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Essays on Women Empowerment and Norms in developing countries:

the case of Nepal and the Philippines

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Introduction

Gender inequality has been on a slow and steady decline for decades. However, at the current rate of decline, it seems that we will not be able to eliminate gender inequality by 2030 as part of the Sustainable Development Goals (UNDP, 2022). Until today, wide gender gaps continue to be observed in many aspects: the lower labor force participation of women (52.5%) compared to men (72.05%) and lower primary schooling enrollment rates of girls (88.22%) and boys (90.53%) (World Bank, 2020). Furthermore, women spend disproportionately more time and are more involved than men in unpaid housework (Eurostat, 2019; UN Women, 2016).

According to the Global Gender gap report, we have closed so far 68.4% of the gender gap in 2023, a 4% improvement since 2006. Much more has to be done in the dimensions relating to political and economic participation since the closed gaps in these two are low, 60.1% and 22.1%, respec-

tively, compared to the health and education dimensions where at least 95% of gender gaps are closed. In the same report, it is mentioned as well that it will take at least 131 years to completely close the gender gap (World Economic Forum, 2023). In theory, we can only expect good to come out of ending gender inequality. As a woman's potential is realized and her well-being improved, she will be able to contribute as a productive member of society and overall, this results in greater economic development and a better society.

To some extent, the inequality between women and men can be explained by the norms and traditions that are deeply rooted in society (Aldashev et al., 2012*b*; Jayachandran, 2021). These harmful and discriminatory norms are part of the same norms that guided most of human interaction in our societies until today. In economics, this topic has gained great attention and has become widely studied. Researchers have illustrated the harmful effects of norms and how it can be addressed through policy (Acemoglu and Jackson, 2017; Aldashev et al., 2012*a*; Gulesci et al., 2021; Young, 2015) and others were focused on finding a proxy measure for this abstract and multi-faceted concept to be able to empirically quantify the negative effects on women (Bargain et al., 2020; Gündüz-Hoşgör and Smits, 2008; Malhotra et al., 1995). There is still much to learn

about norms using data and empirical analysis. For instance, how to measure it and how it interacts with other aspects, e.g. socioeconomic status, race, religion, and gender, etc.

This thesis revolves around norms, traditions and women empowerment as a contribution to this growing body of literature. I study two countries, Nepal and the Philippines, with contrasting personalities to give us varying perspectives about norms and its effect on women empowerment. The **first chapter** of this thesis, co-authored with Andrèa Renk, looks at the evolution of women's empowerment outcomes in a context of strong norms, i.e. Patriarchy. We introduce an index to measure patriarchy using objective demographic variables that captures the different facets of patriarchy, such as, male domination, generational domination and son preference. We take inspiration from the work of Gruber and Szołtysek (2016) in the construction of this index and adapted it for the context of Nepal. We also built a simple model to illustrate the interaction between persistent norms and increasing outside options over time. In short, we show that in a context of strong patriarchy, women have great difficulty in seizing outside options and as outside options increase each year, the empowerment of these women remain lower over time relative to women in weak patriarchy. On average, we observe that the women

empowerment proxies, decision-making and labor force participation, are increasing in Nepal. But, the results for both outcomes show an increasing gap over time between women in weak and strong patriarchy, which we call "divergence" in empowerment. Hence, women in more patriarchal areas have gained less and less in empowerment proxies in comparison with women in less patriarchal areas. Thereby, emphasizing the role certain norms play in hindering equal development.

In the **second chapter** of this thesis, I look at the changes in the time and resource allocation of women and children when the father migrates in a context of strong gender norms in Nepal. Since migrants are mostly male and are typically the household heads, do we observe redistribution towards gender equality among left-behind members? Given selection into migration and its endogeneity with the outcomes of interest, I implement an instrumental variable approach using a leave-out mean of the Migration Network in the village. The results show a disproportionate distribution of work inside and outside the household but an improvement in decision-making in migrant households. There was no significant effect on education outcomes. Girls carry a greater burden of chores and child labor while the responsibilities of boys remain unchanged. Girls take over the tasks of collecting fodder that is typi-

cally assigned to men. As girls engage in more productive hours, they spend less time in leisure. Mothers, on the other had, take on more unpaid farm work and take more final decisions alone. These two outcomes together could result in an eventual improvement in the mother's empowerment in migrant households. In this chapter, norms are again shown as strong and persistent but can also become flexible depending on the circumstance. In a patriarchal society like Nepal, men are supposed to be in-charge of the households and take majority (if not all) of the decisions including women's fertility and mobility. Women are also expected to stay in the household and be in charge of cooking, cleaning and other household tasks. To some extent, male outmigration has opened a door for women empowerment by leaving women alone to make decisions without their male spouse and allowed them to take on other responsibilities outisde of the household.

In the **third and final chapter** of this thesis, co-authored with Jean-Marie Baland, Ludovic Bequet, and Catherine Guirkinger, we explore household efficiency in the Philippines, a context where divorce is illegal and women hold a high status in the household as they are in-charge of finances. We collected our own survey data and conducted a lab-in-the-field experiment between spouses in rural households where couples played both sender and receiver in the

standard dictator game, dictator game with multiplier and trust game. Our first result reveals a high level of inefficiency among couples where they forgo 46% of potential gains despite being in a context that is believed to be conducive for cooperation. Second, we find a strong sharing norm where wives get an average of 60% and husbands 40% of the endowment in all games. A result consistent with the wife's traditional role of being in-charge of finances. Furthermore, we find that wives have a strong preference to keep one dollar than to receive 1.74 dollars while it is only 1.14 dollars for husbands. Since receiving money from the husband ensures that he has a say on its use, the wife prefers to have money for herself directly. We interpret this as a strong demand for agency – a woman having money that she has full control over. Our result highlights that there is a difference between participation in decision making and effective control over resources.

In sum, we saw how norms have effectively guided decisions and outcomes amidst a fast changing context. Norms exist to make social transactions easier thanks to the unwritten rules being followed but since a part of the population is losing from it, it has become a barrier to empowerment and equal development. While some norms are certainly useful, I wonder whether we, as a society, can successfully abolish/abandon harmful and discriminatory norms eventu-

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ally? We know from experience and the existing literature that there is resistance so it will not be possible overnight. But, with great patience and dedication, we can continue to address the problematic norms directly through targeted policy and push human behavior in the right direction as Aldashev et al. (2012*a*) and Gulesci et al. (2021).

As a final remark on this thesis, we observed women empowerment in different contexts using different proxies, such as, decision-making, employment and experimental behavior. The first two chapters show that women were provided new rights and opportunities but being able to take full advantage is impeded by norms. Meanwhile, the third chapter shows that women want to have full control over resources when given the choice in secret. So, to some extent, we have some evidence that women need and desire freedom. On a greater scale, we constantly see women all over the world expressing the same strong desire for freedom: to have full control, not just on resources, but also of their bodies and their lives with the on-going feminist protests and movements as examples.

There is hope for change as awareness and desire for freedom spreads. I hope that researchers, like myself, continue to engage in this topic as many more aspects have yet to be explored with empirical analysis. We need to further

spread awareness and to encourage policymakers and governments to introduce more effective change so we can raise the quality of life for women everywhere and reach gender equality.

Chapter 1

Who gains more from increased rights?

Patriarchal norms and women's empowerment in Nepal

Joint with Andréa Renk

Abstract: Ending the practice and effects of harmful social norms has been at the heart of global policy-making for decades. However, researchers continue to find the vulnerable, mostly women and children, lagging behind in outcomes in these current times. The culprit commonly blamed is the persistence of social norms, like Patriarchy. In this paper, we provide a quantitative evolution of the gap in women's outcomes created by the patriarchal barrier in the Nepali context – where a dramatic social transformation occurred in the last two decades. Laws and reforms in support of women's rights were introduced and at the

same time, citizens have demanded for egalitarian policies. We model this in a simple framework and test it empirically using a spatially defined Patriarchy index based on demographic characteristics. A new approach compared to the usual proxy for norms in economics, which is declared ethnicity or religion. Our results show suggestive evidence that strong patriarchy has indeed increasingly prevented women from taking advantage of better outside options over time and thus, remained at relatively lower levels of empowerment than in a context of weak patriarchy. We recommend policies that are adapted to the varying patriarchal intensities that women are faced with in order to help them seize the opportunities that have opened up to them.

1.1 Introduction

Women in patriarchal societies have been treated as second class citizens and continue to be vulnerable because of harmful norms, many of which persist until the present. In China's history, girls used to be subjected to footbinding as a sign of a prospective bride's gentility and fidelity (Young, 2015). In Somalia and many other countries in the African continent, girls go through an extremely harmful tradition of genital mutilation (FGM) (Gulesci et al., 2021). In Nepal, girls continue to be married off at a young age[1] given the importance placed on preserving the purity of their bodies (ADB, 1999). These norms may have additional long term effects in other aspects of the women and girls' lives, such as, education, labor force participation and empowerment. Policymakers have continuously introduced reforms, laws and new institutions to put an end to the practice of harmful norms in line with the global agenda to achieve gender equality. In some cases, the norms were effectively eliminated: footbinding was eradicated successfully in China thanks to widespread public campaigns and interventions that directly targeted the family and social group. Meanwhile in others, the norms persisted: child

[1] Median age at first marriage of the 25-49year old cohort of women is 17.9 years old according to the MoH (2017)

marriage in Nepal and FGM in the African continent despite the bans. As illustrated in these examples, there is an obvious clash between these policies and the practice of social norms.

Research has investigated the reason for this; some have attributed it to people's lack of awareness towards new policies. Yet, empirical evidence show the contrary – people had knowledge of newly introduced policies that target negative behaviors and still, chose not to follow it (Erten and Keskin, 2022; Roy, 2015). As more individuals choose to disobey the law, reporting violations is less likely which leads to more law-breaking and then the law is further undermined (Acemoglu and Jackson, 2017). Hence, the harmful social norms persist. Another equally plausible argument is that people are aware of the policies but hesitate to abandon their norms because of social sanctions (e.g. shame) or sticking to the belief that norms are a "natural" way of regulating communal life (Aldashev et al., 2012*a*). However, this does not at all imply that policies are useless against ending harmful norms. It can still be useful by acting as a "magnet" or a "stepping-stone" to help societies gradually move away from the practice of harmful norms (Acemoglu and Jackson, 2017; Aldashev et al., 2012*a*; Gulesci et al., 2021).

In this paper, we look specifically at Patriarchy — a set of norms that in one part maintains the dominance of men over women. In these times, Patriarchy remains relevant since most societies are patriarchal, especially countries along the "Patriarchal Belt": North Africa, the Middle East, Central Asia and South Asia (Littrell and Bertsch, 2013). To some extent, only a handful of empirical papers have looked at patriarchy directly and its effect on women's outcomes. Malhotra et al. (1995) used several variables to approximate 3 dimensions of patriarchy: active discrimination, marriage system, and economic value of women, to study fertility preferences in India. Two papers about women's labor force participation in Turkey used people's opinions to measure patriarchy (Dildar, 2015; Gündüz-Hoşgör and Smits, 2008). As a contribution to this literature, our research aims to identify the role of Patriarchy in hindering women's employment and decision-making participation using an index that utilizes objective variables and captures different aspects of Patriarchy. Being able to concretize the effect of Patriarchy, an abstract concept, is useful in revealing the magnitude of its effect on actual measurable outcomes.

Our chosen case study is Nepal, a known patriarchal society where women have relied on men in many aspects of their lives. In particular, access and ownership of property and

resources, mobility, and fertility decisions. Interestingly, in the last two decades, Nepal society has faced dramatic political and social change. The government has introduced policies in support of women's rights and to end the discrimination women face (supply-side). At the same time, there was also a widespread social transformation towards more egalitarian concepts during the decade-long Maoist conflict (demand-side). From here, we want to explore whether the combined supply and demand side changes were helpful in reducing the harmful effects of Patriarchy on women over time.

We measure Patriarchy based on the index originally built by Gruber and Szołtysek (2016). It is based exclusively on demographic variables (revealed behavior) from the 2001 census data. We depart from the original construction of the index by implementing a Principal Component Analysis (PCA) and by computing it spatially at a community level to highlight the importance of communal belief in determining individual behaviour as it is in Nepal. We show that this measure is robust to different specifications and computations and more importantly, that it is a good proxy of social norms that captures variations different from the typical measures used in the literature, such as, ethnicity and religion.

In addition, we build a simple accompanying model to reflect the Nepali context where a woman's situation is determined by the interaction between status quo (i.e. patriarchy) and outside options, and the latter's evolution over time. The idea is that the introduction of women-oriented laws or reforms may increase a woman's outside options but, at the same time, the woman is limited by the cost of departing from patriarchy. We assume that patriarchy is fixed over time owing to its persistence and stronger patriarchy entails a higher deviation cost. The model predicts a divergence across women's outcomes over time where women in relatively low patriarchal areas receive larger gains than those in more patriarchal areas.

Using 4 waves of the Nepal DHS from 2001-2016, we find that the data shows a gradual improvement in women's decision-making participation and employment over time in line with the theoretical literature describing laws to be "magnets" or "stepping stones" in the right direction (Acemoglu and Jackson, 2017; Aldashev et al., 2012*a*; Gulesci et al., 2021). In Nepal's case, we also attribute this improvement to the change in Nepali mindset that occurred in the same period as laws when complemented with social/family-level interventions are found to be more effective in ushering change as it was in another context (Young, 2015).

Our main results show that the general improvement in outcomes are not equally enjoyed by women because of the strength of patriarchy in their community. A 1 standard deviation increase in our patriarchy measure is associated with 2pp less decision-making participation in 2001 then, it increases to 6pp by 2016. We call this a *divergence* in the outcomes of women since the gap in outcomes of women in less and more patriarchal areas are shown to be increasing over time. An equally interesting result is that the divergence in decision-making is driven by newly married women. The social and political conditions escalated at each time period and so couples were faced with greater and increasing women's rights at the time of marriage. We interpret this difference between women in new and older marriages in each time period to be suggestive evidence in support of the assumption that spouses commit all future allocation decisions at the time of marriage (Chiappori and Mazzocco, 2017). Inversely, women in longer marriages are less affected because, then, at the time of their marriage there were no changes in the outside options yet and as a consequence, there is little to no change in their decision-making participation.

In terms of employment, we find no significant change from 2001 to 2016 for no work, paid and unpaid agricultural work given patriarchy but there is change for employment in paid

non-agricultural work. In 2001, there was no difference in non-agriculture employment between women in more and less patriarchal areas and by 2016, an increase in patriarchy reduces the probability of working in non-agriculture by 4pp. The ability to work in the non-agriculture sector entails greater improvement in empowerment because typically this is more likely done outside the home, away from the view and control of the husbands and fathers. The women in more patriarchal areas struggling to take part in this sector shows the increasing desire to keep them in the household over time. Overall, the combined results show that women in more patriarchal areas have faced increasing and greater difficulty in taking advantage of the greater outside options and thus, have lower and declining empowerment relative to women in less patriarchal areas over time.

In the last section of our paper, we provide a detailed discussion on measuring norms. First, as norms are commonly proxied by ethnicity or religion, we compare the main results using our spatial Patriarchy measure and one using a dummy representing the Indo-Ayran and Tibeto-Burman groups. We find that our spatial measure provides "new" insights compared to the traditions-based measure echoing the results of Braunstein (2014). The author has shown using cross country data that focusing on religion as a proxy

draws attention away from the sources and consequences of patriarchal power and concludes that direct measures of patriarchal institutions dominate religious affiliation variables. Second, it can be argued that the better way to capture norms is by taking only the relevant neighbors to the individual instead of taking all neighbors equally. We show that computing the patriarchy index in these two ways do not yield different results and thus, the question of the relevant neighbor is a non-issue in our context. Third, given that we assume patriarchy to be unchanging in our main analysis, we address the idea of letting norms vary over time by comparing women in areas with stable versus those with more changes in patriarchal intensity between 2001 and 2011. We find that women's trajectories differ depending on the magnitude of change in patriarchal intensity over time. For decision-making power, we find an even stronger importance of patriarchy over time in areas where patriarchy remained relatively stable; interestingly, in areas that appeared to have become less patriarchal over time, patriarchy as measured in the first period remained stable and important over time.

In our research, we are able to show that Patriarchy is persistent and remains an important barrier to women's growth. Policies targetting the negative effects of patriarchy and other harmful social norms will not be fully ef-

fective unless the root cause, norms itself, is also addressed directly as some women continue to be affected by it. We recommend adapting laws and reforms based on the intensity of patriarchy in a given community.

The structure of the paper is as follows: section 2 presents the context. Section 3 details our data and the construction of our patriarchy index and outcome variables. Section 4 presents our simple model and empirical strategy. Section 5 presents the main results and several robustness tests. Section 6 discusses several implications of changing our definition of norms and Section 7 concludes the paper.

1.2 Context

Nepal has a rich diversity of culture with over a hundred spoken languages and caste-ethnic groupings[2]. Social prac-

[2]The religion that each individual practices is generally linked to the caste or ethnicity they belong to. For example, those in the Caste system, such as, Brahmin, Chhetris and Dalits, practice Hinduism, which consists roughly 81% of the population. The muslims or those in ethnic groups practices Islam (4.3%) and Buddhism (9.2%), respectively, while the rest practice some other religions: Kirat, Christianity, and Jainism (CBS, 2014)

tices could differ across these groups but they share one thing in common: Patriarchy. Traditional beliefs include the pre-eminence of men over women and so families are structured with men at the top of the hierarchy and women on the lower end. Husbands and sons receive priority over household resources like food, education and inheritance, and are typically in charge of decision-making. In addition, there is a division of labor by gender where women are expected to stay in the household while men are breadwinners (CARE, 2015; Luitel, 2001; Pradhan and Shrestha, 2005).

Although patriarchy is the norm, the intensity of discrimination women face could vary depending on one's ethnicity/caste and geographical region. First, women in Tibeto Burman speaking groups experience much less discrimination than Indo Aryan speaking groups, in extreme cases, they are even better off and hold more power than men within their group. Indo Aryan speaking groups are more patriarchal and impose more restrictions on women that establish inequality and subordination. A common practice among Indo Aryan groups is shift-eating where men get to eat meals first and women can only eat after the men are done (Acharya et al., 2010; Pradhan and Shrestha, 2005). Second, Bennett (2008) has shown people from the same ethnic group but living in different geographical regions in Nepal have created varying socioeconomic status imply-

ing that the average well-being of women could also differ across regions for the same group. For example, in their analysis, they find that Dalits living in the hills are poorer than those living in the Tarai. Or Janjatis in the hills or mountains better school attendance ratios than those living in the Tarai.

For many centuries, the laws in Nepal have also perpetuated patriarchal practices. The country's civil code, *Muluki Ain* of 1854, written based on Hindu religious and legal texts[3] contained many provisions that reinforced the hierarchical nature of castes/ethnicity, the domination of men, and discrimination of women (Pradhan and Shrestha, 2005). Some provisions in the law recognize only the rights of sons to education, food, and inheritance while others limit the woman's rights and ownership of property based on age and marital status (Subedi, 2009).

In the last 3 decades, the government has recognized the need to reverse the inequality due to their longstanding Patriarchal structure by giving more rights to women as summarized in Figure 1.1. In 1979, the government adopted the Convention on the Elimination of All forms of Discrim-

[3]The law was rewritten in 1962 by the new political regime to embrace Nepal's caste/ethnic diversity but it still contained discriminatory laws towards marginalized groups like women and Dalits.

ination against Women (CEDAW) by the United Nations (further ratified in 1990 to make protecting women's rights legally-binding). In 2002, the Civil Code was amended[4] where numerous reforms in abortion, property and inheritance rights were introduced[5]. Further amendments were introduced in 2006 through the Gender Equality act containing the following changes: criminalized domestic and sexual violence and removed the marital restriction on parental property[6]. Other reforms introduced are in the aspects of tenancy of land for women in the family, access to movable or immovable property by herself, and reservation in political positions (IOM, 2016; Tamang, 2009). Finally, reforms were made to abolish extremely discriminatory practices: *Sati* and *Chhaupadi*[7].

[4]In fact, the earliest amendment was in 1975 but the clause is still discriminating women based on age and marital status. The amendment was to add a clause allowing unmarried daughters until the age of 35 could inherit parental property but would have to return the property if they marry (IOM, 2016).

[5]The age limit in inheritance or property rights has been removed: daughters can inherit her father's property from birth while wives have rights to her husband's property immediately after marriage. Divorced women can receive alimony and claim a share of her husband's property. Widows received full rights to her husband's property and no longer has to return it in case she remarries.

[6]Daughters get to keep the inherited parental property even after marriage.

[7]The *Sati* system where a widowed woman burns herself willingly

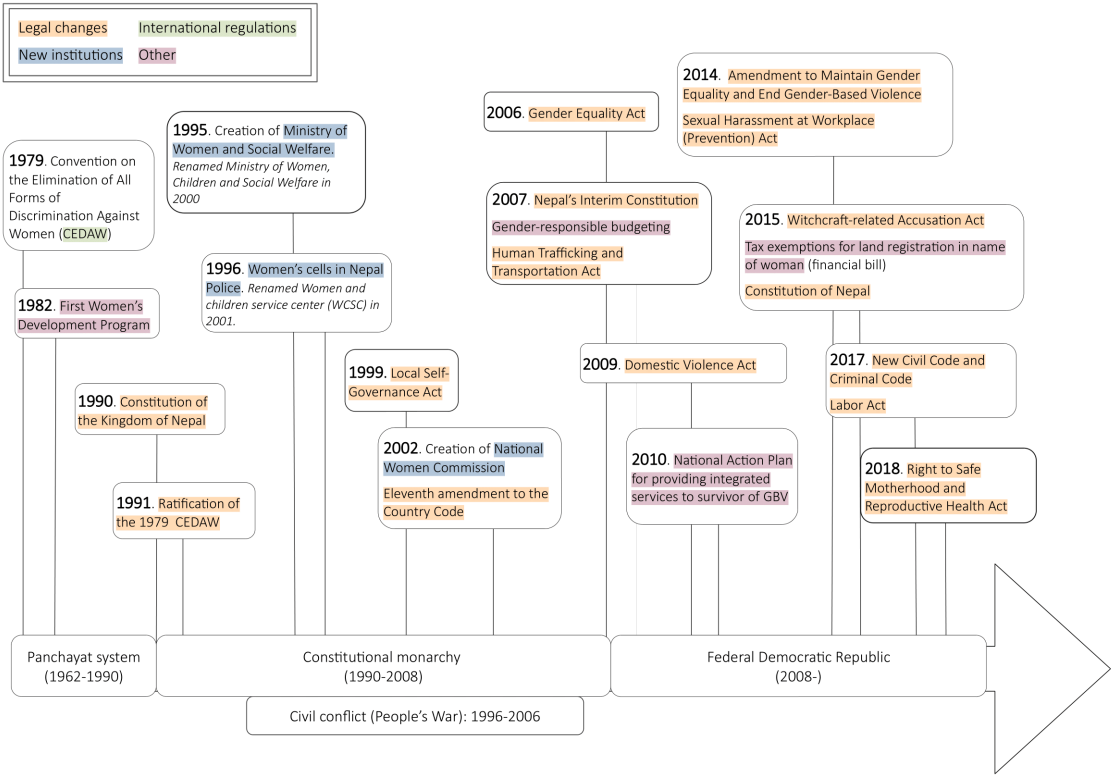
Nepal's social and political transformation as a consequence of the Maoist Insurgency (1996-2006) could have contributed to the abundance of these reforms. One of the demands of the Maoists to the government was to end patriarchal exploitation and discrimination against women. Women from various ethnic groups such as, Janjati, Tibeto Burman and non-Aryan[8], were motivated to join the guerilla where they comprised about a third of the movement in the Maoist controlled districts. During this period, some accounts claim that women were also able to experience having certain rights. The existence of "People's courts" helped them gain ownership over land and also punish or remove discriminatory practices against them. Overall, this period showed that some citizens are capable of improving their understanding of norms towards better and more egalitarian practices. Nonetheless, the war was violent and resulted in a lot of deaths for women and men alike (KC and Van Der Haar, 2019; Manchanda, 2004).

on the funeral pyre of her husband was abolished in 1920s (Kshatri, 2019). *Chhaupadi*, the practice of placing menstruating women in huts outside of the home because it is considered as bad luck, was criminalized on 2017 (Preiss, 2017).

[8]Aside from gender discrimination, these women suffer an additional 'layer' of injustice and maltreatment, that is, their social status/caste and thus had more motivation to join the warfare (Manchanda, 2004).

In short, Nepal had significant changes in gender equality on both the demand-side (in the form of egalitarian ideologies) and supply-side (reforms and laws) factors in the last two decades.

Figure 1.1: Legal framework (1979-2018)



1.3 Data

1.3.1 Sources

We use two different data sources to conduct our analysis in Nepal: the census for the construction of our index and several waves of the DHS for the outcomes of interest.

First, we use data from the 2001 population census to build our patriarchy index, which contains one of eight households[9]. The collected information concerns individual and household characteristics as well as absent and deceased household members. At the individual level, we have information on gender, age, caste/ethnicity, level of education, age at first marriage, and employment. For women, fertility information is also available (number, sex, and living status of children ever born and birth in the past 12 months). In addition to the extensive population coverage, another advantage of this database is the highly precise localization based on the 2001 Census Enumerated Areas (EA) map

[9]Except in less populous areas - 6 districts in the mountains, and small municipalities - where all households were surveyed. Due to the conflict, 83 villages could not be enumerated (over 3,914 VDCs and 58 municipalities) and due to a technical issue in the matching of the questionnaires lead, some areas have smaller ratios (CBS, 2014).

(35,965 units).

Second, we used four waves of the Demographic and Health Surveys (DHS) collected every five years between 2001 and 2016. The most important source of information is the questionnaire administered to women between the ages of 15 and 49 years old. The 2001 wave contains a limited sample by having only administered the questionnaire to ever-married women. It contains information on women's age and ethnic/caste groups[10], employment situation, and marital-related information, such as husband characteristics, age at first marriage/birth, and decision-making.

Several other data sources were used to increase the precision of our analysis. First, we use votes in favor of the Maoist during the 2008 elections (240 constituencies) to capture the alignment with egalitarian demands. Second, we used nighttime illumination data (nightlights) as a proxy for local economic activity. More specifically, we used the globally harmonized nighttime light dataset from Li et al. (2020), with a resolution of 15 arcsec (approximately 1 x 1 km). Finally, we retrieved data from the 2015 earthquake categorized in five intensity levels at the district level Na-

[10]The degree of detail varies across years. We were able to reconstruct 10 categories consistent over time, based on Bennett (2008) and discussions with Olivia Aubriot.

tional Planning Commission (2015).

We merged these different data sources spatially using census EA and DHS cluster information[11]. Since the two geolocations are not the same, we constructed a buffer around the DHS cluster point of 2 km for urban areas and 5 km for rural areas. Then, we take the median value of the census-based data for all EAs intersecting with the DHS buffer. Figure B.1 in the Appendix presents the location of the DHS clusters in each wave and the spatial units correctly surveyed in the 2001 census.

