

Bhattacharya, Leena

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# Time allocation of daughters-in-law and mothers-in-law in India: The role of education as bargaining power<sup>\*</sup>

Leena Bhattacharya  
Tilburg University & GLO<sup>†</sup>

## Abstract

The paper addresses the less-researched topic of intrahousehold dynamics of female in-laws in developing countries by focusing on the bargaining between mother-in-law and daughter-in-law and its influence on the latter's time allocation. Using the first nationally representative Time Use Survey of India, 2019, the paper answers two questions. First, how does the presence of the parents-in-law, particularly the mother-in-law, shape the daughter-in-law's distribution of time between paid and unpaid activities? Second, how does the relative bargaining power among the female in-laws affect the daughter-in-law's time allocation across different activities, where their education levels are used as indicators of bargaining power? The findings show that the daughter-in-law's participation in paid work increases in the presence of her mother-in-law and she allocates more time to paid work and less time to household production. The effect is evident for the daughters-in-law who co-reside with mothers-in-law who have completed at least secondary education. The mother-in-law's time allocated to household production and childcare increases when she co-resides with a daughter-in-law who has completed tertiary education. The father-in-law's presence consistently diminishes the daughter-in-law's engagement in paid work and increases both women's time spent on household production. Heterogeneity in results is observed by socio-religious groups and by the extent of patriarchy in the state of residence. Overall, the results suggest that policies that aim to increase women's education and promote gender-equal attitudes among men can enhance the daughter-in-law's bargaining power and time allocation.

**Keywords:** Intrahousehold bargaining, time allocation, education, gender, work, household production

**JEL Classification:** J22, J16, D13

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<sup>†</sup>Email: L.Bhattacharya@tilburguniversity.edu. This paper is part of a project that has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 101104910.

# 1 Introduction

Individuals in a family allocate their time to various paid and unpaid activities in a day which has implications for their mental health, life satisfaction and overall well-being (Coltrane, 2000; Heisig, 2011). Time allocations are influenced by a myriad of factors including gender, education, marital status, relative bargaining power, and the prevalent social and gender norms in the region of residence. Since the literature on time use has primarily evolved in the context of developed countries, a set of factors that are likely to alter married women’s time allocation in developed countries has been examined. As such, spousal bargaining power and time allocations of couples in nuclear families (Antman, 2014; Becker, 1965; Bloemen & Stancaelli, 2008; Blundell et al., 2005; Bonsang & Van Soest, 2020; Chiappori, 1997; Chiappori & Molina, 2020; Datta Gupta & Stratton, 2010; Lundberg & Pollak, 1994; Matteazzi & Scherer, 2021; Pailhé et al., 2021; Porter, 2017; Stancaelli & Van Soest, 2012, 2016), the time benefits of marriage (Stratton, 2023; Vernon, 2010), co-residence or geographical proximity of parents, parents-in-law, and married women’s labour supply (Marcos, 2023; Maurer-Fazio et al., 2011; Sasaki, 2002; Shen et al., 2016) have garnered scholarly attention. The extent to which co-residence with parents-in-law alters the daughter-in-law’s time allocation and within-gender dynamics in time allocation across different activities remains relatively under-researched.

It is in this context that the paper unfolds. This paper examines the time allocation of the mother-in-law and the daughter-in-law in India and answers two questions. First, how does co-residence with parents-in-law, especially the mother-in-law, alter a daughter-in-law’s time allocation across paid and unpaid activities over a day, such as work, household production, childcare, and leisure? Second, how do the completed education levels of the daughters-in-law and mothers-in-law, influence the former’s time allocation across these activities? The paper unpacks these questions considering the intrahousehold dynamics among female in-laws and examines the heterogeneity in time allocation by the daughter-in-law’s socio-religious identities and existing patriarchy in the state of residence. The paper also examines the extent to which the mother-in-law’s time allocated to household production, childcare and leisure changes when she co-resides with a college-educated daughter-in-law.

Residing with the mother-in-law can alter the daughter-in-law’s time allocation depending on the norms governing the household. A mother-in-law can share the housework burden of the daughter-in-law and free up the daughter-in-law’s time, or she can reinforce gender-specific social norms and reduce the daughter-in-law’s mobility and labour force participation (Anukriti et al., 2020; Khanna &

Pandey, 2023). Co-residence or geographical proximity to parents or parents-in-law has been shown to increase the daughter-in-law's labour force participation across many countries such as Japan (Sasaki, 2002), China (Maurer-Fazio et al., 2011; Shen et al., 2016) and Mexico (Marcos, 2023). The question has gained research interest in India as well, where a large proportion of the population lives in non-nuclear households, with multiple generations co-residing in a single household. The results are mixed. Khanna and Pandey (2023) find that the presence of the mother-in-law increases the daughter-in-law's labour force participation by observing a fall in the daughter-in-law's labour force participation following her mother-in-law's death while Banerji et al. (2023) find an insignificant effect and so did Jayaraman and Khan (2023). On the other hand, there is evidence that co-residence with the father-in-law reduces the daughter-in-law's labour supply (Jayaraman & Khan, 2023), the death of the father-in-law increases the daughter-in-law's labour supply (Banerji et al., 2023) while Khanna and Pandey (2023) find an insignificant effect. The mixed results necessitate further investigation into the topic.

To model intrahousehold time allocations through the lens of bargaining power, scholars have proposed different measures of 'power' but primarily to document the changes in time spent on housework (Evertsson & Nermo, 2004; Gupta, 2007). The argument considering the *relative resource-bargaining* perspective, is that individuals with higher resources, for example, higher wages, higher earnings, or higher education would spend lower time or fewer minutes on housework. Datta Gupta and Stratton (2010) discuss the possible endogeneity posed by the measures related to earnings and find that the couple's relative education serves as a good measure of power, especially to determine the time allocated to leisure activities, more consistently than the time allocated to housework. The argument is education is complete for individuals before they form a household and make decisions regarding time allocations and thus plausibly exogenous to time allocation decisions (Afridi et al., 2022; Datta Gupta & Stratton, 2010; Srivastava, 2020). I draw on studies that use completed education levels as a measure of bargaining power and examine this approach to determine the power among co-resident female in-laws of two generations, a commonly observed living arrangement in South Asian families.

In non-nuclear families in South Asian countries such as India, relational hierarchy and norms governing them significantly influence how family members allocate their time (Dyson & Moore, 1983). The daughter-in-law, who comes from a different family, is the most hardworking labour input in the family and the comfort level enjoyed by the family members is largely dependent on her (Caldwell, 1978). However, the daughter-in-law can bargain with the mother-in-law for an equitable

distribution of time. South Asian scholars and demographers provide two competing theories to determine within-gender bargaining in India. On one hand, Caldwell’s hypothesis states that a woman with a high education has extra-familial options and thus would enjoy a higher bargaining power in the family. Thus, she is likely to be able to bargain for an equitable share of housework when her education is higher relative to her mother-in-law’s (Caldwell, 1984). The education levels would allow women to transcend the prevalent norms and a higher education would allow a daughter-in-law to challenge the norms and bargain with her mother-in-law (Caldwell, 1984). On the other hand, the patriarchal bargaining theory suggests that social norms governing the families would outweigh the benefits of a higher relative education, thus making an equitable share of work not possible. Sengupta and Johnson (2006) test Caldwell’s hypothesis and examine whether a daughter-in-law with higher relative education than her mother-in-law enjoys higher autonomy in terms of mobility and decision-making. The paper finds that a daughter-in-law, who has a higher relative education than the mother-in-law, has autonomy in making decisions about her healthcare but still faces mobility restrictions. Srivastava (2020) uses the relative education level of daughter-in-law and mother-in-law as a measure of the daughter-in-law’s bargaining power and examines their relative share of housework for six Indian states in 1998-99. The paper finds that daughters-in-law who were more educated than their mothers-in-law performed a higher share of unpaid housework, showing evidence that patriarchal bargaining theory has a stronger role to play than Caldwell’s hypothesis.

In this paper, I examine the daughter-in-law’s time allocation through the lens of co-residence with the parents-in-law, the mother-in-law, and the father-in-law. In families where the mother-in-law is present, I examine the role of education completed by daughters-in-law and their mothers-in-law as measures of power determining the intrahousehold allocation of time use. I use the framework used by Srivastava (2020) but extend it further. Instead of only using the relative education of the daughter-in-law and the mother-in-law as the measure of bargaining power, I examine their absolute levels of education. I examine if the time allocations of the daughter-in-law specifically alter if she resides with a mother-in-law who has completed a certain level of education and the same for the mother-in-law’s time allocation. I account for the mother-in-law’s education level since it is possible that a higher-educated mother-in-law might be more open to defying the prevailing social norms and ensuring equitable time allocation across activities. However, it remains unclear apriori, whether the mother-in-law’s presence and the education levels would have any significant effect on the daughter-in-law’s time allocation.

To unpack the questions posed above, I use data from the nationally representative India Time Use

Survey 2019 conducted between January and December 2019. This is the first Time Use survey conducted in India across all states and union territories<sup>1</sup>. Time Use Survey 2019 covered 138,799 households and collected detailed information about time allocation across paid and unpaid activities for every member of the household who was above six years of age. The survey reports detailed time allocations for 447,250 individuals across India. The India Time Use Survey is unique and has an added advantage over other time use surveys which do not report detailed time allocation for all individuals<sup>2</sup>. Moreover, it is one of the largest time-use surveys among the ones done globally (Hirway, 2023). I estimate Logit models to determine how the presence of the parents-in-law determines the daughter-in-law's labour force participation. In addition, I use Tobit models to examine the variation in the daughter-in-law's time across paid work, unpaid work-related activities, household production, childcare, and leisure, measured in minutes per day, by the completed absolute education levels of the female in-laws. The models include individual and household characteristics to account for the role of religion, class, and the extent of patriarchy in caste in time allocation, which more often can alter intrahousehold time allocations in South Asian countries (Eswaran et al., 2013).

The findings show that having a mother-in-law enhances the daughter-in-law's labour force participation and time spent on work, and reduces her time spent on household production. A more-educated daughter-in-law, with education above tertiary level, has a stronger bargaining power than those at lower education levels. A mother-in-law with an education level above secondary increases the odds that the daughter-in-law would work, the time spent on paid work and reduces time spent on household production. The results also underscore the heterogeneity in time allocation by the extent of patriarchy in the state of residence. The findings suggest that the presence of a mother-in-law does not positively alter the daughter-in-law's work participation or time in the high-patriarchal states in India. In addition, the presence of the father-in-law reduces the daughter-in-law's work participation and time spent on work and increases her time spent on household production activities. These results are stronger in high-patriarchal states. The time allocations of the mother-in-law show that those who reside with tertiary-educated daughters-in-law spend a higher time on household production and childcare. Thus, education levels act as bargaining power and have the potential to alter both women's time allocations.

The results suggest that framing policies to increase the education of women would also help them

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<sup>1</sup>The last survey, which was conducted two decades before this survey, was done for six Indian states.

<sup>2</sup>Consider, for example, the American Time Use Survey which does not collect time use for all members of the family.

in intrahousehold bargaining in time allocation after marriage. A higher-educated daughter-in-law would be able to bargain for less time on household production and more time on paid work and a highly educated mother-in-law is likely to facilitate that. However, the time allocation would be more favourable to the daughter-in-law under policies that aim to promote gender-equal attitudes among men.

The paper contributes to different strands of literature that examine time allocations on paid and unpaid activities through the role of norms, gender dynamics, and family structure in the fields of Economics (Antman, 2014; Becker, 1965; Bloemen & Stanca, 2008; Blundell et al., 2005; Bonsang & Van Soest, 2020; Chiappori, 1997; Chiappori & Molina, 2020; Datta Gupta & Stratton, 2010; Lundberg & Pollak, 1994; Matteazzi & Scherer, 2021; Pailhé et al., 2021; Porter, 2017; Stanca & Van Soest, 2012, 2016; Vernon, 2010) and Sociology (Craig & Mullan, 2011; Heisig, 2011; Hook, 2006; Killewald, 2016; Killewald & Gough, 2013; Musick et al., 2016; Offer & Schneider, 2011; Szinovacz, 2000). First, the paper adds to the literature examining women's labour force participation in India. The literature has also examined the role of family structure (Debnath, 2015; Dhanaraj & Mahambare, 2019), norms (Afridi et al., 2022; Eswaran et al., 2013; Jayachandran, 2021; Rao, 2014), and more recently co-residence with mother-in-law (Banerji et al., 2023; Jayaraman & Khan, 2023; Khanna & Pandey, 2023) in determining female labor force participation. This paper complements and advances the literature by delving deeper into the conditions which could help to advance women's labour force participation. This paper advances the literature by not only looking at women's probability of working for pay and working for pay outside the house but also examining the changes in time allocated to paid work by reaping the benefits of a Time Use Survey. Second, the literature has examined within-gender differences in housework and the extent to which relative education levels of female-in-laws alter daughter-in-law's time on housework (Sengupta & Johnson, 2006; Srivastava, 2020). In the last two decades, India has witnessed a rapid change in economic growth coupled with more education for women. This paper revisits women's time allocation in housework and complements the literature that has examined within-gender dynamics in time allocation.

The results of the study contribute to the discourse on United Nation's Sustainable Development Goal (SDG) 2030. SDG 5 considers several aspects of gender equality and women's empowerment, of which, Target 5.4 recognizes and values unpaid care and domestic work and acknowledges the importance of '*shared responsibility within the household and the family as nationally appropriate*'. This study brings a related aspect of the SDG target to the forefront. In developing countries like

India, where multiple generations co-reside, it is not only important to consider between-gender dynamics in time allocation, but also within-gender dynamics, and consider how different members influence women’s time allocation. The study design also shows an indirect way through which SDG 4 on quality education influences SDG 5. More specifically, this study shows how completed education levels, Target 4.1 under SDG 4, can act as bargaining power and influence the time allocation of female in-laws, thereby contributing to the discourse of linkages between SDG 4 and 5.

The rest of the paper is structured as follows. Section 2 sets the background of the paper. Section 3 presents the data and descriptive statistics. Section 4 presents the methodology used in the study. Section 5 presents the results and Section 6 tests the results by socio-religious group and the extent of patriarchy in the state. The section also discusses the mother-in-law’s time allocation across household production, childcare and leisure. Section 7 concludes.

