One, the reform applied only to those women who were not married at the time of the reform, and two, it was binding only for households belonging to Hindu, Buddhist, Sikh, or Jain religions. The obvious choice of treatment group would be women who were not married after the reform in their respective states and compare their outcomes with women who were married at the time of reform across treated and non-treated religions. But the year of marriage could be endogenous with the timing of reform enactment. Parents who did not want their daughters to be eligible for the rules under HSA would marry them before the amendment passed in their respective states. So, using the actual marital status at the time of reform to create the treatment and control group may create an issue.

To solve this issue, I use the age at marriage distribution during the year the HSA was passed in their state to construct the treated and control cohort. This is similar to what was adopted by Heath and Tan (2020). A similar strategy has also been used in other studies related to education reform that compare



the outcomes of children of younger cohorts who were of school age at the time of reform with those of older cohorts who would have completed their school education (Duflo 2001; Osili and Long 2008). Here, I compare the outcomes of women of younger cohorts who were not of marriageable age at the time of reform with those of older cohorts who would have married at the time of reform. In spirit, I consider a treated cohort consists of women whose age was less than the 10<sup>th</sup> percentile of the age at marriage during the year when the reform was passed in their state as these are the women who are more likely to be unmarried at the time of reform. Similarly, women whose age was more than the 90<sup>th</sup> percentile of age at marriage during the year when the reform was passed in their state are considered the non-treated cohort.<sup>10</sup> The details on these cutoffs is given in Appendix A. <sup>11</sup> The current age distribution of these sampled women across Hindu and non-Hindu religion is given in Figure B3.

For identification, I compare the difference between the treated and the non-treated cohort across Hindu and non-Hindu households. Consider the following equation:

$$Y_{irft} = \beta_1 Treatedcohort_{it} \times Hindu_r + \beta_2 Treatedcohort_{it} + \delta_f + \gamma_t + \lambda_r + \mu_{rt} + \epsilon_{irft} \quad (1)$$

where  $Y_{irft}$  is the time spent in minutes per day in any particular activity spent by a given woman  $i$ , where the activities are given by  $Y = \{\text{Home Production, Employment, Leisure}\}$ .  $Treatedcohort_{it}$  is a dummy variable that takes value 1 if the woman  $i$  is younger than the 10<sup>th</sup> percentile of the age at marriage during the year the reform was equalized in the state and 0 if she is older than the 90<sup>th</sup> percentile of the age at marriage during the year the reform was equalized in their state.  $Hindu_r$  is a binary variable that takes value 1 if the woman belongs to Hindu, Buddhist, Sikh, or Jain religion and 0 if the woman is Muslim, Christian, Parsi, Jewish, or other.

An important concern with this estimation strategy is that state-level unobserved factors could be correlated with inheritance reform that could also affect the time-use allocations. Some states in India have recently introduced certain policies at the state level that directly or indirectly affect women's employment and thereby have an impact on women's time use.<sup>12</sup> To account for this, I control for state fixed effects. However, it is also plausible to assume that there could be some unobserved factors at the sub-region level within a state that can differentially affect the time-use allocations across different regions within a state independently of the reform. To correct this, I replace the state fixed effects with sub-region or first FSU fixed effects ( $\delta_f$ ). As a part of the sampling strategy, a state has been divided into various sub-regions called FSUs, which are either villages in rural regions or urban towns. Therefore, FSU fixed effects encompass state-level fixed effects and therefore comprehensively control for state-specific time-invariant characteristics as well as time-invariant unobservables that affect women's time-use allocations across different states. In addition, time-invariant unobserved heterogeneity is also controlled at a lower level, such as at the village or town level.

Next, I control for year of birth ( $\gamma_t$ ) and religion ( $\lambda_r$ ) to control for differences in women's time-use allocations that may vary across different age groups or religions. Additionally, I include religion-specific birth-cohort fixed effects ( $\mu_{rt}$ ), which account for the fact that there may be certain religion-specific policies or unobserved factors that affect the time-use allocations differentially among women of different age cohorts within the same religion. For instance, religion-specific policies such as the

<sup>10</sup> A pictorial description of the identification strategy is given in Appendix Figure B2.

<sup>11</sup> For example, the reform came in Tamilnadu in 1989, and the 10<sup>th</sup> and 90<sup>th</sup> percentile of marriage age at that time was 14 and 22, respectively. Women who were younger than 14 years at the time of the reform are classified as treated cohort, and the women who were older than 22 years at the time of the reform are classified as control cohort. The distribution of age at marriage in different reform years is given in Figure 1.

<sup>12</sup> For example, the Bihar state government has introduced the scheme named 'Aarakshit Rozgaar Mahilaon ka Adhikaar' to boost female employment, under which 35 per cent of state government jobs are reserved for women.

1978 Child Restraint Act, as well as Dowry Prohibition Act, directly affect only young Hindu women who were born or married after the implementation of these laws (Calvi and Keskar 2021). These policies explicitly exclude Muslim women<sup>13</sup> and, therefore, may have a differential effect on young Hindu women. In addition, if these religions may have evolved in general over time, then it would be captured by religion-specific time fixed effects.

$\beta_1$  is the coefficient of interest and captures the difference in time-use allocations for the treated relative to the control cohort because of exposure to HSA, after controlling for region, time, religion, and religion-specific time fixed effects. Here, the main identifying assumption is that, in the absence of the reform, any difference in time-use allocations between Hindu and non-Hindu women would have been the same across treated and control cohorts. I cluster the standard errors at the district level to control for heteroscedasticity and correlation between the individuals in the same district.