1.3.2 Patriarchy index construction

The patriarchy index was created by Gruber and Szołtysek (2016) to compare the intensity of patriarchy in historical Europe between the 18th to 20th centuries using census microdata. Although they acknowledged that patriarchy is multifaceted and a complex social system, they advocated for a measure that is admittedly less holistic but based on a set of characteristics that can be studied across space

[11] DHS cluster locations were randomly displaced within 0-2 kilometers for urban locations and 0-5 kilometers for rural areas, with 1% randomly displaced within 0-10 kilometers to ensure privacy of the respondents (Perez-Heydrich et al., 2013).

and time. They used it to understand cross-country differentials in fertility, parental control and other aspects in greater precision. The index has already been proven relevant as Singh et al. (2022) adapted this index for contemporary India and found that it had strong correlations with mainstream measures of gender equality.

Our patriarchy index closely follows Gruber and Szołtysek (2016) and Singh et al. (2022) using a similar set of variables. Given our available data and context, we decided to change some of the variables, which is discussed in detail on section A in the Appendix. We describe each variable used to construct our version of the index on Table 1.1. As explained in the table, each variable is defined on a different population and thus, cannot be computed at the household level or at a very small spatial unit as a minimum number of observations is required. Instead, we aggregate our variables for each EA using all observations up to 10km[12] using the precise location of households in the census microdata as illustrated in Figure B.2 in the

[12] As area coverage increases as we move away from the center, we correct for the differences in area so that those further away do not influence more the index than those closer: we introduce a "geometrical" weight defined such as if density of observation is similar across space, observations between 0 and 5km count as observations between 5 and 10km -despite the latter more numerous.

Appendix. To increase the internal validity of the index, we only keep spatial units for which all variables are defined on at least 15 observations. Our decision to compute the index at a spatial (local) level is driven by the fact that social practices in Nepal tend to be defined at a community level (Bennett, 2008; Ghimire et al., 2015).

We depart from the original construction of the index by implementing a Principal Component Analysis (PCA) instead of taking an average of each dimension as in the original paper. The PCA creates a space of uncorrelated n dimensions (the components) as linear combinations of the original variables from a set of n variables. Thus, each component maximizes the variance left unexplained. This method for index computation is valid only if the first component contains enough information, i.e., explains a significant share of the variance. We standardized our variables ($\mu = 0$; $\sigma = 1$) to make the linear combination of the coefficients directly reflect the importance (weight) of each variable. The share of variance explained by the first component is 45% (Eigenvalue 3.63) while it is only 14% (1.15) for the second component. Note that 45% is well above the figures mentioned in Vyas and Kumaranayake (2006)'s meta-study about constructing socio-economic status indices with PCA where the first components' explained variance ranged only between 12 and 27 percent.

Table 1.2 presents the average values of our variables in Nepal and their contribution to the PCA. As can be seen in the last columns, all variables contribute significantly and in the expected direction. Only the last two variables, sex and siblings ratio, contribute slightly less. Finally, figure 1.2 presents our constructed patriarchy index across the map of Nepal.

An advantage of this patriarchy measure is that it is based exclusively on objective demographic variables. In other papers evaluating patriarchy, the gender roles attitude responses of women was used to build a measure of patriarchy in Turkey using DHS data (Dildar, 2015; Gündüz-Hoşgör and Smits, 2008). Ideally, these questions are useful in revealing the beliefs of individuals but the problem is that the responses are subject to social desirability bias. That is, respondents overreport socially desirable responses and underreport socially undesirable ones to ease discomfort during the survey (Krumpal, 2013). If being patriarchal is socially desirable, then responses will be biased towards patriarchy. Questions about the members of the household roster and their age etc. are a lot less susceptible to this bias compared to questions about whether it is better to educate a son than a daughter.

Table 1.1: Patriarchy index variables: definitions

Variable	Description	Patriarchy hypothesis[1]	+/− [2]	Definition
Female head	Proportion of female household heads	Only men can be household heads	−	Number female headed household / Number of households
Young bride	Proportion of young brides	A lower female age at marriage facilitates male domination	+	Number of female 15-19 years old ever married / All female 15-19 years old
Older wife	Proportion of wives older or same age as husband	The husband is always older than his wife	−	Share of couples with wife older or same age than husband. *Couples considered: head and wife, son and daughter-in-law (when 1 in household), parents*
Neolocal	Proportion of neolocal residence among young men	Sons cannot establish their own household on marriage	−	Number of ever married men 20-35 years old in nuclear household / Number of ever married men 20-25 years old)
Joint family	Proportion of elderly people living in joint families	All sons have to stay in the household of their father	+	Number of people over 60 living with at least 2 married sons or 2 daughters in law / Number of people over 60
Matrilocality	Proportion of elderly people living with married daughters	All daughters move into their husband's father's house	−	Number of people over 60 living with at least 1 married daughter / Number of people over 60 living with at least 1 married child in household
Siblings	Difference in average number of siblings for boys and girls	Parents continue child bearing until they reached a specific number of boys	+	Average number of siblings for girls / Average number of siblings for boys
Sex ratio	Number of boys compared to number of girls in 5-8 years old population	Girls are treated worse or are considered to be of lesser importance than boys	+	Number of boys 5-8 years old*100 / Number of girls 5-8 years old

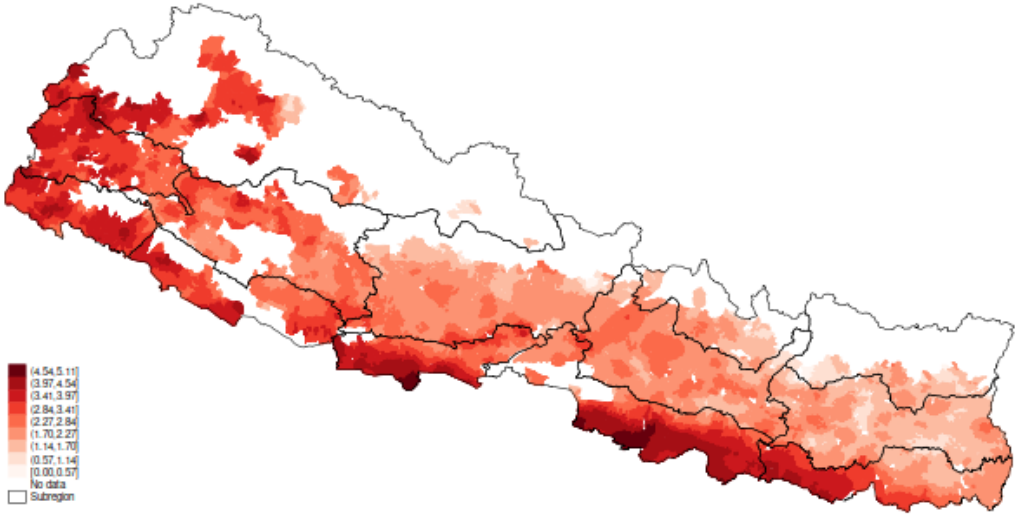
[1]Based on Gruber and Szołtysek (2016), except for *siblings*, motivated by Baland et al. (2020) (see details in appendix). [2]Positive or negative relation to patriarchy, based on patriarchal hypothesis.

Table 1.2: Average value and contribution of variables for patriarchy index

	Mean	Std. Dev	Obs	PCA coef.
Female head	.154	.361	520,624	- .3203
Young bride	.348	.428	135,100	+ .4593
Older wife	.095	.294	449,265	- .4309
Neo-local	.412	.492	240,249	- .3553
Joint family	.105	.307	127,363	+ .4658
Married daughters	.104	.306	104,595	- .3209
Siblings ratio	1.061		423,811	+ .1862
Sex ratio	105.17		295,921	+ .1413

Note: The means of the variables is computed at the national level. To compute the PCA, the variables are standardized ($\mu = 0$; $\sigma = 1$) and thus, the coefficients represent directly the weight of the different variables in our index. The number of observations differ because each variable is defined at different populations.

Figure 1.2: Patriarchy index in 2001



Note: The patriarchy index is computed using the Census of 2001. Darker colors reflect greater patriarchal intensity at the DHS cluster level. The index is computed from a Principal Component Analysis using STATA.

1.3.3 Outcome Variables

Our empowerment outcomes from the DHS data are divided in 2 main categories: intra-household decision-making and employment. For decision-making, we focus on decisions regarding the woman's own health care, large household purchases and her ability to visit family and friends. In the questionnaire, each woman respondent was asked: *"Who usually decides how [decision item] is made: you, your husband/partner, or you and your husband/partner jointly?"*.

We use a Multiple Correspondence Analysis (MCA) as in Bargain et al. (2019) and Lépine and Strobl (2013) to aggregate these decisions. To do so, we recode the variables so they take the value 0 if the woman doesn't make the decision, 1 if the decision is joint and 2 if she takes it alone; then the value is normalized between 0 (no decision power) and 1 (full power). In this approach, we consider that a sole decision is better than a joint one, which might be a questionable assumption. So we provide an alternative binary measure for each decision item where the value is equal to 1 if the woman has jointly or solely made the decision and 0 otherwise.

For these outcomes, we take particular interest in newly

married[13] women given the assumption in the Full commitment model in a dynamic environment developed by Chiappori and Mazzocco (2017) where spouses commit to all future allocations at the time of marriage. As outside options changed in each period in Nepal, the environment for each new couple varies and subsequently could influence their allocation decisions for the future. This assumption has been challenged empirically as bargaining power was found to have changed (for a review see Baland and Ziparo (2018)) but if we believe a first set of allocations is settled at the time of marriage, then we could expect stronger effects for the recently married cohorts.

For employment, our main outcomes are whether a woman has worked at all in the past 12 months and whether she got paid in cash for her work conditional on working. Then, we use occupation information to classify into mutually exclusive categories, that is no work, unpaid agricultural work, paid agricultural work, and non-agricultural work. For this set of variables, we focus exclusively on ever-married women between 25 and 49 years old to limit changes in labor force supply related to education: by the time the individual is 25, we consider studies are over.

[13] Defined as equal or less than 10 years of marriage.

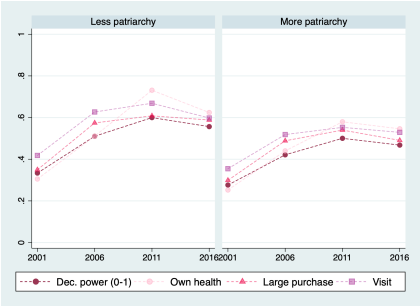
1.3.4 Descriptive statistics

On Figure 1.3, we present the levels of our outcomes over time on the sample of ever-married women, splitting the data between less and more patriarchal areas using the median value. Participation in decision-making increased for all women but the averages are always higher for less patriarchal areas. In 2016, we observe a sudden drop in decision-making variables for all groups. The 2016 wave was administered in between February and June 2016. This was collected months after the 2015 devastating earthquake and during the Madhesi fuel blockade that was largely supported by India. Both events have led to restricted finances and fuel supply that in turn might have constrained mobility and household income. For what we call “marriage quality indicators", we see that women marry and have their first child at an older age in the less patriarchal areas while age and education gaps behave quite similarly in both areas. A striking drop is observed in the education gap after the conflict ended in 2006, much larger for less patriarchal areas.

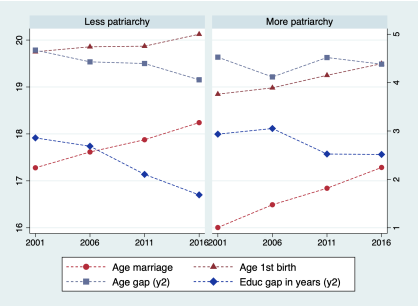
Meanwhile, we observe a downward slope over time in working in any type of job regardless of patriarchal intensity while trends in paid-work are more similar for both. In the

more detailed work categories, we observe a sharp increase in non-agricultural work overtime, again more prominent for less patriarchal areas and a sharp decrease in unpaid agricultural work. A peak is also noticeable in 2006 for paid agricultural work, most likely related to the increased rights women experienced during the conflict.

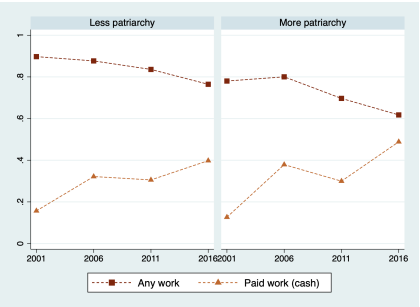
Figure 1.3: Ever-married Women Outcomes per wave and patriarchy dummy



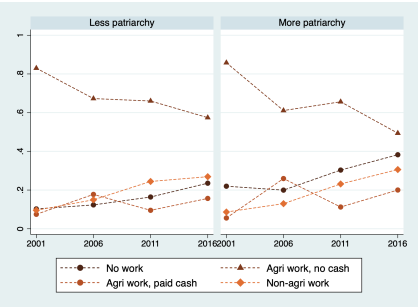
(a) Decision-making



(b) Marriage quality indicators



(c) Work (1)



(d) Work (2)

Note: Patriarchal intensity is split to less and more patriarchy using the median value in each DHS wave. The data contains the sample of ever-married women and are computed with DHS weights.

1.4 Framework

1.4.1 Conceptual approach

We build a simple model to guide the empirical analysis. In this model, outside options are increasing as time passes. However, the woman is faced with a cost to seize the increased outside options and this cost increases with patriarchy.

$$Y_{it} = (1 - C(p_j))\alpha_t$$

where Y_t represents woman i's situation in period t, which we proxy with decision-making participation and employment outcomes in the empirical analysis. α_t is the outside options available to her at time t and is defined at the national level. But whether she can capture the full benefits of α_t depends on the cost of departing from the status quo represented by $C(p_j)$ for local community j, where $C'(p_j) > 0$ and $C(p_j) \in [0, 1]$. In Nepal's case, the status quo is patriarchy and so we can interpret this variable as the strength of patriarchy. A strong adherence to patriarchy in a certain community implies a greater deviation cost that consequently makes the outside options less credible and less attainable for women. Concretely, we can think of this as the social pressure or criticism from people living

in the same community when a woman attempts to behave differently from patriarchal expectation. It could also be a more explicit cost, for example, legal costs to help a woman exercise her new found rights.

A key assumption is that $C(p_j)$ is not time-dependent. More importantly, the ranking of values needs to be preserved. Simply put, a village that ranked as high patriarchy in 2001 should remain in high patriarchy by 2011 and always more patriarchal than a village with low patriarchy in 2001, for example. This is a reasonable assumption given that norms change slowly and the time period we study is not long in that respect, 15 years in the main analysis. Figure 1.4 shows that our assumption is reasonable. On average, patriarchy index values decreased between 2001 and 2011 on average by 0.42 and we observe a strong correlation across the geolocations of the patriarchy index when computed in 2001 and 2011 (pairwise correlation coefficient is 0.9269).

Moving from time 0 to time t, we have:

$$Y_{it} = Y_{i0} + (1 - C(p_j))[\alpha_t - \alpha_0]$$

the term $[\alpha_t - \alpha_0]$ represents the change in outside options from time 0 to time t, where $\forall t > 0, \alpha_t > \alpha_{t-1}$. In the

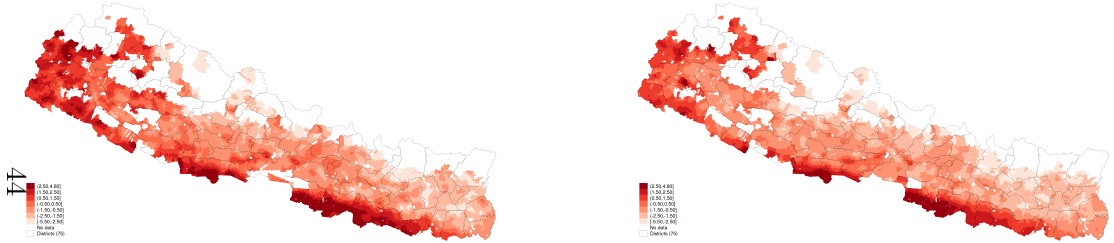
context section, we know that this constitutes an increase because of the national (legal) framework. Yet, it not only refers to the accumulation of laws but also change in mindset, the length of time for change to be accepted or better civil servants in implenting new laws.

Generally, our model predicts a divergence in women's situations as time progresses given increasing outside options. We call it *divergence* because we are looking at the evolution of the difference in outcomes of women living in different communities: one lives in a more patriarchal community j while the other lives in a less patriarchal community k, mathematically, $C(p_j) \geq C(p_k)$. As each year passes and more outside options are available, a woman in a more patriarchal community could face greater difficulty in seizing outside options. Thus, her outcomes are not increasing as much as the other and overall, the outcomes diverge over time.

Our model is limited because of the way we define patriarchy. It imposes that everyone in a community is equally relevant to the reference individual when, in reality, it could be that only people practicing the same religion or belonging to the same clan could influence her to deviate or stay in the norm. For example, the family's influence might matter more than a random person in the village. We address

this issue in Section 1.6 by comparing in-group patriarchy with our spatial patriarchy.

Figure 1.4: Changes in patriarchy index values between 2001 and 2011



(a) Patriarchy index 2001

(b) Patriarchy index 2011

Note: The index is computed using Census data respectively for 2001 and 2011. Darker colors reflect greater patriarchal intensity at the DHS cluster level. The index is computed from a Principal Component Analysis using STATA.

1.4.2 Empirical strategy

To test whether we observe a divergence in women's outcomes over time, we evaluate the importance of patriarchy in each period while controlling for important confounding factors. We regress each wave separately to be able to use the DHS original sampling weights. In this way, the controls will enter the estimation differently and we are unable to determine whether the estimated coefficients are significantly different for each wave. In order to keep the original weights, we find a way by comparing the estimates of each wave and their 95% confidence intervals (CI) with each other. An estimate with a CI that does not overlap with another wave's estimate can be interpreted as significantly different since the probability that they are the same value is at a maximum of 5%.

For each wave of DHS, we regress the following equation:

$$Y_{ij} = \beta Patri_j + \alpha X_{ij} + \epsilon_{ij} \tag{1.1}$$

where Y_ij represents the outcome of individual i living in neighborhood j; $Patri_j$ is the patriarchy index at spatial level j and β is our main coefficient of interest that sig-

nifies the difference in outcomes between women in less and more patriarchal areas; X_{ij} are a set of controls at the individual level, household level and spatial controls. Individual and household controls included in all regressions are: age and age squared, wealth, education in 6 categories (no education to high education), and ethnic group. Spatial controls included in all regressions are: rural/urban, population density, year-wise nightlight intensity (related to urbanity and development), slope, altitude, travel time to nearest city in 2000 (isolation), and share of votes for Maoist in 2009, to capture alignment with egalitarian ideologies. Here, spatial controls are crucial as we do not use spatial fixed-effects[14] in order to capture as much variation as possible. In addition, we use ethnic/caste-group fixed effects given the findings of Bennett (2008) showing that ethnic groups in different regions could be dissimilar in socioeconomic factors.

A number of our outcomes are non-time-varying, i. e., the value does not depend on when it is observed. We study variation for these variables over time using birth cohorts. We estimate the same equation as (1), except we do it for each birth cohort separately rather than for each wave. A drawback of cohort analysis is that we do not have the

[14]We do this as a robustness check on Section 1.5.3

proper set of controls, in this case, on the year of their birth. If the environment 'then' and 'now' are entirely different, then our estimates would be biased. The closest proxy we can use, however, is characteristics collected on the survey year. For individual characteristics, we use education, wealth and ethnic/caste group. For spatial controls, we use what is observed 2001 - contemporaneous with our patriarchy index measurement. Note that we do not include a wave dummy, as the value of the outcome should not differ based on when it is observed. Table 1.3 presents the maximal number of observations per birth cohort; we keep only those that appear in at least two DHS waves. An obvious advantage of this approach is extending the period of study. But, at the same time, it creates a problem related to potential selected mortality, made more salient in this setting given oldest cohorts are only composed of older individuals observed in earliest waves.

Table 1.3: Number of observations in each cohort in each wave

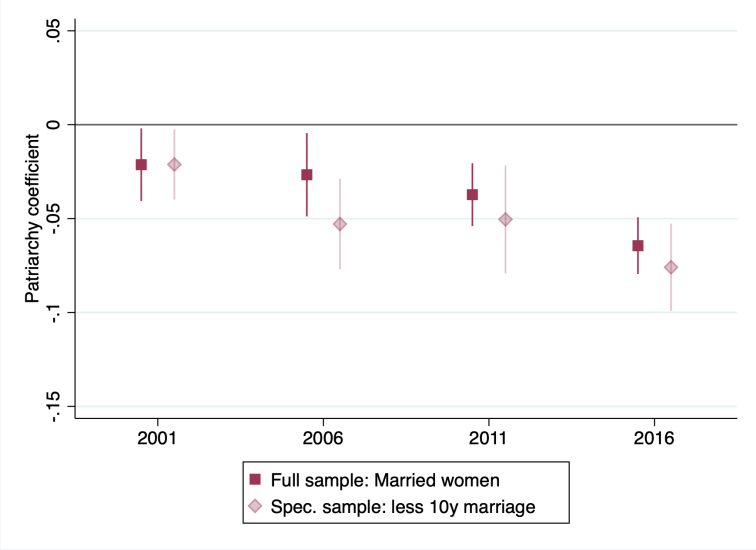
Cohort: birth year	2001	2006	2011	2016	Total
1950-1955	713	0	0	0	713
1955-1960	1,264	828	0	0	2,092
1960-1965	1,334	1,444	841	0	3,619
1965-1970	1,695	1,568	1,611	910	5,784
1970-1975	1,900	1,738	1,915	1,710	7,263
1975-1980	1,886	2,076	2,180	1,981	8,123
1980-1985	1,299	2,418	2,467	2,204	8,388
1985-1990	83	2,788	2,680	2,402	7,953
1990-1995	0	1,053	3,179	2,677	6,909
1995-2000	0	0	1,008	3,136	4,144
2000-2005	0	0	0	1,243	1,243
Total	10,174	13,913	15,881	16,263	56,231

1.5 Results

1.5.1 Intra-household decision-making

Our main results on intra-household decisions and patriarchal norms for ever-married women over time are presented in Figure 1.5 for two different samples: currently married women and women married strictly less than 10 years ago (subsample). For currently married women, a clear divergence appears as the patriarchy coefficient grows negatively over time in line with our model. In the same period, decision-making participation has improved all over Nepal as seen on Figure 1.3. This means that a woman in a more patriarchal area has gained less in decision-making participation than one in a less patriarchal area, and this gap in gains increases over time. A one standard deviation increase in our patriarchy index is associated with 2 percentage points less decision-making in the 2001 DHS wave, while it is 6 percentage points in the 2016 wave. Although only these two coefficients are significantly different, a downward trend continues to be observed. In terms of magnitude, this represents 7% and 12% of the sample mean, respectively.

Figure 1.5: Ever-married Women's Decision-making outcomes



Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: individual and household-level include the woman's education in categories, age and age-square, ethnic group FE, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

Aside from patriarchy being a barrier to a woman's development, one possible explanation for this divergence is related to the Full Commitment Hypothesis (explained in detail in the review of Chiappori and Mazzocco (2017)). A "strong" assumption in this model is that individuals can commit to all future resource allocations at the time of marriage given their knowledge about their environment (spouse included). If allocations are decided at marriage and outside options are better for women than the previous period, then women in less patriarchal areas could ask for better allocations at marriage. We should observe the opposite for women in more patriarchal areas; resulting in a greater gap in their empowerment. Inversely, women in longer marriages should be less affected because, then, at the time of their marriage there were no changes in the outside options yet and as a consequence, there is no change in their decision-making participation in the more current timeframe. Indeed, we see in Figure 1.5 that patriarchy has more negative point estimates for the newly married cohort; affirming this hypothesis. We investigate this further by switching to a cohort analysis[15] comparing women born in

[15]Note that grouping our sample into cohorts is only meaningful with time-invariant outcomes. A drawback of cohort analysis is that we do not have the proper set of controls, in this case, on the year of their birth since variables like these are all determined at one point in their lives and no longer change over time.

different years and where we suppose decision-making as decided at marriage, hence, time-invariant. Figure 1.6 show results consistent with the hypothesis. The younger cohorts, both in terms of birth year or first year of marriage, are more negatively affected by patriarchy than older cohorts, also confirming the hypothesis. An explanation outside of this model has to do with the fact that in patriarchal societies one's position in the household (although correlated with age) is also a determining factor in the hierarchy. Within the same gender, the ranking or position of one over another can become a source of authority and respect in a patriarchal community. An example in the Nepali context would be the distinctive authority that mothers-in-law receive than daughters-in-law (Luitel, 2001).

The increasing divergence between less and more patriarchal areas might also be due to changing marriage preferences as resources and opportunities become gradually available to women. We explore this at cohort-level using time-invariant variables such as, age at first marriage, age at first birth, and education and age gap[16] between spouses.

[16]One can argue that the age and education gap aren't time invariant if women remarry often. However, in a context of high Patriarchy in Nepal, divorce, especially for women, is frowned upon and if widowed, there is little possibility of remarriage (ADB, 1999) and remarriage is more likely for men than women above the age of 30

In Figure 1.7, we observe strong convergence in age at first marriage and age at first birth. An indication that women in more patriarchal areas have caught up to and, thus, are marrying at the same age as in less patriarchal areas[17]. Meanwhile, the coefficients for age and education gaps are fairly constant. To some extent, this means that women are marrying men with "similar" characteristics as before but simply delay their first marriage, suggesting that preferences for marriage have remained the same and is unlikely to explain the divergence we observe.

Given that our decision-making variable is aggregated, we do not see whether one or indeed all of the variables is driving the divergence for the full and newly married sample of women. So here, we estimate our results using the variables separately (own health, large household purchases, visit to family and friends). At the same time, we simplify the coding into a binary variable where we do not make a distinction between a sole and a joint decision since we do not want to impose that a joint decision is better (worse) than a sole decision (as was done in the MCA explained in the data section). The results are presented on Figure 1.8.

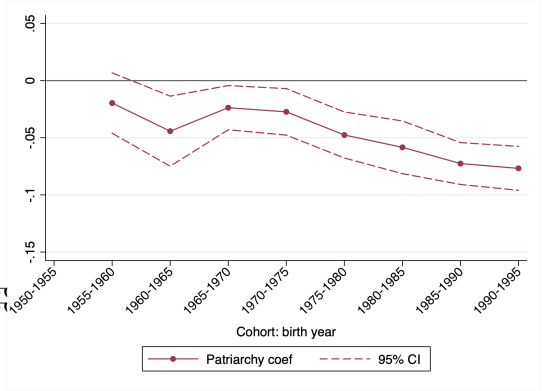
(MoH, 2017). Hence, we can safely assume these gaps to be time invariant.

[17] In the 2016 DHS, the median age at first marriage for 20-49 yo women is 17.9 years old while it is 21.7 years old for men (MoH, 2017).