## 2 Background

### 2.1 Family Structure, Role of Individuals, and Bargaining Power

The hierarchy and gender roles of each individual in a non-nuclear family are shaped by the prevalent social, cultural, and gender norms in society. In patrilocal societies such as in India, the father-in-law is the patriarch who makes unilateral decisions about household consumption. The mother-in-law makes decisions on labour allocation within the household and is the demi-patriarch who ensures that the family traditions and norms are upheld and respected (Srivastava, 2020). The son is the breadwinner who is most likely to engage in paid work. The highest labour input to determine a family’s comfort level comes from the daughter-in-law (Caldwell, 1978). The daughter-in-law is expected to engage in household production and raise children. The daughter-in-law, who comes from another family, is conditioned to be submissive in front of her in-laws and undertake most of the housework (Caldwell, 1978). The mother-in-law could restrict the daughter-in-law’s mobility to protect the ‘status’ of the family (Anukriti et al., 2020) and could try to pass on household labour to the daughter-in-law. The mother-in-law could also share the housework with the daughter-in-law and free the latter’s time for engagement in other activities. Given the opposite channels, the daughter-in-law’s time allocation in the presence and absence of the mother-in-law deserves empirical inspection.



The extent to which married women will be able to bargain depends on their options outside the marriage. The literature on spousal bargaining in developed countries considers the threat of divorce facing the married couple as an external threat point when they bargain for time allocation (Datta Gupta & Stratton, 2010). In case the woman does not have children and has other options for survival should the marriage dissolve, she can exercise a higher bargaining power relative to her spouse. Divorce, however, is not a culturally and socially acceptable practice in India. In non-nuclear families in India, where the daughter-in-law co-resides with her husband and parents-in-law, the threat point is internal. In these cases, a mother-in-law can threaten the daughter-in-law with an increase in abuse and violence if the latter does not abide by familial expectations while the daughter-in-law can threaten the mother-in-law that she will move into a quasi-nuclear household arrangement and deprive the in-laws of her children, and public goods such as cooked food (Rew et al., 2013; Srivastava, 2020).

A framework to study the intrahousehold bargaining power between these specific relations of female in-laws was not present in the economics literature until recently. By borrowing from the theories developed by South Asian demographers and feminist scholars, Srivastava (2020) provided a framework for examining the share of time in housework between the mother-in-law and the daughter-in-law. The theory suggests that the difference in the relative education level of female in-laws could act as the source of their bargaining power (Caldwell, 1978, 1979; Caldwell, 1984). Even in societies where the daughter-in-law is trained to be submissive in front of her mother-in-law, a relatively higher education can help the daughter-in-law to challenge her mother-in-law. A more educated daughter-in-law might be able to challenge the social norms with knowledge and awareness of her rights and the mother-in-law might not be able to fight the challenge (Caldwell, 1979). I argue that it is possible that while relative education or share of education between the daughter-in-law and the mother-in-law proves to be a source of bargaining power, it is likely that absolute education levels too, play a strong role. Highly educated mothers-in-law themselves might not reinforce norms on the daughter-in-law. This is tested in the context of different activities, like work, childcare, and leisure activities, which remain open and are addressed in this paper.

## **2.2 The role of the sector, social group, and religion**

In India, prevailing norms related to the sector of residence, that is, rural or urban, and socio-religious identities determine the daughter-in-law's bargaining power in the family. Culturally, women are

discouraged from working outside when their husband's income is considered to be sufficient in both rural (Mehrotra & Parida, 2017; Rangarajan et al., 2011) and urban areas (Klasen & Pieters, 2015). A woman working outside the home is considered detrimental to the family's status whereas, high-status activities for upper-caste women include taking care of the household and family (Eswaran et al., 2013). These restrictions hold especially for young women while senior women, that is the mother-in-law, might face fewer restrictions (Rao, 2014).

Time allocation across paid and unpaid labour is also shaped by the class and caste of individuals. Individuals belonging to Scheduled Caste (SC) and Scheduled Tribe (ST) social groups have historically faced economic, social, and political disadvantages<sup>3</sup> and are considered to be at the lower end of the caste hierarchy. Individuals from social groups of SC and ST, who often belong to marginalized and deprived communities, might find it necessary to be engaged in paid work (Rao, 2014). It is possible to observe that the presence or the absence of the mother-in-law does not alter the daughter-in-law's work participation. The status concerns of the families rise with an increase in their position in the caste hierarchy. The members belonging to the General category are at the top of the traditional caste hierarchy. The daughters-in-law belonging to General social groups face the toughest restrictions in terms of engaging in paid work and work outside the house (Eswaran et al., 2013).

The religious group of the individual, too, determine norms, marriage formation, and within-gender bargaining power, and hence time allocations. Caldwell (1984) examined the extent to which religious identities affect within-family dynamics and how education could erode the authority of seniors over juniors. According to the thesis, Christian women would have more bargaining power, than Hindu and Muslim women. This is likely since Christianity speaks more to individuals and less to family, Hinduism considers family as the primary unit whereas Islam hails to the patriarch. Jejeebhoy and Sathar (2001) examining women's autonomy through the lens of religion state that Muslim women are likely to have higher bargaining power than Hindu women. Hindu women often marry into distant villages and unknown families with infrequent visits to natal houses post-marriage, thus reducing their autonomy (Jejeebhoy & Sathar, 2001). The daughter-in-law is unlikely to know her mother-in-law before the marriage and is likely to obey the traditions of the new family. Cross-cousin marriages are common in Muslim families. Thus, the daughter-in-law is likely to be familiar with her in-laws increasing her intrahousehold bargaining power (Srivastava, 2020). However, women

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<sup>3</sup>The members belonging to these groups have been guaranteed favourable treatment and affirmative actions such as representations in the Parliament, education, and public sector jobs. The members belonging to OBC are also considered groups in need of affirmative action by the constitution.

from both religions face a higher restriction on mobility and work participation. Under the Hindu caste system, it is believed that men from outside the family would ‘pollute’ the women and the mother-in-law could try to protect the family’s honour by preventing the daughter-in-law from working outside (Chen, 1995). Under Islam, the *purdah* system endorses the seclusion of women, thus increasing mobility restrictions for Muslim women (Jayachandran, 2021). Thus, differences in religious identities can lead to a difference in the bargaining power and time allocations of the daughter-in-law.

## 2.3 India Patriarchy Index

Researchers have examined the extent to which cultural contexts and norms can explain women’s labour force participation (Afridi et al., 2022; Chatterjee & Vanneman, 2022; Goldin, 1994; Jayachandran, 2021). Goldin (1994) discusses how social and cultural contexts determine a married woman’s labour supply decisions. Chatterjee and Vanneman (2022) find only modest support for stigma, measured by the observance of *purdah* system in India, on women’s employment. Afridi et al. (2018) found that education played a substantial role but did not find strong evidence that observable factors like socio-religious identities that are linked with the social stigma of women working outside the house play a substantial role in women’s labour force participation. Jayachandran (2021) argue that society-specific cultural norms are an important source of differences in female labour force participation across the countries. This paper considers the changes in the daughter-in-law’s bargaining power, and time allocations across different activities by the extent of patriarchy in the state of residence. This is done by creating the India Patriarchy Index for 2019 following the work of Singh et al. (2021), which is adapted from the Patriarchy Index of Europe created by Gruber and Szołtysek (2016).

Gruber and Szołtysek (2016) designed the Index of Patriarchy for Europe to measure the varying degrees of sex-and age-related patriarchal bias in different social and familial settings in Europe. The authors used four domains to measure the overall patriarchy of the region, which were, the domination of men over women, the domination of the older generation over the younger generation, patrilocal bias, and the preference for sons. Extending the work and contextualizing for India, Singh et al. (2021) designed the India Patriarchy Index. The authors made certain changes to adapt it to the Indian context. They retained the four domains and added a fifth domain of socioeconomic

domination to measure the extent of patriarchy in India<sup>4</sup>. The details of the variables used in forming the index and the method of creating the index are presented in Appendix Table A1. Using three rounds of data from the National Family Health Survey (NFHS) for the years 1992–93, 2005–06, and 2015–16, the authors created the India Patriarchy Index and tested for validity and reliability of the index.

Using the design of the India Patriarchy Index by Singh et al. (2021), I extend the India Patriarchy Index to 2019–21 using data from NFHS 5. This is to ensure parity between the year of analysis between TUS 2019 and the Patriarchy Index. Singh et al. (2021) noted the stickiness of the index over the years, with the state of Meghalaya on one end of the spectrum with the lowest patriarchy and Rajasthan and Haryana, closely following each other at the highest end of the patriarchy. I observed the same for 2019–21. While Meghalaya had the lowest score on the India Patriarchy Index, Rajasthan was identified as the most patriarchal state of India, with Haryana as the close second. I divide the states into three groups based on their scores on the India Patriarchy Index - Low, Medium, and High. The state of Meghalaya was not considered in the models, given the differences in norms in the state. The rest of the states were classified into three groups based on their index scores as follows: 16 states and Union Territories (UT) with low patriarchy, 10 with medium patriarchy, and 9 with high patriarchy. The detailed classification is presented in Appendix Table A2. Among the daughters-in-law in the sample, 26 percent belong to the states classified as low, 31 percent belong to medium, and 43 percent are the states classified as high-patriarchal states. In an alternate specification, instead of classifying the states into three groups, I use the values of the index and examine the variation in time allocation.

I hypothesize that individuals residing in states with higher patriarchy are more likely to adhere to gender-specific norms and roles. Thus, time allocation between mother and daughter-in-law is less likely to be in the favour of the daughter-in-law. If traditional norms are indeed followed more based on the extent of patriarchy, the daughters-in-law residing in high patriarchal states might have lower odds of working or might work for a lesser time relative to those residing in less patriarchal states. This could be exacerbated by the presence of less-suitable jobs for women in highly patriarchal states. The presence of men, father-in-law, or other male in-laws is likely to have a stronger negative relation with the daughter-in-law's involvement in paid work and a stronger positive effect on her

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<sup>4</sup>Singh et al. (2021) excluded two variables that were not suitable to be measured in the Indian context. The excluded variables are the proportion of young women living with neither their own nor their husband's families, which was very low, and the proportion of elderly people living with lateral relatives, which was not possible to identify given the data. They included an additional variable in the fourth domain, boy as the last child, to reflect son preference in India.

time spent on household production. I examine these relations using a sub-sample analysis, by estimating the models by Low, Medium, and High Patriarchal states.

### 3 Data and Descriptive Statistics

#### 3.1 Sample Selection

The data used for the study is taken from the Time Use Survey 2019, conducted by the National Statistical Office (NSO), Government of India, between January and December 2019. The survey covered 138,799 households of which 82,897 households are from the rural sector and 55,902 households are from the urban sector. Details of time use were collected for 447,250 members aged more than 6 years, of which 273,195 people were from the rural sector and 174,055 members were from the urban sector. Data on time use was collected through the personal interview method, covering 24 hours starting from 4 A.M. on the day before the interview to 4 A.M. on the day of the interview. Information related to time use was collected for 30-minute blocks for a total of 165 activities and a nine-fold classification of these activities following the International Classification of Activities for Time-Use Statistics (ICATUS) 2016. Besides time allocation, the demographic details including religion, social group, and the highest level of education completed by each member were collected from each household.

A person could report up to three activities in each time slot, provided that the person had spent at least 10 minutes in that activity. The activities were noted in chronological order following the major criteria format. The person reported the major activity as the activity which the person considered to be the most important in the particular time slot. For each of the activities, the person also reported whether the activity was performed within the premise of the dwelling unit or outside of it and whether it was paid or unpaid. The data records the day of the week in which the survey was done, and the person also declares if the day was normal or otherwise<sup>5</sup>. In the main analysis, I consider all the activities in the time slot instead of only considering the major activity. Time was distributed across all the activities done in a block. That is, if a person reported undertaking only one activity in the time slot, that activity was allocated 30 minutes. In case there were two activities, each activity was allocated 15 minutes and in case of three activities, each activity was allocated 10

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<sup>5</sup>A day classified as other days, or not a normal day, were days where the person could not perform routine activities due to any reason such as illness, ceremonies, hospitalization or some other social obligations.

minutes. As a robustness check using alternative specifications, I show the results considering only the major activity in each time slot.

The demographic data and family roster allow me to identify relations among the household members. The mother-in-law, father-in-law, daughter-in-law, married son, and children are identified in relation to the head of the household<sup>6</sup>. The mother-in-law is either reported as the wife of the household head, who then is the father-in-law, the household head herself, in fewer cases, or as the mother of the head, when the head is the married son. The last case is more common when the mother is the widower or the father is not present in the household. Since the objective is to understand the dynamics between the mother-in-law and the daughter-in-law, I do not consider families where a daughter-in-law is not present, for instance, when the married woman lives with her mother. The model considers families whether the mothers-in-law, if present, are aged between 40-70 years and the daughter-in-law is aged between 20-40 years. The choice of age caters to women of economically active age who are neither too young nor too old to participate in housework or other activities. In case the family had more than one married son and multiple daughters-in-law, it was not possible to uniquely identify the specific couples and their children. Further, the bargaining in time will likely not only be between the mother-in-law and the daughter-in-law but among the daughters-in-law as well. Hence, I consider families with one daughter-in-law of the mother-in-law in the main estimation, but I conduct robustness checks considering households with one mother-in-law and all daughters-in-law.

In order to show the dynamics among the female in-laws in at least a two-generation household, I consider families where the daughters-in-law and mother-in-law co-reside, along with the other family members, that is the son and husband of the mother-in-law, and other unmarried children of mother-in-law, if present. In the main analysis, I consider households where at least two generations co-reside. In the sub-group analysis, I show that the results remain the same if I consider multigenerational families in which three generations co-reside, that is, the parents-in-law, the daughter-in-law, and the married son, along with children.

Since I am interested in examining the effect of education on time allocation, I do not consider families where the daughter-in-law reported attending educational institutions as their major activity in the year preceding the survey<sup>7</sup>. This ensures that the education level of both the daughter-in-law and

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<sup>6</sup>Children are considered to be individuals below 18 years of age and could be the daughter-in-law's child, and much less frequently the mother-in-law's child or the child of a co-resident daughter of the mother-in-law

<sup>7</sup>This is identified by the Usual Principal Activity (UPA) Status of the individual

the mother-in-law is complete and thus plausibly exogenous to their time allocation. Families were not considered in which the mother-in-law or daughter-in-law had a missing time allocation or in cases where the level of education was missing. Finally, the state of Meghalaya was not considered for analysis since Meghalaya is matrilineal and follows matriarchal social norms. The final sample comprises 69,478 married women, the daughters-in-law, between the ages of 20-40 years, of which 17,003 reside in households with one mother-in-law.