For a difference-in-difference strategy to work, the parallel trend assumption must follow. This empirical strategy will fall, if pre-trend reforms in women's time-use allocation are different among Hindu and non-Hindu women. Because of the lack of panel data, it is not possible to check for parallel trend assumptions directly. However, I carry out two falsification tests to check for this assumption and establish the validity of the identification strategy. In the first falsification test, I compare the time-use allocations of older and younger women between the Hindu and non-Hindu who were not exposed to the reform as they were too old at the time of the reform. For this, we construct a new treatment and control cohort with those women who were not exposed to the reform and re-estimate the results with specification (1). If there are no differential trends in time allocation between Hindu and non-Hindu women, then the coefficient  $\beta_1$  estimated with this new treatment cohort should be statistically insignificant. In the second falsification test, I compare the time-use allocation of married men using Equation (1). If there is a general change in time-use allocation common to the Hindu young cohort exposed to reform, then a similar effect in time-use allocation will be visible for Hindu young men as well. In addition, I conduct a number of robustness checks. The details for the same are given in the next section.

## 6 Results

### 6.1 Main results

Table 2 reports the estimates for the effect of HSA on women's time-use allocation across different activities. The first row of the table reports the estimates for  $\beta_1$  coefficient from equation (1). Columns (1)–(3) list the results for key dependent variables, which are time spent per day by women, measured in minutes, in employment, home production, and leisure. The estimates in column (1) show that women exposed to inheritance reform experience a significant positive increase on time allocated to employment. I find that exposure to inheritance reform increases time spent by women in employment by 46 minutes per day, which is highly significant and equivalent to an increase of 69 per cent of mean time spent by married women in employment. The result in column (2) shows that the coefficient for the dependent variable home production is negative and statistically significant at the 1 per cent level. This shows that women exposed to reform are spending 42 minutes per day less in home production. In addition, I find that HSA has no effect on leisure time, although the coefficient is negative, but it is statistically insignificant.

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<sup>13</sup> The 1978 Restraint Act raised the legal age of marriage for Hindu girls from 15 to 18, but it remained unchanged for Muslim women. Similarly, the Dowry Prohibition Act and its amendments exclude the marital transfers that are governed by Muslim Personal Law.

These findings draw two important points. First, autonomy effect is at play. An increase in the legal ability to inherit property increases women’s autonomy by raising her control over resources. This increase in autonomy leads to increasing her gain from working outside, and therefore, she prefers to invest more time in employment. A 69 per cent increase in time spent in employment is consistent with the autonomy effect. This aligns with those of Heath and Tan (2020). This result contrasts with their study in the sense that they study the labour supply at an extensive margin.<sup>14</sup> However, I examine labour supply at the intensive margin. Given that women generally spend fewer hours per day in employment because of norms and mobility constraints, the study of labour supply at an intensive margin is important, and an increase of such a large magnitude is noteworthy.

The second important point is that an increase in women’s bargaining power induces a woman to free up her time from home production and reallocate it to market work, without any change in her leisure time. This is in contrast with the model prediction of Heath and Tan (2020), which suggests an increase in women’s time spent in home production assumes that money and time are perfect substitutes. However, they have not tested it empirically.<sup>15</sup> The empirical findings do not support this model prediction, probably because time and money are not perfect substitutes.

If one looks at these women’s well-being in terms of time use, it is visible that the reform has not increased their burden of work as the leisure time remains unaltered. They are reallocating their time by shifting from home production to market work. Moreover, I find a positive significant impact of equal inheritance reform on women’s learning activity, although the effect size is small (column (4) Table 2). However, the focus of this paper is on time spent in employment, home production, and leisure.

## 6.2 Intra-household dynamics

To investigate the reason for decline in home production, I re-estimate Equation (1) on the individual components of home production. Table 3 presents the estimates of those results. Columns (1)–(3) show that because of exposure to HSA, women experienced a decline in time spent on domestic chores significantly—namely, a decline of 45 minutes per day, which amounts to 13.8 per cent of the average time spent by married women on domestic chores. However, I do not find any significant change for time spent in any care-giving activities (childcare and others). This suggests that women release their time from domestic duties, but their preference for time devoted to childcare remains unchanged; time diverted to employment is not coming at the expense of time spent on childcare. Less time spent in home production could possibly be compensated by two channels: first, the other household members are increasing their time in home production or, second, the home production work is substituted by market services, such as by hiring maids or using machines for domestic chores. To explore these possibilities, I estimate the following regression:

$$Y_{hrf} = \beta_1 Treatedwomen_{hf} \times Hindu_r + \beta_2 Treatedwomen_{hf} + \delta_f + \gamma_r + \eta_{hrf} \quad (2)$$

where  $Y_{hf}$  is either the number of minutes spent per day by other household members (separately for kids and adult members) in home production household  $h$  or an indicator variable if cleaning clothes or

<sup>14</sup> Heath and Tan (2020) develop a theoretical non-cooperative household model in which they predicted that a woman’s unearned income raises her bargaining power within the household, which increases her gains from working outside and can increase her labour supply. To empirically support this model, they use the exposure to the HSA as an exogenous source of variation in the woman’s unearned income and find that exposure to HSA increased women’s autonomy by 0.17 standard deviations and increases the probability of joining the labour supply by between 3.8 and 6.1 percentage points. They suggested that increased control over income is the potential channel for an increase in women’s bargaining power.

<sup>15</sup> Heath and Tan (2020) further predicted that women’s contribution to the household public good production also increases. One can think of a contribution to household public good as a contribution to home production activities. They further extended the model by showing the main results hold true even when a woman contributes both money and time in the production of household public good, as long as money and time are perfect substitutes.

floors using machines. Equation (2) is analogous to Equation (1) except that  $Treatedwomen_{hf}$  is now defined at the household level and takes the value 1 if at least one woman in the household belongs to the treated cohort and 0 otherwise.  $Hindu_r$  is a binary variable that takes value 1 if the woman belongs to Hindu, Buddhist, Sikh, or Jain religion and 0 if the woman is from Muslim, Christian, Parsi, Jewish, or other religion.  $\delta_f$  and  $\gamma_r$  represent FSU and religion fixed effects.