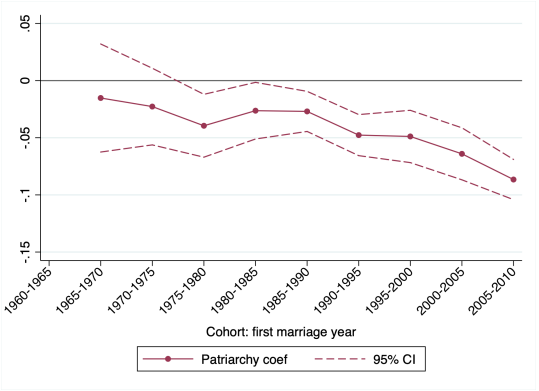
Still, we observe an increasingly negative importance of our patriarchy index for all decisions and that not one particular decision is driving the results. Furthermore, these results indicate that our main results are not due to delegation[18] among couples. That is, women in more patriarchal areas might be deciding less and less over time simply because these types of decisions (aggregated in our measure) have become decisions delegated to male spouses. This argument could make sense for decisions on large household purchases and possibly, visits to friends and family but less plausible for decisions regarding her own health.

[18] Delegation is when spouses split tasks or decisions to one another depending on certain factors (Baland and Ziparo, 2021)

Figure 1.6: Ever-married Women's Decision-making outcomes by cohort



(a) Birth cohorts



(b) First marriage year cohorts

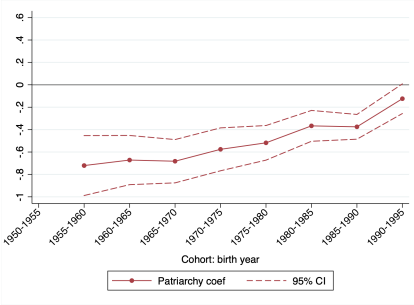
Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: individual and household-level include the woman's education in categories, ethnic group FE, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Estimated with Conley standard errors (25km). Point estimates are reported with 95% CI.

1.5.2 Employment

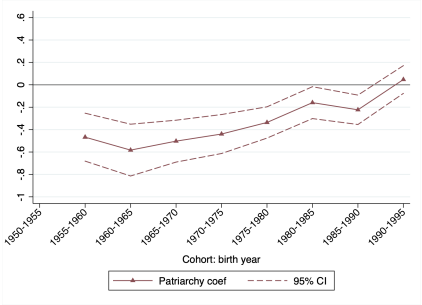
On Figure 1.9, we present the importance of patriarchal intensity over time on the employment of women 25-49 years old. Given our model, we expect a stronger divergence where women living in more patriarchal areas are lagging behind in work outcomes than women in less patriarchal areas as outside options increase. Our expectation is also anchored on the patriarchal notion that women's roles are restricted within the household.

On the left panel of Figure 1.9, we look at two variables: probability of working any job and conditional on working, receiving cash as payment. Over the years, there is no average difference in working for any type of job and for work for cash. It is interesting to note that the lack of Patriarchal difference here can be considered a positive result as it means that patriarchy has not been a hindrance to women's labor force participation. However, when looking at working for cash, we see a consistent patriachal "barrier" for most of the period where women in more patriarchal areas are shown to be less likely to work for cash. Since we control for education and household wealth, this is not due to socioeconomic differences in more and less patriarchal areas. For this result, there is no observed divergence

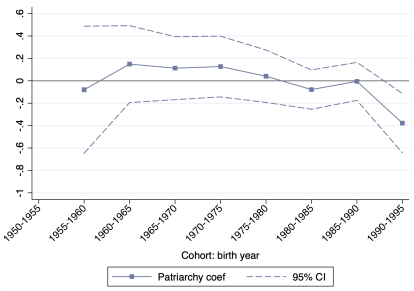
Figure 1.7: Marriage quality indicators



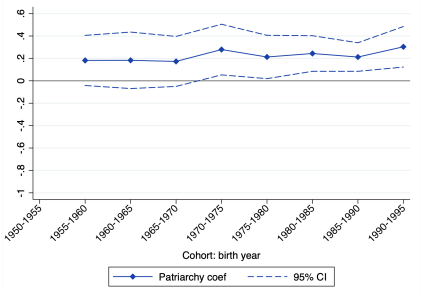
(a) Age at first marriage



(b) Age at first birth



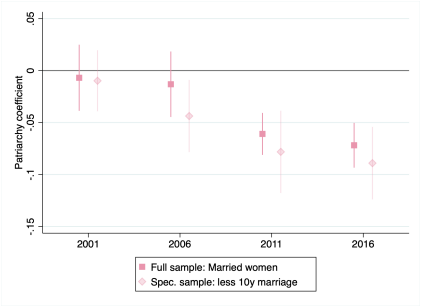
(c) Age gap between husband and wife



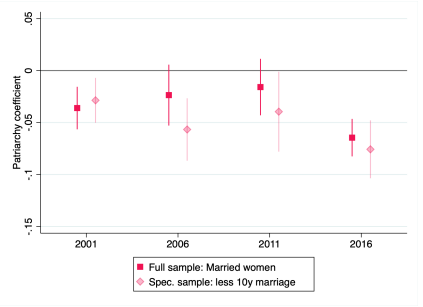
(d) Education gap (years) btw husb and wife

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, ethnic group FE, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Estimated with Conley standard errors (25km). Point estimates are reported with 95% CI.

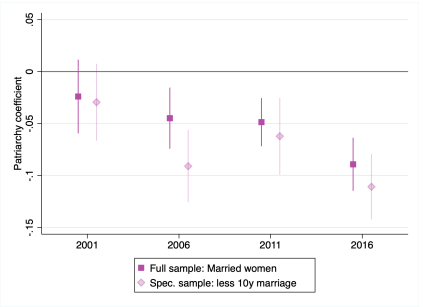
Figure 1.8: Ever-married Women's Decision-making outcomes by decision item



(a) Own health



(b) Large household purchases



(c) Visits to family and friends

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, age and age-square, ethnic group FE, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

since the coefficients remained relatively the same when we compare 2001 to 2016.

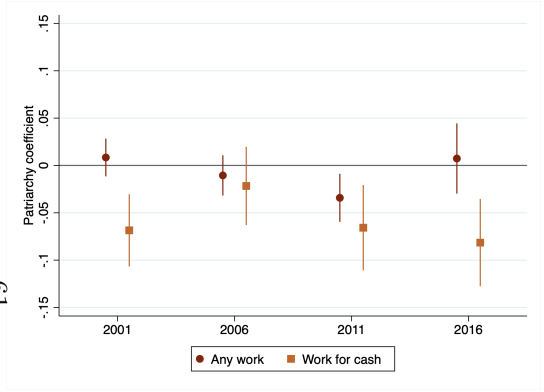
We take a closer look at these trends by creating 4 mutually exclusive categories on the right panel of Figure 1.9. As before, we see that as years pass the patriarchy coefficient for these work categories move slightly over the years and remain unchanged until 2016 with the exception of the 2016 patriarchy coefficient for non-agricultural work. Also interesting in this figure is the clustering around zero on 2006, the year the Maoist civil conflict ended, when in 2001, women in more patriarchal areas are more likely to work in unpaid agriculture and less likely to work in paid agriculture compared to women in less patriarchal areas. This may have been a direct result of the conflict where egalitarian ideologies were widespread and in some cases, forced upon citizens.

In non-agricultural work, we observe a slow divergence over the time period and by 2016 a gap has emerged where women in more patriarchal areas are less likely to engage in it by 4pp than in less patriarchal areas. Finding a significant difference over time only on this variable is still of interest. Since non-agricultural work is often conducted outside the home (unlike agriculture), husbands and fathers might have greater difficulty in monitoring women,

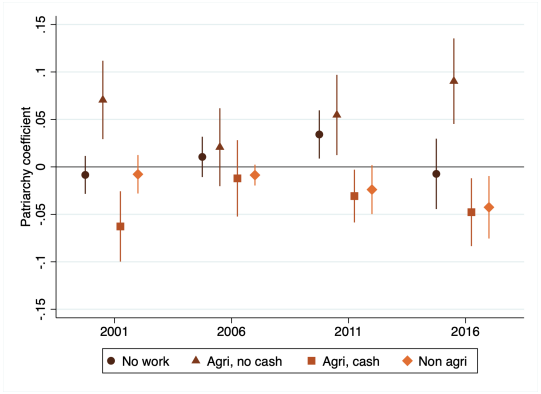
and thus, is typically a situation where patriarchal norms are likely to matter.

Doss (2006) discussed the endogenous relationship between employment and empowerment. A woman with high bargaining power can choose not to work (for wages) and to be supported by other members. At the same time, a woman who works can become empowered by having money under her control. To what extent can we accept this 2016 gap in non-agricultural work as empowerment? If we consider the first argument, then are women in more patriarchal areas indeed choosing to not work in these ventures and are more empowered? This is only plausible if it is indeed *her choice*. But, given that Nepali women are expected by patriarchal standards to stay in the home, women in more patriarchal areas choosing not to work seems highly improbable. Conversely, with the latter argument where employment begets empowerment, we can safely conclude that women in more patriarchal areas are less empowered relative to women in less patriarchal areas.

Figure 1.9: Ever-married Women's Work outcomes



(a) General Definition



(b) Detailed and Exclusive categories

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, age, age squared, ethnic group FE, and household wealth index; spatial controls include share of migrants in cluster, 2015 earthquake intensity, rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

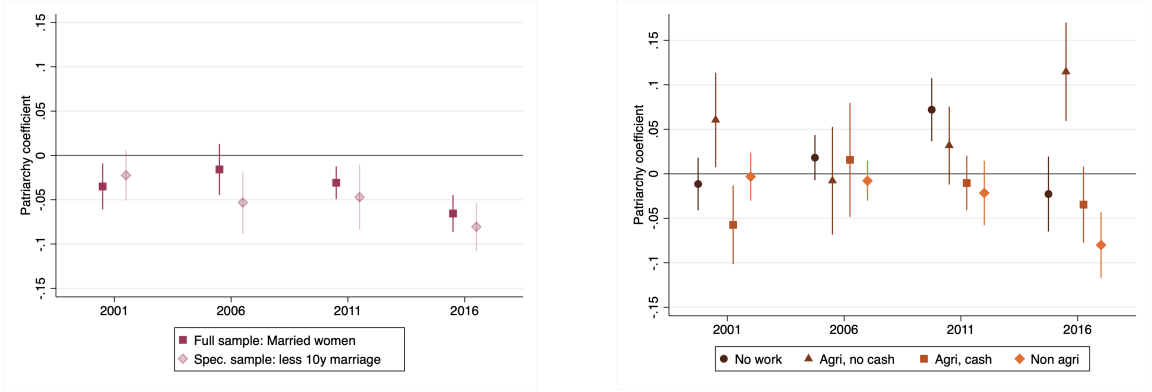
1.5.3 Robustness checks

We conduct two tests of robustness, each addressing different issues. First, we test the robustness of our results to spatial confounding factors by including subregion fixed effects [19] (13 in Nepal). This means that we use the variation in patriarchal intensity within sub-regions only. Rest assured, the results are fairly similar, although the estimates are less precisely measured as confidence intervals are larger.

Second, we test the robustness of our results using a different way to build patriarchy, that is, computed as it was done originally by Gruber and Szołtysek (2016). Instead of using a PCA as the final step, we divide the variables into dimensions and compute the index as an average of these dimensions. The results on Figure 1.11 show consistent trends as in our main specification. We also present these results visually on Figure B.3 in the appendix and it can be observed that the two measures are largely correlated.

[19] Strata for DHS sampling. A lower level would be the district (75), but not all districts are surveyed or sometimes there is only one cluster per district, implying that the identifying sample would be quite different, as a sole-surveyed cluster in the district will not enter the estimation.

Figure 1.10: Ever-married Women's outcomes with Sub-region FE

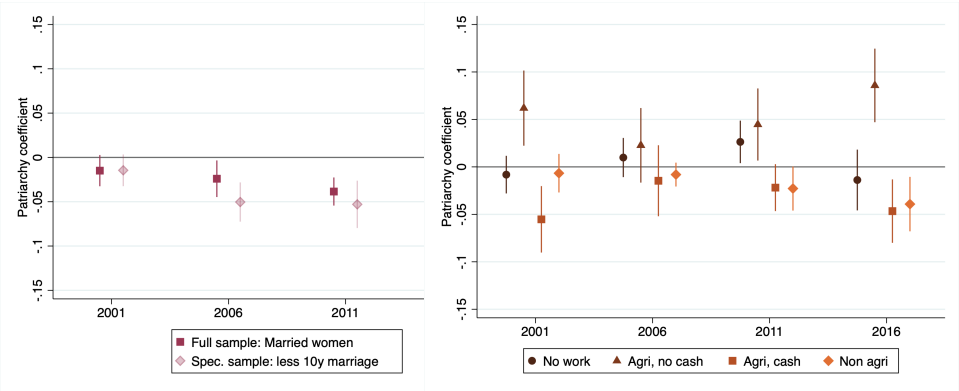


(a) Decision-making

(b) Work detailed

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, ethnic group FE, and household wealth index; spatial controls include sub-region fixed effects, rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Additional controls for work regressions: share of migrants in cluster and 2015 earthquake intensity. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

Figure 1.11: Ever-married Women's outcomes using alternative Patriarchy Index



(a) Decision-making (b) Work

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Additional controls for work regressions: share of migrants in cluster and 2015 earthquake intensity. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

1.6 More about norms

In this section, we further discuss patriarchal norms. First, as norms are commonly proxied by ethnicity or religion, we test the additional insights provided by our spatial measure. Second, we address the issue of the relevant "neighbor": is it neighbors in proximity that matter or neighbors that an individual specifically identifies with? To do so, we reconstruct our index by ethnic group instead of spatial and observe whether the results vary. Finally, we explore the posibility of evolving patriarchal norms. In our framework, we used a fixed measure of patriarchy defined at the beginning of the study period but it is likely to have evolved over time. Especially, in this context where the political and social transformation was notable during the same time frame as our data. Therefore, we conducted a heterogeneity analysis based on whether we observed important variations in our patriarchy index between 2001 and 2011.

1.6.1 Indo-Aryan vs. Tibeto-Burman

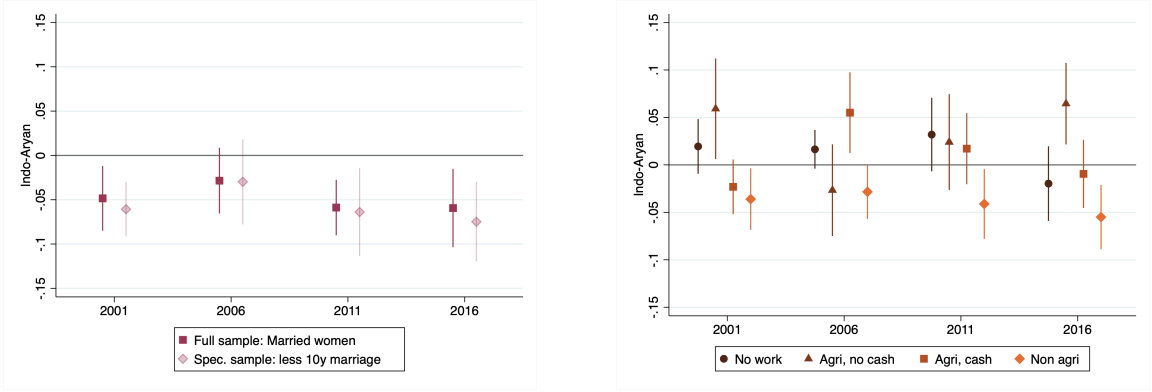
Instead of considering patriarchy as a local (spatial) phenomenon, we use a measure based on traditions. Doing

this helps us illustrate the contribution of using a spatial measure of norms compared to traditional measures like ethnicity or religion. In Nepal, as explained in the context section, one clear-cut way to identify norms is by language spoken: Indo-Aryan or Tibeto-Burman, with the fact that Indo-Aryans are more patriarchal. For simplicity, we create a dummy variable of being Indo-Aryan or not[20] based on the woman's declared ethnicity. We implement a regression analysis as in the original specification to have comparable estimates but excluding the ethnic group fixed effects. Figure 1.12 shows us the result using this alternative measure of patriarchy and it seems to show a different story. We find that, although Indo-Aryan women have less decision-making, there is no visible change over time. For work outcomes, we also find no change in the estimates over time. Paid agriculture work in 2006 shows some increase from 2001 where Indo-aryan women are more likely to work in that sector than Tibeto-Burman women, then it disappears for the next waves.

[20]We are constrained by the categories available in the DHS. The 2006 wave contains a very detailed ethnic categorization, but this is not the case for the other years. Therefore, we rely on broad categories. Indo-Aryan groups are: Hill Brahmin Chhetri, Hill Dalit, Muslims, Madhesi, Tarai Janajati. Tibeto-Burman groups are Hill Janajati and Newar.

Compared to our spatial approach to measuring Patriarchy, the results shown here using a self-reported ethnicity measure are less precisely estimated due to the wider CIs. The difference could possibly be due to the fact that the broad caste/ethnic categorization that the variable is based on is also highly correlated to socioeconomic factors as discussed by Bennett (2008). Therefore, our spatial approach to measuring Patriarchy yields different insights that could lead to a better understanding of the situation of women in Nepal.

Figure 1.12: Indo-Aryan vs. Tibeto-Burman



(a) Decision-making

(b) Detailed work

Interpretation: a value of 1 is for Indo-Aryan groups and O otherwise. Controls: woman's education in categories, age and age-squared, ethnic group FE, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Additional controls for work regressions: share of migrants in cluster and 2015 earthquake intensity. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

1.6.2 The “relevant" neighbor

In this study, we defined a neighborhood-based measure where all neighbors are equally relevant in determining an individual's norms (Patriarchy). Yet, it could be that some neighbors matter more than others. For example, people belonging to the same ethnic group or practicing the same religion. To observe whether this distinction matters, we rebuilt our patriarchy index[21] for the most detailed ethnic/caste groups available in our data (9 categories). Table 1.4 shows the relevance of investigating this: when regressing ethnicity/caste on patriarchy within a DHS cluster, we find signficant estimates indicating that variation exists across these groups within one neighborhood. Graphically, we can see on Figure 1.4 the geolocation of the ethnic/caste groupings. Focusing on one geolocation, it can be observed that several groups live together with varying levels of in-group patriarchal intensity. In practice, we plug-in the value of in-group patriarchy given the ethnicity of a woman in an area and implement the same regression in our main specification. Figure 1.13 presents the results for our main outcomes and generally, the results show a consistent story.

[21]We expanded the radius for the computation of the variables to 15 instead of 10 km to increase the number of observations. We used the same coefficients as those defined by the original PCA.

Table 1.4: Ethnicity/caste patriarchal dimension within spatial units

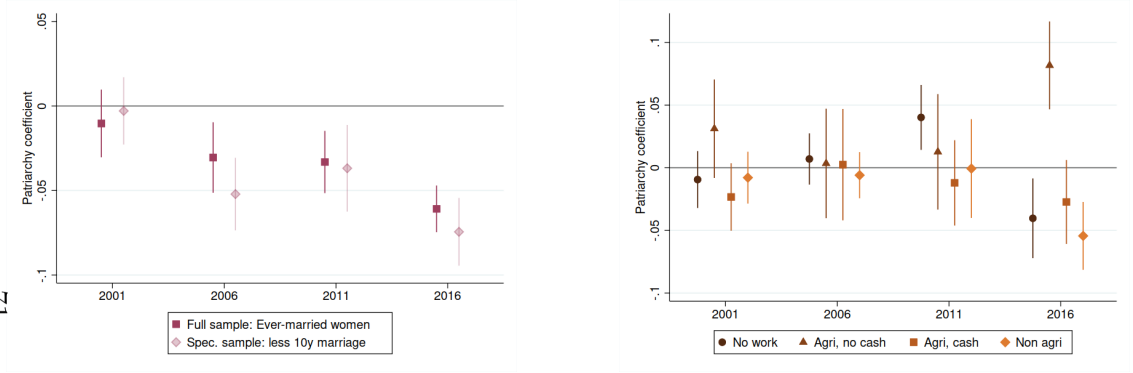
Ethnic/caste group	Coef.	Std. Err.	p-value
Hill Dalit	-0.577	0.167	0.001
Hill Janajati	-0.692	0.182	0.000
Muslim	1.154	0.302	0.000
Madhesi castes	1.590	0.210	0.000
Madhesi Dalit	1.319	0.233	0.000
Newar	0.330	0.164	0.044
Terai Janajati	1.053	0.312	0.001

Note: The ethnicity/caste categorical variable is regressed on our Patriarchy measure with DHS cluster fixed-effects and Conley standard errors (25km). The (omitted) reference group is Hill Brahmin Chhetri.

The divergence in decision-making may even be stronger for recently married cohorts while the results for work are also similar.

Since the in-group patriarchal intensity does not produce results drastically different from using the whole neighborhood's patriarchal intensity, we can conclude that neighbors belonging in similar ethnicity/caste groups do not matter more than regular neighbors.

Figure 1.13: Ethnic/caste-specific spatial Patriarchy Index



(a) Decision-making

(b) Work detailed

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Additional controls for work regressions: share of migrants in cluster and 2015 earthquake intensity. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

1.6.3 Changing norms

In this section, we address the question of changing norms by comparing areas with slow or fast changes in patriarchal intensity over time, in this case, (our available census data is from) 2001 and 2011. On average, we know that patriarchal intensity has decreased between the two periods. From this, we classified areas as slowly (fastly) decreasing in patriarchal intensity when the difference is in the 30th (70th) percentile. Then, we split the sample into two categories: “stable" and “reduced" for slow and fast change, respectively, and proceeded with the same empirical specification as in the main results. In comparison, we expect a larger divergence of results for areas that had a relatively small change in patriarchy compared to those with a large change in patriarchy[22].

Figure 1.14 presents interesting results. For decision-making, it shows estimates in line with our expectations. The magnitude of the coefficient in the last period for stable areas

[22]A small decrease in patriarchy entails a small decrease in costs, hence, a small decrease in divergence as described in our model. Since our results in the main specification show a large divergence in decision-making by 2016, then we expect a small change in patriarchy to result in little to no change in this divergence while a large change in patriarchy to do the opposite.

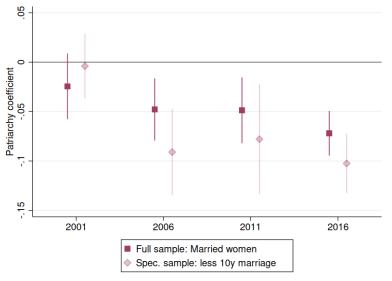
is much more negative, around 10 percentage points for recently married women compared to 6 in the main estimation. On the contrary, for reduced areas, the coefficient is constant over time: patriarchal norms may be getting lower but they still matter. One result that is inconsistent among out outcomes of interest is non-agricultural work. We expected greater divergence in stable areas than reduced areas but here it is the opposite, although the estimates in reduced is imprecisely estimated.

1.7 Conclusion

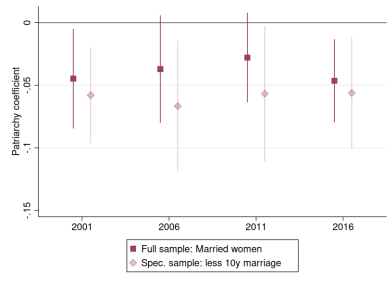
This research evaluates Patriarchy and its effects on women empowerment proxies (decision-making and employment) over time. We built a spatial index to measure Patriarchy based on measureable demographic variables. Our measure is robust and captures variations different from traditional categorical measures used in the existing literature, such as, declared ethinicity or religion.

We find that there is an overall increase in the empowerment proxies in Nepal but has not improved in the same way given Patriarchal intensity. Our results show that, on average, women in more patriarchal areas have gained less

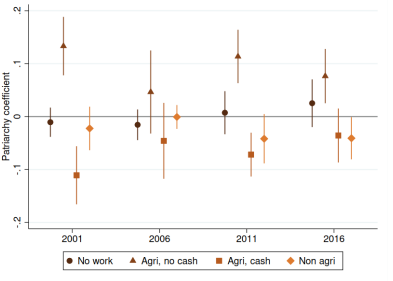
Figure 1.14: Main outcomes and changing patriarchal norms



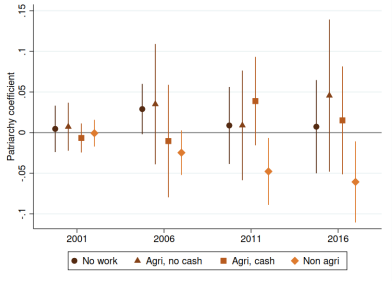
(a) Stable: decision-making



(b) Reduced: decision-making



(c) Stable: detailed work



(d) Reduced: detailed work

Interpretation: an increase of 1 in the Patriarchy index is equal to a 1 SD increase in the outcome. Controls: woman's education in categories, and household wealth index; spatial controls include rural/urban, population density, year-wise nightlight intensity, slope, altitude, travel time to nearest city in 2000, and share of votes for Maoist in 2009. Additional controls for work regressions: share of migrants in cluster and 2015 earthquake intensity. DHS weights for each wave and Conley standard errors (25km) are used in each regression. Point estimates are reported with 95% CI.

and less over time in participation in decision-making and in non-agriculture work than those in less patriarchal areas. Hence, a divergence in women's empowerment emerges over time proving the persistence of the patriarchal barrier. For brevity and data constraints, we are not able to explore the reasons behind this result. For example, whether these results are evidence of backlash in communities with stronger patriarchal beliefs, that is, women are being penalized in other aspects of their lives because of their increased rights.

Despite these results being expected from our model, it remains surprising. To some extent, it shows that well-established social norms do not only resist laws and reforms but also general social change given the events that transpired in the last two decades in Nepal. Is the persistence because there is no concrete change in society and all is merely done "on paper"? That is, no opportunities have actually opened for women, so there is nothing to seize. Is it due to women themselves choosing to perpetuate 'subordination' by continuously doing what is expected of them in a patriarchal society? Thereby, not seizing the opportunities made available to them. The latter relates to the incorporation of norms into one's individual preferences, which was also observed in similar contexts (Baland and Guirkinger, 2022).

As shown for the case of Nepal, there is no one-size fits all approach in eradicating the effects of harmful norms. In order to get closer to achieving the SDGs in time, we recommend adapting laws and reforms based on the intensity of patriarchy in a given community. Some women could use more help in understanding and seizing their newfound rights especially in communities with stronger patriarchy. Furthermore, future researchers could dive in deeper to explore the mechanisms that led to a norm's persistence, the backlash story and eventually, find more ways to reduce the harmful effects of norms that could be of greater importance in developing contexts.

Appendices

Appendix A

Additional details on the Patriarchy Index construction

In this section, we describe additional information relevant to our construction of the Patriarchy Index. First, our variable definitions mostly follow the original papers of Gruber and Szołtysek (2016) and Singh et al. (2022) the decision rests on which one is deemed more appropriate for the Nepali context. However, we completely changed the computation of the variables in the *Son Preference* dimension : *Siblings* and *Sex Ratio*. In the original papers' way to measure the stopping rule, they build a dummy on whether the last child born is a boy for women who have completed their fertility. In a recent paper, Baland et al. (2020) show that the stopping rule (and selective abortion) can be measured at the child level by studying composition of elder and younger siblings for girls. A larger number of younger (elder) siblings for girls as compared to boys denote the presence of stopping rule. This measure thus captures fer-

tility decisions before birth and has the advantage to be independent of completed fertility. In our case, we cannot distinguish between younger or elder brother at the child level so instead we measure the number of ever born siblings for girls and boys based on the mother's declaration represented by the variable *Siblings*.