### 3.2 Outcome variables of interest

The time allocation of each individual is categorized into different categories. First, I consider work. Work is first measured by the Usual Principal Activity (UPA) status which is standard in the literature of female labour force participation in India (Li, 2023). Then I calculate work in terms of time used from the Time Use Survey. Work for pay comprises all the work-related activities for which the individual receives payments. The second group includes all work-related activities that are not income-generating like the time spent on the production of goods for their final use. The third group is that of household production, which consists of food and meal management, housework, and care for adults but not activities related to childcare. The fourth is that of activities related to childcare and instructions to children. There is considerable evidence that activities related to childcare should not be classified as housework or leisure activities (Kimmel & Connelly, 2006; Vernon, 2010). Thus, childcare is considered a separate category in the regression. It is also well-established that individuals often report childcare as a secondary activity. For instance, a mother reports cooking as a primary activity and passively minding a child as a secondary activity in the same time slot. Since the time use data allows respondents to report up to three activities for every time slot, and I consider all the activities under each time slot for the analysis, time spent on childcare is unlikely to be understated in the analysis. The fifth group comprises leisure including watching television, multimedia use, socializing, and taking part in cultural activities. All categories outlined above include the travel time involved in each. It should be noted that activities included in household production can be outsourced to a different individual, while those classified as leisure or personal time cannot be outsourced. Thus, the main variables of interest are:

- Work: This includes all *paid* activities classified under goods or services produced for the market.

- Unpaid work-related activities: Includes all *unpaid* activities classified under goods or services produced for the market and goods produced for own final use.
- Household production: Activities providing unpaid domestic services for household and family members, unpaid caregiving services for household and family members, but exclude activities under childcare and instructions.
- Childcare (only considered for families with children): Activities under childcare and instructions such as feeding, cleaning, providing physical, and medical care to children, instructing, teaching, training, helping children, talking to and reading with children, playing sports with children, passive care, meeting and arrangements with schools and child care service providers, and other activities related to childcare and instructions.
- Leisure: Socialising and communication, community participation and religious practice, and culture, leisure, mass media, and sports practices.

Activities exclude the time spent on other unpaid work such as volunteering, learning, and personal time such as eating, taking medicines, and sleeping<sup>8</sup>. Thus, the total time spent on the activities of interest does not add up to 1440 minutes.

### 3.3 Descriptive Statistics

The descriptive statistics are presented in Table 1. As seen in the table, only 22 percent of married women aged 20-40 years report engagement in paid work when measured by the UPA status. Not conditional on participation in the activity, women on average spend around an hour each day on paid work. If I only consider women who have spent positive time on work, this is not reported in the table, women spend around 5.6 hours a day on paid work. In 24 percent of the sample, or 17,003 households, a daughter-in-law aged 20-40 years co-resides with a mother-in-law aged 40-70 years. As specified before, this does not include families with multiple daughters-in-law. In families with mother-in-law, almost 100 percent of the daughters-in-law report undertaking activities related to household production, whereas 81 percent of the mothers-in-law report spending time on household production. The daughters-in-law spend more time than the mother-in-law in all housework related

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<sup>8</sup>The sleep literature has emphasized the importance of sleep on an individual's cognition and overall well-being (Killgore, 2010; Lim & Dinges, 2010). Although I do not consider sleep as a primary variable of interest in this study, a separate analysis that considers sleep shows that the presence or the education of the mother-in-law does not have any significant effect on the daughter-in-law's sleep duration.



to food and meal preparation, cleaning or repair of houses, washing, drying, or ironing clothes, and such activities. The mother-in-law, however, spends significantly more time on activities related to budgeting, planning, and organizing duties and activities in the household.

The level of education of the daughter-in-law is divided into five categories. In the overall sample, 23 percent of the daughters-in-law are illiterate, 21 percent had completed up to primary school, 18 percent completed upper primary, 15 percent completed secondary, 11 percent completed higher secondary education and 12 percent completed an education level of at least tertiary education, that is, at least college. If I consider the mothers-in-law, 60 percent were illiterate, 9 percent had completed education till below primary, 11 percent completed primary education, 9 percent completed upper primary and 11 percent completed an education level of secondary or above. The average age difference between the mother-in-law and the daughter-in-law is 29 years. A young daughter-in-law is likely to find it harder to bargain with her older mother-in-law. It is also possible, that the younger daughter-in-law will listen to and abide by the mother-in-law's expectations because of respect for the elders (Srivastava, [2020](#)).

The norms governing the time allocations of the daughter-in-law can vary by social and religious groups. In the sample, 78 percent of the families are Hindu, 14 percent belong to Muslim families, and other religious groups, including Christianity make up 8 percent of the sample. Among the social groups, families belonging to OBC formed 41 percent of the sample, followed by 26 percent in General, 19 percent in SC and 14 percent in ST. 64 percent of the sample belongs to the rural sector and 36 percent of the families belong to the urban sector. Appendix Table [A3](#) presents the time allocated by the daughter-in-law by socio-religious groups, sector of residence and the three classifications of states by the extent of patriarchy. In each group, the time allocated by the daughter-in-law is checked by whether or not the mother-in-law was present in the family. In all the groups, the daughter-in-law spends more time on childcare in the presence of the mother-in-law and the differences are statistically significant. The time spent on household production is significantly lower in the presence of the mother-in-law in all but two groups, women belonging to Scheduled Tribe and other religious groups. The daughters-in-law are also able to spend significantly more minutes on leisure activities in the presence of the mother-in-law, other than those residing in the urban sector the time spent by whom was already relatively high to begin with.

The results are not uniform across groups for work-related activities. While all the groups experience a fall in the time allocated to paid work in the presence of the mother-in-law, the fall is significant

for some. Hindu daughters-in-law experience a significant fall in the time allocated to paid work in the presence of the mother-in-law. Among the social groups, the daughters-in-law belonging to the General social group had the least time allocated to paid work. The time allocated to paid work falls even further in the presence of the mother-in-law. Their time allocated to paid work could be attributed to the concerns about status in the family (Eswaran et al., 2013). Among the groups of states by patriarchy, it can be seen that irrespective of the presence or absence of the mother-in-law, the daughters-in-law allocated the least time to paid work in the highly patriarchal states. There was a significant fall in the time allocated to paid work in the presence of the mother-in-law in the least patriarchal group as well, but even then, the absolute minutes were the highest among this group. In the presence of the mother-in-law, the daughters-in-law in low, medium and high patriarchal states spent 70 minutes, 60 minutes, and 40 minutes on paid work respectively.

The time allocated by the daughter-in-law by different activities by the education level of the mother-in-law and the level of patriarchy is presented in Appendix Figure A1. It is seen that at each level of the mother-in-law's education level, the daughters-in-law who reside in less patriarchal states spend significantly less time on household production and a higher time on childcare. The time spent on work or leisure activities is not significantly different at different levels of the mother-in-law's education. The descriptive statistics provide some evidence about the probable direction of time allocation of the daughter-in-law in the presence of the mother-in-law and by her education, but the exact relation controlling for all the other factors remains an empirical question. Among the other controls, in the sample 83 percent of the days were regular, and 17 percent of the days were irregular days. 73 percent of the days were weekdays and the others, weekends.

Figure 1 presents the distinction in minutes allocated to activities by the presence or absence of the mother-in-law. The daughters-in-law spend less time on paid work and household production, and more time on childcare and leisure in the presence of the mother-in-law and the differences are statistically significant for each type of activity. Time allocated to paid work and household production is the opposite in the presence of the father-in-law (Appendix Figure A2). The daughter-in-law's time on childcare and leisure increases in the presence of her mother-in-law as well as the father-in-law.

**Table 1:** Summary statistics for married women aged 20-40 years

Variable	Married woman	
	Mean	SD
Participation in paid work	0.22	
<i>Minutes per day unconditional on participation</i>		
Working for pay	60	140
Working for pay outside of the house	51	133
Unpaid work-related activities	5	21
Household production	352	125
Childcare, for families with children	88	98
Leisure	229	129
Age	30.67	5.67
<i>Number of children by age group and gender</i>		
Boys aged 0-5 years	0.45	0.66
Girls aged 0-5 years	0.39	0.64
Boys aged 6-12 years	0.29	0.53
Girls aged 6-12 years	0.24	0.50
Boys aged 13-17 years	0.18	0.44
Girls aged 13-17 years	0.15	0.41
<i>Education level</i>		
Illiterate	0.23	
Below primary or primary	0.21	
Upper Primary	0.18	
Secondary	0.15	
Higher Secondary	0.11	
Tertiary	0.12	
<i>Religion</i>		
Hindu	0.78	
Muslim	0.14	
Christian and Others	0.8	
Mother-in-law (MIL) is present	0.24	
Age difference with mother-in-law, when present	28.65	6.02
Number of adult men	1.06	0.49
Number of adult women	0.08	0.31
<i>Social group</i>		
Scheduled Tribe (ST)	0.14	
Scheduled Caste (SC)	0.19	
Other Backward Classes (OBC)	0.41	
General	0.26	
<i>Sector</i>		
Rural	0.64	
Urban	0.36	
<i>Type of day</i>		
Normal day	0.83	
<i>Day of the week</i>		
Weekday	0.73	
Weekend	0.27	
N	69,748	

Note: Sample means calculated from TUS 2019. In families with a mother-in-law, the sample is restricted to one daughter-in-law.

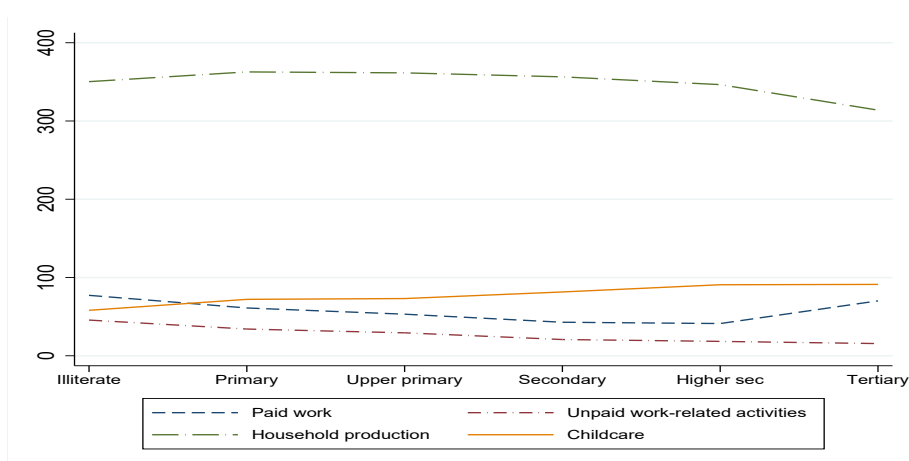
**Figure 1:** Average minutes per day spent by daughter-in-law by presence of mother-in-law



Note: Author's calculation from TUS 2019. Childcare is measured only for families with children

Time allocated to activities varies by the differences in the daughter-in-law's education level. Figure 2 shows the minutes spent by the daughter-in-law across paid work, unpaid work-related activities, household production, and childcare by different levels of completed education. It can be seen that women reduce their time spent on household production with an increase in their education, whereas childcare increases consistently with an increase in education. The extant literature has discussed a U-shaped relation between women's education and engagement in paid work in India (Afridi et al., 2022; Dhanaraj & Mahambare, 2019; Li, 2023) and I observe the same. The time spent on paid work is the highest for illiterate women and it falls with an increase in education level, only to increase again when women complete tertiary education. The type of work that the women engage with at these two extreme levels of education, is not surprisingly, very different<sup>9</sup>. Among the illiterate daughters-in-law who work, 69 percent work in the primary sector, that is, in agriculture, forestry, and fishing, 20 percent work in the manufacturing sector, and 11 percent work in the services sector. Even among those working in the services sector, 6 percent either provide personal services or are employed by households as employers of domestic personnel, such as maids and cooks. On the other hand, among working daughters-in-law who have completed tertiary education, 85 percent work in the services sector, with 19 percent working in the education sector and 10 percent in the retail sector, which is considered more 'suitable' for women (Jayachandran, 2021). The higher levels of education allow women to break free from the norms governing their mobility and more 'suitable' jobs are likely to be available to women at higher levels of education (Li, 2023). Illiterate women, who might also belong to low-income families, might be required to take on paid work to sustain the family. So, it is driven by necessity rather than the availability of 'suitable' jobs.

**Figure 2:** Minutes per day spent by daughter-in-law by education level

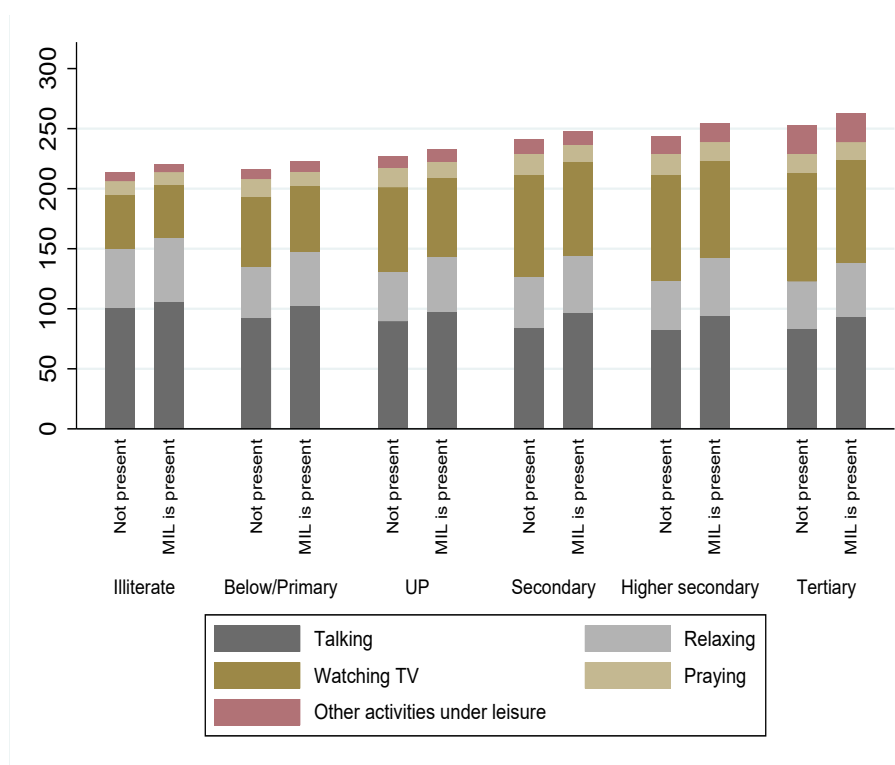


Source: Author's calculation using TUS 2019

<sup>9</sup>The type of work is identified from the 2-digit codes of NIC 2008.