Table 4 presents the estimates from Equation (2). The dependent variable in columns (1)–(4) is the time spent in home production by different household members, which are boys and girls (6–14 years), men, and other women in the household who have not been exposed to the reform. The estimates show that in a household where women have been exposed to HSA, other members of the household are spending more time on home production. These estimates vary from 3–13 minutes per day more. Moreover, I find no significant positive effect on machines used for cleaning (column (5)). This shows that it is not the case that these women are investing in more machines for doing their domestic chores. In fact, they are able to divert the burden of home production to other members of the same household as a result of an increase in their autonomy. The work of home production is generally viewed as something that subordinates women. These findings highlight that inheritance reform has been able to counteract the gender roles that subordinate women.

In addition, I find that even though the impact on total time spent on leisure is insignificant, there is an indication of reallocation of time across these different leisure activities (Table 3 columns (4)–(7)). For example, women exposed to the reform are spending significantly less time in religious practices, which is equal to 22 minutes per day. This decline in religious practices is offset by an increase in time spent on socializing and self-care. Even though the estimates are weakly significant, the effect of reform on these activities is positive.

### 6.3 Heterogeneity

Next, I study the heterogeneity of treatment effects across different dimensions, and Table 5 presents these estimates. Each regression specification includes the main difference-in-difference term and its interactions with a set of indicator variables along which the heterogeneity is estimated. The response in time spent on employment on account of inheritance reform could be less drastic in states, regions, or groups where norms around gender-specific roles and status concerns are high. For example, households in urban areas are generally expected to have less dated views on traditional gender roles, and therefore, one may expect the effect of inheritance reform to be more responsive in urban areas relative to their rural counterparts. Columns (1) and (5) of Table 5 show the estimated heterogeneous effect across rural and urban areas, with women residing in the rural region with base category. The estimates for both rural and urban regions are in line with baseline findings. However, the coefficients on time spent in employment and home production are more responsive in urban areas than rural areas. In particular, women exposed to the reform residing in urban areas are spending 55 minutes per day more in employment and 53 minutes per day less on home production, while the same estimates for women in rural areas are 39 and 34 minutes per day, respectively. These differences could be because status is derived from women's home production, especially in rural India.

The culture in north Indian states is strongly patriarchal. They are characterized by more conservative and traditional gender norms, where the movements of restriction are rigidly controlled and have less autonomy compared to their counterparts in the southern states (Dyson and Moore 1983). Columns (2), (6), and (10) of Table 4 show the estimated heterogeneous effect by spatial variation, where I compare the northern states with the rest of the Indian states. Two observations are noteworthy. First, the increase in time spent in employment is much higher in north Indian states relative to the rest of India, whereas the degree of decline in home production is less. Second, this increase in time spent in employment is compensated by a moderate reduction of time spent in home production as well as leisure. This reveals that women in north India are working more both outside and inside the home but at the expense of their

leisure, probably because the notion that 'women have the primary responsibility for home production' is much stronger in these states.

Next, I present the heterogeneity estimates by caste in columns (2), (6), and (10), with women belonging to other castes as the reference category. The estimates indicate that coefficients are more responsive for low caste women who belong to scheduled castes (SCs) or scheduled tribes (STs). This is consistent with the fact that status concern is lower among low caste households, and it increases as we go up in the caste hierarchy (Eswaran et al. 2013). Therefore, the changes in time spent in employment and home production in response to inheritance reform is lower among other caste women.

Next, it has been observed that women with higher education spend more time in home production either because of status concerns (Eswaran et al. 2013) or higher returns of education to home production (Afridi et al. 2018). I find that there is no differential impact of HSA on employment across women with different levels of education. However, the finding suggests that women with higher education are spending even less time in home production but are also experiencing a small increase in leisure because of the reform, relative to women with less education [Columns (8) and (12)].

#### 6.4 Robustness checks

To test the validity of the main results, I carry out a set of falsification tests and robustness checks. I present those findings in this section.

##### *Falsification tests*

In the first falsification test, I compare the time-use allocations of older and younger women who were not exposed to the reform. This is similar to testing for parallel trend assumptions. For this, I construct a new treatment and control cohort with those women who were not exposed to the reform, as they were too old at the time of the reform. The new treatment cohort consists of women who were older by 13 years or less than the 90<sup>th</sup> percentile of the age at marriage distribution at the time of the reform in her state. Similarly, a new control cohort is defined as women who were older by 14 years or more than the 90<sup>th</sup> percentile of the age at marriage at the time of the reform in her state. For instance, if the 90<sup>th</sup> percentile of the age at marriage is 18 years, then women who were between 18 and 35 years old at the time of reform are in the treatment cohort and women older than 35 in the control cohort. I re-estimate Equation (1) with the false treatment and control cohort. Table 6 presents the estimates of the  $\beta_1$  coefficient from these falsification tests. These estimates in columns (1)–(3) are statistically insignificant, which suggests the absence of pre-trends among the women who were not exposed to the reform. Next, I compare the time-use allocations of married men using Equation (1) by focusing on the sample of married men between the ages of 15 and 60 years. Again, I find no significant effect of exposure to the reform on young Hindu men's time-use patterns (Table 6 columns (4)–(5)).

##### *Transforming the dependent variable*

Next, I perform a series of robustness checks. First, I transform the dependent variable using Inverse Hyperbolic Sine (IHS) transformation. This transformation is defined at zero.<sup>16</sup> Table B2 of the Appendix shows the estimates using this transformation. The results are in line with Table 2. These estimates show that women exposed to reform experience a 74 per cent increase in time spent in employment per day, whereas they decrease their daily time in home production by 14 per cent. In addition, the result for activity leisure remains insignificant even for the transformed variable.

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<sup>16</sup> The IHS transformation of a given variable  $x$  is given by  $\log x = (x + (x^2 + 1)^{1/2})$ . This transformation is used to transform variables that include zero or negative values.