Moreover, we depart from using the original definition of *Sex Ratio* because the youngest children in the household was poorly measured in the census data[1]. We also ended up excluding many joint families due to unclear parental lineage given that relations between household members are defined only with respect to household head. In the end, we decided to use the sex ratio of children 5 to 8 years old rather than 0 to 4.

Second, we go into detail regarding the correlation of the variables included as seen on Table A.1. Majority of the correlations are behaving as expected. One example is the negative correlation between *female head* and *young bride*. More younger brides implies men to be in charge, hence, women are less likely to be head. The *young head* variable behaves different to expectation given what we know about Patriarchy and Nepal. For example, the correlation of

[1] A mismatch between the woman's declared number of infants and actual number of infants.

young head to *jointfam* is 0.1877. This means that as there are younger male household heads they are more in joint family structures where men older than him can be present based on the latters definition. This goes against patriarchy since the presence of an older man should imply headship. The same can be said about its correlation with *neolocal*. For these reasons, we exclude this variable in our computation.

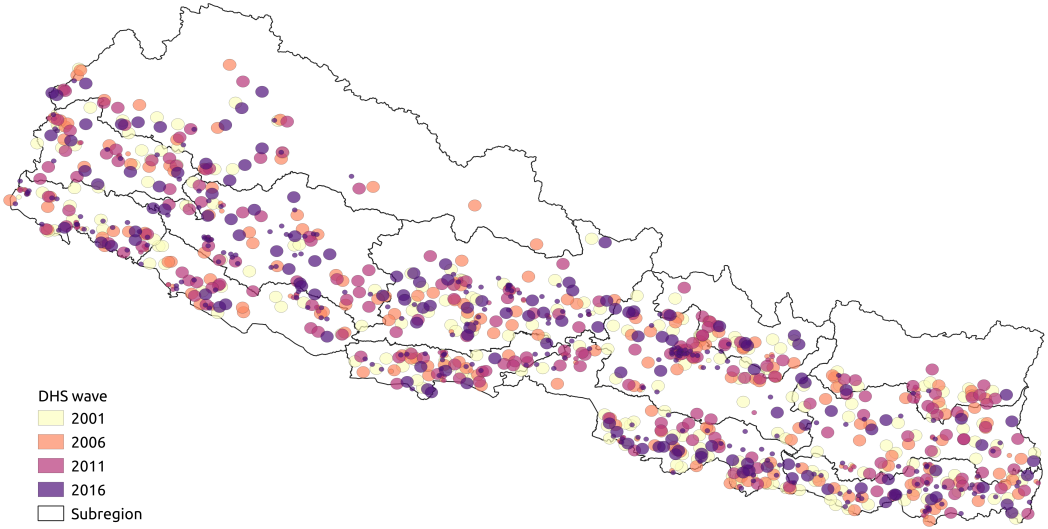
Table A.1: Pair-wise correlations of Patriarchy Index variables

	female_head	young_bride	older_wife	young_head	neolocal	jointfam	marrdaug	rsiblings	sexratio_5_8
female_head	1.0000								
young_bride	-0.5662*	1.0000							
older_wife	0.3213*	-0.6914*	1.0000						
young_head	-0.1820*	0.1192*	-0.0947*	1.0000					
neolocal	0.1566*	-0.5311*	0.4851*	-0.1102*	1.0000				
jointfam	-0.5405*	0.7292*	-0.6593*	0.1877*	-0.6462*	1.0000			
marrdaug	0.2878*	-0.4377*	0.4271*	-0.0758*	0.3371*	-0.4281*	1.0000		
rsiblings	-0.1815*	0.1877*	-0.3386*	-0.0547*	-0.0309*	0.2124*	-0.1772*	1.0000	
sexratio_5_8	-0.0734*	0.1596*	-0.2098*	0.0540*	-0.1020*	-0.0793*	-0.0793*	0.2336*	1.0000

Appendix B

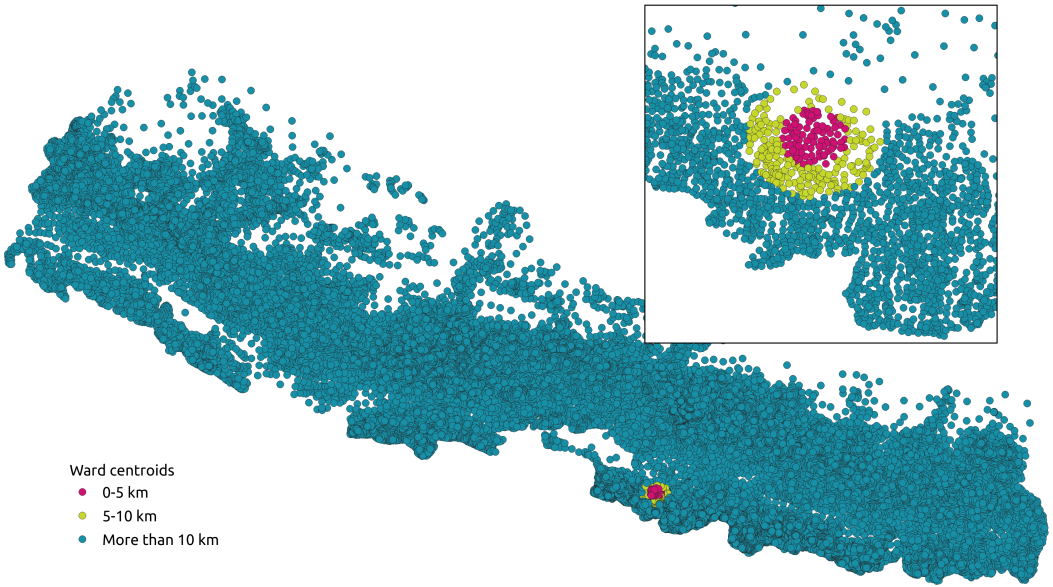
Additional maps and figures

Figure B.1: DHS clusters



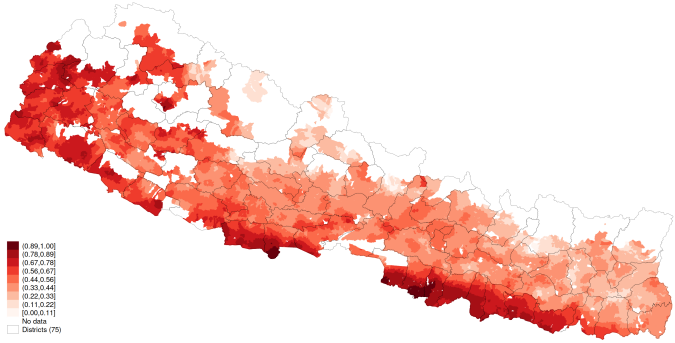
DHS clusters location. 2km buffer for urban areas, 5km for rural.

Figure B.2: Spatial index

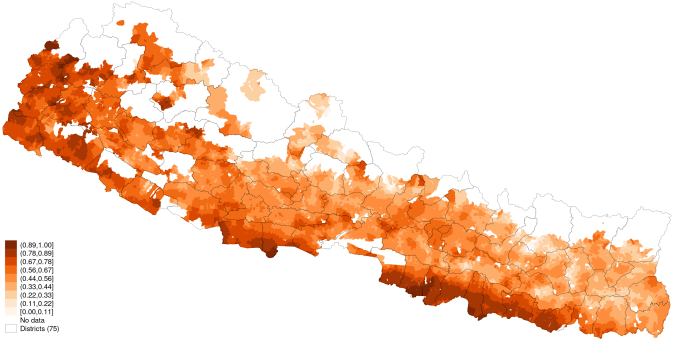


Observations up to 10km are used to compute the average value for each EA.

Figure B.3: Maps of patriarchy indices: PCA vs. averaged dimensions

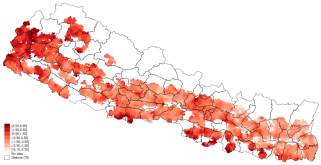


(a) Our PCA index

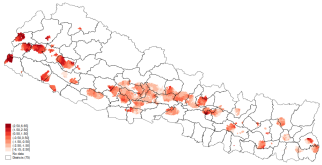


(b) Averaged dimensions as Gruber and Szołtysek (2016)

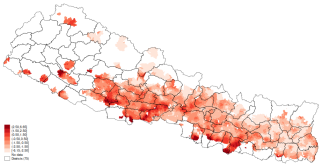
Figure 1.4: Ethnic/caste-specific spatial patriarchy index



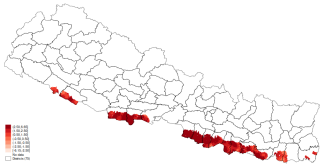
(a) Hill Brahmin Chhetri



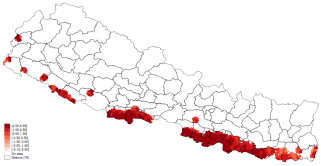
(b) Hill Dalits



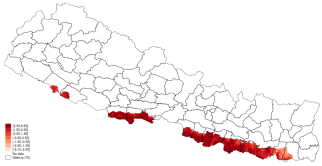
(c) Hill Janajatis



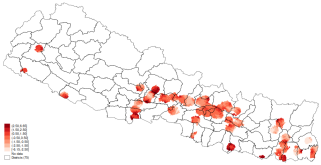
(d) Muslim



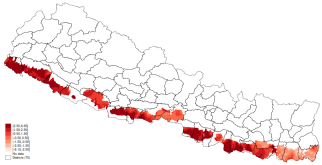
(e) Madhesi caste



(f) Madhesi Dalit



(g) Newar



(h) Terai Janajati

95% CI. Standard errors clustered at DHS PSU, regression per cohort, no DHS weight. Controls: slope, altitude, travel time to nearest big city in 2000, migrants in 2001, conflict variables (killings and abductions), education level (6 categories, from no education to higher education) and ethnic group (10 categories).

Chapter 2

Male outmigration and its consequences on left-behind members: The case of Nepal

Clarice Colleen Manuel[1]

Abstract: This paper investigates the impact that male outmigration could have on the allocation of resources and work for the left-behind members, wife and children, in the patriarchal setting of Nepal. I implemented an instrumental variable approach using the village migration network to predict the household's decision to send the father as a

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migrant. The results show a biased reallocation to only female members where girls are doing more chores and work outside the home and simultaneously, mothers are doing less chores and engaged in more farm work compared to non-migrant households. In a setting where women are tied to the household, migration seems to have opened up alternative tasks for women, especially mothers, which can be considered a first and positive step towards empowerment. This is supported by the results in decision-making where final decision-making alone has increased. On the contrary, girls handling more chores and work could reduce the time spent on other activities such as studying or leisure. Altogether, this shows that migration has different effects on the left-behind depending on their gender and relationship to the migrant.

2.1 Introduction

With the continued rise and importance of migration in today's world, the question of the impact on the left-behind members remains crucial to explore. The existing body of literature is divided in two strands: one side discusses the effects of remittances to the left behind family[2] while the other discusses migration as a whole[3]. The advantage of studying the latter is that it also accounts for other potential effects of migration to the left-behind, such as, physical absence, knowledge transfers, etc. aside from the income effect brought by remittances. The literature discussed hereafter focuses on the effect of migration to the remaining members of the sending household regardless of the migrant's gender or position in the household.

First, having a migrant in the family means that remittances are possibly received and this allows the family to spend more on children's education or on better healthcare for all members (Antman, 2013; Hanson and Woodruff, 2003; Mansuri, 2006*a*; McKenzie, 2006). Indeed, in most of

[2] Adams Jr (2011) wrote a literature review on the impacts of remittances on various outcomes.

[3] Antman (2013) for a literature review on the health, education and labor supply of the family left-behind).

the literature this is what is found; increased educational attainment for all children (Hanson and Woodruff, 2003; Mansuri, 2006*a*) with an effect larger for girls (Mansuri, 2006*a*). But, the effect seems to be age or context-specific since a reduction in educational attainment was found for the 16 to 18 age cohort in Mexico (McKenzie, 2006; McKenzie and Rapoport, 2011). The authors explained that this is due to the preparation for the boys' early migration and the greater amount of household responsibilities for girls (McKenzie and Rapoport, 2011). Inversely, school performance could deteriorate for children with a migrant parent because a role model was lost in the household and so a reduction in educational attainment can also happen (Antman, 2013; Hanson and Woodruff, 2003).

Second, it can be expected that the absence of at least one member of the household, ceteris paribus, could increase the remaining chores for everyone else. Moreover, larger household income from migration could imply more assets and thus, more chores. Evidence has shown that girls, wives and elderly women were found to have more household work in migrant households on average (Chang et al., 2011; Hanson, 2007; McKenzie and Rapoport, 2011; Wang, 2013). The mechanism behind this result is explained differently depending on the context. In China, the biased allocation to girls has been linked to norms that appropriate chores

only to women (Chang et al., 2011). In Mexico, it was not directly linked to norms. Men and women are considered substitutable for household chores and so when women are left-behind after migration, they are the ones to replace them (Hanson, 2007; Wang, 2013). By contrast, if the migrant member does not do chores at all, then it is possible that the amount of chores does not change for remaining members.

Third, the effect on labor force participation is rather widely studied but the results remain inconclusive depending on the definition of migration or work, relation to migrant, gender, etc. In Pakistan, children were found to have reduced labor market participation and days worked in households with a temporary migrant (Mansuri, 2006*a*). Meanwhile, an increase in farm work was found for elderly women and girls in rural China for households with at least one internal migrant (Chang et al., 2011). For wives, it has been shown that they have reallocated more time into unpaid work and less into paid work when the husband is a migrant (Hanson, 2007; Lokshin and Glinskaya, 2009; Wang, 2013). In Mexico, this was considered as intra-household specialization (Hanson, 2007). Yet, this might not be the only explanation particularly for patriarchal contexts where women might not even have the choice to work because they are expected by society and family to remain at home.

Fourth, the migrant could acquire new knowledge and culture in the destination country and then "remit" the new information to his family (Hildebrandt et al., 2005; Levitt, 1998). This, called *social remittances*, could have either a positive or a negative effect on the left-behind family. For example, a migrant from India, a country that is patriarchal, learns about the freedom and working culture of women in the United Kingdom, then he might allow his wife back in India to take a job instead of restricting her to tasks inside the household.

Finally, assuming that the migrant is a man[4], the physical absence could be beneficial to women in a patriarchal context because there is no main figure to impose patriarchal or traditional norms (Antman, 2013; Fakir and Abedin, 2021). Women would be able to make choices or do certain things they were not able to. Then, it can be expected that women would have greater empowerment and better outcomes in general. On the contrary, an even further reduction in women's outcomes could be observed if the remaining members of the household joins the parental household of the male in his absence. In this case, the head's wife drops her status to become the head's daughter-in-

[4]A greater share of international migrants are men (22.79%) as compared to women (17.42%) in developing countries (United Nations Department of Economic and Social Affairs, 2015).

law in this even bigger household and in certain contexts, daughters-in-law have little to no power in the household (Luitel, 2001). No change can also be expected in the women's decision-making in particular if we believe that married couples decide all future resource allocations at the time of marriage as in the Full commitment hypothesis (Chiappori and Mazzocco, 2017). Currently, only a few research papers have engaged into analyzing this, two of which are Fakir and Abedin (2021) and Slavchevska et al. (2021). These papers evaluated the effect of male migration on several dimensions of women empowerment, such as, decision making, ownership of different types of assets, control over expenditures, mobility, contraception use, and domestic violence. The results show that male migration has resulted in empowerment in certain dimensions and disempowerment in others. For example, in Bangladesh, women's asset ownership is increased but her participation in decision making on the productive use of these assets were left unchanged (Fakir and Abedin, 2021).

Generally, the existing literature illustrates that there is no singular impact of migration to the left-behind members because of factors, such as, gender, relationship to the migrant, and nature and type of migration. For that reason, my research objective is to determine the causal effect of male outmigration on the wife and children's outcomes

in Nepal. Nepal is the chosen study area because migration has been and remains an important livelihood strategy. One out of four households has at least one member living outside the country (Khatiwada, 2014) and personal remittances received is at least 20% of their GDP (World Bank, 2020). Internal migration is also as common, with movements from hill/mountain areas to the plains and rural to urban regions, in search of arable land, better livelihood opportunities and better public infrastructure (*Nepal Population Report*, 2011). According to *Nepal Population Report* (2011), more than 85% of migrants are men, thus it is common for women and children to be left-behind in a household. Moreover, the widespread patriarchal and gender discrimination practices in Nepal provide insight on whether the patriarch being away can give rise to positive change for the disempowered women. I use the NLSS 2010/11 dataset with detailed information on decision making, time allocation in paid and unpaid work, and education to have a holistic approach since to the best of my knowledge no single research paper has looked at all of these outcomes simultaneously yet.

The challenge in obtaining a causal effect is the selection into migration and the endogeneity between the male household head's migration decision and left-behind family's outcomes. To address this, my strategy is to implement an

instrumental variable approach using the village migration network as an instrument. The migration network is a popular instrument. In theory, it helps reduce transaction and information costs for potential migrants about anything related to the migration process, some of which are jobs, costs, agencies, and living experience (Hanson and Woodruff, 2003; Hildebrandt et al., 2005; Mansuri, 2006*a*,*b*; McKenzie, 2006; McKenzie and Rapoport, 2011). Having a migrant in an individual's close network could also influence his migration choices (Sapkota et al., 2019).

The main results using the IV approach reveal that women's outcomes were indeed altered but not ultimately for the better. Women in migrant households carry the burden of responsibilities previously assigned to men given the migration of the male household head. Girls spend more time on chores and child labor in migrant households. It does not adversely affect their educational attainment but it is possible that they lose time in leisure. On the other hand, mothers spend more time in work outside of the home, particularly in agriculture work. On its own, having the ability to work outside the household can already be thought of as empowering since a woman's traditional role is at home. The results in decision-making complement this by also showing an increase in making final decisions alone, particularly in household assets.

There are three important contributions of this research. First, it contributes to the small body of literature on the empirical effect of migration on household chores of left-behind members; it has been lacking attention mostly due to data limitations[5] and with the jobs and time use module in the NLSS, I had the chance to explore this in detail. Second, this research highlights the importance of evaluating Women Empowerment in several dimensions simultaneously in order to have a more holistic perspective on the effect on women, something that has not yet been done in the literature. I show this by estimating the effect of migration on the two most commonly used proxies of Women Empowerment: labor force participation and decision-making. Current research has been limited to only evaluating one dimension at a time, for example, labor employment alone in the case of Lokshin and Glinskaya (2009) or decision-making alone in the case of Fakir and Abedin (2021) or empowerment as an entire index (Slavchevska et al., 2021). Third, this research shows the persistence and strength of norms in governing an individual's behavior. In the absence of the patriarch, mothers could have made different decisions about their children's education,

[5]Most data sets used in the existing literature either do not have simultaneously exhaustive modules on migration and chores or do not contain chores information at all, especially for children.

chores or labor force participation by prioritizing the welfare of the girls to equalize it with the boys but we do not find evidence of this at the child-level. Nor do I find it on the types of decisions the mother makes by herself. However, the mother's empowerment by the husband's absence simultaneously shows that in one way or another, norms can change when individuals are left with no choice.

The remainder of the paper is organized as follows: Section 2 describes Nepal, its social practices and migration patterns, Section 3 talks about the Nepal Living Standards Survey data and the construction of migration and outcomes, Section 4 discusses the chosen identification strategy, respectively. Section 5 discusses the main results, section 6 shows some robustness checks and finally, section 7 concludes the research.

2.2 Context

2.2.1 Female discrimination in Nepal

Nepal is a pre-dominantly rural country with a rich diversity in language, religion, and culture with over a hundred

spoken languages and caste-ethnic groupings[6]. Although social practices could largely differ across groups, one social practice common among them is patriarchy (including its variations: patrilocality and patrilineality) and son preference, both of which could explain the prevailing gender inequality in the country[7].

Socio- and anthropological research has enumerated the social norms that discriminate against women. From birth, the discrimination already occurs as parents rejoice a boy's birth while lament a girl's (Luitel, 2001). While growing up, a girl is taught that her purpose is for childbirth and her place is in the household (ADB, 1999). Starting from a young age, she spends a lot of her time in chores and it exponentially increases as she ages compared to her male

[6]The religion that each individual practices is generally linked to the caste or ethnicity they belong to. For example, those in the Caste system, such as, Brahmin, Chhetris and Dalits, practice Hinduism, which consists roughly 81% of the population. The muslims or those in ethnic groups practices Islam (4.3%) and Buddhism (9.2%), respectively, while the rest practice some other religions: Kirat, Christianity, and Jainism (CBS, 2011)

[7]The latest score of Nepal is 0.680 and received a rank of 101 out of 153 countries. The score is computed based on education, health and survival, economic participation and opportunity, and political empowerment outcomes. Higher values indicate more parity between genders (World Economic Forum, 2020).

sibling whose chores virtually remain unchanged over time. Then, the girl is married off very young[8] and joins her husband's household (ADB, 1999).

As she is expected to leave the natal household, her parents will not be able to benefit from the returns on her human capital investments and therefore, have little to no incentive to invest on her. There is some evidence of this in the 2011 Census of Nepal where women are found to be less literate (57.4%) than men (75.1%) on average (CBS, 2014). Although, it is not just the Nepali social practices that treat women in this manner. In fact, the 1963 Nepali Civil Code, *Muluki Ain*, had provisions that only gave boys the right to food, clothing, proper healthcare, education and inheritance. It is only from 2002 onwards that more gender equal laws and constitutional reforms have been introduced[9].

[8]The median age at first marriage reported in the 2011 Nepal Demographic and Health Survey is 17.8 years old for the 20-49 year old women cohort. Legally, the age of marriage is set at 18 years old for both men and women with parental consent and 20 without according to the 11th amendment of the Nepal civil code in 2002.

[9]For example, the 11th amendment of the Muluki Ain in 2002 and the Gender Equality Law in 2015.

2.2.2 Nepali Migration

Historically, international migration started because of the recruitment of young Nepali men to the British Army and British India (Khatiwada, 2014). As time passed, Nepali migration has spread out to many destinations across the globe and has emerged as a common livelihood strategy. Until now, this strategy is mostly limited to males due to the societal and governmental restrictions on female outmigration especially in the Gulf region to protect them from many risks, i.e., long working hours, sexual violence, physical abuse, and economic exploitation (Gurung, 2018). Assuming the woman still wants to work even with the risks, she needs to have written permission from her guardians or husband before the government permits her to work abroad (Gurung, 2004). In addition, traditional beliefs discourage female outmigration because of the belief that the place of women is in the household and so taking a job is frowned upon, especially if she has to leave the household for it. As of 2011, a small portion of women (12.4% of total absentees) still opted to work abroad amidst the restrictions (Khatiwada, 2014).

Currently, Nepalese migrants are spread out over many destinations but the most popular destination for them is India

(Khatiwada, 2014). At least 53% of father migrants are in India while the remainder are spread out in Gulf countries, Malaysia, etc (Central Bureau of Statistics, 2011*a*). Because of the distinct characteristics of migrating to these destinations, Shrestha (2017) split the destinations into two categories: India and Non-India destinations. Nepal's migration relationship with India is quite special as it goes back to the 19th century when many Nepali men were recruited to serve in the British Army and British India. From there, the migration network has been established between the sending regions (mostly from Mountain and Hill regions) and India (Khatiwada, 2014). The ease of migration was due to the many factors, like the long border shared and similarities in culture and language. Up until now, migration flows between the two countries remain large as they maintained an open-border[10], implying a low cost of migration. Aside from that, one characteristic specific to India is that the migrants come seasonally because majority of the work available here is agriculture related. Hence, migrants earn much lower relative to other destinations and they are gone for only about 9 months (median) per year during the harvest or planting season where hired labor is much needed (Shrestha, 2017).

[10]India has an open-border with Nepal meaning that documents and passports are not necessary to cross the border to look for jobs.

On the other hand, migration to other destinations, for example, Qatar, Malaysia, and South Korea, is a much more recent phenomenon (Shrestha, 2017). This is reflected in census data where 6.9% of absentees were located in non-India destinations in 1981 and by 2011, it has drastically grown to 61.4% (Khatiwada, 2014). It is worth mentioning that, in order to migrate to these destinations, having access to a recruitment agency is important because it is the agency's responsibility to connect the Nepalis looking for work with the employer aside from arranging paperwork from both parties (World Bank, 2011). These connections do not come free as potential migrants pay at least 100,000 rupees (equivalent to 1333 USD). The households could pool resources in order to afford these costs, otherwise, they take a loan and repay as they earn abroad. The main incentive for potential migrants is that the income is much higher, each month they can earn about 16,000 rupees. Based on the stark differences of the two destinations, Shrestha (2017) labeled India as the low cost, low return destination while non-India destinations as the high cost, high return destinations.

Lastly, internal migration is very common for Nepalese too. For many decades, millions of Nepalese living in the mountains or hills have migrated to the Terai plains according to census data from 1971-2002. This north to south move-

ment within Nepal is motivated by the harsher conditions in the mountain areas, the lack of arable land, employment, and education opportunities and the lack of infrastructure (*Nepal Population Report*, 2011). In addition, the period of the 1996-2006 civil conflict also saw a rise in internal migration, as well as international migration, as families in rural areas were displaced by the frequent and violent activities that took place (Pivovarova and Swee, 2015; Upreti et al., 2018)

2.3 Data

This research employs data from the nationally representative Nepal Living Standards Survey (NLSS 2010/11) collected by the Central Bureau of Statistics of Nepal following the same methodology developed by the World Bank for the Living Standards Measurement Survey. Compared to earlier waves of the survey, the questionnaire of the latest wave contains more detailed information regarding the household roster and assets, education and health outcomes, jobs and time use, household consumption, marriage and maternity history, farming and livestock, and migration experience.

The cross sectional sample contains a total of 5,988 house-

holds. The chosen group for my analysis are the households who have both head and spouse alive and those with complete individual or parental characteristics relevant to the research question. Moreover, I defined the children sample to be composed of children aged 10 to 16 years old, leaving 4,663 children for the analysis from 2,811 households. 87% of which are the household head's children. I took the cohort of 10 years old and above in consideration of delayed entry to school and the cohort of 16 years old and younger to reduce the selection bias given a median age at first marriage of 17 years old (Ministry of Health and Population, 2012). In mother-level regressions, I used the sample of the female head or spouse containing 5,079 women; 99% of which are sole wives.

The descriptive statistics of the sample at the household-level is found on Table 2.1 by the father's migration status.