At all levels of education, women enjoy a greater time on leisure activities when the mother-in-law is present (Figure 3). The time spent on total leisure increases with an increase in education, but the time spent on a particular activity changes. For example, time spent watching TV increases with an increase in education. Women with tertiary education spend 82 minutes watching television or video, whereas illiterate women spend 45 minutes. In all cases, talking or chatting, watching TV, and relaxing form a major part of women's leisure. Tertiary-educated daughters-in-law spend relatively more time reading books or exercising relative to the other groups, resulting in a higher time spent on the 'other' categories under leisure. Relative to illiterate daughters-in-law, the others spend more time on prayer and religious activities which is considered to be a status good for the families.

**Figure 3:** Minutes spent on leisure by daughter-in-law by her education and the presence of mother-in-law

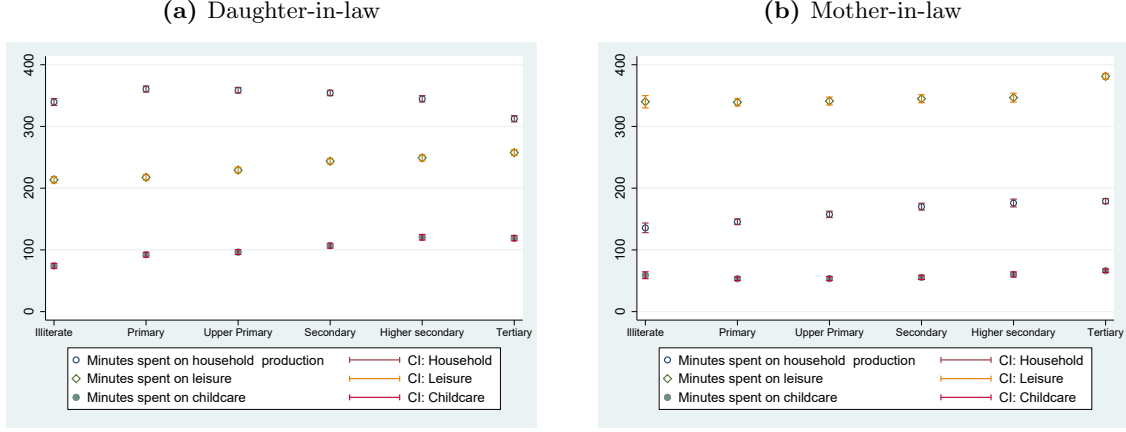


Source: Author's calculation using TUS 2019

Figure 4 shows the minutes per day spent by co-resident mother-in-law and daughter-in-law on household production, childcare and leisure, by different levels of completed education of the daughter-in-law. The figure shows that the daughter-in-law reduces her time allocated to household production as her education increases, while the mother-in-law's time spent on household production and child-

care increases. The time spent on leisure activities increases for both women with an increase in the daughter-in-law's education.

**Figure 4:** Minutes per day on household work, childcare and leisure spent by co-resident daughter-in-law and mother-in-law by the education level of daughter-in-law



Note: Author's calculation from TUS 2019.

## 4 Methodology

### 4.1 Regression model

In the first set of models, I check the probability that the daughter-in-law is engaged in work, based on whether or not her mother-in-law is present in the household. In the first model, work is first checked based on the usual principal activity (UPA) status. In the second model, the woman is considered working when she spends a positive time on activities classified as work. A distinction is made between paid work and unpaid work-related activities. Since the time use survey also reports whether the work was done outside the home or indoors, I also check whether the woman engaged in paid work outside the house depending on the presence of the mother-in-law. Logit models are estimated only to examine the labour force participation of women, as the probability of participating in household production and leisure is almost always one.

The model is specified as follows for a daughter-in-law ' $i$ ' residing in a household. The variable MIL would take a value of 1 if the mother-in-law is present for the daughter-in-law ' $i$ ', and 0 otherwise.

$$Work_i^* = \alpha + \gamma MIL_i + \delta DIL_{EDi} + \beta X_i + \epsilon_i \quad (1)$$

$$\epsilon_i \sim N(0, \sigma^2) \text{ independent of } X, MIL, DIL_{ED}$$

$$Work_i = \begin{cases} 1 & \text{if } Work_i^* > 0 \\ 0 & \text{if } Work_i^* \leq 0 \end{cases}$$

The second set of models is estimated to measure the daughter-in-law's time allocation in minutes per day. Separate Tobit models are estimated for each activity, paid work, unpaid paid-related activities, household production, childcare, and leisure for daughter-in-law 'i'. In Model (2), the variable MIL takes the value of 1 if the mother-in-law is present for the daughter-in-law 'i', and 0 otherwise. Model (3) considers the education level of MIL in the families where the MIL is present. The education level of the mother-in-law that is the variable  $MIL_{EDi}$  can either be illiterate, below primary, primary, upper primary, or secondary and above. The base category is illiterate and the variable of interest is when the mother-in-law has completed at least secondary education. Models (2) and (3) are specified as follows

$$Time_i^* = \gamma MIL_i + \delta DIL_{EDi} + \beta X_i + \epsilon_i \quad (2)$$

$$\epsilon_i \sim N(0, \sigma^2) \text{ independent of } X, MIL, DIL_{ED}$$

$$Time_i^* = \gamma MIL_{EDi} + \delta DIL_{EDi} + \beta X_i + \epsilon_i \quad (3)$$

$$\epsilon_i \sim N(0, \sigma^2) \text{ independent of } X, MIL_{ED}, DIL_{ED}$$



$$Time_i = \begin{cases} 0 & \text{if } Time_i^* \leq 0 \\ Time_i^* & \text{if } Time_i^* > 0 \end{cases}$$

The variable of interest is the presence of the mother-in-law and where the mother-in-law is present, the variation in the daughter-in-law's time allocation by the mother-in-law's education, controlling for her own education.

The control variables include the age of the daughter-in-law '*i*' and her completed educational level. Household controls include religious groups, with Hindu as the base category, and dummies for Muslims and other religious groups, social groups with ST as the base category and dummies for SC, OBC, and General social groups, the type of structure of the house, permanent or others with others as the base category. Members residing in permanent households include households that are made up of permanent materials whereas the other category includes those residing in houses that are either made up of temporary materials, or those that do not have a residence.

The number of children in the family is included by age group and gender: boys and girls 0-5 years, 6-12 years, and 13-17 years. The model controls for the presence of the father-in-law and other adult males, including husbands, and females in the family. Adult men or women in the husband's family are considered hierarchically superior to the daughter-in-law. Thus, their presence could help in restoring the status quo regarding gender roles and expected behaviour from the daughter-in-law. Girls and adult women could reduce the women's housework burden and free their time to engage in work or leisure. Boys and adult men in the family could add to the daughter-in-law's burden of household production and reduce her engagement in paid work. The literature has also included the household monthly per capita consumption expenditure (MPCE) as a control variable to determine women's work (Dhanaraj & Mahambare, 2019; Sheikh et al., 2023) and housework (Srivastava, 2020) but is possible that the MPCE is driven by the daughter-in-law's employment and hours worked. The variable is not included in the models. The models control for the day of the week, that is, weekday or weekend, and type of day that is normal or otherwise, sector of residence, that is, rural or urban. For the set of models under (1), separate models are estimated for normal weekdays to check for robustness. To account for state-specific characteristics state dummies are included in the equations. Standard errors are clustered at the state level. In a different model specification instead of state dummies the models (2) and (3) include the actual values of the patriarchy index.

## 5 Results

### 5.1 How does living with parents-in-law alter daughter-in-law's time allocations across activities?

Table 2 reports the odds ratios indicating whether the daughter-in-law engages in work, depending on the presence of the mother-in-law in the household considering the full sample. The model, restricted to the sample of women who reported regular weekdays, is presented in Appendix Table A4. The results are similar when I consider all days and only regular weekdays, so I present the results considering all days in this section. The first column shows the estimates for work from UPA status, while the other columns show work defined by a positive time spent based on the Time Use survey. It can be seen that work measured by UPA status, or paid work and paid work outside the house measured from the time use survey increases when the mother-in-law is present but falls when the father-in-law is present. The results for the mother-in-law's presence are insignificant for total work, that is paid and unpaid work-related activities, as well as for unpaid work-related activities. The presence of the father-in-law significantly reduces the odds of the daughter-in-law working, across all the model specifications.

Adult women in the family increase the odds of the daughter-in-law's engagement in paid work and paid work outside the house. Adult men in the family, however, reduce the odds of working. The education of the daughter-in-law follows the U-shaped curve as seen in Figure 2 and as discussed in the literature. The probability of undertaking paid work is highest when the woman is illiterate and falls with a rise in education level. Relative to an illiterate daughter-in-law, the estimates are weakly significant or insignificant only when the woman has an education of tertiary level. The full table is presented as Appendix Table A5. Infants in the family reduce the daughter-in-law's labour supply, but her participation increases in the presence of both boys and girls aged 6-12 years old. The woman's odds of engaging in work measured by UPA status, total work and paid work increase when girls aged 13-17 years are present in the family, but are only weakly significant or insignificant in the presence of 13-17-year-old boys.

The socio-religious groups bring out patterns that could be driven by the norms governing the families. The odds of Muslim women working are significantly lower than that of the base category of Hindu women. Even among the models, the odds of engaging in paid work outside the house are

the lowest for them. Among the social groups, women belonging to ST families is the base category and dummies are used for the other social groups. It can be seen that relative to ST women, the odds are lower for all other categories, and they are the lowest for women belonging to general social groups. Relative to women residing in houses made of temporary materials, those residing in *pucca* houses or permanent houses, depicting a higher class, have lower odds of working. Thus, there are differences in women's work participation by socio-religious groups, and protecting the 'status' of the family could be a possible reason. Relative to women in the rural sector, women residing in the urban sector are less likely to work.

**Table 2:** Odds ratio showing daughter-in-law's engagement in work by the presence of in-laws

	UPA status	Work	Paid work	Paid work outside	Unpaid work-related activities
MIL is present	1.18*** (0.05)	1.05 (0.06)	1.14*** (0.05)	1.17*** (0.06)	1.05 (0.06)
FIL is present	0.75*** (0.04)	0.79*** (0.04)	0.76*** (0.04)	0.79*** (0.04)	0.81*** (0.04)
DIL is illiterate					
Primary	0.76*** (0.07)	0.77*** (0.04)	0.78*** (0.06)	0.71*** (0.06)	0.83*** (0.04)
Upper primary	0.58*** (0.07)	0.65*** (0.04)	0.64*** (0.06)	0.55*** (0.06)	0.73*** (0.04)
Secondary	0.43*** (0.05)	0.50*** (0.03)	0.47*** (0.04)	0.39*** (0.04)	0.59*** (0.05)
Higher Secondary	0.41*** (0.06)	0.45*** (0.03)	0.48*** (0.05)	0.42*** (0.06)	0.52*** (0.05)
Tertiary	0.78 (0.16)	0.58*** (0.05)	0.76* (0.12)	0.79 (0.13)	0.65*** (0.06)
Adult women	1.07 (0.05)	1.11*** (0.03)	1.06** (0.03)	1.08** (0.03)	1.08*** (0.03)
Adult men	0.58*** (0.04)	0.78*** (0.04)	0.70*** (0.05)	0.69*** (0.03)	0.85*** (0.03)
Constant	0.07*** (0.01)	1.95*** (0.36)	0.12*** (0.02)	0.13*** (0.02)	1.60** (0.34)
State FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	69,748	69,748	69,748	69,748	69,748

Calculated from TUS 2019. Odds ratios are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age, education of the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used. For Col (1): The usual principal activity status is defined as a self-reported principal activity status codes 11 to 51 and does not include households reporting 93 'attended domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed etc.) sewing, tailoring, weaving, etc. for household use'. In columns 2-5, an individual is considered to be working when the individual spends a positive time on activities. The full table with the set of controls is presented in Appendix Table A5.

Table 3 presents the estimated average marginal effects, denoting the minutes spent per day across activities, by the presence of the in-laws. The estimates show that a daughter-in-law spends around 7 more minutes per day on work when the mother-in-law is present. The time spent on household production falls by 9 minutes. A significant difference in unpaid work, childcare, or leisure is not observed in the presence of the mother-in-law. In contrast, the time spent on work decreases by around 12 minutes when the father-in-law is present, and even the time allocated to household production increases by 7 minutes. Other adult females increase the daughter-in-law's time spent on work, both paid and unpaid, and leisure, and reduce her time spent on household production and childcare. Adult men reduce the daughter-in-law's time spent on work and childcare and increase her time spent on household production and leisure activities.

**Table 3:** Marginal effects showing the minutes spent by daughter-in-law by the presence of in-laws

	Work Paid	Work Unpaid	Household Production	Childcare if children	Leisure
MIL is present	6.97*** (2.06)	0.89 (1.44)	-9.16*** (3.34)	-0.17 (1.04)	2.71 (1.91)
FIL is present	-11.72*** (2.34)	-3.87*** (1.30)	7.08** (3.36)	2.15 (1.44)	2.95 (1.94)
DIL is illiterate					
Primary	-15.11*** (3.79)	-6.41*** (1.25)	14.81*** (3.88)	2.72* (1.57)	6.68** (2.75)
Upper Primary	-24.95*** (4.47)	-9.49*** (1.50)	19.59*** (4.14)	5.63* (3.12)	14.07*** (4.10)
Secondary	-36.45*** (4.10)	-14.55*** (1.82)	24.22*** (4.00)	12.19*** (3.77)	21.84*** (3.52)
Higher Secondary	-35.13*** (4.62)	-16.58*** (2.00)	18.01*** (4.15)	19.00*** (3.88)	20.89*** (4.64)
Tertiary	-11.62 (7.83)	-12.10*** (2.23)	-10.54** (4.09)	32.52*** (5.01)	19.94*** (3.99)
Adult women	3.47** (1.42)	3.22*** (1.02)	-22.03*** (2.28)	-7.03*** (1.32)	12.10*** (2.16)
Adult men	-17.19*** (3.58)	-4.21*** (0.78)	23.10*** (2.37)	-7.56*** (1.34)	8.18*** (2.30)
State FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	69,748	69,748	69,748	59,006	69,748

Calculated from TUS 2019. Average marginal effects are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The control variables not shown in the table include the age of the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.