### *Ten-year-long cohort and early reformer states*

This subsection describes the two robustness checks in the spirit of Heath and Tan (2020). To remove the concern that the results are driven by women who were very far from the age of marriage at the time of the reform, I re-estimate Equation (1) with 10-year-long cohorts in both the treatment and control cohorts (see columns (1)–(3) in Appendix Table B3). The estimates are similar to the main findings. Next, I focus only on the early reformer states in which case the nationwide implementation of the reform is not considered. If the reform came for all women after 2005, the estimates obtained by restricting early reformers deals with this concern. I re-run the results only by considering women in states of undivided Andhra Pradesh, Kerala, Karnataka, Maharashtra, and Tamilnadu and find that the results persist (see columns (4)–(6) in Appendix Table B3).

### *Extended specification*

Even with a variety of fixed effects, there is a possibility that the average employment of Hindu women in younger cohorts increases faster over time compared to other religions. To account for this, I replace religion fixed effects with religion time trends. Columns (1), (5), and (9) of Appendix Table B4 show these estimates, and the main results hold true. I also extend the empirical specification in Equation (1) by including religion-state fixed effects to control for omitted variables as well as state-year linear trends and state-year fixed effects to account for state-specific time-varying factors that may differentially affect women’s time allocation across different states. I use birth year as a time dimension, and by including state-year fixed effects, the coefficient on the term *Treatedcohort* ( $\beta_1$ ) will no longer be identified as it also varies with the state-year of birth levels (see Appendix Table B4). The results are robust in all these alternative specifications.<sup>17</sup>

### *Inclusion of endogenous controls*

Previous literature suggests that HSA leads to change in women’s ability to inherit land, education, and fertility, for example. These variables are also determinants of women’s time-use allocation. Hence, these variables are endogenous to the variable of interest. To test whether the results are robust to this, I extend the empirical specification by including a variety of controls related to women’s and households’ characteristics that may have been directly influenced by the reform. Therefore, I include woman’s education, household landholding, household size, presence of kids in the house, and consumption quintile as a set of bad controls. These estimates remain significant (see Appendix Table B5).

### *Clustering at the state-religion level*

In Appendix Table B6, I clustered the standard errors at the state-religion level. This takes into account any possible correlation that may affect women’s time use and the introduction of HSA reform within a state for the same religion. I find that the results remain significant even when I cluster the standard errors at the state-religion level. In addition, I cluster the standard errors at the state Hindu level.

## **7 Conclusion**

In this paper, I study the impact of the HSA on married women’s time use. I exploit the variations in the HSA across religions and cohorts to examine how equalizing the inheritance reform for women has affected the time-use allocation for married women. I find that exposure to the HSA, which raised their ability to inherit property, increased the time spent by women in outside employment work and decreased

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<sup>17</sup> The results are also robust with inclusion of district-linear time trends.

their engagement in home production. I find an increase of 44 minutes per day in employment and a reduction of 43 minutes per day in home production for women who were exposed to the HSA. This decline in home production is primarily on account of a reduction in women's engagement in domestic chores. Additionally, there is no change in time spent on leisure.

Heath and Tan (2020) suggest that an increase in a woman's unearned income increases her autonomy by increasing her ability to control decisions directly. Therefore, it affects her labour supply decisions not just through the income effect but also through an increase in autonomy. Since an increase in her autonomy raises the gains from working, I find that women exposed to reform devote more time to employment by releasing their time from domestic chores. Besides Heath and Tan (2020), the relation between women's autonomy and inheritance rights is well researched in the context of India as well as other developing countries. In addition, this paper suggests that legal reforms can have multiplier effects. Evidence suggests that working outside the home enhances women's autonomy (Anderson and Eswaran 2009; Atkin 2009). Therefore, legal reforms that empower women can prompt them to increase their time in outside employment work and can further empower them. However, it is also possible that the HSA could impact pre-marital human capital investments (e.g., education or health investments and shift in marriage age) or change the characteristics of marital matching (e.g., change in average husband characteristics), which may potentially lead to a change in women's time allocation rather than autonomy effect. In this context, Heath and Tan (2020) found that there is minimal evidence of change in pre-marital characteristics and no evidence of change in the extent of assortative matching, ruling out the possibility that these factors may be the primary driver for the observed change in time patterns.

This paper reveals how policies that aim to promote gender equality and empower women can potentially impact women's time-use allocations in India where the deep-rooted patriarchal norms prevail. These deeply entrenched patriarchal norms emphasize women's primary role as homemakers and, thereby, restrict their mobility. Household work done by women is not viewed as worthy (Anderson and Eswaran 2009). This paper highlights that in such a setup, institutionalizing women's property rights can also be an effective tool to change the perspective towards women's work. Enhancing women's bargaining power also promotes economic growth (Doepke and Tertilt 2019). Such indirect effects should not be overlooked while designing policies that are economic and social in nature.

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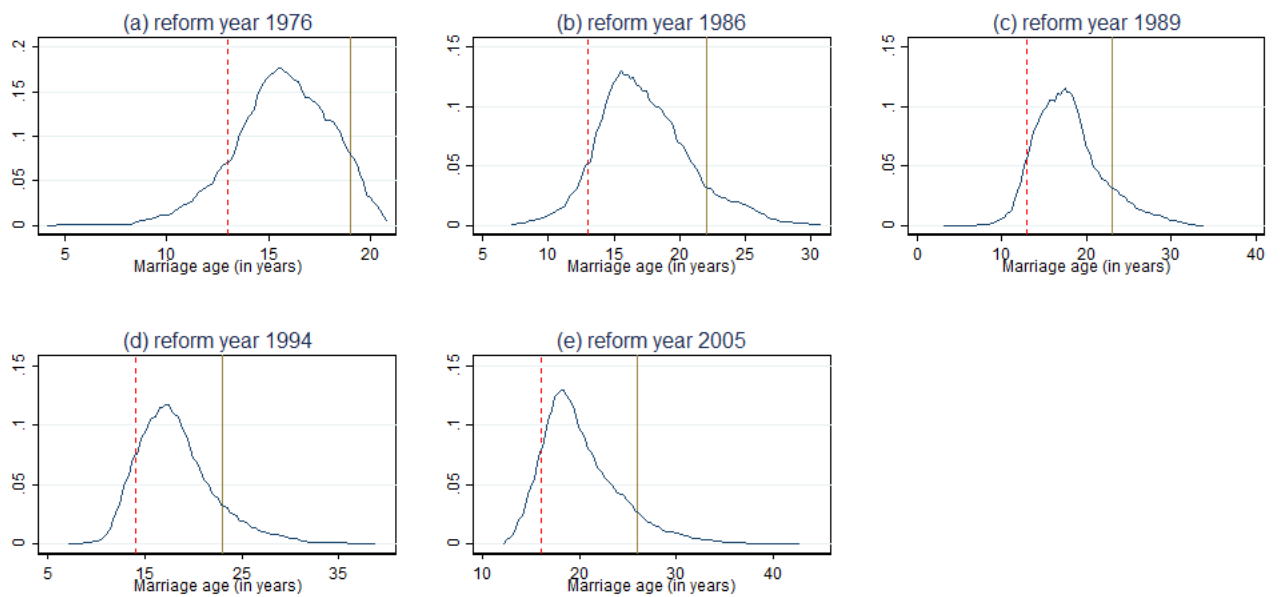
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## Figures