Table 2.1: Descriptive Statistics by Migration

Variable	(1) Non-Migrant N	Mean/SE	(2) Migrant N	Mean/SE	T-test Difference (1)-(2)
Male household head	4035	0.921	1193	0.399	0.521***
		(0.005)		(0.015)	
Father's education	4035	4.582	1193	5.541	-0.959***
		(0.079)		(0.132)	
Father's age	4035	48.300	1193	39.300	9.000***
		(0.227)		(0.283)	
Number of wives	4035	0.967	1193	0.990	-0.023***
		(0.003)		(0.004)	
Count of household members	4035	5.174	1193	4.410	0.764***
		(0.042)		(0.055)	
Count of adults in household	4035	3.258	1193	2.221	1.037***
		(0.025)		(0.035)	
Count of children (<16) in household	4035	1.916	1193	2.189	-0.273***
		(0.028)		(0.041)	
Extended family presence	4035	0.462	1193	0.322	0.140***
		(0.008)		(0.014)	
Household Owns agri land	4035	0.765	1193	0.796	-0.031**
		(0.007)		(0.012)	
Size of plots owned	4035	0.564	1193	0.391	0.173***
		(0.017)		(0.017)	
Per capita nominal consumption, 7d	4035	40339.282	1193	37165.249	3174.033***
		(522.096)		(893.396)	
Share of int'l migrants per VDC	4035	0.090	1193	0.118	-0.028***
		(0.001)		(0.002)	

Note: The computations are done at the household level.

2.3.1 Variable Construction

Migration variable

Because migration affects households in many ways, I followed the strategy of McKenzie (2006) and Hanson and Woodruff (2003) by looking at the impact of a person living in a migrant household. I focus on the father as the migrant instead of taking any migrant in the household. He is identified in the survey either as the male head or spouse of the household from the current and absentee members. Given that the focus of this research is on the effects on left-behind wife and children, it only makes sense to look directly at the male spouse and in patriarchal societies, he is typically responsible for making decisions on the work and school outcomes. Taking any migrant implies that I could be measuring the effect of having a son migrate on the mother's work, which is not directly in the son's control.

In order to identify migration, I took the affirmative response to the question "*Has [household member] lived outside this location for more than 2 continuous months over the past 5 years?*" given economic migration[11]. Relying on

[11] Doing this ignores 13 migrant fathers who were reported as a student, not working, or unknown

this migration definition only takes into account the past migration experience and so I also included the current migration of the father by including those listed as absentees. Doing so, identifies 12.86% more households as having migrants. Absentees are defined in the survey as people not currently living in the household[12] but were members in the past and are expected to come back in the future. From this definition, I am unable to identify in the survey absentee fathers that are no longer expected to come back to the household due to marital separation. Left-behind members living in a household of this situation might be mistakenly identified as having no migrant father. This issue is of little concern because only 0.3% of the population declared to have been divorced and separated (*Nepal Population Report*, 2011).

Moreover, some bias is introduced given the chosen definition for migration. I consider a household a migrant household only if the male household head has migrated but there is the possibility of his son migrating as well since migration is commonly a male event in Nepal. In the NLSS data, 36% (345) of male migrants are the sons of the head while 56% (470) are the male heads/spouses. With

[12] Away from the household for more thank 6 months out of the last 12 months or expected to be away for more thank 6 months.

about 70% of these migrant sons married, the wives could possibly live in the son's parents' household in a context of patriarchy/locality. Thus, my analysis ignores the changes in outcomes for the daughters-in-law and so the succeeding analysis potentially provides a lower bound effect compared to the full effect of migration to left-behind wives.

I used the same definition to construct the migration network by taking the share of all individuals with current and past migration to the population of the village development committee (VDC)[13]. The migration network has enough variation across regions [14] for me to be able to make better

[13]The Village Development Committee is the second to the smallest administrative unit in Nepal.

[14]There is a small difference depending on the data set used where the values are slightly higher in NLSS than in the Census with the exception of the Eastern Mountain region. One factor could be the absence of weights in the NLSS computation. Despite this, the two measures are significantly and positively correlated, therefore, we can rely on using the migration network computed from the third wave of NLSS given that the pairwise correlation coefficient is 0.5651 with significance at 5% and it increases to 0.6147 when I exclude the Mid-Western region. The mean difference is 0.03 with a range of -0.06 to 0.006, which could be due to the different sampling framework of the two surveys. The NLSS 2010/11 was based on the sampling frame of the Labor Force Survey of 2008, which in turn based it on the Census 2001 framework. The Maoist conflict peaked in that year, thus, many wards or VDC were missed in the sampling procedure of the Census

prediction with the data (Figure C.2 in the appendix).

Outcome variables

The substantial amount of information available in the jobs and time use module allowed me to construct several variables about the mother and child's work inside and outside the home. The module is asked for household members above the age of 5. To measure household chores for each left-behind member, I took the response to the question "*How many hours has [household member] spent doing the following activities during the past 7 days?*". These house-related activities can be broadly categorized into livelihood and housework[15]. The variables were constructed based on the total number of hours spent on all of these activities as a binary and a continuous measure. These variables

2001 and consequently, NLSS 2010 also missed those areas. This no longer was the problem in the 2011 Census because the conflict ended in 2006 and they were able to sample the entire population.

[15] Livelihood-related activities include fetching water, collecting firewood and dung, collecting fodder, taking care of animals, making mats, knitting, weaving and tailoring, and food processing. On the other hand, housework-related activities refer to minor household repairs, cooking/serving food, cleaning house, doing laundry and dishes, shopping for household, and caring for elderly, sick, and babies.

illustrate the increase in chores and responsibilities inside the household of the left-behind family given the migration of the father.

To measure work outside the home, I took the total number of hours each person declared to have worked in the past year considering the individuals who had multiple jobs. The sum of work hours includes all jobs in the last 12 months. Similar to the chore outcomes, the variables here were constructed as binary and continuous measures. In addition, the module provided information on the sector of employment whether it was wage or self-employment and in agriculture or non-agriculture. The employment patterns of the left-behind family potentially changes due to the migration of the father. If the migration cost is so high, then the left behind members will have to take up jobs to pay off the debts associated to the cost. If not, they can choose not to work and even work less as seen in the literature.

The education module was administered to individuals above the age of 3. Therefore, I have complete education information for my chosen sample: children 10 to 16 years old. Each child was asked whether she never went to school, went to school in the past or is currently attending. From here, I constructed the following variables: education

in single years, primary completion, and education expenditure. Education in single years is zero for children who never went to school. Primary completion is a binary variable while education expenditure is a continuous variable in the local currency, rupees. Both are available based on the condition of having gone to school. Finally, I constructed a binary variable equal to 1 if the child dropped out of school before reaching 16 years old based on the question on the age at which the child stopped or left school. Since migration in Nepal is typically recurring and long term, migration could have a long term effect on education and this can be seen by analyzing each child's educational attainment, primary-level completion or drop out. Educational expenditure is interesting to check for the income effect of migration.

Table 2.2 presents the difference in outcomes of children depending on the migration status of the father. Children in migrant households are more likely to do and spend more time in doing chores in the last week on average. They are also more likely to have taken a job in the last 12 months but have spent less hours doing so than those in non-migrant households. In education and primary completion, there isn't a significant difference while education expenditure and drop out is higher for children in non-migrant households.

For the mother, decision-making participation could also change given her husband's migration. She ends up making decisions on that previously she was not responsible for since her husband is not present in the household. To measure this, I constructed variables representing her self-declared participation similar to the methodology of Allendorf (2007). In the questionnaire, the female household heads/spouses were asked of their involvement in the decision making process in these 15 items: children's education and school choice, healthcare of self and children, healthcare during pregnancy, number of children to have, contraception use, food and major household expenditure, sale of assets, crops to grow, taking and using loans, migration decision, and use of remittances conditional on having made the decision in the last 12 months. They could respond with *"a lot"*, *"a little"* or *"not involved"*. Then, they are asked who made the final decision per item: her, her spouse, both of them, or another individual.

The items were not consistently decided upon in the last 12 months as seen on Figure C.1 in the appendix. On food spending, 80% of the women declared that a decision was made in the last 12 months while fewer than 20% declared that a decision was made in contraception or the number of children to have. Given the large differences on the response rate on each item, I simply took the total final decisions

the wife has made alone and/or jointly with the spouse. The measure has a high value of Cronbach's alpha (0.9132) meaning there is internal consistency in aggregating these decision making items. To complement this measure, I constructed the share of final decisions by dividing the total number of final decisions made by the wife to the number of decisions made in the last 12 months. I also combined the items together in broad categories[16], such as, education, healthcare, agriculture, household assets and remittances to see the particular aspects in which her decision making has changed.

Table 2.3 summarizes the outcomes of the mother by migration status. Mothers in migrant households are more likely to do chores and spend more time than those in non-migrant households on average. They are also more likely to have a job with a wage or in the agriculture sector. In the last 12 months, they have had to make more decisions

[16]Education category contains the decisions made on the grade children should attend and which school to go to. Healthcare decisions are on female respondent and children's health, pregnancy check ups, number of children to have, and use of contraceptive method. Assets decisions are on spending food and major household items and selling of household assets. Agriculture decisions are on crops to grow, and taking and using loans. Finally, the decision on remittances. I excluded the decision on migration for employment since this is a decision that does not entirely concern migrant households.

on average and have greater participation whether alone or jointly. Looking at it per item, a similar trend is observed where mothers in migrant households mostly have made final decisions jointly and/or alone on Table C.1 and C.2 in the appendix. On average, the decisions made alone by the mother has a larger mean than the alone and joint decision combined.

Table 2.2: Children's outcomes by Migration

Variable	(1) Non-Migrant N	(1) Non-Migrant Mean/SE	(2) Migrant N	(2) Migrant Mean/SE	T-test Difference (1)-(2)
Spent at least 1hr in chores, 7d	3445	0.711	1218	0.755	-0.044***
		(0.009)		(0.014)	
Hours spent on chores, 7d	3445	12.305	1218	13.210	-0.905*
		(0.303)		(0.455)	
Did any job, 12 mos	3445	0.430	1218	0.466	-0.036*
		(0.010)		(0.016)	
Total hours doing job, 12 mos	3445	246.736	1218	190.615	56.121***
		(9.999)		(11.172)	
Complete years of Education	3445	5.450	1218	5.342	0.109
		(0.056)		(0.086)	
Finished primary	2787	0.632	947	0.600	0.032
		(0.011)		(0.018)	
Education expense in rupees, 12 mos	3090	5104.323	1137	4306.705	797.618***
		(153.658)		(267.857)	
Dropped out before 16yo	3298	0.064	1179	0.029	0.035***
		(0.005)		(0.005)	

Table 2.3: Mother's outcomes by Migration

Variable	(1) Non-Migrant N	(1) Non-Migrant Mean/SE	(2) Migrant N	(2) Migrant Mean/SE	T-test Difference (1)-(2)
Spent at least 1hr in chores, 7d	3898	0.969	1181	0.981	-0.012**
		(0.003)		(0.005)	
Hours spent per week in chores, 7d	3898	40.652	1181	46.343	-5.691***
		(0.424)		(0.755)	
Did any job, 12 mos	3898	0.813	1181	0.875	-0.062***
		(0.007)		(0.010)	
Did wage job, 12 mos	3898	0.210	1181	0.308	-0.098***
		(0.008)		(0.016)	
If job is in agri sector, 12 mos	3898	0.709	1181	0.819	-0.110***
		(0.008)		(0.012)	
Nb of decisions made, 12 mos	3725	7.509	1146	8.294	-0.785***
		(0.058)		(0.096)	
Nb of final decisions wife has made alone or jointly, 12 mos	3725	5.126	1146	6.493	-1.367***
		(0.068)		(0.118)	
Share of final decisions wife has made alone or jointly, 12 mos	3725	0.680	1146	0.774	-0.095***
		(0.007)		(0.010)	
Nb of final decisions wife has made alone, 12 mos	3725	0.829	1146	2.289	-1.461***
		(0.029)		(0.089)	
Share of final decisions wife has made alone, 12 mos	3725	0.117	1146	0.292	-0.175***
		(0.004)		(0.011)	

2.4 Identification Strategy

To have a causal estimate of paternal migration to the left-behind family's outcomes, one cannot rely on a simple OLS regression because of the endogeneity between the migration decision and the outcomes of interest. Migration is an activity chosen by households with certain characteristics and for that reason, it is a decision that is not chosen randomly. This can be observed on Table 2.1 that illustrates a difference in some of the characteristics of migrant households than non-migrant households, which could be the same factors that influence decisions on the child's education, the mother's decision to work, etc.

The OLS regressions on appendix Tables C.3, C.4 and C.5 illustrate the parameter estimates when endogeneity is ignored. The father's migration is shown to have no impact on the chores of the left-behind family as all the estimates are insignificant on Table C.3. On Table C.4, it is shown to have some alleviating effect for the work burden of children 10 to 16 years old where the effect is smaller for girls. We cannot say with certainty that this is the causal effect of migration because at the same time it could have resulted from the household's wealth despite having control

variables in the regression that approximate wealth[17].

In order to address this identification problem, I implement an Instrumental Variable approach (IV) using the leave-out mean of the village migration network. The migration network has been commonly used as an instrument for an individual's decision to migrate in many papers (Hanson and Woodruff, 2003; Hildebrandt et al., 2005; Lokshin and Glinskaya, 2009; Mansuri, 2006*a*,*b*; McKenzie, 2006). In this paper, it is computed as the share of international migrants at the village development committee (VDC) level. The intuition behind this instrument is that an individual having access to a migration network helps lower information and transaction costs making it easier to migrate. For example, a father living in a village with a massive outmigration could easily find information regarding the requirements in getting a visa to Saudi Arabia or job availabilities in India because many of his neighbours have been there and have contacts to agencies or potential employers. Migrant

[17]A large amount of wealth enables a household to send a migrant and at the same time, it reduces the need for anyone else in the household to work, hence, lower child labor. Or, possibly the households that send a migrant are the ones living in areas with poor labor market opportunities. Then, the father and his children are unable to find work and so the father leaves for other places and his children are left-behind without work.

networks also provide information about living conditions in migration destinations (Mansuri, 2006*a*). Therefore, a strong migration network could increase the propensity to migrate.

The exclusion restriction must be satisfied in using this instrument. It requires no correlation between the chosen instruments and the error term. This poses a problem for the validity of my instrument because villages with better migration networks could have better public infrastructure that facilitates migration. Better infrastructure could also imply that better education facilities are available and thus, the instrument could influence the outcomes of the left-behind family. Another problem is the instrument's relationship with labor market opportunities. Villages with low labor market opportunities could force individuals to migrate to find better prospects but at the same time, could also mean that left-behind members are less likely to find a job. A possible correction is to include village-level controls to capture these effects as Hanson and Woodruff (2003) by including the share of individuals in the VDC that has agricultural work to proxy for the labor market and the share of households that has flush toilets, electricity, and piped water to proxy for the infrastructure in each VDC[18].

[18]To compute for these variables, I use Nepal census data for 2011

As additional controls, I also included whether the VDC is classified as urban or rural and district fixed effects.

The first-stage relationship between the household's decision to send a migrant and the migration network is illustrated by the following equation. It is important to mention that depending on the unit of observation, the controls included in the first stage changes to include either child-level and mother-level variables.

$$M_h = \alpha_0 + \alpha_1 MigNet_{VDC} + \theta X_h + \zeta_{VDC} + \delta_D + \lambda_{Eth} + \eta_h$$

where $\text{MigNet}_{\text{VDC}}$ is the migration network. The household level controls included in X_h are the father's age and education with squares, count of adults and children in the household, presence of extended family members, size of land owned, and consumption per capita in the last 7 days. The village level controls described earlier are in ζ_{VDC}. District fixed effects are included to capture the time-invariant differences across districts on δ_{D}. λ_{Eth} represents the caste-ethnicity fixed effects to capture the socio-economic or cultural differences across the 10 categories of ethnic groups

to provide more accurate information at the village level

in Nepal. Finally, η_{h} is the error term of the regression.

Then, using the predicted values of migration, $\hat{M}_{\mathrm{h}}$, the estimation of the second stage at the child-level is shown in the following equation:

$$Y_{i,h} = \beta_0 + \beta_1 \hat{M}_h + \beta_2 Female_{i,h}$$

$$+\beta_3 Female_{i,h} * \hat{M}_h + \gamma C_{i,h}$$

$$+\theta X_h + \zeta_{VDC} + \lambda_B + \delta_D + \lambda_{Eth} + \epsilon_{i,h}$$

where $\mathrm{Y_{i,h}}$ represents one of the outcome variables for the child i living in household h; $\hat{M}_{\mathrm{h}}$ is whether the child has a migrant father and is instrumented by the village migration network; $\mathrm{Female_{i,h}}$ is equal to 1 for girls and 0 otherwise. $\mathrm{C_{i,h}}$ represents the child's characteristics such as age and its square, and dummies for living in a district other than the birth district, for being unmarried and being the head's child. I also include birth year fixed effects, λ_{B}. The rest of the controls are as described above. The main parameter of interest that illustrates the average treatment effect of a father's migration to the left-behind members is β_1 while β_3 captures the differential effect across gender, exclusively for the child's equation.

A similar equation is used for evaluating the mother's outcomes. The child characteristics are just replaced by the mother's characteristics; I use the mother's age and its square, completed education in categories, number of other wives, and whether her father is still alive. In the regressions for decision-making variables, I include the number of decisions made in the last 12 months as a control to account for the differences in the type of decisions made across households.

All the regressions are estimated using IVREG2 on Stata 15 with sample weights and standard errors clustered at the village level.

2.5 Results and Discussion

Table 2.4 shows the results for the first stage regression for the various levels of observations. Column (1) shows the estimates at the household level, column (2) the child level and column (3) the mother level regression. In all three, we find a positive and significant effect of the migration network on the probability that the father migrates. The probability that the father migrates increases by 0.05 pp for every 0.1 pp increase in the migration network.

Furthermore, I conducted two tests for the rank condition in the appendix (Table C.8): the likelihood ratio test and the Wald test. The likelihood ratio test compares two regressions, one where my instrument, the migration network, is included and another where it isn't in the household level regressions. A limitation of the likelihood ratio test is that it does not allow for the inclusion of weights and clustering, both of which are important for analyzing survey data like the NLSS. On the other hand, the Wald test includes both weights and clustering in the estimation and also checks whether all the controls used in the regression contribute to the goodness of fit. Both tests reveal that the migration network and the controls are important for the analysis given the rejection of the null hypothesis that the coefficients are jointly equal to zero. In sum, these tests illustrate that the migration network instrument is a positive and strong predictor of the household's decision to send a migrant.

The regression results using the predicted migration decision of the household are in the following sections. In comparison with the OLS regressions, I find that the signs and magnitude of the estimated coefficients in the OLS are different with the instrumented regressions. The benefit of addressing endogeneity is that the estimates are produced with greater precision.

2.5.1 Paid and unpaid work

In this section, I estimate the causal effect of paternal migration on the work in and outside of the household of the mothers and children 10 to 16 years old. The intuition is that household work is solely reallocated to women when the father migrates because of the traditional Nepali gender roles. Table 2.5 presents the results on the household chores of the left-behind family in the last 7 days. The effect of paternal migration to children 10 to 16 years old are on columns (1) to (4) and the effect on mothers are on columns (5) and (6). I find that paternal migration has no average effect on the chores done by mothers and children in migrant households. However, when chores are broken down into categories, significant differences arise due to migration for children left-behind. On Tables C.9, C.10 and C.11 in the appendix, migration is shown to increase the hours spent by girls in collecting fodder and processing preserved food by 5.4 hours and 1.5 hours respectively. In comparison to the mean hours spent by a child in these tasks per week, the estimates represent a significant increase in hours. Girls spending more time collecting fodder seems to make sense in this context as Pokharel (2008) recounts that caring for cattle is a typical part of a man's

Table 2.4: First Stage Results with full set of controls

	(1) Household Migrant Father	(2) Child 10 to 16 yo Migrant Father	(3) Mother Migrant Husband
Migration network (Leave out mean)	0.537***	0.510***	0.424***
	(0.132)	(0.184)	(0.153)
Female		0.0104	
		(0.0127)	
Child's age		-0.111	
		(0.0721)	
Child's age sq		0.00474*	
		(0.00273)	
Mother's age			0.00292
			(0.00431)
Mother's age sq			-3.27e-05
			(4.04e-05)
Father's education	0.0440***	0.0457***	0.0435***
	(0.00214)	(0.00373)	(0.00219)
Father's education sq	-0.00397***	-0.00445***	-0.00392***
	(0.000170)	(0.000269)	(0.000186)
Father's age	0.00243	-0.000625	-0.00426
	(0.00274)	(0.00529)	(0.00440)
Father's age sq	-7.95e-05***	-4.36e-05	-1.05e-05
	(2.51e-05)	(4.92e-05)	(3.69e-05)
Count of adults (>=16) in household	-0.0527***	-0.0393***	-0.0398***
	(0.00534)	(0.00668)	(0.00529)
Count of children in household	0.00823**	-0.00186	0.00299
	(0.00378)	(0.00472)	(0.00336)
Extended family presence	0.0344**	-0.000396	0.0176
	(0.0152)	(0.0264)	(0.0160)
Size of plots owned	-0.0113*	-0.0145*	-0.0113*
	(0.00575)	(0.00765)	(0.00608)
Per capita nominal consumption, 7d	0.000704***	0.00101***	0.000694***
	(0.000179)	(0.000365)	(0.000212)
Population with agriculture work (%)	0.167*	0.152	0.145
	(0.0950)	(0.128)	(0.106)
HH with flush toilet (%)	0.0123	-0.0430	0.00477
	(0.0476)	(0.0844)	(0.0530)
HH with piped water (%)	-0.0471	-0.0711	-0.0339
	(0.0353)	(0.0560)	(0.0369)
HH with electricity (%)	-0.101**	-0.0814	-0.0870**
	(0.0407)	(0.0550)	(0.0434)
Rural	-0.0261	-0.0259	-0.0134
	(0.0184)	(0.0279)	(0.0200)
Observations	5,228	4,663	5,079
CDW F-stat	25.088	19.934	15.705
Cluster	Village	Village	Village
Mean	0.228	0.261	0.233

Significance: *** p<0.01, ** p<0.05, * p<0.1. For the regressions, the district and ethnicity fixed effects and specifically for children, the birth year fixed effect, are not shown in the table but remain included in the regressions.

daily routine[19]. With the man away, girls are left to do these tasks. Processing food, on the other hand, is part of a woman's sphere as these tasks usually involve transforming the raw agricultural crops into daily food for the members of the family, such as, grinding seeds to make flour and making chutneys (Slater, 2004). Meanwhile, mothers in migrant households have reduced the hours they spent on cooking food but no significant change is observed for the other chore categories as seen on Tables C.12 and C.13 in the appendix.

A question that arises from this result is whether this increase comes from a time reallocation between left-behind members or, rather reflects an increase in total household chores. The mean difference table on Table C.14 shows that, on average, migrant households significantly spend less time on total chores and have fewer members doing chores than non-migrant households. Another way to illustrate this is by looking at chore hours per capita. This measure considers the fact that the number of members differs across the household types and could be more reliable in understanding whether total household chores have indeed increased in migrant households. I test this hypothesis

[19]On page 78, he says, "*... Males prepare food stuff for cattle, milk the cow, clear the cowshed and shift the animals at open space.*"

on Appendix Table C.15 with the same regressions at the household level. For all three different measures that represent total household chores, I find no evidence that migrant households significantly have more chores to do than non-migrant households. Although, on Column (2), it shows that migration has increased the number of members doing chores given a fixed household size (by adult and children) indicating that there seems to be a transfer of responsibilities. Therefore, the evidence points to a reallocation of chores within members of the migrant households after the father leaves.

Table 2.6 shows the estimates for work outside the home. If we expect migration to ease a household's budget constraints, then we should see a reduction in child labor. For mothers, the effect of migration is not as straightforward given the context. The probability that she works outside the household could increase because either she gains empowerment from the absence of her spouse or merely out of necessity. This distinction is explored further in a following subsection.

As seen on columns (1) to (4), the father's migration has a positive and significant effect on the girls' probability to have taken a job in the last year and the total number of hours worked in the last year has increased, which more

than doubled their mean hours and likelihood. Majority (90%) of these children work in the agriculture sector indicating that the increase could also be for jobs in that specific sector. Furthermore, mothers are also more likely to have taken a job, especially in agriculture as seen on columns (5) and (8) of Table 2.6. Only 26% of mothers working in agriculture are paid, showing that most of the time they are working unpaid in agriculture work. With limited time in a day, the mother being more likely to work outside the home means she is less likely to spend time at the home. We see this in the result for chores where she has spent less time cooking. A possible concern regarding these employment results is the local labor market confounding the estimates. I used the share of the village population working in agriculture as a proxy for local labor markets, Pop in Agri (% of VDC), and I included it as a control as seen on Table 2.6. The coefficient of this proxy is positive and significant on the binary measures of work indicating that it matters in the labor force participation decision.

Table 2.5: IV - Household Chores of left-behind family, 7d

	(1)	(2)	(3)	(4)	(5)	(6)
	Children 10-16 years old				Mother	
	Spent at least 1hr		Number of Hours		Spent at least 1hr	Number of Hours
Migration	0.499	0.658	15.04	7.773	-0.0642	20.14
	(0.373)	(0.465)	(9.243)	(11.62)	(0.115)	(21.37)
Migration*Female		-0.192		8.796		
		(0.252)		(7.952)		
Female	0.227***	0.271***	9.846***	7.873***		
	(0.0214)	(0.0606)	(0.618)	(1.849)		
Observations	4,663	4,663	4,663	4,663	5,079	5,079
CDW F-stat	19.93	9.13	19.93	9.13	15.70	15.70
Cluster	Village	Village	Village	Village	Village	Village
Mean	0.711	0.711	11.55	11.55	0.971	40.10

Significance: *** p<0.01, ** p<0.05, * p<0.1. Child-level Regressions: controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district. Mother-level regressions: controls include the mother's age and its square, her education in categories, number of other wives and a dummy for her father being alive. All regressions control for the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table 2.6: IV - Work of left-behind family, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Children 10-16 years old				Mother		
	Took a job in the last year		Total hours doing job		Took a job	Job pays wage	Job in agriculture
Migration	0.662	0.180	354.3	-72.36	0.762**	0.302	1.203**
	(0.495)	(0.507)	(377.0)	(394.6)	(0.374)	(0.370)	(0.507)
Migration*Female		0.583**		516.8***			
		(0.256)		(197.8)			
Female	0.0272	-0.104*	-31.87	-147.8***			
	(0.0192)	(0.0587)	(23.50)	(54.31)			
Pop in Agri (% of VDC)	0.440**	0.453**	-81.64	-70.66	0.349**	-0.139	0.597***
	(0.209)	(0.209)	(170.6)	(172.0)	(0.155)	(0.127)	(0.216)
Observations	4,663	4,663	4,663	4,663	5,079	5,079	5,079
CDW F-stat	19.93	9.13	19.93	9.13	15.70	15.70	15.70
Cluster	Village	Village	Village	Village	Village	Village	Village
Mean	0.417	0.417	221	221	0.789	0.228	0.647

Significance: *** p<0.01, ** p<0.05, * p<0.1. Child-level Regressions: controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district. Mother-level regressions: controls include the mother's age and its square, her education in categories, number of other wives and a dummy for her father being alive. All regressions control for the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

2.5.2 Children's Education

The left-behind members typically receive some remittances from their migrant member. With this, the household gets flexibility on their budget and therefore, children in migrant households can be expected to have better education outcomes. This hypothesis is tested on Table 2.7 for various education outcomes: completed years of education, primary schooling completion, education expenditure and drop out for school-age children.