## 5.2 Does the education of daughter-in-law and mother-in-law alter daughter-in-law's time allocations?

Table 4 presents the time allocation of the daughter-in-law by the education levels of the daughter-in-law and mother-in-law. Since the models include information on both the mother-in-law and the daughter-in-law, the sample is reduced to include only families where both of them co-reside. The results show that while the daughter-in-law's education and time spent on work follow the U-shaped curve, the results are more interesting for the mother-in-law's education level. Relative to illiterate mothers-in-law, the daughter-in-law's time spent on work significantly increases by 12 minutes per day when the mother-in-law has completed at least a secondary education. Even the time spent by their daughter-in-law on household production falls by 25 minutes per day, almost a 3-hour reduction in household production per week. The results on paid work are insignificant when the mother-in-law has completed upper primary education, but even then the daughter-in-law's time spent on household production falls by 12 minutes. The literature on intrahousehold bargaining in India has usually considered the mother-in-law as an individual who would reinforce gender and relational norms (Sengupta & Johnson, 2006; Srivastava, 2020). However, it is possible, that a highly educated mother-in-law transcends the restrictive norms and helps the daughter-in-law to spend more time on work by sharing the time required for household production.

The daughter-in-law's education significantly affects her time spent on all activities. With an increase in her education, a daughter-in-law reduces her time spent on unpaid work and increases her time spent on childcare and leisure. Relative to a daughter-in-law who is illiterate, a daughter-in-law with tertiary education spends half an hour more on childcare per day. Relative to illiterate daughters-in-law, daughters-in-law who have completed at least a secondary level of education spend between 20-21 minutes more on leisure, depending on their education levels. Although the daughter-in-law's time spent on household production reduces significantly by 25 minutes when the mother-in-law has completed secondary education, the relation with her own education is not so apparent. It is seen that relative to a daughter-in-law who is illiterate, the time spent on household production by the daughter-in-law who has completed tertiary education is not significantly different. Instead, the time spent by the daughters-in-law by the other groups of completed education is significantly higher.

**Table 4:** Minutes spent by the daughter-in-law across activities by education levels of daughter-in-law and mother-in-law

	Work Paid	Work Unpaid	Household Production	Childcare if children	Leisure
MIL is illiterate					
Below primary	-15.22*** (3.44)	-7.22*** (2.05)	4.54 (4.70)	2.59 (4.89)	8.44* (5.00)
Primary	-9.69*** (3.10)	-5.96*** (2.07)	5.02 (3.90)	5.91 (4.19)	6.41 (6.24)
Upper Primary	-3.41 (5.19)	-4.53*** (1.23)	-11.80** (4.85)	1.08 (5.57)	10.21** (5.08)
Secondary and above	11.56** (5.36)	1.01 (2.30)	-25.49*** (6.94)	4.81 (5.12)	4.09 (5.12)
DIL is illiterate					
Primary	-16.27*** (5.05)	-7.53*** (1.73)	21.63*** (5.55)	6.51* (3.3)	6.14** (3.13)
Upper Primary	-24.93*** (4.35)	-9.62*** (2.51)	22.91*** (5.04)	9.66* (5.05)	12.99*** (4.99)
Secondary	-33.12*** (4.56)	-15.99*** (2.53)	29.54*** (5.55)	13.22*** (3.74)	21.29*** (3.79)
Higher Secondary	-31.62*** (3.84)	-15.79*** (3.32)	23.01*** (5.32)	19.37*** (3.94)	20.64*** (5.36)
Tertiary	-9.42 (8.02)	-13.78*** (3.34)	-4.27 (4.21)	29.83*** (5.90)	19.92*** (4.94)
State FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	17,003	17,003	17,003	13,577	17,003

Author's calculation from TUS 2019. Estimated average marginal effects are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age of the daughter-in-law, the age difference between the mother-in-law and the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.

It remains unclear whether the woman spends more time on household production, childcare and leisure because she spends fewer hours on work or vice-versa, but it could be interesting to observe the changes in the time allocated to household production, childcare and leisure by controlling for time spent on work (Evertsson & Nermo, 2004; Gupta, 2007). I examine the time allocated to household production, childcare and leisure by considering dummy variables for work participation of the daughter-in-law and the mother-in-law following Srivastava (2020). The author argues that the daughter-in-law's bargaining power occurs from her work participation. That is, a working daughter-in-law is likely to find it easier to bargain for a lesser time on household production but the study, based on TUS 1998-99, did not find evidence for that. An OLS model is estimated considering that the point of interest is not only the dummies for the individuals but also the interaction term for

when both, the daughter-in-law and the mother-in-law, work outside and the fact that almost all the daughters-in-law engage in these activities. Appendix Table A6 shows the time spent by the daughter-in-law on activities other than work, like household production, childcare, and leisure, by including dummies for her work participation and the work participation of the mother-in-law. The results show that the daughter-in-law spends less on household production when she works outside, relative to when she does not and the estimates are significant. Her time spent on household production significantly increases when the mother-in-law works outside and even more so when both work outside. The results indicate that the daughter-in-law might be required to compensate to a greater degree in terms of her time spent on household production for working outside when even her mother-in-law works outside. The differences in the other activities are less stark. Not surprisingly, the daughter-in-law's time spent on childcare falls significantly when she works outside. It remains unknown, due to the paucity of data, whether the daughter-in-law is able to arrange for day-care facilities, or other arrangements when both work outside. The daughter-in-law's leisure falls when she works outside but is only weakly significant for the other instances when only the mother-in-law works outside or both work outside.

Appendix Table A7 considers the relative education of the daughter-in-law and the mother-in-law, controlling for the daughter-in-law's completed education levels. Here, it can be seen that there is no significant effect of the daughter-in-law's relative education level on her time allocations. Rather than considering all activities and the absolute time in minutes on them, Appendix Table A8 focuses on the share of relative housework by the relative education of the daughter-in-law and the mother-in-law, controlling for the mother-in-law's absolute education levels, similar to the model followed by Srivastava (2020). In contrast to what the author found using TUS 1998-99, evidence from TUS 2019 suggests that controlling for the mother-in-law's education, a relatively educated daughter-in-law does a lower share of housework across education levels. The results, however, are only weakly significant. It should also be noted that Srivastava (2020) used the relative education levels in the models and education of the household head but not particularly for the absolute education levels of the mother-in-law. Also, the period of analysis is two decades apart. In addition, the daughter-in-law who works outside does a significantly lower share of housework, possibly through a higher bargaining power. Overall, the results taken together suggest that between patriarchal bargaining theory and Caldwell's hypothesis, the results provide evidence for Caldwell's hypothesis but only weakly that the daughter-in-law will be able to use her higher relative education to bargain time allocation in her favour and bargain for a lesser share of housework. The strong significant results of



the mother-in-law's education, however, that it is more likely that the equitable share of housework is likely to be possible with an increase in the education of the mother-in-law. Thus, the bargaining and time allocation not only depend on who bargains but also on the education of the other person.

Finally, instead of using the state dummies as specified in the models, I use the continuous variable for the India Patriarchy Index and re-estimate the models to understand the variation in the level differences in time allocations by the extent of patriarchy. I find that in the sample of households with co-resident female in-laws, the daughter-in-law's work participation falls with an increase in the value of the patriarchy index. The daughter-in-law's time spent on paid work falls by 3 minutes, childcare by 4 minutes, and her time spent on household work increases by 7 minutes with an increase in patriarchy. The time spent on unpaid work-related activities and leisure does not show a significant difference under this model specification.

## 6 Results by socio-religious groups and extent of patriarchy

The models are estimated by socio-religious categories and the results are reported in Table 5. The table presents the sub-sample analysis by social group composition in Panel A of the table and by religious groups in Panel B of the table. For women belonging to ST families, there are no significant differences in the odds of working and the time allocated to paid work by the presence of the mother-in-law or by the education level of the mother-in-law. However, for those belonging to SC and General social groups, the mother-in-law not only increases the odds of working for the daughter-in-law but also increases her time spent on paid work by 9 and 10 minutes respectively. In all the models the father-in-law reduces the daughter-in-law's odds of working and the time spent on paid work.

The last column shows the results where the mother-in-law has completed at least secondary education, relative to the base category of illiterate mother-in-law. The other categories, as discussed earlier, are controlled in the models but the estimates are not reported in the Table. The results show that the daughter-in-law's time spent on household production significantly falls by 33 minutes when the mother-in-law has completed secondary education but only for women belonging to the General social group. The earlier hypothesis, that the higher-caste mother-in-law would try to restrict the daughter-in-law's mobility to maintain the household status, is not seen in these sets of results given the rise in paid work time for daughters-in-law belonging to the General social group

in the presence of the mother-in-law. On the contrary, co-residing with an educated mother-in-law significantly increases the daughter-in-law's work, but only weakly, and reduces the time allocated to household production.

The results by religious groups show that neither the presence nor the education level of the mother-in-law has any significant effect on daughters-in-law belonging to Muslim families. On the other hand, the presence of a mother-in-law increases the odds of working and time spent on work for women in both Hindu and other religious groups, but the results for other religious groups are stronger. The mother-in-law increases the daughter-in-law's time spent on paid work by 22 minutes among other religious groups and by 7 minutes among Hindu families. The reduction of time spent on household production is by 9 minutes in Hindu families and by 25 minutes among other religious groups in the presence of a mother-in-law. The education of the mother-in-law, however, only shows significant results for daughters-in-law belonging to Hindu families. A mother-in-law who completed at least secondary education in a Hindu family increases the daughter-in-law's work time by 13 minutes and reduces her time on household production by 22 minutes but such results are not observed for the other religious groups. While our results align with the expectation of ease of bargaining in Christian families, similar results are also observed for Hindu families.

The results of the extent of patriarchy in the state of residence and the daughter-in-law's time allocation are presented in Panel C of Table 5. The results show that the presence of the mother-in-law increases the daughter-in-law's odds of working in low-patriarchal states, whereas the results are weakly significant in medium-patriarchal states and insignificant in high-patriarchal states. The minutes of work in the presence of the mother-in-law also decrease with the increase in patriarchy. The presence of the mother-in-law increases the daughter-in-law's work by 20 minutes among low patriarchal states but there is no significant increase in time spent on paid work for medium or high-patriarchal states. A more educated mother-in-law always reduces the daughter-in-law's time on household production and the result is seen across all the groups, irrespective of the extent of patriarchy. The fathers-in-law, across all the groups, reduce women's work participation and work time. While the father-in-law does not increase the daughter-in-law's time spent on household production significantly in low or medium-patriarchal states, he significantly increases the daughter-in-law's time on household production by 12 minutes in high-patriarchal states.

**Table 5:** Effect of the presence of parents-in-law and education of mother-in-law on the time allocation of daughter-in-law by social groups, religious groups and extent of patriarchy in states

	MIL is present	FIL is present	MIL's education is secondary or above
<b>Panel A: Social Group</b>			
<i>Scheduled Tribe</i>			
Probability of working	1.03	0.72***	1.05
Mins on work - paid	3.75	-20.36***	0.30
Mins on household production	-10.95**	10.41	-2.15
N	9,460	9,460	1,955
<i>Scheduled Caste</i>			
Probability of working	1.21**	0.77**	1.08
Mins on work - paid	9.21**	-10.39**	1.58
Mins on household production	-10.47***	3.91	8.88
N	13,478	13,478	2,876
<i>General social group</i>			
Probability of working	1.24***	0.81**	1.30
Mins on work - paid	10.39***	-8.29**	14.26*
Mins on household production	-12.56***	6.00	-32.70***
N	18,425	18,425	5,180
<b>Panel B: Religion</b>			
<i>Hindu</i>			
Probability of working	1.15***	0.76***	1.23**
Mins on work - paid	7.38***	-12.93***	12.75**
Mins on household production	-8.88***	7.22***	-22.37***
N	54,530	54,530	13,809
<i>Muslim</i>			
Probability of working	0.96	0.88	1.72
Mins on work - paid	-0.62	-2.86	14.42
Mins on household production	-3.63	4.92	-29.9
N	9,537	9,537	1,863
<i>Other religious groups</i>			
Probability of working	1.40**	0.68**	1.37
Mins on work - paid	21.72**	-20.58***	18.54
Mins on household production	-24.73***	6.93	-24.8
N	5,681	5,681	1,329
<b>Panel C: India Patriarchy Index</b>			
<i>Low patriarchy</i>			
Probability of working	1.34***	0.74***	1.24**
Mins on work - paid	20.18***	-16.82***	13.46*
Mins on household production	-19.86***	2.14	-11.99***
N	17,871	17,871	3,874
<i>Medium patriarchy</i>			
Probability of working	1.13*	0.83**	1.25
Mins on work - paid	5.05	-6.44**	10.78
Mins on household production	-13.81***	2.77	-52.30**
N	22,008	22,008	4,500

**Table 5:** Continued

	MIL is present	FIL is present	MIL's education is secondary or above
<i>High patriarchy</i>			
Probability of working	1.07	0.74***	1.35*
Mins on work - paid	3.12	-13.03***	16.93*
Mins on household production	-0.77	12.46***	-17.66**
N	29,869	29,869	8,629

Calculated from TUS 2019. Odds ratios are presented to show the probability of working for each group whereas the marginal effects are presented for minutes spent on paid work and household production, with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age, education of the daughter-in-law, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Models under Panel A control religious groups and models under Panel B control social groups. For the last column, the models control for the age difference between the mother-in-law and the daughter-in-law. Sample weights are used.

## 6.1 Results for alternative specifications

The analysis till now has been done considering families, where one daughter-in-law and one mother-in-law are present in the family and considering all activities in the time slot. This section relaxes these assumptions. First, I restrict the analysis to multigenerational families, where three generations co-reside, the parents-in-law, the daughter-in-law, and their children. Second, I consider families where more than one daughter-in-law co-resides with the mother-in-law. Finally, I present the results considering only the major activity of each time slot. For this particular specification, I present the results related to all activities - work, household production, childcare, and leisure. The results are reported in Appendix Table A9. The reported results show that the results hold under different specifications. Co-residing with the mother-in-law benefits the daughter-in-law's participation and paid work, and reduces time spent on household production, whereas the father-in-law decreases the daughter-in-law's work participation and time, with or without increasing time spent on household production. The mother-in-law's absolute education level of more than secondary significantly reduces the daughter-in-law's time on household production in all the specifications.

## 6.2 Time allocation of the mother-in-law

The analysis until now has shown that the daughter-in-law's time allocated to household production falls in the presence of a mother-in-law, and when she co-resides with a highly educated mother-in-law. A fall in daughter-in-law's time in household production could be a result of multiple factors. First, it is possible that a highly educated daughter-in-law is more efficient and can complete activities related to household production in a shorter period. In this scenario, the daughter-in-law's time allocated to household production falls but the mother-in-law's time spent on household production need not necessarily increase. In the second case, it is possible that the task is outsourced and hence the total time spent on household production falls. Finally, it is possible that while the daughter-in-law's time spent falls, the total time required remains the same. In this instance, the time spent by the mother-in-law significantly increases.