Figure 1: Actual age at marriage distribution for different reform years



Note: the red and brown lines in each graph represent the 10<sup>th</sup> and 90<sup>th</sup> percentile of marriage age in the specific year. For example, the 10<sup>th</sup> percentile of marriage age in reform years 1976, 1986, 1989, 1994, and 2005 was 13, 13, 13, 14, and 16, respectively. Similarly, the 90<sup>th</sup> percentile of marriage age was 19, 22, 23, 23, and 26, respectively.

Source: author's calculations based on NFHS-3 conducted in 2005–06.

## Tables

Table 1: Descriptive statistics

	Hindu		Non-Hindu	
	Mean	S.D.	Mean	S.D.
<b>Time spent in activities per day (in minutes)</b>				
Employment	70.251	156.8	45.871	127.9
Home production	376.417	159.8	397.707	162.9
Domestic chores	322.123	139.9	326.477	138.4
Childcare	52.487	86.8	69.102	97.3
Care-giving to others	1.807	16.2	2.129	16.9
Leisure	959.919	160.6	962.096	156.8
Socializing	110.164	91.6	111.731	92.9
Religious practices	15.307	29.7	31.884	56.4
Recreation	131.136	105.1	123.204	99.0
Self-care	703.311	108.9	695.278	107.9
<b>Religion</b>				
Hindu	0.965	0.2	0.000	0.0
Muslim	0.000	0.0	0.687	0.5
Christian	0.000	0.0	0.264	0.4
Sikh	0.022	0.1	0.000	0.0
Jain	0.003	0.1	0.000	0.0
Buddhist	0.010	0.1	0.000	0.0
Other religion	0.000	0.0	0.048	0.2
<b>Other characteristics</b>				
Rural	0.636	0.5	0.579	0.5
Monthly per capita expenditure	2,722.841	2,313.7	2,556.891	1,791.9
Working	0.230	0.4	0.188	0.4

Note: the table reports the sample mean and standard deviation across the Hindu and non-Hindu religion for the sample women. The sample includes women who are 15–60 years old and belong to either the treated or control cohort in the sample estimation. Working is the indicator variable if an individual is engaged in employment activity. S.D. stands for standard deviation.

Source: author's calculation based on Time Use Survey, 2019.

Table 2: Hindu Succession Act and married women's time use

	(1)	(2)	(3)	(4)
	Employment	Home production	Leisure	Learning
Treatedcohort × Hindu	45.717*** [10.807]	-41.850*** [8.353]	-9.375 [7.869]	3.310** [1.317]
Treatedcohort	-4.865 [10.319]	34.005*** [10.798]	-12.118* [7.204]	-7.555*** [1.814]
Observations	97,489	97,489	97,489	97,489
R-squared	0.331	0.433	0.413	0.129
FSU	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes
Mean of dependent variable	66.71	385.8	954.1	2.223

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, learning, and leisure activity. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table 3: Effect of HSA on individual components of home production and leisure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Home production			Leisure			
	Domestic chores	Child care	Other care	Socializing	Religious practices	Cultural	Self-care
Treatedcohort × Hindu	-44.979*** [7.394]	2.983 [3.407]	0.145 [1.231]	6.544* [3.912]	-21.483*** [3.906]	-1.222 [5.559]	6.787* [4.026]
Treatedcohort	65.672*** [10.037]	-30.862*** [3.832]	-0.805 [1.042]	-11.963*** [3.831]	16.888*** [3.438]	3.375 [4.377]	-20.418*** [3.677]
Observations	97,489	97,489	97,489	97,489	97,489	97,489	97,489
R-squared	0.379	0.404	0.164	0.430	0.398	0.489	0.508
Mean of dependent variable	326.6	57.37	1.827	108.9	17.78	128.2	699.2

Note: the dependent variable in each column is the time spent in minutes per day in domestic chores, childcare, others' care, socializing, religious practices, recreation, and self-care. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table 4: Intra-household dynamics

	(1)	(2)	(3)	(4)	(5)
	Time spent in home production (in minutes per day)				Mechanical
	Boys (6–14)	Girls (6–14)	Men	Other women	(=1 if yes)
Treatedwomen × Hindu	2.680*** [0.743]	5.237*** [1.454]	18.747*** [4.229]	12.956** [5.150]	-0.007 [0.006]
Observations	86,052	86,052	86,052	86,052	86,052
R-squared	0.174	0.145	0.232	0.597	0.497
FSU	Yes	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable	2.804	6.232	82.94	179.9	0.119