On columns (1) and (2), the coefficients of migration on completed years of education are insignificant. On average, children 10 to 16 years old complete the same amount of schooling regardless of migration. In the next analyses, I use variables that are conditional on having gone to school. I begin with testing the difference in the probability that children complete primary schooling, i.e. 5 years of education. It is worth mentioning that primary schooling has been free and mandatory for all Nepali but the completion rate still did not reach 100% in the sample as can be observed in the mean value in the bottom panel of the table. The estimates on columns (3) and (4) show no significant difference for children in migrant and non-migrant households.

For children currently schooling, I have the education expenditure in the last 12 months and I explore the effect of migration on this on columns (5) and (6). The migration coefficient and its interaction remains insignificant. Finally, I test for the effect on drop out rates for children conditional on (ever) schooling on columns (7) and (8) and the estimates remain insignificant. It is striking that these schooling outcomes don't differ for boys and girls in migrant and non-migrant households. It implies that the income effect of migration does not play a role in this context. A possible explanation for this is that remittance receiving households or the migrant's income is not used primarily for education. According to Central Bureau of Statistics (2011*b*), about 80% of remittances is used for daily consumption and only 3.5% is used for education, which might not be large enough to make a difference in children's education. Additionally, I would have expected a reduction in school performance because girls in migrant households were shown to have a greater load of housework and child labor as seen in earlier results. One way to approach this is to consider that the increase in work results in a reduction in leisure time and so schooling does not necessarily get affected.

A similar paper by Bansak and Chezum (2009) has also used the NLSS 2010/11 to study the effect of migration on

the enrolment of 5 to 16 yo children left-behind using the Net remittances received as the treatment variable. They have shown that Net remittances have increased enrolment rates of children 5 to 10 yo with a greater effect for boys in remittance receiving households. The result is different to what I find here for two main reasons: their sample consists only of remittance receiving households and the instruments employed are different and computed at a higher aggregation level (district).

Table 2.7: IV - Education of Children 10 to 16 years old

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Completed years of Education		Finished primary		Education Expenditure in Rupees		Dropped out before 16yo	
Migration	1.678	1.733	1.166	1.514	3,693	1,214	-0.0212	-0.100
	(1.934)	(2.172)	(0.727)	(0.936)	(4,253)	(4,655)	(0.143)	(0.170)
Migration*Female		-0.0660		-0.437		3,159		0.0948
		(1.304)		(0.365)		(2,324)		(0.116)
Female	-0.275***	-0.261	-0.0422*	0.0545	-1,092***	-1,832***	-0.00736	-0.0288
	(0.0814)	(0.314)	(0.0247)	(0.0737)	(235.9)	(621.0)	(0.00855)	(0.0298)
Head's child	0.0601	0.0616	0.0188	0.0301	493.3	413.4	0.00594	0.00365
	(0.162)	(0.164)	(0.0344)	(0.0406)	(382.4)	(376.4)	(0.0167)	(0.0170)
Observations	4,663	4,663	3,734	3,734	4,227	4,227	4,477	4,477
CDW F-stat	19.93	9.13	11.93	5.68	16.92	7.77	19.44	8.72
Cluster	Village	Village	Village	Village	Village	Village	Village	Village
Mean	5.798	5.798	0.670	0.670	6974	6974	0.0494	0.0494

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

2.5.3 Women Empowerment

Kabeer (1999) describes empowerment as the process of change where an individual previously deprived of making choices is now given the freedom and the ability to do so. In the previous results, it showed an increased work outside the home for women, particularly in the agriculture sector. Being able to work could translate into a better sense of empowerment or greater bargaining power based on the cooperative model of intrahousehold bargaining. This is because a woman's outside option, her welfare outside of the marriage, increases with a job (Doss, 2013). More than that, the absence of her husband could be beneficial to her in the sense that she becomes the sole decision-maker of the household, thereby, gaining full control of the use and allocation of household resources. So then, it can be expected that Nepali women have overall gained some empowerment.

I explore this by looking at another common proxy of empowerment, i.e., participation in decision making, to complement the employment results. On Table 2.8, I present the results on the total number of final decisions the mother has made alone in the last 12 months. Column (1) shows a positive and significant coefficient on the total number of

final decisions made alone while controlling for the number of decisions made in the last 12 months. A mother in a migrant household makes 2.65 more final decisions alone than in non-migrant households. Alternatively, a similar positive result is obtained when taking the share of decisions where a mother in a migrant household takes 0.37 pp more final decisions. The type of decision that she is making more by herself has to do with assets as seen on Column (5), that is, spending on food and major household items and selling of household assets. The other types of decisions are also positive but the coefficients are not significant. On Table C.16 in the appendix, I present the results on final decisions made alone and jointly with her husband where it shows mostly negative and insignificant coefficients. By itself, this can be interpreted as participating less in decision-making but taken together with the result on Table 2.8 it illustrates that final decisions are less taken jointly with the spouse and more decided on by the mother in migrant households.

However, given that there is no significant change on the rest of the decision types, especially, to final decisions regarding the mother's own health and bodily autonomy, it is difficult to exclude the idea that her greater involvement in decision-making alone is only a consequence of the man's absence, *empowerment by absence* as Fakir and Abedin

(2021) put it. Sociological evidence provides some support to this conjecture. In quantitative studies, it is documented that women have been taking over farming tasks previously performed by men, i.e., land preparation, fertilization irrigation, cutting, and drying harvests, for reasons, such as, male migration and conflict displacement (Maharjan et al., 2013; Upreti et al., 2018). Although this shift has brought change in the traditional gender division of agricultural labor in Nepal, women continue to struggle in selling crops and negotiating the price. Tasks that could be reflective of one's level of empowerment. In an interview from Upreti et al. (2018), a female respondent disclosed that despite being the one responsible for all the farming work, she felt that she was in a weak position to negotiate to sell her crops because she did not have enough knowledge. In certain cases, women had their husbands on the phone to assist and reach certain decisions (Adhikari and Hobley, 2015).

It is important to consider as well the effect on the future empowerment of girls in migrant households. These girls risk their future empowerment as they spend a lot of time working or doing chores and less on leisure and studies. Having good education has been theorized to aid in making strategic choices and increase empowerment in the long run, (Doss, 2013; Kabeer, 1999). Thus, these low-performing

girls could potentially have a relatively low empowerment in the future.

Table 2.8: IV - Mother's final decisions alone, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Nb of final decisions made alone by category				
	Total	Share	Education	Healthcare	Assets	Agriculture	Remittances
Migration	2.645*	0.371*	0.837	0.148	1.255*	0.980	0.854
	(1.593)	(0.219)	(0.568)	(0.778)	(0.722)	(0.690)	(0.574)
Nb of decisions	0.112***	-0.00695***	-0.00202	0.0483***	0.0114	-0.000755	-0.0168**
made in last 12 mos	(0.0182)	(0.00251)	(0.00604)	(0.00896)	(0.0103)	(0.00964)	(0.00754)
Observations	4,871	4,871	3,109	4,236	4,423	3,785	1,566
CDW F-stat	13.74	13.74	9.79	7.64	8.73	11.57	5.91
Cluster	Village	Village	Village	Village	Village	Village	Village
Mean	1.290	0.184	0.216	0.477	0.483	0.301	0.202

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

2.6 Robustness Check

A concern that could possibly weaken the results of my main analysis is that all the productive hours of left-behind members are actually correlated with one another. Each individual has only a limited amount of time in a day, thus, more time spent in chores means less time in school or work, and vice versa. Or, the household chores that the mother does can no longer be done by the son and daughter. Hence, the estimates from the regressions of chores and work (and education) or mother and child in sections 2.5.1 and 2.5.2 could have precision issues. Here, I present regressions that verify the consistency and stability of my main results in consideration of these issues. In these additional tests, I find that the more consistent and stable result from my main specification is the increase in responsibilities for girls while I lose the effect on mothers.

2.6.1 Across time-consuming outcomes

I address the possible issue of correlation across the different outcomes measured by creating one outcome variable called productive hours. This variable is the sum of the

hours that each individual spent in chores and worked any job in the last 7 days and, specifically for children, I include the hours spent in school conditional on being enrolled. I regress the productive hours of the mother and the children separately. Table 2.9 shows that mothers and girls in migrant households have greater productive hours while it is lower for boys in migrant households. Although, the coefficient for the girls is the only one significant.

To some extent, this result mirrors that of the main specification where girls are the ones spending more time in productive activities in migrant households than the other left-behind members.

2.6.2 Across left-behind members

To address the second concern, that is, the chores and work allocation decisions are inversely correlated across left-behind members of the household, I implement the same IV regression as in the main specification but I no longer split the sample for mother and child. This means that I have only one regression for chores and another for work for all the left-behind members of a household. The individual controls are slightly different from the main specification.

Table 2.9: IV - Total Productive Hours, 7d

	(1)	(2)	(3)
	Children 10-16 years old		Mother
Migration	-23.15	-43.26	5.051
	(23.09)	(28.57)	(24.33)
Migration*Female		29.68**	
		(11.68)	
Female	8.435***	1.492	
	(0.807)	(2.849)	
Head's Child	0.725	0.0296	
	(1.452)	(1.629)	
Mother's age			0.598*
			(0.354)
Mother's age sq			-0.0122***
			(0.00365)
Observations	3,331	3,331	5,079
CDW F-stat	7.01	3.32	15.70
Cluster	Village	Village	Village
Mean	44.09	44.09	62.77

Significance: *** p<0.01, ** p<0.05, * p<0.1. Child-level Regressions: controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district. Mother-level regressions: controls include the mother's age and its square, her education and its square, and number of other wives. All regressions control for the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

I include only a control for the relationship with the migrant father: a dummy equal to 1 when the individual is

a child and 0 for mother. I also include age, age-squared and a dummy for being born in a different district. I add education in single years as a control for the regressions involving work. The controls at the household and village-level, and the fixed effects at the caste-ethnic and district levels are the same. As seen on bottom panel of Table 2.10, the F-statistic is about two times larger in this regression possibly due to the larger sample size.

The result shows an 0.5 pp increase in the likelihood of doing chores and a 566 hours increase in hours spent in working in any job only for children in migrant households with the comparison group being the mothers and children (in non-migrant households). These represent a large increase in the amount of time children spent outside of schooling, 60% and 84% respectively. From the main specification, we know that this increase in chores and work is driven by girls in migrant households showing consistency in my story.

Table 2.10: All members in one Regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Does chores		Hours in Chores		Does Work		Hours in Work	
Migration	0.516	-0.0465	12.88	22.52*	0.740	0.533	462.3	-103.8
	(0.362)	(0.360)	(9.469)	(12.08)	(0.518)	(0.562)	(395.7)	(522.9)
Migration*Child		0.562***		-9.651		0.208		566.5**
		(0.194)		(7.350)		(0.203)		(257.2)
Child	0.217***	0.0180	-11.60***	-8.187**	0.667***	0.593***	494.9***	294.5*
	(0.0681)	(0.0935)	(2.474)	(3.295)	(0.115)	(0.134)	(139.7)	(164.2)
Observations	9,742	9,742	9,742	9,742	9,742	9,742	9,742	9,742
CDW F-stat	41.872	20.932	41.872	20.932	42.479	21.235	42.479	21.235
Cluster	Village	Village	Village	Village	Village	Village	Village	Village
Mean	0.847	0.847	26.43	26.43	0.611	0.611	673.3	673.3

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include age, age-squared and whether the individual is born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, caste/ethic and district level fixed effects.

2.7 Conclusion

In this paper, I estimated the causal effect of paternal migration to the left-behind family's outcomes using an instrumental variable approach to address endogeneity. I find that the father's migration worsened the already existing gender gaps in chores and work where women in migrant households are the ones carrying greater burden consistent with the traditional gender roles in Nepal. The result also shows that it did not affect their education negatively but could have possibly taken away from their leisure time. It highlights the stability and persistence of social norms impressive given that women upheld discriminatory practices even with the absence of the dominant male in the household. With majority of Nepali migrants going to India for seasonal menial work, an alternative explanation is that the nature and destination of migration did not seem to provide an opportunity for them to acquire new knowledge and culture. Although, the effect on leisure and social remittances are not empirically studied here in detail, future research could analyze this with a more appropriate dataset.

To some extent, the results also highlight that traditional roles and norms can change given the situation. The phys-

ical absence of the father has created some room for the mother to make more final decisions alone starting with household assets and to work outside of the home. Despite the quantitative and qualitative evidence showing that this is not by choice but by necessity, it remains an important step in the right direction for Nepali women. That being said, verifying multiple possible sources or outcomes of empowerment is essential to gain a clearer and fuller understanding of the impacts on women.

As migration continues to be a common livelihood strategy not just for Nepal but also everywhere else, the welfare of the left-behind women should be kept in mind. Policymakers should continue to strengthen already existing measures that encourage families to support women's well-being especially in these new tasks they are taking over and to discourage the employment of school-age children, particularly girls.

Appendices

Appendix C

Additional figures and tables

Figure C.1: Share of observations per Decision-Making item, 12 mos

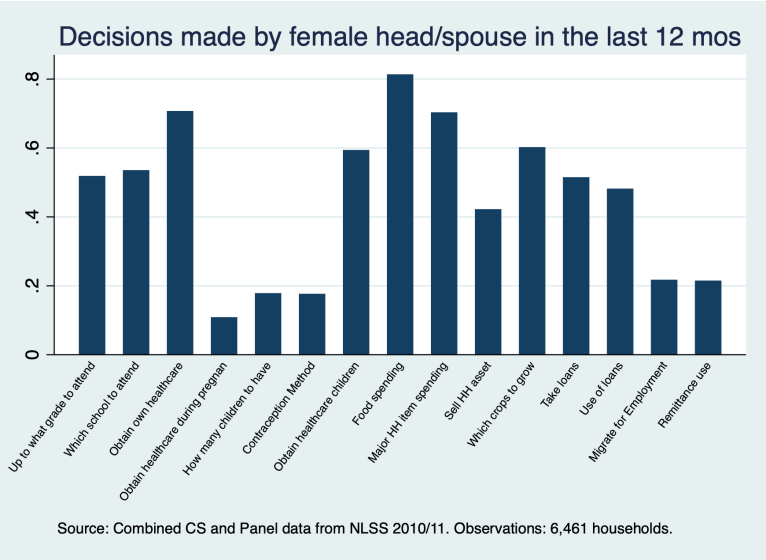

Figure C.2: Share of migrant individuals in Census 2010 and NLSS 2011

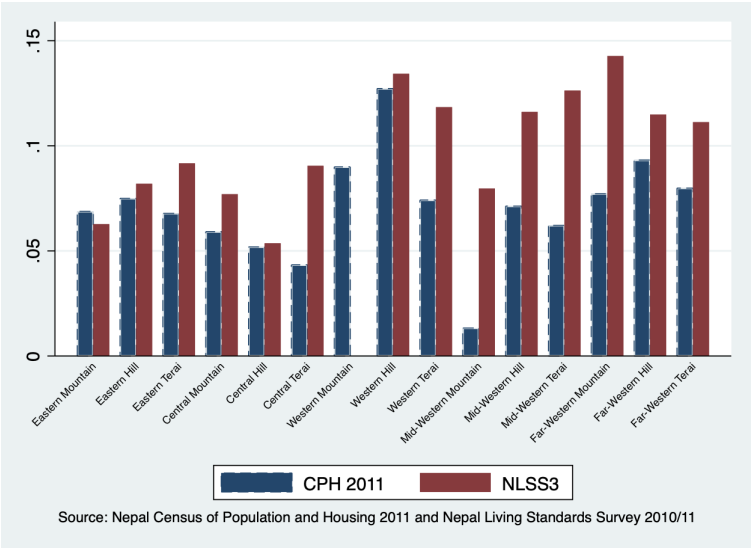

Table C.1: Mother's decision making alone and jointly by migration, 12 mos

Variable	(1) Non-Migrant N	Mean/SE	(2) Migrant N	Mean/SE	T-test Difference (1)-(2)
Up to what grade a child goes to school	1992	0.680	700	0.770	-0.090***
		(0.013)		(0.019)	
Which school to attend	2069	0.658	726	0.770	-0.111***
		(0.013)		(0.018)	
Own healthcare	2736	0.767	830	0.834	-0.067***
		(0.010)		(0.015)	
Own healthcare during pregnancy	421	0.760	178	0.847	-0.086**
		(0.027)		(0.031)	
Number of children to have	713	0.805	309	0.856	-0.051*
		(0.019)		(0.023)	
Method of contraception	734	0.840	271	0.867	-0.027
		(0.018)		(0.023)	
Healthcare of children	2295	0.705	817	0.843	-0.138***
		(0.012)		(0.015)	
Expenditure on Food	3182	0.719	944	0.822	-0.102***
		(0.010)		(0.015)	
Major HH spending	2765	0.679	810	0.797	-0.118***
		(0.011)		(0.016)	
Selling HH assets	1603	0.649	516	0.765	-0.116***
		(0.014)		(0.021)	
Which crops to grow	2286	0.695	717	0.765	-0.070***
		(0.011)		(0.018)	
Take loans	1992	0.610	662	0.712	-0.102***
		(0.013)		(0.020)	
Use of loans	1854	0.622	630	0.749	-0.126***
		(0.013)		(0.020)	
Migrate for Employment	658	0.483	463	0.622	-0.138***
		(0.023)		(0.026)	
Use of remittances	613	0.522	471	0.763	-0.242***
		(0.024)		(0.023)	

Table C.2: Mother's decision making alone by migration, 12 mos

Variable	(1) Non-migrant N	Mean/SE	(2) Migrant N	Mean/SE	T-test Difference (1)-(2)
Up to what grade a child goes to school	1992	0.065	700	0.207	-0.142***
		(0.006)		(0.016)	
Which school to attend	2069	0.068	726	0.205	-0.138***
		(0.006)		(0.016)	
Own healthcare	2736	0.173	830	0.362	-0.189***
		(0.008)		(0.018)	
Own healthcare during pregnancy	421	0.194	178	0.285	-0.091**
		(0.022)		(0.037)	
Number of children to have	713	0.161	309	0.181	-0.020
		(0.017)		(0.023)	
Method of contraception	734	0.218	271	0.259	-0.041
		(0.018)		(0.028)	
Healthcare of children	2295	0.093	817	0.336	-0.242***
		(0.006)		(0.018)	
Expenditure on Food	3182	0.157	944	0.427	-0.270***
		(0.007)		(0.018)	
Major HH spending	2765	0.126	810	0.358	-0.232***
		(0.007)		(0.019)	
Selling HH assets	1603	0.080	516	0.298	-0.219***
		(0.007)		(0.022)	
Which crops to grow	2286	0.096	717	0.321	-0.225***
		(0.007)		(0.019)	
Take loans	1992	0.081	662	0.179	-0.098***
		(0.007)		(0.015)	
Use of loans	1854	0.076	630	0.167	-0.092***
		(0.007)		(0.015)	
Migrate for Employment	658	0.057	463	0.077	-0.019
		(0.010)		(0.013)	
Use of remittances	613	0.096	471	0.277	-0.181***
		(0.012)		(0.022)	

Table C.3: OLS - Chores of left-behind Family, 7 days

	(1)	(2)	(3)	(4)	(5)	(6)
	Children 10-16 years old				Mother	
	Spent at least 1hr		Number of Hours		Spent at least 1hr	Number of Hours
Migration	-0.00291	-0.0196	0.0367	-0.422	-0.00857	-0.867
	(0.0169)	(0.0252)	(0.631)	(0.636)	(0.00902)	(1.118)
Migration*Female		0.0322		0.884		
		(0.0324)		(0.957)		
Female	0.233***	0.225***	10.00***	9.800***		
	(0.0192)	(0.0214)	(0.549)	(0.637)		
					(3.89e-05)	(0.00296)
Observations	4,663	4,663	4,663	4,663	5,079	5,079
R-squared	0.257	0.257	0.322	0.322	0.046	0.248
Cluster	Village	Village	Village	Village	Village	Village

Significance: *** p<0.01, ** p<0.05, * p<0.1. Child-level Regressions: controls include the child's age and its square, birth rank, a dummy for being unmarried, head's child and born in a different district. Mother-level regressions: controls include the mother's age and its square, her education in categories, and number of other wives. All regressions control for the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.4: OLS - Work of left-behind Family, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Children 10-16 years old				Mother		
	Took a job in the last year		Total hours doing job		Took a job	Job pays wage	Job in agriculture
Migration	-0.0201	-0.0311	-42.70**	-74.98***	0.00214	0.0640***	0.0490***
	(0.0211)	(0.0270)	(18.03)	(26.01)	(0.0134)	(0.0198)	(0.0151)
Migration*Female		0.0211		62.29*			
		(0.0348)		(35.70)			
Female	0.0342**	0.0294*	-27.78	-41.95			
	(0.0150)	(0.0169)	(22.06)	(27.65)			
Observations	4,663	4,663	4,663	4,663	5,079	5,079	5,079
R-squared	0.346	0.346	0.165	0.165	0.230	0.110	0.393
Cluster	Village	Village	Village	Village	Village	Village	Village

Significance: *** p<0.01, ** p<0.05, * p<0.1. Child-level Regressions: controls include the child's age and its square, birth rank, a dummy for being unmarried, head's child and born in a different district. Mother-level regressions: controls include the mother's age and its square, her education in categories, and number of other wives. All regressions control for the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.5: OLS - Education of 10 to 16 year old

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Completed years of Education		Finished primary		Education Expenditure		Dropped out before 16yo	
Migration	-0.108	-0.0418	-0.0253	-0.0111	230.3	604.4	-0.0128	-0.0254**
	(0.0962)	(0.125)	(0.0216)	(0.0308)	(217.7)	(366.0)	(0.00912)	(0.0106)
Migration*Female		-0.128		-0.0277		-742.5		0.0249**
		(0.148)		(0.0342)		(474.2)		(0.0123)
Female	-0.257***	-0.228***	-0.0241	-0.0179	-1,056***	-880.0***	-0.00746	-0.0132
	(0.0768)	(0.0843)	(0.0154)	(0.0177)	(222.5)	(269.6)	(0.00839)	(0.00971)
Head's child	0.0686	0.0716	0.0174	0.0181	512.5	532.5	0.00592	0.00530
	(0.165)	(0.165)	(0.0266)	(0.0265)	(394.0)	(396.4)	(0.0170)	(0.0170)
Observations	4,663	4,663	3,734	3,734	4,227	4,227	4,477	4,477
R-squared	0.506	0.506	0.359	0.359	0.473	0.473	0.184	0.185
Cluster	Village	Village	Village	Village	Village	Village	Village	Village

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the child's age and its square, birth rank, a dummy for being unmarried, head's child and born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.6: OLS - Mother makes final decisions alone and jointly, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Nb of final decisions made alone and jointly by category				
	Total	Share	Education	Healthcare	Assets	Agriculture	Remittances
Migration	0.164	0.00479	-0.0316	-0.0376	0.0695	-0.0224	0.0481
	(0.114)	(0.0130)	(0.0421)	(0.0527)	(0.0458)	(0.0633)	(0.0557)
Nb of decisions made	0.696***	0.00294	0.0455***	0.200***	0.0930***	0.121***	0.0444***
in last 12 mos	(0.0233)	(0.00277)	(0.00825)	(0.0100)	(0.00941)	(0.00865)	(0.00875)
Mother's age	0.0857**	0.0124**	0.0382**	-0.0730***	0.0629***	0.0501***	0.0142
	(0.0375)	(0.00501)	(0.0171)	(0.0170)	(0.0189)	(0.0173)	(0.0150)
Mother's age sq	-0.00140***	-	-	0.000460**	-	-	-0.000320*
		0.000187***	0.000583***		0.000693***	0.000642***	
	(0.000420)	(5.57e-05)	(0.000188)	(0.000175)	(0.000202)	(0.000191)	(0.000167)
Observations	4,871	4,871	3,109	4,236	4,423	3,785	1,566
R-squared	0.500	0.208	0.196	0.385	0.203	0.194	0.274
Cluster	Village	Village	Village	Village	Village	Village	Village

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

Table C.7: OLS - Mother makes final decisions alone, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Nb of final decisions made alone by category				
	Total	Share	Education	Healthcare	Assets	Agriculture	Remittances
Migration	0.829***	0.111***	0.143***	0.186***	0.385***	0.175***	0.0182
	(0.110)	(0.0129)	(0.0259)	(0.0419)	(0.0418)	(0.0427)	(0.0343)
Nb of decisions made	0.127***	-0.00481***	0.00308	0.0480***	0.0206***	0.00803*	-0.0121***
in last 12 mos	(0.0123)	(0.00179)	(0.00403)	(0.00670)	(0.00537)	(0.00452)	(0.00444)
Mother's age	0.0447**	0.00744**	0.00626	-0.00279	0.0192	0.0207**	0.0134
	(0.0219)	(0.00288)	(0.0121)	(0.00997)	(0.0116)	(0.00806)	(0.00911)
Mother's age sq	-0.000512**	-8.52e-05***	-8.83e-05	2.46e-05	-0.000244**	-0.000215**	-0.000122
	(0.000228)	(2.98e-05)	(0.000121)	(0.000107)	(0.000116)	(8.71e-05)	(9.84e-05)
Observations	4,871	4,871	3,109	4,236	4,423	3,785	1,566
R-squared	0.233	0.214	0.118	0.204	0.180	0.136	0.179
Cluster	Village	Village	Village	Village	Village	Village	Village

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

Table C.8: Instrument Validity test

	(1) LR Test Migrant Father	(2) Wald Test Migrant Father
Migration network (Leave out mean)	0.551***	0.537***
	(0.110)	(0.132)
Father's education	0.0462***	0.0440***
	(0.00194)	(0.00214)
Father's education squared	-0.00381***	-0.00397***
	(0.000134)	(0.000170)
Father's age	0.00352	0.00243
	(0.00233)	(0.00274)
Father's age squared	-7.96e-05***	-7.95e-05***
	(2.35e-05)	(2.51e-05)
Count of adults (>=16) in household	-0.0493***	-0.0527***
	(0.00443)	(0.00534)
Count of children in household	0.00766**	0.00823**
	(0.00368)	(0.00378)
Extended family presence	0.0379***	0.0344**
	(0.0123)	(0.0152)
Size of plots owned	-0.0119**	-0.0113*
	(0.00571)	(0.00575)
Per capita nominal consumption, 7d	0.000626***	0.000704***
	(0.000155)	(0.000179)
Share of population with agriculture work in VDC	0.186**	0.167*
	(0.0852)	(0.0950)
Share of households with flush toilet in VDC	0.0163	0.0123
	(0.0433)	(0.0476)
Share of households with piped water in VDC	-0.0587*	-0.0471
	(0.0341)	(0.0353)
Share of households with electricity in VDC	-0.112***	-0.101**
	(0.0325)	(0.0407)
Rural	-0.0246	-0.0261
	(0.0201)	(0.0184)
Observations	5,228	5,228
R-squared	0.305	0.302
F/χ^2 Statistic	25.38	4262.67
P-val	4.68e-07	9.67e-128
Weights	None	Yes
Cluster	None	VDC