To have a better understanding of the intrahousehold dynamics, I examine the mother-in-law's time allocation across household production, childcare, and leisure by her absolute education level and the education level of the daughter-in-law. This is to understand whether the mother-in-law shares the household production and childcare with all daughters-in-law and if it varies based on the education of the daughter-in-law. That is if the bargaining power of the daughter-in-law is only apparent at higher levels of education.

The results from the Tobit models are presented in Table 6. It is seen that an increase in the mother-in-law's education levels leads to an increase in her own time on household production. In addition, the daughter-in-law's education level significantly alters the mother-in-law's time allocations. Relative to an illiterate daughter-in-law, residing with a daughter-in-law who has completed tertiary education increases the mother-in-law's time allocated to household production by 11 minutes and childcare by 13 minutes. There is also a significant increase in her leisure time by 21 minutes. The presence of her husband, the father-in-law, increases her time spent on household production by more than one hour and reduces her leisure time by half an hour, and childcare time by 8 minutes. This shows that higher-educated daughters-in-law are likely to bargain and achieve an equitable distribution of time spent on household production and childcare. Appendix Table A10 presents the results with an additional variable of the relative education of the daughter-in-law and the mother-in-law, controlling for the daughter-in-law's education levels. In line with the earlier findings, a daughter-in-law with higher relative education increases the mother-in-law's time allocated to household production, indicating the bargaining theory suggested by Caldwell's hypothesis.

**Table 6:** Marginal effects showing minutes spent by the mother-in-law by her education and education of her daughter-in-law

	Household Production	Childcare, if children	Leisure
MIL is illiterate			
Below primary	11.33* (6.06)	2.96 (3.41)	9.63 (5.89)
Primary	9.49*** (3.49)	4.01 (3.59)	19.91*** (6.24)
Upper Primary	25.64*** (4.99)	2.59 (2.66)	9.56* (7.38)
Secondary and above	21.85*** (5.07)	2.68 (3.08)	7.38 (6.17)
DIL is illiterate			
Primary	3.20 (3.52)	3.64 (2.60)	0.01 (4.79)
Upper Primary	1.72 (4.27)	4.07 (2.75)	7.18 (5.01)
Secondary	6.53 (4.51)	4.28 (3.14)	8.48 (5.73)
Higher Secondary	7.20 (5.31)	5.38* (2.86)	9.12** (4.60)
Tertiary	10.64** (5.09)	13.03*** (2.30)	20.82*** (4.33)
FIL is present	62.89*** (2.56)	-7.94*** (1.70)	-32.48*** (3.73)
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	17,003	17,003	17,003

Author's calculation from TUS 2019. Estimated average marginal effects are presented from Tobit models with robust standard errors clustered at the state level in parentheses. The control variables not shown in the table include the age of the mother-in-law, the age difference between the mother-in-law and the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 7 Conclusion

The literature on intrahousehold bargaining power and time allocations has primarily focused on couples residing in nuclear families in developed countries. The extent to which the in-laws alter the daughter-in-law's time allocation in non-nuclear families in developing countries, and the role of within-gender dynamics has received less attention. Using data from the Government of India's first nationally representative Time Use Survey 2019 the paper considers the intrahousehold dynamics, role of education and time allocation of daughters-in-law and mothers-in-law in India. The study contributes to the discourse on UN SDG 5 by exploring the dynamics of women's empowerment and shared responsibility of unpaid domestic and care work within families.

The findings show that the presence of the mother-in-law in families enhances the daughter-in-law's work participation and minutes spent on work. The mother-in-law shares time spent on household production with the daughter-in-law. Relative to families with illiterate mothers-in-law, daughters-in-law in families where the mother-in-law has completed at least secondary education have higher participation in paid work and spend more minutes on paid work and fewer minutes on household production. It is also interesting to note that mothers-in-law who reside with tertiary-educated daughters-in-law spend a higher time on household production and childcare relative to those who live with lesser-educated daughters-in-law. The father-in-law and other men, not only decreased the daughter-in-law's labour supply, in terms of both participation and time spent but also increased both women's time on household production. The time spent on completing household chores is beneficial for all members of the household and should solely not be expected from a daughter-in-law, or the women in the household. Thus, framing policies to increase the education of women and altering the gender attitudes of men in parallel would be of great importance for women to be able to bargain for different time allocations. Specifically, in order to reshape the father-in-law and other adult men's influence on the women's time allocations, classroom interventions that have been successful in enhancing gender-equal attitudes of adolescent children could be considered at a pan-India scale to alter the gender attitudes of the future generation (Dhar et al., 2022). More equitable gender attitudes would also make regions less patriarchal in the future, thereby enhancing women's empowerment and bargaining power.

The study is not without limitations. First, the analysis is based on time-use data that is collected using the recall method, something that has been criticised in the time-use literature. Given the scale of the survey, the interview method itself included a significant effort from the field staff and

several cross-checks were done during the interview to arrive at correct estimates (Hirway, 2023). It remains unknown if there would have been any major advantages of using the diary method given the checks conducted during the face-to-face interviews. Of course, a major advantage of the survey is that it has information on time use for all members, something that is not common across time-use surveys. Second, it would have been interesting to understand the implications of the time trade-off between work, leisure, childcare and household production for the daughters-in-law. For instance, using primary data from an Indian city, Sinha et al. (2024) shows that an additional hour of caregiving reduces women's participation in market work, life satisfaction and happiness. On the other hand, a higher time on paid work outside the house is not always beneficial for women's overall well-being. Engaging in paid work outside the house enhances women's autonomy within the household (Anderson & Eswaran, 2009) but working women face backlash and fall victim to domestic violence in India (Dhanaraj & Mahambare, 2022). Unfortunately, we do not have any indication of satisfaction in the survey. In future, if data is collected on satisfaction levels of individuals and activity-specific well-being, it would help in having a complete understanding of the implications of different time allocations on women.

We have an indication that women in more patriarchal states find it difficult to allocate time away from household production to paid work, but it remains unknown whether the daughter-in-law herself bargained to not engage in paid work to maintain her status as a good woman, or to prevent backlash, or if she was unable to bargain for it. It is also possible that high-patriarchal states which are likely to hold women's domestic duties and staying indoors in high regard, might not have sufficient childcare facilities and suitable jobs for women at all levels of education. While a higher education does help a daughter-in-law to bargain, such facilities outside of the home would aid a more equitable distribution of time. Such mechanisms could not be deciphered from this study due to the unavailability of data but could be considered in future research. Finally, if panel data on time allocation is collected in the future, it will help in understanding how the presence or absence of the mother-in-law alters the daughter-in-law's time allocation at different stages of her life. Since the individuals are observed only at a certain point, a causal impact of the mother-in-law's presence and the daughter-in-law's time allocation remains beyond the scope of this paper and can be considered in future research.



## References

- Afridi, F., Bishnu, M., & Mahajan, K. (2022). What determines women's labour supply? The role of home productivity and social norms. *Journal of Demographic Economics*, 1–33.
- Afridi, F., Dinkelman, T., & Mahajan, K. (2018). Why are fewer married women joining the work force in rural India? A decomposition analysis over two decades. *Journal of Population Economics*, 31, 783–818.
- Anderson, S., & Eswaran, M. (2009). What determines female autonomy? Evidence from Bangladesh. *Journal of Development Economics*, 90(2), 179–191.
- Antman, F. M. (2014). Spousal employment and intra-household bargaining power. *Applied Economics Letters*, 21(8), 560–563.
- Anukriti, S., Herrera-Almanza, C., Pathak, P. K., & Karra, M. (2020). Curse of the mummy-ji: The influence of mothers-in-law on women in India. *American Journal of Agricultural Economics*, 102(5), 1328–1351.
- Banerji, A., Batheja, D., & Deolalikar, A. B. (2023). Co-residence with parents-in-law, female labor force participation, and autonomy. *Available at SSRN Number 4380450*.
- Becker, G. S. (1965). A theory of the allocation of time. *The Economic Journal*, 75(299), 493–517.
- Bloemen, H., & Stancanelli, E. (2008). How do parents allocate time? The effects of wages and income. *IZA Discussion Paper Number 3679*.
- Blundell, R., Chiappori, P.-A., & Meghir, C. (2005). Collective labor supply with children. *Journal of Political Economy*, 113(6), 1277–1306.
- Bonsang, E., & Van Soest, A. (2020). Time devoted to home production and retirement in couples: A panel data analysis. *Labour Economics*, 65, 101810.
- Caldwell, J. C. (1978). A theory of fertility: From high plateau to destabilization. *Population and Development Review*, 553–577.
- Caldwell, J. C. (1979). Education as a factor in mortality decline an examination of Nigerian data. *Population Studies*, 395–413.
- Caldwell, J. C. (1984). *Causes of fertility decline in South India*. Population Council.
- Chatterjee, E., & Vanneman, R. D. (2022). Women's low employment rates in India: Cultural and structural explanations. *Population and Development Review*, 48(2), 445–474.
- Chen, M. (1995). *A matter of survival: Women's right to employment in India and Bangladesh* (Vol. 38). Oxford: Clarendon Press.

- Chiappori, P.-A. (1997). Introducing household production in collective models of labor supply. *Journal of Political Economy*, 105(1), 191–209.
- Chiappori, P.-A., & Molina, J. A. (2020). The intra-spousal balance of power within the family: Cross-cultural evidence. In *Cross-cultural Family Research and Practice* (pp. 185–209). Elsevier.
- Coltrane, S. (2000). Research on household labor: Modeling and measuring the social embeddedness of routine family work. *Journal of Marriage and Family*, 62(4), 1208–1233.
- Craig, L., & Mullan, K. (2011). How mothers and fathers share childcare: A cross-national time-use comparison. *American Sociological Review*, 76(6), 834–861.
- Datta Gupta, N., & Stratton, L. S. (2010). Examining the impact of alternative power measures on individual time use in American and Danish couple households. *Review of Economics of the Household*, 8, 325–343.
- Debnath, S. (2015). The impact of household structure on female autonomy in developing countries. *The Journal of Development Studies*, 51(5), 485–502.
- Dhanaraj, S., & Mahambare, V. (2019). Family structure, education and women’s employment in rural India. *World Development*, 115, 17–29.
- Dhanaraj, S., & Mahambare, V. (2022). Male backlash and female guilt: Women’s employment and intimate partner violence in urban India. *Feminist Economics*, 28(1), 170–198.
- Dhar, D., Jain, T., & Jayachandran, S. (2022). Reshaping adolescents’ gender attitudes: Evidence from a school-based experiment in India. *American Economic Review*, 112(3), 899–927.
- Dyson, T., & Moore, M. (1983). On kinship structure, female autonomy, and demographic behavior in India. *Population and Development Review*, 35–60.
- Eswaran, M., Ramaswami, B., & Wadhwa, W. (2013). Status, caste, and the time allocation of women in rural India. *Economic Development and Cultural Change*, 61(2), 311–333.
- Evertsson, M., & Neramo, M. (2004). Dependence within families and the division of labor: Comparing Sweden and the United States. *Journal of Marriage and Family*, 66(5), 1272–1286.
- Goldin, C. (1994). The u-shaped female labor force function in economic development and economic history.
- Gruber, S., & Szoltysek, M. (2016). The patriarchy index: A comparative study of power relations across historical Europe. *The History of the Family*, 21(2), 133–174.
- Gupta, S. (2007). Autonomy, dependence, or display? The relationship between married women’s earnings and housework. *Journal of Marriage and Family*, 69(2), 399–417.