Note: the dependent variable in columns (1)–(4) is the time spent in minutes per day in home production. In column (5), it is the indicator variable if a household cleans clothes and floors mechanically. The variable Treatedwomen is a dummy variable that takes value 1 if at least one woman in the household belongs to the treated cohort and 0 otherwise. The variable Hindu is an indicator for a given woman who belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region and religion fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table 5: Heterogeneity in treatment effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Employment				Home production				Leisure			
Treatedcohort × Hindu	38.633*** [10.803]	44.552*** [10.812]	37.255*** [10.846]	47.373*** [10.873]	-34.430*** [8.445]	-43.261*** [8.378]	-31.267*** [8.435]	-36.827*** [8.209]	-1.263 [7.892]	-8.418 [7.880]	-8.376 [8.021]	-12.710 [7.956]
Treatedcohort × Hindu × urban	16.361*** [2.857]				-17.138*** [3.227]				-18.736*** [2.644]			
Treatedcohort × Hindu × northern states		14.911*** [2.860]				18.069*** [4.222]				-12.248*** [3.287]		
Treatedcohort × Hindu × SC/ST			8.719*** [2.685]				-12.274*** [2.441]				-0.089 [2.333]	
Treatedcohort × Hindu × Women ≥ higher secondary education				-3.753 [2.633]				-15.326*** [2.527]				8.676*** [2.240]
Observations	97,489	97,489	97,489	97,489	97,489	97,489	97,489	97,489	97,489	97,489	97,489	97,489
R-squared	0.332	0.332	0.333	0.332	0.434	0.434	0.434	0.434	0.413	0.413	0.413	0.413
FSU	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes a value of 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. In columns (1), (5), and (9), the base category is the rural region. In columns (2), (6), and (10), the base category is the rest of the Indian states except northern states like Punjab, Haryana, Uttar Pradesh, Uttarakhand, Delhi, and Himachal Pradesh. In columns (3), (7), and (11), the base category is women who belong to a caste other than SC or ST. In columns (4), (8), and (12), the base category is women who have schooling less than higher secondary. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table 6: Falsification tests

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment	Home production	Leisure	Employment	Home production	Leisure
Treatedcohort New × Hindu	10.300 [12.728]	-1.196 [10.295]	-8.448 [16.360]			
Treatedcohort Men × Hindu				15.476 [12.745]	-5.111 [4.038]	-9.447 [11.695]
Observations	39,841	39,841	39,841	80,505	80,505	80,505
R-squared	0.438	0.464	0.482	0.399	0.297	0.347
FSU	Yes	Yes	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes	Yes	Yes

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Treatedcohort New is a dummy variable that takes value 1 if women were older by 13 years or less than the 90<sup>th</sup> percentile of the age at marriage distribution at the time of reform in her state and 0 if women were older by 14 years or more than the 90<sup>th</sup> percentile of the age at marriage. The variable Treatedcohort Men is a dummy variable that takes values 1 and 0 if the given man is younger than the 10th percentile and older than the 90th percentile age of marriage distribution at the time of reform when it was passed in his respective state. The variable Hindu takes value 1 if the religion of the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.