Table C.9: IV - Chore Type (1) for children 10 to 16 years old, 7 days

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Hours spent in the last week by chore type:					
	Fetching Water		Collecting Firewood		Collecting Fodder		Animal Care	
Migration	1.359	0.920	2.436	2.583	-1.595	-6.117	3.809	2.040
	(1.912)	(1.734)	(2.705)	(2.577)	(3.612)	(4.704)	(3.403)	(3.852)
Migration*Female		0.529		-0.178		5.446*		2.130
		(1.329)		(2.188)		(2.809)		(2.521)
Female	0.514***	0.396	0.783***	0.823	1.757***	0.536	-0.246	-0.723
	(0.0874)	(0.294)	(0.168)	(0.595)	(0.181)	(0.619)	(0.195)	(0.634)
Head's child	-0.0275	-0.0393	0.186	0.190	0.186	0.0633	0.470	0.422
	(0.149)	(0.148)	(0.209)	(0.214)	(0.239)	(0.265)	(0.323)	(0.320)
Observations	4,634	4,634	4,634	4,634	4,634	4,634	4,634	4,634
CDW F-stat	19.32	8.76	19.32	8.76	19.32	8.76	19.32	8.76
Cluster	Village	Village	Village	Village	Village	Village	Village	Village
Mean	0.771	0.771	0.850	0.850	2.164	2.164	2.368	2.368

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.10: IV - Chore Type (2) for children 10 to 16 years old, 7 days

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Hours spent in the last week by chore type:					
	Knitting		Food processing		House Repairs		Cooking	
Migration	1.390	2.192	1.985*	0.712	0.394	0.529	2.568	2.152
	(1.146)	(1.556)	(1.175)	(0.972)	(0.587)	(0.576)	(2.605)	(2.591)
Migration*Female		-0.965		1.533**		-0.162		0.501
		(0.997)		(0.646)		(0.329)		(2.016)
Female	0.0505	0.267	0.111***	-0.233	0.160***	0.197**	3.129***	3.016***
	(0.0764)	(0.239)	(0.0383)	(0.144)	(0.0242)	(0.0803)	(0.172)	(0.464)
Head's child	0.145	0.166	-0.0341	-0.0685	0.0362	0.0399	-0.344	-0.355
	(0.176)	(0.192)	(0.0742)	(0.0786)	(0.0597)	(0.0618)	(0.266)	(0.269)
Observations	4,634	4,634	4,634	4,634	4,634	4,634	4,634	4,634
CDW F-stat	19.32	8.76	19.32	8.76	19.32	8.76	19.32	8.76
Cluster	Village	Village	Village	Village	Village	Village	Village	Village
Mean	0.0339	0.0339	0.145	0.145	0.130	0.130	2.132	2.132

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.11: IV - Chore Type (3) for children 10 to 16 years old, 7 days

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Hours spent in the last week by chore type:					
	Clearing House		Shopping		Elder Care		Baby Care	
Migration	1.608	2.710	-0.0551	-0.00696	-0.0294	-0.106	1.027	1.124
	(2.110)	(2.413)	(0.488)	(0.673)	(0.388)	(0.356)	(2.218)	(2.618)
Migration*Female		-1.327		-0.0579		0.0922		-0.117
		(2.044)		(0.443)		(0.280)		(1.649)
Female	2.863***	3.161***	-0.0613**	-0.0483	0.107***	0.0867	0.691***	0.717*
	(0.119)	(0.481)	(0.0301)	(0.110)	(0.0204)	(0.0685)	(0.105)	(0.378)
Head's child	-0.0592	-0.0294	-0.0140	-0.0127	0.0301	0.0281	0.237	0.240
	(0.325)	(0.334)	(0.0619)	(0.0630)	(0.0501)	(0.0489)	(0.212)	(0.207)
Observations	4,634	4,634	4,634	4,634	4,634	4,634	4,634	4,634
CDW F-stat	19.32	8.76	19.32	8.76	19.32	8.76	19.32	8.76
Cluster	Village	Village	Village	Village	Village	Village	Village	Village
Mean	2.091	2.091	0.243	0.243	0.0706	0.0706	0.625	0.625

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the child's age and its square, a dummy for being unmarried, head's child and born in a different district; the father's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and per capita nominal consumption. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.12: IV - Chore Type (1) for Mothers, 7 days

	(1) Fetching water	(2) Collecting Firewood	(3) Collecting Fodder	(4) Animal care	(5) Knitting	(6) Food Processing
Migration	2.988	9.400	1.770	2.586	3.218	2.176
	(3.232)	(7.126)	(7.078)	(6.660)	(2.533)	(2.702)
Mother's age	0.00973	0.0475	0.328***	0.263***	-0.0754*	0.0183
	(0.0472)	(0.0862)	(0.107)	(0.0849)	(0.0446)	(0.0267)
Mother's age sq	-0.000244	-0.000407	-0.00379***	-0.00235**	0.000607	-0.000214
	(0.000484)	(0.000964)	(0.00114)	(0.000925)	(0.000388)	(0.000270)
Observations	5,079	5,079	5,079	5,079	5,079	5,079
CDW F-stat	15.70	15.70	15.70	15.70	15.70	15.70
Cluster	Village	Village	Village	Village	Village	Village
Mean	1.393	1.989	5.616	5.262	0.277	0.762

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

Table C.13: IV - Chore Type (2) for Mothers, 7 days

	(1) House repairs	(2) Cooking	(3) Clearing house	(4) Shopping	(5) Elder care	(6) Baby care
Migration	2.171	-9.652*	-5.656	1.272	0.368	9.515
	(1.905)	(5.133)	(3.469)	(1.833)	(1.588)	(7.231)
Mother's age	-0.00721	0.110	-0.129*	0.0351	-0.0162	-0.560***
	(0.0293)	(0.116)	(0.0783)	(0.0276)	(0.0284)	(0.158)
Mother's age sq	5.60e-05	-0.00223*	0.000289	-0.000629**	0.000142	0.00464***
	(0.000294)	(0.00124)	(0.000762)	(0.000274)	(0.000291)	(0.00159)
Observations	5,079	5,079	5,079	5,079	5,079	5,079
CDW F-stat	15.70	15.70	15.70	15.70	15.70	15.70
Cluster	Village	Village	Village	Village	Village	Village
Mean	0.493	10.56	7.081	1.368	0.401	4.889

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

Table C.14: Household Chores by Father's Migration Status, 7 days

	(1) No Migrant		(2) Migrant		T-test Difference
Variable	N	Mean/SE	N	Mean/SE	(1)-(2)
Total hours members spent on chores	4035	51.748	1193	44.940	6.808***
		(0.589)		(0.771)	
Nb members doing chores	4035	3.032	1193	2.539	0.493***
		(0.024)		(0.037)	
Count of household members	4035	5.174	1193	4.410	0.764***
		(0.042)		(0.055)	
Hours doing chores per capita	4035	18.305	1193	20.385	-2.080***
		(0.165)		(0.371)	

Table C.15: IV - Total Household Chores, 7 days

	(1) Total hours spent on chores	(2) Nb of members doing chores	(3) Chores per capita
Migration	18.16	1.044*	-3.776
	(16.57)	(0.540)	(6.418)
Count of adults (>=16) in household	8.507***	0.594***	-1.016***
	(0.994)	(0.0331)	(0.365)
Count of children in household	6.528***	0.301***	0.470***
	(0.367)	(0.0193)	(0.124)
Extended family presence	5.299***	-0.103**	2.298***
	(0.996)	(0.0429)	(0.386)
Observations	5,228	5,228	5,228
R-squared	0.379	0.452	0.127
CDW F-stat	25.088	25.088	25.088
Cluster	Village	Village	Village
Mean	48.57	2.877	18.61

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, child birth year, caste/ethic and district level fixed effects.

Table C.16: IV - Mother's final decisions alone and jointly with spouse, 12 mos

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Nb of final decisions made alone and jointly by category				
	Total	Share	Education	Healthcare	Assets	Agriculture	Remit-tances
Migration	-5.038	-0.703*	-1.167	-3.848	-1.094	-0.881	0.378
	(3.398)	(0.426)	(0.964)	(2.357)	(1.288)	(1.140)	(0.769)
Nb of decisions made	0.739***	0.00874*	0.0539***	0.227***	0.105***	0.130***	0.0425***
made in last 12 mos	(0.0345)	(0.00478)	(0.0113)	(0.0240)	(0.0154)	(0.0143)	(0.00856)
Observations	4,871	4,871	3,109	4,236	4,423	3,785	1,566
CDW F-stat	13.74	13.74	9.79	7.64	8.73	11.57	5.91
Cluster	Village	Village	Village	Village	Village	Village	Village
Mean	5.362	0.742	1.289	1.784	1.672	1.520	0.899

Significance: *** p<0.01, ** p<0.05, * p<0.1. Controls include the mother's age, age-squared, education, education squared, number of other wives, a dummy for her father being alive, the husband's age and education in single years, household size (adult and children), a dummy for the extended family presence, the size of owned plots, and the nominal household consumption per capita. VDC-level controls such as the share of the VDC population engaged in agricultural work and the share of households in the VDC with a toilet, piped water and electricity. Also, dummies for ethnic/caste groupings and district level fixed effects.

Chapter 3

Sharing norm, household efficiency and female demand for agency in the Philippines

Joint with Jean-Marie Baland, Ludovic Bequet and Catherine Guirkinger[1]

Abstract: Households in the Philippines are characterized by durable unions and a relatively high status of women who are entrusted with the management of household finances, a context conducive to intra-household cooperation. We run experimental games with couples in the rural Philip-

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pines. We first find the prevalence of a strong sharing norm whereby women secure about two thirds of the total payoffs, in line with their prominent role in the family. Despite a favourable setting, couples incur large efficiency losses of about 46% of potential gains. We interpret this finding as revealing a strong, latent demand for agency by women who express a strong preference for hidden money over (larger) transfers from their husband as the latter involve an implicit control over their use. These findings challenge a naive view of female empowerment that solely focuses on the apparent control over household resources.

3.1 Introduction

Classical models of household decisions such as the Unitary and the Collective Models assume efficiency (Alderman et al., 1995). A growing empirical literature has called this assumption into question, in particular in the context of developing countries (see for instance Udry (1996), Duflo and Udry (2004), Goldstein (2004), Jakiela and Ozier (2016), Kazianga and Wahhaj (2017), and Rossi (2019)). Baland and Ziparo (2018) summarize the various mechanisms that may undermine household efficiency in poor countries and point in particular to the instability of marital relationships and the low level of female bargaining power. Marital instability pushes individuals to take actions to secure themselves in case of marital breakdown, while low bargaining power may prompt women to adopt passive and non-cooperative behaviors as the potential gains from cooperation are fully captured by husbands.

In this context, the Philippines provide an interesting setting to investigate cooperation in the household as (i) households are overwhelmingly nuclear and couples are remarkably stable (divorce is illegal) and (ii) women enjoy a high relative status, including a prominent role in household finances. In this paper, we present a series of lab-in-the-field

experimental games conducted with rural households in the Philippines. Participants together with their spouses played a standard Dictator game, a Dictator game with multiplier and a Trust game. Our first result highlights large inefficiencies within couples which goes against a cooperative approach of the household. On average, households forego 46% of their potential gains in the games. Similar levels of inefficiency have been observed in similar games in several settings such as India (Castilla, 2015) or Kenya (Hoel, 2015); see in particular the review by Munro (2018).[2] Our second result highlights a pattern of transfers revealing the prevalence of a surprisingly strong sharing norm, whereby women secure about 60% of the pay-offs, regardless of the game played. This is consistent with their traditional role as financial managers of the household.

Finally, we explore possible mechanisms underlying household inefficiency. We interpret our main findings as a demand for agency, whereby women in particular express a preference for money under their direct control. For instance, given the return behavior of the spouse in the trust games, wives forego 1.74 dollars and husbands 1.14 dollars for every dollar they decide to keep. This suggests that

[2]Moreover, as shown by Hoel (2015), couple behaviors in experiments have strong predictive power for real life decisions (see also Munro (2018)).

transfers from husbands appear as less valuable than money wives keep for themselves, as if transfers carry "strings attached". This is in line with a recent experimental literature highlighting a demand for secrecy within couples (see for instance, Ashraf (2009); Boltz et al. (2019); Hoel (2015); Jakiela and Ozier (2016); Kebede et al. (2014)). What our evidence highlights is that, in the Filipino context, entrusting women with the nominal charge of household finance does not confer them a full control over its use. This suggests a more nuanced view of female empowerment than a self-declared participation to household financial decisions.

The rest of the paper is structured as follows. Section 2 describes the context of marital relationships in the Philippines, Section 3 discusses the data and the design of our experiment. Section 4 presents the results of the games, highlighting the prevalence of a sharing norm and large levels of inefficiency. Section 5 discusses the mechanisms underlying these inefficiencies. Section 6 concludes.

3.2 Institutional Context

Households in the Philippines feature two characteristics that should further cooperation and promote efficiency: (i)

the permanence of the couple and (ii) the apparent gender equality. In addition, women play a prominent role in household finances. We discuss these three points below.

First, divorce remains illegal in the Philippines and Filipinos strongly believe that marriages are permanent (Abalos, 2017; Medina, 2001). Given a strong sigma on separation, the society expects women to keep the relationship intact through "her submission, patience and virtues" (Alcantara, 1994). She would typically be the one to be blamed or publicly shamed for letting the relationship break down (Angeles and Hill, 2009).

Nevertheless, compared to other developing countries, Filipina women are more empowered and experience better living conditions. The Philippines receives a score of 0.784 (17th rank) on the gender equality index of the Human Development Report and outranks by far its neighbors of the East Asia and Pacific Region (0.688)[3]. Husband and wife are said to have equal roles in making decisions involving property, income, agricultural decisions or the education of children (Gerpacio et al., 2004; Ramirez, 1984). In rural areas, farming couples work side by side, with the woman

[3]The index is computed based on four dimensions: educational attainment, health and survival, political empowerment, and economic participation and opportunity (WEF, 2020).

typically responsible for transplanting, weeding, fertilization, harvesting and threshing (Illo and Lee, 1991; Pineda, 1981). We observe this in our sample where about 85% of households have both husband and wife working on the household plot in the most recent cropping season.

Despite this apparent equality, gender roles are highly differentiated: "In the ideology of the Filipino family, [...] the wife/mother [is] cast as manager, nurturer and moral pillar, and husband as resource provider and titular head" (Chen, 2005: 70, cited by Chant (2007)). Filipina women play a central role in domestic affairs, "often being referred to as [...] the light of the home, or even as [...] the 'commander' " (Angeles, 2001). They are typically entrusted with financial responsibilities on household expenditures and are given control over household spending from the pooled income of household members (Stoodley (1957); Ramirez (1971) as cited in Church (1986); Illo (1989); Eder (2006); Alcantara (1994); Vancio (1980)). Thus, in our sample, wives declare that they are in charge of the household's money in 92% of the households[4].

[4]On the other hand, only 36% of husbands claimed to be in charge of the money. The question was part of the post-game questionnaire where each participating member of the couple was asked independently "Are you in charge of the household's money?".

Filipinos generally believe that men are incompetent in managing money. Husbands are supposed to turn over their earning to their wives who, in turn, provide them with a daily allowance or pocket money to spend on their vices (Angeles and Hill, 2009; Eder, 2006). "Men often spend a disproportionate amount of time and money (including that of their wives) on extra-domestic activities, including socializing with their [...] gang, and/or engaging in [...] vices such as betting on cockfights, drinking and taking [...] mistresses" (Chant, 2007). In a study of Ifugao women, Kwiatkowski (2019) reports that "men tended to spend money on themselves more often than women spent money on themselves".

While on the surface women have high status, some scholars argue that family relationships remain highly hierarchical with men keeping a leadership role in the household: Wives relations to economic assets are typically "indirect and mediated through her husband" (Eder, 2006). Women's active management of money signifies women's responsibility for managing family finances rather than control over how the cash is spent (Aguilar, 1988; Errington, 1990). As pointed out by Kwiatkowski (2019), this form of delegation introduces a critical difference between the money a wife receives from her husband and the money she earns herself: "Within the household, although Ifugao women usually managed all

of their family's cash resources, women were highly conscious of the money they themselves had earned versus the money earned by their husbands. Some did not always feel they could freely spend the money that their husband had earned. [...] One woman stated that she was often reticent to ask her husband for money that he had earned for items or services that she felt she needed, or that she would have liked to give to her relatives in crisis."

In addition, even if a woman has control, the money she manages may just cover basic household needs and it is not clear that the husband turns over all his earnings, taking advantage of her ignorance of how much he actually earns. Ashraf (2009) highlights that husbands may be tempted to withhold money and not turn all of it over to their wives. As she writes, "this behavior is so widespread that there is a word in the Tagalog language that is applied to men not handing over all of their income to their wives: kupit. Kupit literally means to pilfer, to filch, to steal in small quantities".

The combination of low divorce rate and high gender equality makes Filipino context a particular and relevant place to investigate cooperation in the household. Yet, power relations underlying stereotyped gender roles and a culture of secrecy and separate budgets for personal spending poses

obvious challenges to collective efficiency.

3.3 Experimental Design and Data

Sample selection and survey

The data was collected from April to August 2018 from a sample of farming households living in the uplands of Bukidnon in Northern Mindanao. As this research was part of a larger research project on smallholder corn farmers, respondent households were selected based on the following criteria: they farmed corn at least once in the last 10 years, and cultivate less than 10 hectares of land.[5]. Each household spent about three hours answering the household survey and participating in the experiment. Overall, we were able to gather information from 212 farming households from 14 villages[6].

We collected detailed information on the household, spousal

[5]Information about the survey and the experiment was given to the villagers one day in advance by one of our enumerators.

[6]Data collection and the experiment were conducted in the native languages of the area, Pulangiyen and Bisayan in particular

trust, and household decision making, through separate interviews with each spouse. We asked which spouse takes decisions when it comes to household expenditures, agricultural credit, or crop choice. We also included questions about the level of trust the participant has in her spouse when it comes to handling household finances. Table 3.1 reports some descriptive statistics. About half of the respondents belong to an indigenous community, the others originate from migrant communities in the region or other islands. On average, women are slightly more educated than their husbands and have been married to each other for more than 20 years. A third of the couples are matrilocal as the couple lived, at some point after marriage, close to the bride's family. Within households the level of trust is generally high even though 25% of the wives declare that they do not fully trust their husband for financial decisions. In terms of decision making, about half of household decisions are taken jointly. According to both members of the couple, husbands take slightly more individual decisions than their wife.

Table 3.1: Descriptive statistics

Variable	N	Male Mean/SD	Female Mean/SD
Age (self)	212	43.571 (12.337)	39.500 (12.419)
Education (self)	212	5.052 (3.107)	5.995 (3.448)
Indigenous (self)	212	0.547 (0.499)	0.585 (0.494)
No trust	212	0.075 (0.265)	0.250 (0.434)
Reported joint decision share	212	0.490 (0.332)	0.518 (0.348)
Decision share (self)	212	0.302 (0.248)	0.223 (0.238)
Decision share (spouse)	212	0.208 (0.208)	0.260 (0.232)
Years of marriage	212	20.528 (12.810)	
Matrilocality	212	0.358 (0.481)	
HH owns land	212	0.774 (0.420)	
Wife owns land	212	0.217 (0.413)	

Experimental games

The lab-in-the-field experiment involved both spouses who played with each other a series of games derived from the standard literature, namely two variants of the Dictator Game and a Trust game in which all respondents played both roles. Although players made decisions that influenced the payoffs of their spouse, the game set-up prevented the spouse to infer how much money the player kept for herself. At the beginning of each session, the enumerator grouped together the husbands (wives) and placed them in a location away from the view of their spouse's group in order to ensure privacy. We also provided each player a makeshift booth to conceal her decisions.

To avoid systematic biases, games were played in one of four pre-determined orders[7]. The games were incentivized and the compensations were determined by the payoffs resulting from one randomly chosen game. We made sure that players could not infer the decisions made by their spouse from this compensations. In practice, participants received either individual vouchers, handed out individually,

[7]We have prepared four scenarios that changes the sequence in which the games are played. These are available in Appendix F

or a couple voucher.[8] Vouchers could be exchanged for a variety of household and personal items in a small shop run by the enumerating team directly after the session.

In the standard Dictator Game, each participant received two envelopes, one of which contained 200 pesos[9] as endowment. Players had to decide how to share the received endowment with their spouse by filling in the second envelope. The physical manipulation of the bills and envelopes was meant to help the participant visualise the stakes. In the "multiplier" version of the Dictator Game, the money given to the spouse was tripled before reaching her. After explaining the game, the enumerators always provided examples to clearly illustrate the multiplication of the money sent.

The Trust Game used the same set-up as the Dictator Game with multiplier, but allowed the receiving spouse to send back part of what she received. To capture the return strategy while ensuring privacy, we asked, for each possible

[8]The value of the couple voucher was based on a separate section of the interview, not presented in this paper. The choice between individual and couple voucher was randomized at the session level and unknown to the participants before the end of the games.

[9]This is equivalent to a day's wage in this area. The exchange rate is roughly 50 PhP $\approx$ 1 USD.

amount sent, the amount they were willing to send back.[10] To create a single measure of return behaviour from the return strategy, we compute the average amount returned for each dollar received (after tripling the amount)[11]. This is the main measure of trust game return that is used in the rest of the paper. A limitation of this approach is that it is based on hypothetical returns which are not equally plausible as participants have expectations on the amounts likely to be sent by their spouse. In appendix B, we present our main results using as an alternative measure the return amount corresponding to the transfer actually sent by the spouse (instead of the average over all possible transfers). Results are left unchanged by this alternative definition.

Two features of our games mitigate the "undoing problem", whereby spouses make ex-post transfers unknown to the experimenter (Munro, 2018). First, we chose to distribute vouchers to be exchanged against goods by the recipient, immediately after the experiment, thereby discouraging post-game transfers. Second, the compensations, when individual, were kept private.

[10] In order to avoid redundancy, we asked the amount returned in case the amount sent was 50, 100, 150 and 200. The response sheet showed both the amount sent and the amount received after tripling.

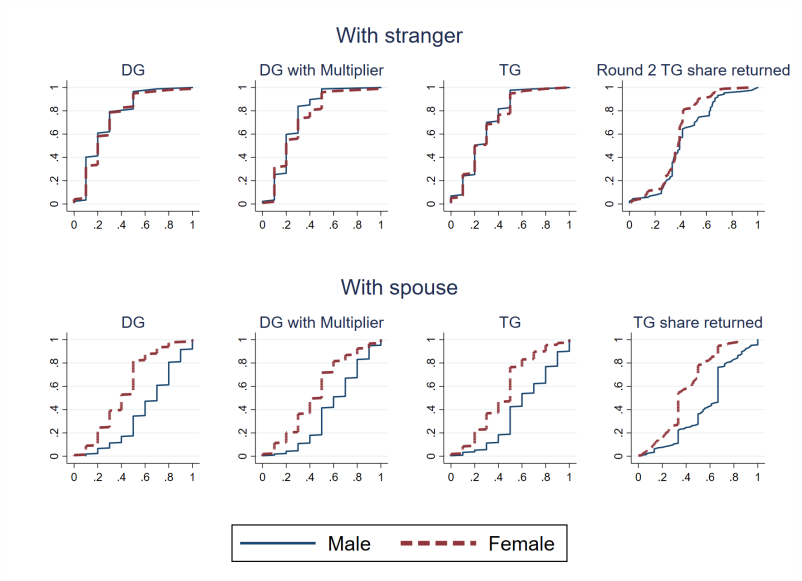
[11] In practice, we compute the ratio of the total amount returned divided by the sum of all possible transfers received.

To provide a benchmark for intrahousehold cooperation, we visited again some of the villages two months later and asked former participants to play the same set of games with an anonymous player from their community. Overall 185 individuals participated in these additional games.

3.4 Norm and Efficiency in the Household

We first present the behaviors of husbands and wives when they played with an anonymous recipient in the relevant subsample of players. Figure 3.1 reports the cumulative distributions of the share sent for each decision taken. As can be seen, men and women behave in a surprisingly similar manner, as the distribution are almost identical across gender. On average the amount sent is about 25% and never exceeds 50% of their endowment. Unsurprisingly, when return transfers are allowed, the amount sent is slightly larger as the cumulative distribution of the share sent in the trust game dominates the share sent in the dictator game with multiplier.

Figure 3.1: Cumulative density of amounts sent



As expected, when playing with their spouse, the amounts sent in each decision are larger. However, husbands and wives play very differently, as husbands transfer systematically larger amounts. For instance, in the dictator game,

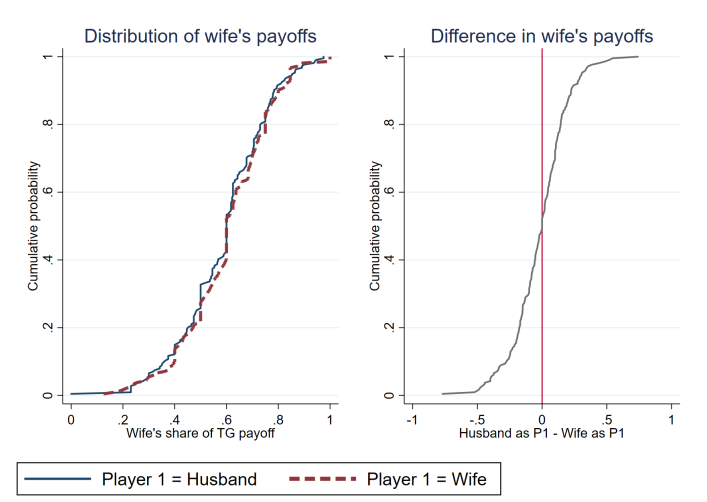
husbands send 65% of their endowment while wives send only 42% (see Table 3.2). A similar differential is observed for each of the four decisions presented in Table 2. In addition, for decisions that involve a pure transfer (DG and TG Return), the shares sent by husbands and wives approximately sum to 1.[12] In other words, in those games, the share of the initial endowment that accrues to women (men) is independent of the gender of the sender. Interestingly, the same pattern obtains in the distribution of the final payoffs of the trust game: the wife secures the same share of the final payoff whether she or her husband makes the first transfer. Figure 3.2 plots the cumulative distributions of the wife's payoff share when husbands or wives play first (and the difference in these payoffs), illustrating the irrelevance of the identity of the first player. Overall, these two findings suggest the existence of a strong sharing norm that systematically favors women in intra-household transfers, in line with the anthropological evidence.

[12]The average of the sum of husband and wife transfers is 1.058, which, while statistically different, is very close to one.