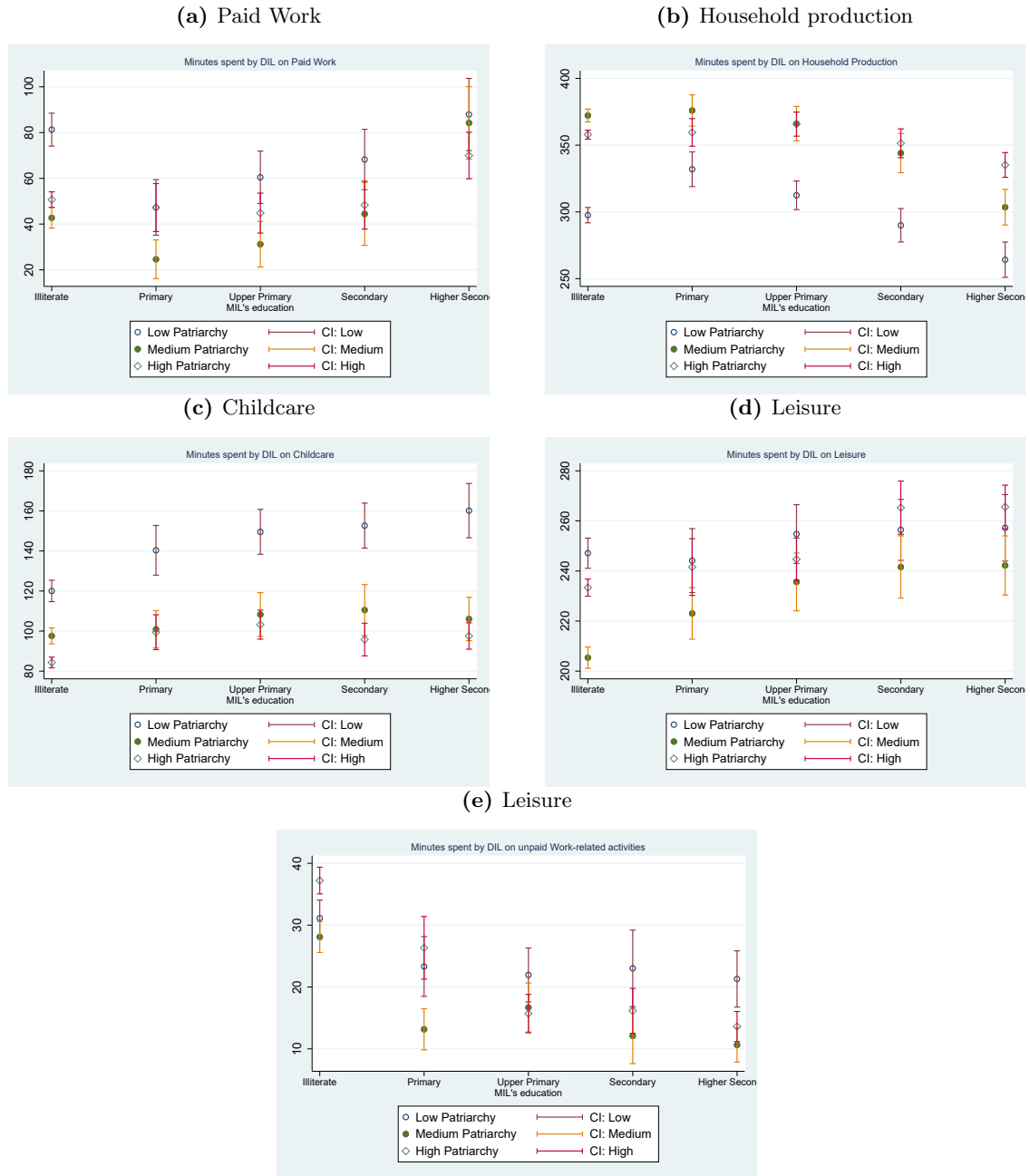
- Heisig, J. P. (2011). Who does more housework: Rich or poor? A comparison of 33 countries. *American Sociological Review*, 76(1), 74–99.
- Hirway, I. (2023). Work and workers in India: Moving towards inclusive and sustainable development. *The Indian Journal of Labour Economics*, 1–23.
- Hook, J. L. (2006). Care in context: Men’s unpaid work in 20 countries, 1965–2003. *American Sociological Review*, 71(4), 639–660.
- Jayachandran, S. (2021). Social norms as a barrier to women’s employment in developing countries. *IMF Economic Review*, 69(3), 576–595.
- Jayaraman, R., & Khan, B. (2023). Does co-residence with parents-in-law reduce women’s employment in India? *CESifo Working Paper Number 10238*.
- Jejeebhoy, S. J., & Sathar, Z. A. (2001). Women’s autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review*, 27(4), 687–712.
- Khanna, M., & Pandey, D. (2023). The role of mothers-in-law in determining women’s work: Evidence from India. *Forthcoming in Economic Development and Cultural Change*. <https://doi.org/10.1086/724307>
- Killewald, A. (2016). Money, work, and marital stability: Assessing change in the gendered determinants of divorce. *American Sociological Review*, 81(4), 696–719.
- Killewald, A., & Gough, M. (2013). Does specialization explain marriage penalties and premiums? *American Sociological Review*, 78(3), 477–502.
- Killgore, W. D. (2010). Effects of sleep deprivation on cognition. *Progress in Brain Research*, 185, 105–129.
- Kimmel, J., & Connelly, R. (2006). Is mothers’ time with their children home production or leisure? *IZA Discussion Paper Number 2058*.
- Klasen, S., & Pieters, J. (2015). What explains the stagnation of female labor force participation in urban India? *The World Bank Economic Review*, 29(3), 449–478.
- Li, N. (2023). Women’s work in India: Evidence from changes in time use between 1998 and 2019. *World Development*, 161, 106107.
- Lim, J., & Dinges, D. F. (2010). A meta-analysis of the impact of short-term sleep deprivation on cognitive variables. *Psychological Bulletin*, 136(3), 375.
- Lundberg, S., & Pollak, R. A. (1994). Noncooperative bargaining models of marriage. *The American Economic Review*, 84(2), 132–137.
- Marcos, M. A. T. (2023). Grandmothers and the gender gap in the Mexican labor market. *Journal of Development Economics*, 162, 103013.

- Matteazzi, E., & Scherer, S. (2021). Gender wage gap and the involvement of partners in household work. *Work, Employment and Society*, 35(3), 490–508.
- Maurer-Fazio, M., Connelly, R., Chen, L., & Tang, L. (2011). Childcare, eldercare, and labor force participation of married women in urban China, 1982–2000. *Journal of Human Resources*, 46(2), 261–294.
- Mehrotra, S., & Parida, J. K. (2017). Why is the labour force participation of women declining in India? *World Development*, 98, 360–380.
- Musick, K., Meier, A., & Flood, S. (2016). How parents fare: Mothers' and fathers' subjective well-being in time with children. *American Sociological Review*, 81(5), 1069–1095.
- Offer, S., & Schneider, B. (2011). Revisiting the gender gap in time-use patterns: Multitasking and well-being among mothers and fathers in dual-earner families. *American Sociological Review*, 76(6), 809–833.
- Pailhé, A., Solaz, A., & Stanfors, M. (2021). The great convergence: Gender and unpaid work in Europe and the United States. *Population and Development Review*, 47(1), 181–217.
- Porter, M. (2017). Spousal bargaining over care for elderly parents in China: Imbalances in sex ratios influence the allocation of support. *The Journal of Development Studies*, 53(4), 514–529.
- Rangarajan, C., Kaul, P. I., & ., S. (2011). Where is the missing labor force? *Economic and Political Weekly*, 46(39), 68–72.
- Rao, N. (2014). Caste, kinship, and life course: Rethinking women's work and agency in rural south India. *Feminist Economics*, 20(3), 78–102.
- Rew, M., Gangoli, G., & Gill, A. K. (2013). Violence between female in-laws in India. *Journal of International Women's Studies*, 14(1), 147–160.
- Sasaki, M. (2002). The causal effect of family structure on labor force participation among Japanese married women. *Journal of Human Resources*, 429–440.
- Sengupta, M., & Johnson, N. E. (2006). Does educational superiority autonomize daughters-in-law who live with their mothers-in-law in India? A test of Caldwell's thesis.
- Sheikh, R. A., Gaurav, S., & Mishra, T. (2023). Caught in a time warp: Evidence from time use of Indian women. *International Journal of Social Economics*.
- Shen, K., Yan, P., & Zeng, Y. (2016). Coresidence with elderly parents and female labor supply in China. *Demographic Research*, 35, 645–670.
- Singh, A., Chokhandre, P., Singh, A. K., Barker, K. M., Kumar, K., McDougal, L., James, K., & Raj, A. (2021). Development of the India patriarchy index: Validation and testing of temporal and spatial patterning. *Social Indicators Research*, 1–27.

- Sinha, A., Sedai, A. K., Rahut, D. B., & Sonobe, T. (2024). Well-being costs of unpaid care: Gendered evidence from a contextualized time-use survey in India. *World Development*, 173(106419).
- Srivastava, A. (2020). Time use and household division of labor in India – within-gender dynamics. *Population and Development Review*, 46(2), 249–285.
- Stancanelli, E., & Van Soest, A. (2012). Retirement and home production: A regression discontinuity approach. *American Economic Review*, 102(3), 600–605.
- Stancanelli, E., & Van Soest, A. (2016). Partners' leisure time truly together upon retirement. *IZA Journal of Labor Policy*, 5(1), 1–19.
- Stratton, L. S. (2023). Marriage versus cohabitation: How specialization and time use differ by relationship type. *IZA Discussion Paper Number 16097*.
- Szinovacz, M. E. (2000). Changes in housework after retirement: A panel analysis. *Journal of Marriage and Family*, 62(1), 78–92.
- Vernon, V. (2010). Marriage: For love, for money... and for time? *Review of Economics of the Household*, 8, 433–457.

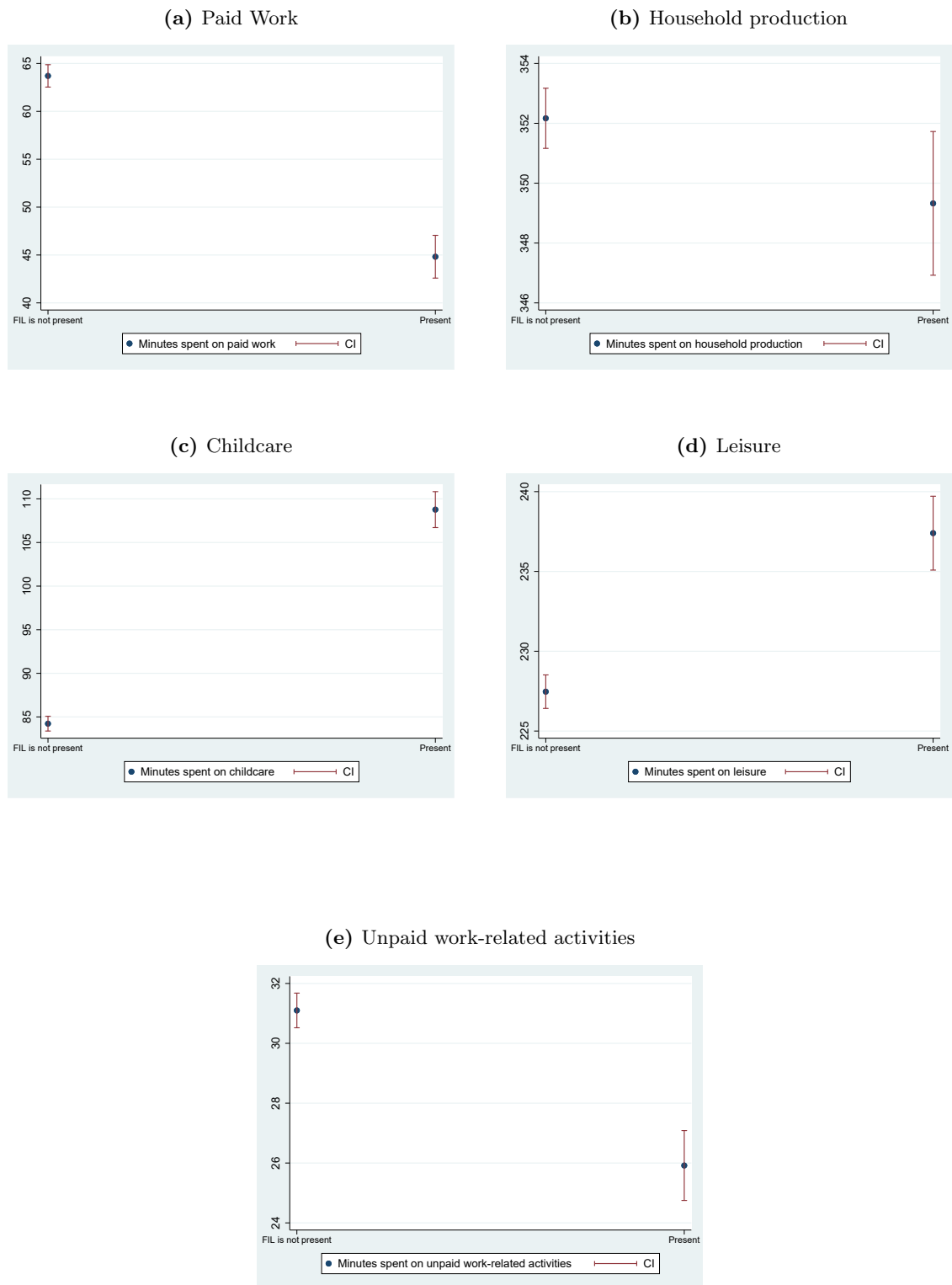
## A Appendix

**Figure A1:** Average minutes per day spent by daughter-in-law by extent of patriarchy and mother-in-law's education level



Note: Author's calculation from TUS 2019. Childcare is measured only for families with children

**Figure A2:** Average minutes per day spent by daughter-in-law by presence of father-in-law



Note: Author's calculation from TUS 2019. Childcare is measured only for families with children

**Table A1:** Description of variables used to create the India Patriarchy Index

Domain	Variable	Numerator	Denominator
Male Domination	Female heads (N)	Total number of female-headed households	Total number of household heads
	Young brides (P)	Total number of ever married young girls aged 15-19 years	Total number of ever married women aged 15–49 years
	Older wives (N)	Total number of wives older than husbands	Total number of couples for whom the ages of both the partners are known
Generational Domination	Younger household head (N)	Total number of elderly men (60+) living in a household headed by a male household head of younger generation	Total number of elderly men having at least one child
	Neo-local (N)	Total number of ever-married male household heads aged 20-29 years without members other than his immediate wife and children	Total number of ever married male aged 20–29 years
	Joint family (P)	Total number of elderly people (age 60+) living with at least two married sons in the same household	Total number of elderly people aged 60 and above
Patrilocality	Married daughter (N)	Total number of elderly people (age 60+) living with at least one married daughter	Total number of elderly people (age 60+) living with at least one married child in the same household
Son preference	Boy as the last child (P)	Total number of boys among last children	Total number of last births
	Sex ratio (P)	Total number of male children aged 0–6 years*100	Total number of female children aged 0–6 years*100
	Ideal no. of sons (P)	Total number of women aged 15–49 years who reported a higher ideal number of sons than daughter	Total number of women aged 15–49 years
Socio-economic Domination	Educated wives (N)	Total number of wives who are more educated than their husbands	Total number of couples for whom the age of both partners are known
	Economic domination (N)	Total number of women of working age (15-49 years) engaged in professional work	Total number of women of working age (15-49 years)

Source: Singh et al. (2021) adopted from Gruber and Szotytsek (2016)

Notes: (1) Elderly men are considered to be all men aged 60 years and above and referred to as 60+ in the table. Sample weights are used for all computations.

(2) For Economic Domination, a woman working in professional work is working in professional, technical, managerial or sales. The age group is considered as 15-49 years given the data availability for women in that age group.

(3) The hypothesized association of each variable with patriarchy are mentioned as (P): positively associated with patriarchy and (N): negatively associated with patriarchy. The Index for each variable is created using the following rule. Index Point = round( $10 \times (\text{proportion for a state} / \text{the highest proportion seen among the states included in the analysis})$ ) for variables marked as (P) and Index Point =  $10 - \text{round}(10 \times (\text{proportion for a state} / \text{the highest proportion seen among the states included in the analysis}))$  for variables marked as (N). Index point = round( $10 \times ((\text{proportion for a state defined minimum value}) / (\text{highest proportion seen among the states included in the analysis defined minimum value}))$ ) for the variables boy as last child and sex ratio. The index points range from 0 to 10.

(4) India Patriarchy Index = (Index of male domination/3) + (Index of generational domination/3) + (Index of patrilocality/1) + (Index of son preference/3) + (Index of socio-economic domination/2)



**Table A2:** Marginal effects showing the daughter-in-law's time in minutes per day by the extent of patriarchy in the state of residence

Classification (Index Score)	States
Low Patriarchy (16-26)	Andaman and Nicobar Islands
	Andhra Pradesh
	Arunachal Pradesh
	Goa
	Himachal Pradesh
	Kerala
	Lakshadweep
	Manipur
	Mizoram
	Nagaland
	Odisha
	Puducherry
	Sikkim
	Tamil Nadu
	Telangana
	Tripura
Medium Patriarchy (26-29)	Assam
	Bihar
	Chandigarh
	Chhattisgarh
	Daman and Diu
	Delhi
	Jammu and Kashmir
	Jharkhand
	Karnataka
	West Bengal
	Dadra and Nagar Haveli
High Patriarchy (29-33)	Gujarat
	Haryana
	Maharashtra
	Madhya Pradesh
	Punjab
	Rajasthan
	Uttar Pradesh
	Uttarakhand

The states are classified based on their scores on the India Patriarchy Index. The index scores derived from NFHS 5 (2019-21) are mentioned in the bracket in column 1. The names of the states are mentioned alphabetically under each classification.