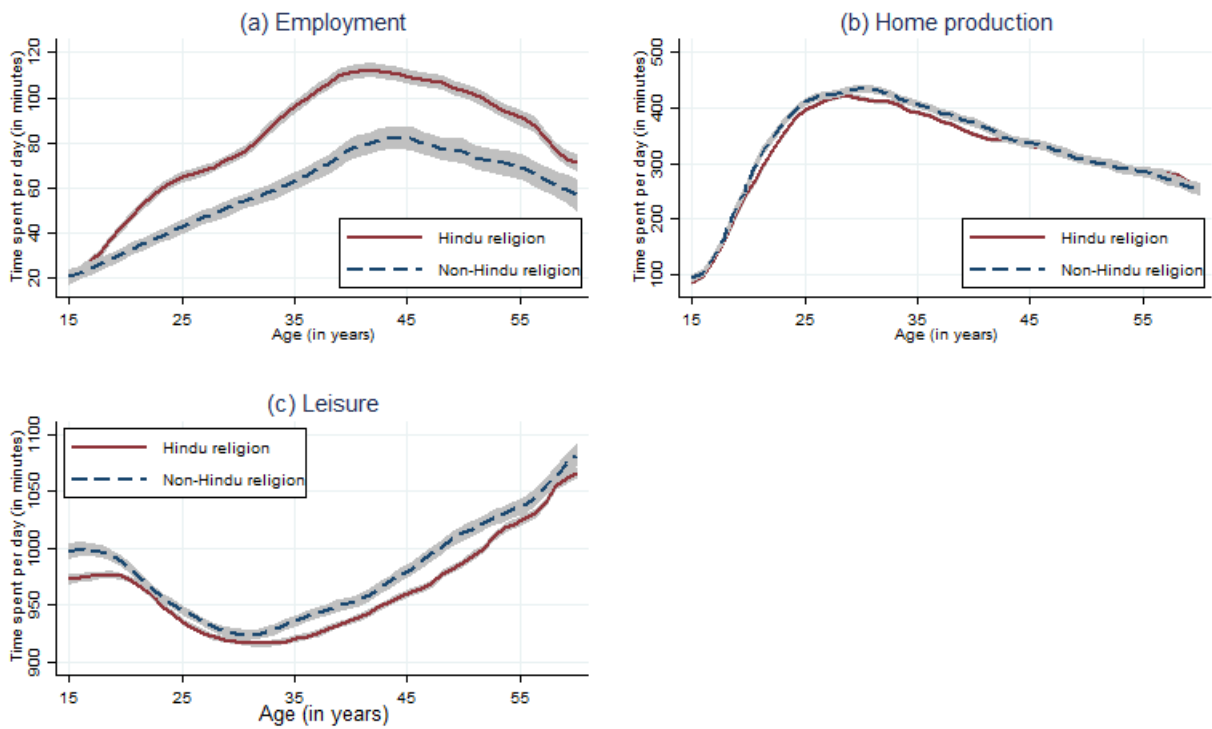
## Appendix

### A Construction of age at marriage distribution

To find the actual age of marriage distribution for different reform years, I use the nationally representative National Family Health Survey (NFHS-3) conducted in 2004–05. NFHS-3 collects detailed information covering the sample of 109,041 households with 74,369 men aged 15–54 and 124,385 women age 15–49. The NFHS data contain information on women’s age at marriage and year of marriage along with individual, household, and other demographic characteristics. To construct the age at marriage distribution, I use two variables: age at first marriage (v511) and year of marriage (v508). Next, I take the sample of all the women who get married in a particular year across India and use their age at first marriage to create the age at marriage distribution. This has been done separately for all five years when the amendments were made. The actual distribution for age at marriage in each reform year is given in Figure 1. This shows that the 10<sup>th</sup> percentile of marriage-age distribution for the years 1976, 1986, 1989, 1994, and 2005 is 13, 13, 13, 14, and 16, respectively. Similarly, the 90<sup>th</sup> percentile of marriage-age distribution for the years 1976, 1986, 1989, 1994, and 2005 is 19, 22, 23, 23, and 26, respectively.

## B Additional figures and tables

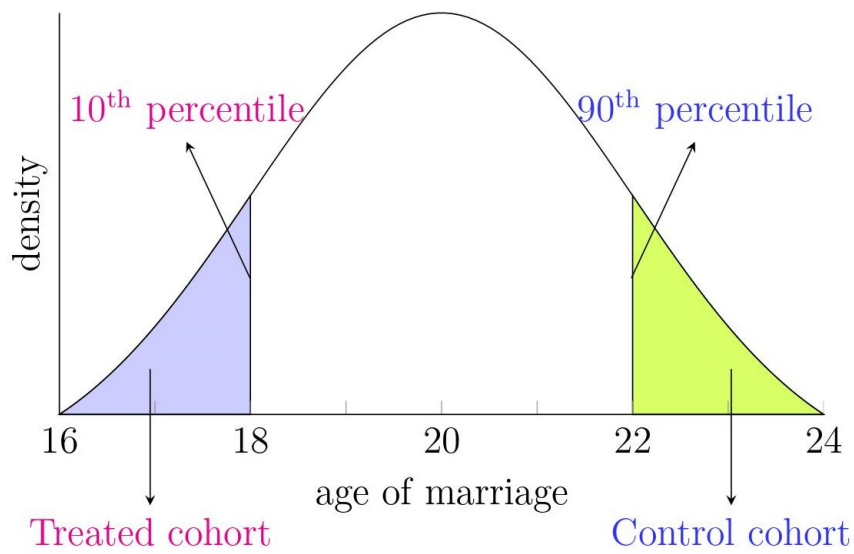
Figure B1: Time use of married women by age across Hindu and non-Hindu religion



Note: this figure shows a time-use allocation for employment, home production, and leisure for the sample of married women across different ages separately for treated and non-treated religions.

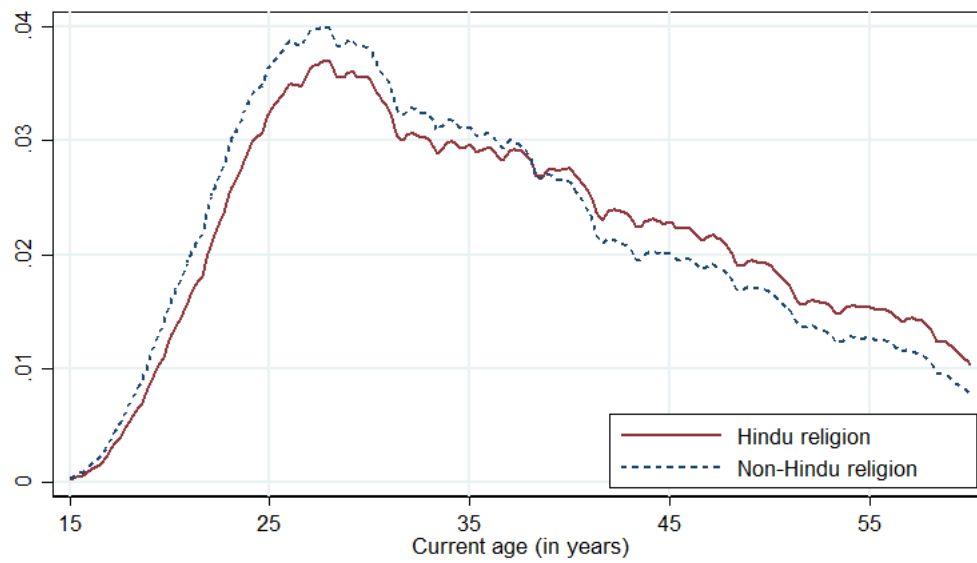
Source: author's calculation based on Time Use Survey, 2019.

Figure B2: An example of treated and control cohorts



Note: this figure shows a hypothetical example of constructing the treated and control cohorts. For illustration, we take the 10th and 90th percentile of the age distribution as 18 and 22 years, respectively.  
Source: author's calculation based on Time Use Survey, 2019.

Figure B3: Distribution of current age across Hindu and non-Hindu religion



Note: this figure shows the age distribution of the women in the sample across treated and non-treated religion.

Source: author's calculation based on Time Use Survey, 2019.

Table B1: List of the activities and their classification

Category	Activities
Employment	Employment in corporations, government, and non-profit institutions; employment in household enterprise to produce goods and to provide services; ancillary activities, training, and studies related to employment; setting up business
Domestic chores	Food and meal preparation; cleaning and maintaining own house, clothes, and footwear; household management like paying bills and budgeting; pet care; shopping for other household members
Childcare	Feeding, cleaning, providing medical care, teaching, training, playing, and minding children
Others' care	Care and help provided to dependent and non-dependent adult members of household
Learning	Attending school or university; self-study for distance education; engaged in non-formal education and other courses
Socializing	Chatting with others; attending get togethers; participating in community cultural and social events (non-religious) like weddings, funerals, and births
Religious practices	Private prayers and meditation; participating in collective religious activities
Recreation	Visiting cultural events, parks, and sports events; reading and watching television; playing games and exercising; arts, literary, and music
Self-care	Sleep, eating and drinking, personal hygiene and care including medical care

Source: author's compilation based on Time Use Survey Report, 2019.