**Table A3:** Daughter-in-law's time allocation by the presence or absence of the mother-in-law in the family by religious groups, social groups, sector of residence and the extent of patriarchy

	Paid work		Unpaid work-rel activities		Household production		Childcare, if children		Leisure	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
<i>Religion</i>										
Hindu	68	58***	32	29***	353	344***	79	99***	226	235***
Muslim	31	27	19	15***	373	361***	94	114***	239	254***
Christian and others	64	63	44	29***	329	329	109	119**	216	232***
<i>Social group</i>										
ST	80	70***	57	55	328	325	94	107***	194	207***
SC	63	52***	30	25***	360	348***	82	104***	219	230***
OBC	63	53***	27	25***	353	345***	82	103***	233	241***
General	49	53*	23	22	366	348***	83	99***	242	247**
<i>Sector of residence</i>										
Rural	64	53***	42	36***	357	348***	81	101***	212	226***
Urban	59	58	12	12	348	338***	90	105***	253	256
<i>Extent of patriarchy</i>										
Low	79	70***	28	22***	330	308***	91	127***	231	243***
Medium	56	60	27	27	375	354***	90	99***	212	223***
High	51	40***	39	31***	354	344***	72	89***	239	243**

Calculated from TUS 2019. Yes represents the presence of the mother-in-law and no represents the absence of the mother-in-law in the family. Level of significance for t-test: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table A4:** Daughter-in-law's time allocation by the presence of in-laws on normal weekdays

	UPA status	Work	Paid work	Paid work outside	Unpaid work-related activities
Mother-in-law is present	1.24*** (0.06)	1.04 (0.07)	1.12*** (0.05)	1.14*** (0.06)	1.04 (0.08)
Father-in-law is present	0.75*** (0.05)	0.79*** (0.05)	0.76*** (0.05)	0.78*** (0.05)	0.83*** (0.05)
Daughter-in-law is illiterate Below primary or primary	0.74*** (0.07)	0.78*** (0.04)	0.75*** (0.06)	0.70*** (0.07)	0.85*** (0.04)
Upper primary	0.56*** (0.06)	0.63*** (0.04)	0.61*** (0.06)	0.53*** (0.06)	0.72*** (0.05)
Secondary	0.42*** (0.06)	0.49*** (0.04)	0.48*** (0.05)	0.40*** (0.05)	0.57*** (0.05)
Higher secondary	0.42*** (0.06)	0.45*** (0.04)	0.47*** (0.06)	0.41*** (0.06)	0.53*** (0.05)
Tertiary	0.82 (0.15)	0.64*** (0.06)	0.86 (0.13)	0.90 (0.14)	0.71*** (0.07)
Adult women	1.08 (0.06)	1.13*** (0.04)	1.06 (0.06)	1.07 (0.05)	1.10*** (0.03)
Adult men	0.58*** (0.04)	0.77*** (0.05)	0.67*** (0.05)	0.66*** (0.03)	0.85*** (0.04)
Constant	0.07*** (0.01)	2.14*** (0.39)	0.16*** (0.02)	0.17*** (0.03)	1.59** (0.31)
Controls	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	44,257	44,257	44,257	44,257	44,257

Calculated from TUS 2019. Odds ratios are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age, education of the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used. For Col (1): The usual principal activity status is defined as a self-reported principal activity status codes 11 to 51 and does not include households reporting 93 'attended domestic duties and was also engaged in free collection of goods (vegetables, roots, firewood, cattle feed etc.) sewing, tailoring, weaving, etc. for household use'.

**Table A5:** Daughter-in-law's odds of engaging in work

	UPA status	Work	Paid work	Paid work outside	Unpaid work-related activities
Mother-in-law is present	1.18*** (0.05)	1.05 (0.06)	1.14*** (0.05)	1.17*** (0.06)	1.05 (0.06)
Father-in-law is present	0.75*** (0.04)	0.79*** (0.04)	0.76*** (0.04)	0.79*** (0.04)	0.81*** (0.04)
DIL is illiterate					
Primary	0.76*** (0.07)	0.77*** (0.04)	0.78*** (0.06)	0.71*** (0.06)	0.83*** (0.04)
Upper Primary	0.58*** (0.07)	0.65*** (0.04)	0.64*** (0.06)	0.55*** (0.06)	0.73*** (0.04)
Secondary	0.43*** (0.05)	0.50*** (0.03)	0.47*** (0.04)	0.39*** (0.04)	0.59*** (0.05)
Higher Secondary	0.41*** (0.06)	0.45*** (0.03)	0.48*** (0.05)	0.42*** (0.06)	0.52*** (0.05)
Tertiary	0.78 (0.16)	0.58*** (0.05)	0.76* (0.12)	0.79 (0.13)	0.65*** (0.06)
Age of DIL	1.06*** (0.00)	1.03*** (0.00)	1.05*** (0.00)	1.05*** (0.00)	1.02*** (0.01)
Hindu					
Muslim	0.56*** (0.09)	0.71** (0.11)	0.61*** (0.09)	0.41*** (0.04)	0.78* (0.11)
Others	1.09 (0.16)	1.16 (0.12)	1.01 (0.11)	0.99 (0.11)	1.19* (0.12)
ST					
SC	0.64*** (0.08)	0.66*** (0.08)	0.85* (0.07)	0.81** (0.08)	0.68** (0.10)
OBC	0.61*** (0.07)	0.69*** (0.08)	0.85* (0.07)	0.72*** (0.07)	0.68** (0.10)
General	0.53*** (0.07)	0.63*** (0.08)	0.75*** (0.07)	0.64*** (0.06)	0.62*** (0.09)
Pucca house	0.85** (0.06)	0.79*** (0.04)	0.88** (0.05)	0.82*** (0.06)	0.81*** (0.05)
Adult women	1.07 (0.05)	1.11*** (0.03)	1.06** (0.03)	1.08** (0.03)	1.08*** (0.03)
Adult men	0.58*** (0.04)	0.78*** (0.04)	0.70*** (0.05)	0.69*** (0.03)	0.85*** (0.03)
Urban	0.59*** (0.07)	0.45*** (0.03)	0.68*** (0.06)	0.64*** (0.07)	0.43*** (0.05)
Weekday	1.04 (0.03)	1.04 (0.03)	1.06** (0.03)	1.06** (0.03)	1.03 (0.03)
Other day	1.39*** (0.07)	0.87*** (0.05)	0.77*** (0.06)	0.75*** (0.05)	0.93* (0.04)
Number of children					
Tot girl 0-5 years	0.79*** (0.04)	0.82*** (0.03)	0.75*** (0.04)	0.71*** (0.03)	0.87*** (0.02)
Tot boys 0-5 years	0.77*** (0.03)	0.86*** (0.03)	0.74*** (0.03)	0.74*** (0.03)	0.92*** (0.02)

**Table A5:** Continued: Daughter-in-law's odds of engaging in work

	UPA status	Work	Paid work	Paid work outside	Unpaid work-related activities
Tot girls 6-12 years	1.12*** (0.03)	1.12*** (0.03)	1.12*** (0.03)	1.08*** (0.03)	1.07** (0.04)
Tot boys 6-12 years	1.03 (0.03)	1.07*** (0.02)	1.07*** (0.02)	1.06*** (0.02)	1.06*** (0.02)
Tot girls 13-17 years	1.12*** (0.04)	1.12*** (0.04)	1.12*** (0.05)	1.07 (0.05)	1.06* (0.03)
Tot boys 13-17 years	0.95* (0.03)	1.06* (0.03)	1.00 (0.03)	0.98 (0.03)	1.05 (0.03)
Constant	0.07*** (0.01)	1.95*** (0.36)	0.12*** (0.02)	0.13*** (0.02)	1.60** (0.34)
State FE	Yes	Yes	Yes	Yes	Yes
Observations	69,748	69,748	69,748	69,748	69,748

Calculated from TUS 2019. Odds ratios are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A6:** Coefficient from OLS for time allocation of the daughter-in-law across household work, childcare, and leisure, by work status of daughter-in-law and the mother-in-law

	Household Production	Childcare, if children	Leisure
DIL works outside	-164.53*** (8.09)	-46.91*** (5.22)	-109.76*** (6.25)
MIL works outside	13.36*** (3.18)	7.46*** (2.59)	-7.19* (3.65)
Both work outside	42.12*** (7.19)	-5.46 (6.20)	7.95* (4.70)
Constant	226.95*** (15.37)	144.99*** (12.24)	301.25*** (11.71)
Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
R-squared	0.26	0.29	0.17
Observations	17,003	13,577	17,003

Calculated from TUS 2019. OLS coefficients are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age, education of the daughter-in-law and the mother-in-law, the age difference between the mother-in-law and the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.

**Table A7:** Odds ratio for the probability of working and average marginal effects showing minutes per day spent by daughter-in-law by relative and absolute education levels of daughter-in-law

	Probability Of working (OR)	Time work (ME)	Household production (ME)	Childcare, If children (ME)	Leisure (ME)
DIL is more educated than MIL	1.06 (0.12)	2.89 (3.14)	1.30 (5.31)	2.24 (4.15)	-0.94 (4.37)
DIL is illiterate					
Primary	0.69*** (0.09)	-21.63*** (7.64)	21.31*** (6.48)	4.81 (3.22)	7.63 (5.49)
Upper Primary	0.58*** (0.08)	-30.81*** (7.63)	22.48*** (6.64)	7.93* (3.10)	14.88** (5.85)
Secondary	0.45*** (0.06)	-39.17*** (7.68)	28.33*** (6.85)	11.94** (3.31)	23.88*** (6.01)
Higher Secondary	0.47*** (0.07)	-37.37*** (7.90)	19.98*** (7.22)	18.24*** (3.72)	23.77*** (6.37)
Tertiary	0.75** (0.11)	-12.43 (8.50)	-12.00 (7.32)	29.37*** (3.72)	23.31*** (6.43)
Controls	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
Observations	17,003	17,003	17,003	13,577	17,003

Calculated from TUS 2019. The odds ratio is presented in Col 1 and Marginal effects in Col 2-5 with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age of the daughter-in-law, the age difference between the mother-in-law and the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.

**Table A8:** Marginal effects from Tobit model showing the relative share of housework between daughter-in-law and mother-in-law by their relative education levels

	All Education Levels	Below Tertiary Education
DIL is more educated than MIL	-0.013* (0.06)	-0.01* (0.01)
MIL is illiterate		
Below primary	-0.17* (0.01)	-0.01 (0.01)
Primary	-0.01** (0.01)	-0.01 (0.01)
Upper Primary	-0.05*** (0.01)	-0.04*** (0.01)
Secondary and above	-0.06*** (0.01)	-0.03*** (0.01)
DIL works outside	-0.19*** (0.01)	-0.16*** (0.01)
MIL works outside	0.12*** (0.01)	0.11*** (0.01)
Controls	Yes	Yes
State FE	Yes	Yes
Observations	16,966	13,617

Calculated from TUS 2019. Marginal effects are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age of the daughter-in-law, the age difference between the mother-in-law and the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.



**Table A9:** Alternate specifications

	MIL is present	FIL is present	MIL's education is secondary or above
<i>Multi-generational households</i>			
Probability of working	1.15***	0.75***	1.07
Minutes on work - paid	7.09***	-12.14***	4.11
Minutes on household production	-8.46**	5.99	-21.47***
Minutes on childcare	-0.17	2.15	4.81
<i>More than one daughter-in-law</i>			
Probability of working	1.15***	0.81***	1.30***
Minutes on work - paid	7.07***	-9.16***	14.60***
Minutes on household production	-12.59***	4.31**	-23.09***
Minutes on childcare, if children	-0.90	-1.33	5.99
<i>Considering major activities only</i>			
Probability of working	1.14***	0.77***	1.31***
Minutes on work - paid	7.49***	-12.24***	15.38**
Minutes on household production	-8.45**	7.84*	-29.49***
Minutes on childcare, if children	1.31	2.08	-0.62
Minutes on leisure	-2.42	3.89*	6.77

Calculated from TUS 2019. Odds ratios are presented to show the probability of working for each group whereas the marginal effects are presented for minutes spent with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . The control variables not shown in the table include the age, education of the daughter-in-law, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used. For the last column, the model controls for the age difference between the mother-in-law and the daughter-in-law.

**Table A10:** Marginal effects showing minutes spent by the mother-in-law by absolute and relative education of daughter-in-law and mother-in-law

	Household Production	Childcare, if children	Leisure
DIL is not more educated than MIL			
DIL is more educated than MIL	8.63* (4.56)	2.42 (2.94)	10.74*** (3.78)
MIL is illiterate			
Below primary	11.60* (6.11)	3.03 (3.37)	9.99* (5.87)
Primary	10.57*** (3.61)	4.34 (3.42)	19.26*** (6.24)
Upper Primary	27.49*** (5.61)	3.11 (2.73)	11.80** (5.73)
Secondary and above	25.48*** (5.57)	3.70 (3.10)	11.77* (6.36)
DIL is illiterate			
Primary	-2.74 (5.05)	2.03 (2.78)	-7.39 (4.85)
Upper Primary	-6.38 (6.47)	1.92 (3.28)	-2.94 (4.65)
Secondary	-1.78 (7.10)	2.07 (4.20)	-1.88 (6.60)
Higher Secondary	-1.36 (6.92)	3.08 (4.25)	-1.53 (5.47)
Tertiary	1.95 (6.96)	10.69*** (3.34)	10.02* (5.73)
FIL is present	62.83*** (2.58)	-7.95*** (1.69)	-32.55*** (3.75)
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	17,003	17,003	17,003

Author's calculation from TUS 2019. Average marginal effects are presented with robust standard errors clustered at the state level in parentheses. Level of significance: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The control variables not shown in the table include age, religious groups, social groups, type of residence: permanent or not, sector of residence: urban or rural, day of the week: weekday or not, type of day: regular day or not, number of children by gender and ages 0-5 years, 6-12 years, 13-17 years. Sample weights are used.