Table B2: Inverse hyperbolic transformation of dependent variable

	(1)	(2)	(3)	(4)
	Employment	Home production	Leisure	Learning
Treatedcohort × Hindu	0.744*** [0.149]	-0.141*** [0.052]	-0.013 [0.009]	0.083*** [0.032]
Treatedcohort	-0.123 [0.137]	0.154** [0.063]	-0.010 [0.008]	-0.166*** [0.039]
Observations	97,489	97,489	97,489	97,489
R-squared	0.350	0.244	0.415	0.150
FSU	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes
Mean of dependent variable	1.266	6.454	7.540	0.061

Note: the dependent variable in each column is the logarithm of time spent in minutes per day in employment, home production, learning, and leisure activity using IHS transformation. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table B3: Effect of HSA: 10-year-wide cohort and considering only early reform states

	(1)	(2)	(3)	(4)	(5)	(6)
	10-year long cohort			Only early reformers		
	Employment	Home production	Leisure	Employment	Home production	Leisure
Treatedcohortshort × Hindu	36.708*** [13.828]	-32.167*** [8.899]	-12.348 [12.104]			
Treatedcohortshort	-12.389 [14.411]	14.008 [10.047]	5.450 [12.711]			
Treatedcohort × Hindu				39.797*** [14.871]	-35.064** [14.546]	-7.542 [13.922]
Treatedcohort				-37.239** [15.416]	42.350*** [16.138]	2.619 [12.122]
Observations	70,625	70,625	70,625	28,604	28,604	28,604
R-squared	0.388	0.475	0.443	0.306	0.385	0.372
FSU	Yes	Yes	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes	Yes	Yes
Religion	Yes	Yes	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes	Yes	Yes

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. In columns (1), (2), and (3), the variable Treatedcohortshort is a dummy variable that takes values 1 and 0 if the given woman is younger (by 10 years or less) than the 10<sup>th</sup> percentile and older (by 10 years or less) than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. Regressions in columns (4), (5), and (6) are only on the subsamples of states who amended the reform early like undivided Andhra Pradesh, Karnataka, Tamilnadu, Maharashtra, and Kerala. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table B4: Effect of HSA: extended specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Employment				Home production				Leisure			
Treatedcohort × Hindu	29.625*** [7.076]	34.353*** [10.383]	37.472*** [11.279]	27.498** [11.675]	-33.722*** [6.030]	-21.401*** [7.510]	-25.975*** [8.242]	-43.327*** [9.623]	0.831 [5.897]	-12.126 [7.928]	-11.761 [8.406]	9.001 [9.792]
Treatedcohort	-18.218*** [6.843]	5.986 [9.533]		9.397 [10.746]	53.179*** [6.447]	-9.986 [7.302]		35.285*** [11.756]	-18.856*** [5.665]	5.670 [8.238]		-26.730*** [8.478]
Observations	97,515	97,489	97,436	97,458	97,515	97,489	97,436	97,458	97,515	97,489	97,436	97,458
R-squared	0.318	0.334	0.345	0.333	0.423	0.438	0.447	0.434	0.391	0.415	0.424	0.414
FSU	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religion X year of birth	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
State time trends	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
State X year of birth	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
State X religion	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Religion time trends	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.



Table B5: Effect of HSA: inclusion of bad controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Employment			Home production			Leisure		
Treatedcohort × Hindu	43.539*** [10.719]	42.725*** [10.555]	40.843*** [10.491]	-40.884*** [8.298]	-37.439*** [8.249]	-36.560*** [8.184]	-7.447 [7.834]	-10.244 [7.727]	-8.580 [7.724]
Observations	97,489	97,486	97,486	97,489	97,486	97,486	97,489	97,486	97,486
R-squared	0.333	0.340	0.341	0.434	0.444	0.444	0.413	0.419	0.420
Good controls	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Bad controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. The set of bad controls include the woman's education, household landholding, household size, presence of kids in the house, and wealth index. Good controls include the social group of the individual. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets and clustered at the district level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.

Table B6: Effect of HSA: alternative clustering

	(1)	(2)	(3)	(4)	(5)	(6)
	State-Hindu level			State-religion level		
	Employment	Home production	Leisure	Employment	Home production	Leisure
Treatedcohort × Hindu	45.717*** [15.671]	-41.850** [16.589]	-9.375 [8.109]	45.717*** [13.861]	-41.850*** [13.576]	-9.375 [11.434]
Observations	97,489	97,489	97,489	97,489	97,489	97,489
R-squared	0.331	0.433	0.413	0.331	0.433	0.413
FSU	Yes	Yes	Yes	Yes	Yes	Yes
Year of birth	Yes	Yes	Yes	Yes	Yes	Yes
Religion X year of birth	Yes	Yes	Yes	Yes	Yes	Yes

Note: the dependent variable in each column is the time spent in minutes per day in employment, home production, and leisure activity. The variable Treatedcohort is a dummy variable that takes values 1 and 0 if the given woman is younger than the 10<sup>th</sup> percentile and older than the 90<sup>th</sup> percentile age of marriage distribution at the time of reform when it was passed in her respective state. The variable Hindu takes value 1 if the given woman belongs to the Hindu, Sikh, Buddhist, or Jain religion. Estimates in each column are from separate regressions. All regressions include FSU or sub-region, religion, and year of birth fixed effects as well as the religion-specific year of birth fixed effects. Standard errors are reported in brackets. In columns (1), (2), and (3), standard errors are clustered at the state-Hindu level. In columns (4), (5), and (6), standard errors are clustered at the state-religion level. \*\*\*, \*\*, and \* indicate statistical significance at 1 per cent, 5 per cent, and 10 per cent levels, respectively.

Source: author's calculation based on Time Use Survey, 2019.