Table 3.2: Endowment share sent in the games

Variable	(1) Male N	(1) Male Mean/SE	(2) Female N	(2) Female Mean/SE	T-test Difference (1)-(2)
Dictator Game	212	0.649	212	0.415	0.234***
		(0.016)		(0.014)	
Dictator Game with Multiplier	212	0.627	212	0.451	0.176***
		(0.015)		(0.016)	
Trust Game - Player 1	212	0.636	212	0.442	0.194***
		(0.016)		(0.015)	
Trust Game - Player 2	212	0.581	212	0.383	0.198***
		(0.017)		(0.012)	

Figure 3.2: Trust game final payoff



We now analyze whether this gender differential holds once we control for various household and individual characteristics in the dictator game. The game corresponds to a simple cake sharing between spouses and may thus be the most direct evidence of a sharing agreement.

Table 3.3: Endowment share sent in Dictator Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.241***	-0.240***	-0.243***	-0.248***
	(0.033)	(0.032)	(0.033)	(0.039)
No trust	0.011		0.012	0.032
	(0.029)		(0.030)	(0.033)
Decision share (self)		0.005	0.003	-0.054
		(0.046)	(0.046)	(0.063)
Decision share (spouse)		0.025	0.027	0.026
		(0.046)	(0.047)	(0.073)
Observations	424	424	424	420
R-squared	0.249	0.249	0.250	0.632
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

Table 3.3 reports the results of various alternative specifications of OLS estimations for the amount sent in the Dictator Game (as measured by the share of the initial endowment). We control in particular for bargaining power and trust. Indeed, bargaining power, as measured by the share of household decisions taken by each partner, may be critical for the allocation of household resources and mutual trust is typically considered as necessary for successful

cooperation. Column 4 includes household fixed effects. All regressions are clustered at the session level, where a session is defined by the group of (same gender) individuals who played the games at the same time and place.

The results confirm a strong and stable gender differential in the amount sent. Across all specifications, women send 24 percentage points less than their husband and this coefficient is very precisely estimated. A F-test of the joint significance of all the other control variables fails to reject the null hypothesis at standard levels of significance. In particular, the structure of the household decision making appears irrelevant. In Appendix D, we further probe into the role of female bargaining power by investigating two alternative measures of women empowerment: matrilocality and individual land ownership. The corresponding coefficients are small and insignificant while the coefficient on "Female" remains unaffected.

This systematic gender differential supports the hypothesis of a sharing norm in favor of women who end up with a larger share of household resources. This norm should in principle allow spouses to maximize their collective gains, since they have clear expectations of their respective payoffs. We designed a dictator game with multiplier to investigate this conjecture. This game departs from a pure cake

sharing structure by allowing the household to secure large payoffs, as the amount sent is multiplied by three. Household efficiency requires the first player to send her/his full endowment.

As shown in Table 3.2, this is not what we observe: on average, men send 63% and women only 45% of their endowment. This implies large losses for the households who forgo, on average, 46% of the potential gains. We report the estimation results in Table 3.4, following the specifications presented in Table 3.3. The female coefficient is again large and very stable around 17 percentage points. This indicates that households are inefficient, as if spouses would not pool their resources but keep separate budgets.

A major difference with the results of the dictator game is the role of trust. Trust towards one's spouse matters for collective efficiency, as mistrustful spouses send 11 percentage points less, regardless of the specification chosen (Table 3.4). In a way, the amount sent can be viewed as an investment, the returns of which are in the hands of the spouse. The trust variable can thus be interpreted as indicating to what extent the recipient will use the augmented transfers in a way that suits the sender's purpose, through some joint decision-making process (this dimension is arguably less relevant in a zero-sum game, such as

the dictator game.) Finally, as above, none of the other controls is significant.

Table 3.4: Endowment share sent in Dictator Game with multiplier

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.164***	-0.186***	-0.164***	-0.162***
	(0.037)	(0.037)	(0.038)	(0.044)
No trust	-0.110***		-0.111***	-0.117***
	(0.029)		(0.028)	(0.036)
Decision share (self)		-0.058	-0.044	-0.041
		(0.046)	(0.044)	(0.083)
Decision share (spouse)		-0.037	-0.055	-0.033
		(0.050)	(0.046)	(0.063)
Observations	424	424	424	420
R-squared	0.176	0.156	0.181	0.562
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

3.5 Interpreting household inefficiency

Given the stability of the average transfers across games, one may question the level of understanding of the games by the players. We took great care in ensuring that participants saw the differences between the different games and the critical role of the multiplier. They systematically played mock games with a detailed analysis of the payoffs by enumerators recruited locally and extensively trained by the research team which accompanied them in all the research sites. Second, decisions systematically differ when playing with a stranger rather than with the spouse. Third, when playing with a stranger, the amounts sent in the trust game are larger than in the dictator game with multiplier, indicating an understanding of a possible reciprocation. Moreover, in line with our expectation, trust in one's spouse does not play a role in simple transfer game but becomes critical in games involving a multiplier. Finally, as we show below, the amount sent in the trust game does depend on the expected return strategy of the partner, again revealing some comprehension of the most complex of the three games played.

3.5.1 Collective inefficiency, ex post transfers and trust

The large inefficiencies highlighted in the dictator game with multiplier may result from the inability of the spouses to share their gains ex post.[13] One expects therefore that explicitly allowing for return transfers would help restore efficiency: couples could increase their collective gains and share these gains ex post according to the sharing norm. To investigate this conjecture, we implement a standard trust game, by adding the possibility of return transfers to the dictator game with multiplier.

We start by investigating the determinants of return transfers in the last stage of the game. We elicited the amount each player would send back for various possible transfer received. We compute the average amount returned for each dollar received (after tripling the amount)[14]. The decision to return part of the amount received is essentially equivalent to a simple dictator game. On average, hus-

[13]With respect to the undoing problem in intra-household games, these inefficiencies reveal the difficulties in sharing ex-post across spouses. The Trust Game can be viewed as a way to elicit the importance of these ex-post transfers.

[14]In practice, we compute the ratio of the total amount returned divided by the sum of all possible transfers received.

bands send back 0.58 while wives send back 0.38 of each dollar received (Table 3.2). Table 3.5 presents the results of our estimations. As in the analysis of the simple dictator game, the only significant coefficient is the one attached to female. Wives send back about 20 percentage points less than their husbands. The sharing norm therefore also applies to return transfers.

Table 3.5: Endowment share returned in Trust Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.193***	-0.199***	-0.193***	-0.185***
	(0.029)	(0.029)	(0.029)	(0.030)
No trust	-0.032		-0.033	-0.055
	(0.029)		(0.029)	(0.044)
Decision share (self)		-0.024	-0.020	-0.016
		(0.044)	(0.044)	(0.057)
Decision share (spouse)		-0.025	-0.031	-0.061
		(0.043)	(0.042)	(0.058)
Observations	424	424	424	420
R-squared	0.208	0.206	0.209	0.657
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

Table 3.6: Endowment share sent in Trust Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.197***	-0.212***	-0.197***	-0.194***
	(0.037)	(0.036)	(0.037)	(0.041)
No trust	-0.073**		-0.074**	-0.087**
	(0.029)		(0.029)	(0.037)
Decision share (self)		-0.074	-0.065	-0.032
		(0.052)	(0.052)	(0.054)
Decision share (spouse)		-0.063	-0.075	-0.019
		(0.048)	(0.047)	(0.076)
Observations	424	424	424	420
R-squared	0.182	0.180	0.191	0.631
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

We now turn to the first decision of the trust game. As shown in Table 3.2, the possibility of return transfer does not change substantially players' behavior. The average amounts sent are essentially identical to those of the dictator game with multiplier: men send on average 63% and women 44% of their endowment. Allowing return transfers does not reduce inefficiency. The latter does not therefore result from the spouses' inability to make transfers ex post. On average households still lose 46% of their potential gains.

Table 3.6 reports regression results for the amount sent in the first stage of the game, using the same specifications as above. Again two coefficients stand out. Female players systematically send 20 percentage points less than male players and the lack of trust towards the partner reduces the amount sent by 7 to 9 percentage points. These effects are of a similar magnitude as those reported for the dictator game with multiplier.

Table 3.7: Share sent in Trust Game and spouse's return behavior

VARIABLES	(1)	(2)	(3)
Female	-0.228***	-0.216***	-0.222***
	(0.038)	(0.039)	(0.040)
Spouse's TG return (average)	0.091	0.096*	0.133**
	(0.056)	(0.055)	(0.062)
No trust		-0.075**	0.014
		(0.030)	(0.070)
Spouse's TG return (average) * No trust			-0.166
			(0.117)
Observations	424	424	424
R-squared	0.177	0.188	0.192
Controls	YES	YES	YES
HH FE	NO	NO	NO

As discussed above, the lack of trust may imply that the spouse limits as much as s/he can the budget available to his or her partner. The lack of trust may also imply that one systematically underestimates the return transfer of her partner. Using our measure of return transfers, we investigate whether senders anticipate and react to the reciprocity intentions of their spouse, depending on the latter trustworthiness. Table 3.7 presents the same estimations as Table 3.6, including the average share returned by the spouse as an explanatory variable. The estimations are to be taken with caution because of obvious endogeneity concerns, which also prevent us from including household fixed effects[15].

The sender's strategy seems to depend on the intended returns of the recipient, illustrating the incentives provided

[15]With household fixed effects, we compare the amount sent by the first player to that of his/her partner using the difference between what the same player and his/her partner sent back when they are second players as an explanatory variable. To the extent that a player's first move is strongly correlated to his second move, this creates serious issues of reverse causality. Moreover, the strong correlation between gender and the average amount sent (or returned) implies that within a couple, wives always send and return less than their husband. With a fixed effect, one obtains a negative correlation between the difference in the amount sent by the spouses and the difference in the amount they return.

Table 3.8: Household inefficiency: Share of total payoff foregone

VARIABLES	(1)	(2)	(3)	(4)
Female	0.181***	0.199***	0.180***	0.178***
	(0.034)	(0.033)	(0.034)	(0.040)
No trust	0.092***		0.092***	0.102***
	(0.026)		(0.025)	(0.032)
Decision share (self)		0.066	0.055	0.037
		(0.042)	(0.041)	(0.055)
Decision share (spouse)		0.050	0.065	0.026
		(0.043)	(0.040)	(0.057)
Observations	424	424	424	420
R-squared	0.220	0.206	0.229	0.619
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

by return transfers. The coefficients on trust and female remain remarkably stable (column 2). As expected, the results reported in column (3) suggest that the spouse's return strategy only matters when the latter is trustworthy: the sum of the coefficient on the return strategy and its interaction with "no trust" is zero, even though the interaction is barely significant at the 12% level.

We summarize the above findings by providing an overall

measure of household inefficiency. Efficiency matters for two of the decisions described above: the dictator game with multiplier and the trust game. Merging these two decisions, we define total household inefficiency as the share of the maximum possible payoff foregone from not sending the full amounts. Inefficiency when husbands play is equal to 37%. When wives play, it rises up to 56%. In other words, more than half of potential gains are left on the table when wives play. In Table 3.8, we investigate the determinants of household inefficiency, replicating the specifications used in Tables 3.5 and 3.7. Confirming the results presented in the previous section, female and lack of trust significantly increase inefficiency. Yet, trust plays a minor role: 16 percent of players do not trust their partner which implies, with an estimated coefficient of 0.10 that the lack of trust reduces on average efficiency by only 1.6 percentage points. In contrast, the female dummy by itself explains an efficiency loss of 18 percentage points.

3.5.2 Collective Inefficiency and Individual Optimization

One possibility is that, in the trust game, players anticipate the return strategy of their partner and maximize their in-

dividual payoff at the expense of household efficiency. The above estimations suggest that this is not the case. The size of the coefficient attached to the return transfer is small at around 0.1 (Table 3.7): for each dollar returned, a player increases the amount sent by only 0.1 dollar. More generally, with a multiplier of three and husbands returning 58% of their gains, wives appear to prefer keeping one dollar than receiving an average of 1.74 dollars ($1*3*0.58). In contrast, as wives return 38% of their gains, husbands renounce to only 1.14 dollar when keeping one dollar. Each partner would obviously gain individually by transferring more in the first move. To explore further this possibility, we measure individual inefficiency as the share of the maximum individual payoff foregone in the trust game, assuming players correctly anticipate the return strategy of their partner. On average, men lose 18% and women 27% of these potential gains.[16] Women thus incur substantial losses. (These, however, remain lower than total losses under collective efficiency.) Men, on the other hand, are relatively close to their private optimum, suggesting that their behavior is much more consistent with an individual than with a household payoff maximization objective.

[16] 75% of the women could have increased their individual gains by sending more to their husband in the first stage.

Table 3.9: Individual inefficiency: Share of maximum individual payoff forgone

VARIABLES	(1)	(2)	(3)	(4)
Female	0.083***	0.081***	0.069**	0.067**
	(0.029)	(0.029)	(0.029)	(0.031)
No trust	0.051*		0.061**	0.059
	(0.031)		(0.029)	(0.039)
Decision share (self)		-0.063	-0.070*	-0.085*
		(0.039)	(0.037)	(0.050)
Decision share (spouse)		0.106**	0.116***	0.058
		(0.042)	(0.041)	(0.056)
Observations	422	422	422	416
R-squared	0.076	0.086	0.097	0.551
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	YES

Table 3.9 reports the estimations of individual inefficiency. We again find that trust and female matter, even though the coefficient attached to female is now sensibly smaller than in the previous estimations. Interestingly, the structure of household decision making matters, as inefficiency is larger when the player's spouse takes more decisions on her/his own, and lower when the player has more decision power. In other words, giving up on expected return transfers is more prevalent when one has less decision power relative

to the partner.

3.5.3 Demand for Agency

These results indicate among women a strict preference for one dollar directly received over one dollar sent by the spouse, particularly when the latter concentrates decision power. In line with the anthropological evidence presented above, we interpret these preferences as a demand for exclusive, unshared, decision power. This follows from the idea that, by giving money, the husband ensures some say on its use. This pressure need not be explicit and may well be fully internalized by the woman. When receiving a transfer from the husband, she takes the role of the household manager and spends this money according to the expected behavior attached to this role. The greater control over the amount privately kept is facilitated by secrecy, since the partner will never be informed about its existence and use (as explained above, players never learn about the amounts actually kept by their partner.) This interpretation is in line with the recent economic literature on the measure of female empowerment that insists on the difference between declared participation to decisions and effective control of household resources (Bernard et al., 2020; Donald et al.,

2020). In contrast, the fact that men are close to their private optimum implies that they are almost indifferent between money kept or received. This suggests more freedom in the use of the money they were given by their wives.

We find some support for this interpretation in the analysis of the spending patterns associated with the vouchers that were distributed after the games to compensate players for their participation[17]. The items available in the shop were chosen so as to be easily categorized between female (perfume, hairbrush...), male (male head cap, sunglasses...) and household items (food, children items...). Table 3.10 reports the average total amounts spent in each category by households who received individual (column 1) or couple vouchers (column 2). Couple vouchers are on average of a higher value (simply because they were determined by the outcome of a different game) than the sum of the individual vouchers (last row of Table 3.10). We thus expect expenditure on all types of items to be larger under a couple voucher. Surprisingly, while the amounts spent

[17]Unfortunately, as the coupon values are determined by the decisions made during the games, they also depend on the degree of cooperation between spouses which has a direct impact on their expenditure pattern. We cannot therefore provide a more detailed analysis of these data and we simply compare average expenditures across couple versus individual voucher categories.

on male and household items are significantly larger, the amount spent on female items remains unchanged. This suggests that under joint decision, female preferences are not fully expressed or accounted for[18].

[18]It is striking to note that the expenditure pattern under a couple voucher remains unchanged even when the wife comes alone to redeem the coupon.

Table 3.10: Spending patterns by type of voucher

Variable	(1) Individual N	(1) Individual Mean/SE	(2) Couple N	(2) Couple Mean/SE	T-test Difference (1)-(2)
Amount spent on female item	106	31.132	105	26.952	4.180
		(4.148)		(3.736)	
Amount spent on male item	106	43.585	105	79.810	-36.225***
		(8.254)		(10.658)	
Amount spent on household item	106	346.698	105	463.810	-117.111***
		(12.808)		(12.976)	
Coupon value	106	412.075	105	586.857	-174.782***
		(11.320)		(9.682)	

3.6 Conclusion

Our experiment highlights the prevalence of a general sharing norm whereby women manage two-thirds of household resources. This behavior reflects the typical organization of Philippine households described in the literature, where women enjoy a favorable status and are in charge of the household finances while men keep an allowance for their own private expenses. The norm seems to be fully internalized as reflected by the amounts sent by husbands and wives across all games. One would expect that such a norm, by clearly shaping expectations, would allow households to maximize their joint payoffs.

In this context, it is surprising to find levels of inefficiencies similar to those highlighted in the experimental literature in settings that are apparently more conflictual and less favorable to women. In our experimental games, women are willing to give up substantial gains when those are handed in by their husbands, revealing a strong, latent, demand for agency. This demand for agency expresses itself through a strong preference for money unknown to their spouse over (larger) transfers as the latter involve an implicit control over their use. This calls into question classical measures of female empowerment that rely on

women nominal command over household resources.

The recent empirical literature highlights the prevalence of a demand for secrecy within households. Our interpretation introduces a subtle distinction between this demand for secrecy and a demand for agency. While a preference for secrecy typically signals a demand for agency, the latter may manifest itself even under complete information. As we tentatively showed, the value of income at one's disposal differs depending on the identity of the person who generated it. This suggests a promising avenue for further research.

Appendices

Appendix D

Additional tables

Table D.1: Share sent in Dictator Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.243***	-0.242***	-0.242***	-0.242***
	(0.033)	(0.033)	(0.034)	(0.034)
No trust	0.012	0.011	0.012	0.011
	(0.030)	(0.030)	(0.030)	(0.030)
Decision share (self)	0.003	0.002	0.004	0.003
	(0.046)	(0.046)	(0.047)	(0.047)
Decision share (spouse)	0.027	0.025	0.028	0.026
	(0.047)	(0.047)	(0.047)	(0.047)
Wife owns land		-0.011		-0.011
		(0.027)		(0.027)
Matrilocality			0.011	0.011
			(0.033)	(0.033)
Female * Matrilocality			-0.001	-0.001
			(0.040)	(0.040)
Observations	424	424	424	424
R-squared	0.250	0.250	0.250	0.250
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	NO

Table D.2: Share sent in Dictator Game with multiplier

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.164***	-0.164***	-0.161***	-0.161***
	(0.038)	(0.038)	(0.038)	(0.039)
No trust	-0.111***	-0.112***	-0.111***	-0.112***
	(0.028)	(0.028)	(0.028)	(0.028)
Decision share (self)	-0.044	-0.047	-0.045	-0.048
	(0.044)	(0.043)	(0.045)	(0.044)
Decision share (spouse)	-0.055	-0.060	-0.055	-0.060
	(0.046)	(0.046)	(0.046)	(0.046)
Wife owns land		-0.021		-0.021
		(0.031)		(0.031)
Matrilocality			0.003	0.004
			(0.028)	(0.028)
Female * Matrilocality			-0.009	-0.010
			(0.037)	(0.038)
Observations	424	424	424	424
R-squared	0.181	0.182	0.181	0.182
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	NO

Table D.3: Share sent in Trust Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.197***	-0.197***	-0.200***	-0.199***
	(0.037)	(0.037)	(0.037)	(0.037)
No trust	-0.074**	-0.075**	-0.074**	-0.075**
	(0.029)	(0.029)	(0.029)	(0.029)
Decision share (self)	-0.065	-0.067	-0.061	-0.063
	(0.052)	(0.051)	(0.052)	(0.051)
Decision share (spouse)	-0.075	-0.077*	-0.071	-0.073
	(0.047)	(0.045)	(0.047)	(0.045)
Wife owns land		-0.012		-0.012
		(0.031)		(0.031)
Matrilocality			0.032	0.032
			(0.030)	(0.030)
Female * Matrilocality			0.008	0.008
			(0.040)	(0.040)
Observations	424	424	424	424
R-squared	0.191	0.191	0.195	0.196
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	NO

Table D.4: Share returned in Trust Game

VARIABLES	(1)	(2)	(3)	(4)
Female	-0.193***	-0.192***	-0.160***	-0.159***
	(0.029)	(0.029)	(0.032)	(0.031)
No trust	-0.033	-0.035	-0.034	-0.036
	(0.029)	(0.029)	(0.028)	(0.028)
Decision share (self)	-0.020	-0.025	-0.023	-0.028
	(0.044)	(0.045)	(0.044)	(0.045)
Decision share (spouse)	-0.031	-0.038	-0.027	-0.035
	(0.042)	(0.042)	(0.042)	(0.042)
Wife owns land		-0.035		-0.036
		(0.030)		(0.030)
Matrilocality			0.063*	0.063*
			(0.037)	(0.037)
Female * Matrilocality			-0.105**	-0.105**
			(0.042)	(0.042)
Observations	424	424	424	424
R-squared	0.209	0.212	0.220	0.224
Controls	YES	YES	YES	YES
HH FE	NO	NO	NO	NO

Appendix E

Alternative Trust Game return

Table E.1: Share returned in Trust Game

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.195***	-0.198***	-0.192***	-0.186***	-0.192***	-0.191***	-0.162***	-0.162***
	(0.028)	(0.028)	(0.028)	(0.032)	(0.028)	(0.028)	(0.032)	(0.032)
No trust	-0.027		-0.031	-0.035	-0.031	-0.032	-0.031	-0.033
	(0.031)		(0.030)	(0.042)	(0.030)	(0.030)	(0.030)	(0.030)
Decision share (self)		0.005	0.009	0.019	0.009	0.004	0.006	0.001
		(0.044)	(0.043)	(0.056)	(0.043)	(0.044)	(0.043)	(0.044)
Decision share (spouse)		-0.038	-0.044	-0.062	-0.044	-0.049	-0.043	-0.048
		(0.047)	(0.046)	(0.073)	(0.046)	(0.046)	(0.045)	(0.046)
Wife owns land						-0.029		-0.030
						(0.027)		(0.027)
Matrilocality							0.043	0.044
							(0.038)	(0.039)
Female * Matrilocality							-0.092*	-0.092*
							(0.047)	(0.048)
Observations	417	417	417	406	417	417	417	417
R-squared	0.202	0.201	0.204	0.631	0.204	0.206	0.212	0.215
Controls	YES	YES	YES	YES	YES	YES	YES	YES
HH FE	NO	NO	NO	YES	NO	NO	NO	NO

Table E.2: Share sent in Trust Game and spouse's return behavior

VARIABLES	(1)	(2)	(3)
Female	-0.212***	-0.198***	-0.202***
	(0.038)	(0.039)	(0.040)
Spouse's TG return	0.027	0.025	0.043
	(0.053)	(0.052)	(0.056)
No trust		-0.075**	-0.032
		(0.029)	(0.065)
Spouse's TG return * No trust			-0.081
			(0.102)
Observations	417	417	417
R-squared	0.167	0.179	0.179
Controls	YES	YES	YES
HH FE	NO	NO	NO

Appendix F

Script and scenarios

Table F.1: Game Scenarios

Scenario 1	Scenario 2
Dictator Game	Dictator Game with Multiplier
Dictator Game with Multiplier	Trust Game (sender)
Trust Game (sender)	Trust Game (receiver)
Trust Game (receiver)	Dictator Game
Scenario 3	**Scenario 4**
Trust Game (sender)	Trust Game (sender)
Trust Game (receiver)	Trust Game (receiver)
Dictator Game	Dictator Game with Multiplier
Dictator Game with Multiplier	Dictator Game

Figure 3.1: Sample Game Script

INTRODUCTION

- You are going to perform a series of activities to help us better understand how households make decisions. In those activities, you will use fake bank notes but we ask you to act as if it was real money.
- To thank you and encourage you to play seriously, you will receive a gift voucher with a value between 0 and 400 pesos, proportional to your result in one chosen activity. We will only reveal which activity has been chosen at the very end.
- So you will only be paid for one activity, there is no link at all between the different activities and between the different decisions you are going to make. Since it is possible that some of you will get unlucky and will receive a voucher of 0 peso, you will also receive another voucher of 200 pesos to share between both of you no matter what happens during the activities. You will also receive it at the very end of the session.
- You will be able to exchange the gift voucher you will receive tomorrow/this afternoon for a series of goods that we brought with us that include food, clothes, school supplies etc.
- The value of your voucher will be known by you only and we will not tell anyone else about it, not even your spouse. You will be able to exchange it in private, without anyone else knowing what you choose, not even your spouse.
- Men and women will be separated for most activities. These activities are individual and we will not reveal any of your decision to anyone. There is no right or wrong answer. Each one may choose what s/he prefers.
- The session should take one hour and a half and will be followed by a small individual questionnaire. We will then go back to your house to ask more detailed questions to the head of the household about your agricultural practices.
- You are allowed to leave this session at any point but, in order to exchange your gift voucher, you need to participate to all activities, answer the small individual questionnaire and the detailed household questionnaire.
- If you have a question at any point, do not ask it out loud but please raise your hands and we will come to answer it in private.
- Please do not communicate with the other participants or try to look at what they are doing.

[IF THIS IS NOT THE LAST SESSION]

- Similarly, please do not talk about those activities with other people in this community as we will have several sessions with different households. Once you have exchanged your gift voucher, you will be able to talk about it to whomever you want.

[IF THIS IS NOT THE FIRST SESSION]

- If someone who has already gone through this session has told you about his/her experience, please try to abstract from it as this might make you misunderstand the instructions and you might make decisions that are not right for you.
- Is there anyone who wishes not to continue with the activities? If so, you can leave now. Otherwise, we will now separate men from women.

DICTATOR GAME, with MULTIPLIER, and TRUST GAME

- You have received two envelopes. In the BLUE envelope, there are 200 pesos in notes of 20 pesos. The RED envelope is empty.

- You can decide how to divide the 200 pesos between yourself and your spouse. The notes you leave in the BLUE envelope will be for you, the ones you put in the RED envelope will be for your spouse.
- You can give any amount you want to your spouse, between 0 and 200 pesos.
- For example, if I put 2 notes in my RED envelope, that's 40 pesos so my spouse will receive 40 pesos and I will keep 160 pesos.
- If I put 5 notes in my RED envelope, that's 100 pesos so my spouse will receive 100 and I will keep 100.
- If I put 9 notes in my RED envelope, how much will my spouse receive? (180). How much will I keep for me? (20).
- If this is the activity that we select to determine your earnings, you will receive a gift voucher with a value of the money you put in the BLUE envelope and your spouse will receive a gift voucher with a value of the money you put in the RED envelope.
- Please put in the RED envelope the amount of money you want to give to your spouse and in the BLUE envelope the amount you want to keep for yourself.

[DECISION]

- We will now collect the envelopes and distribute you two other ones. Again, the BLUE envelope will contain 200 pesos in fake 20-peso notes and the RED envelope will be empty.

[COLLECT ENVELOPES AND DISTRIBUTE NEW ONES]

- You are now going to repeat almost exactly the same task: decide how much to send to your spouse by putting money in the RED envelope.
- This time, however, your spouse will receive triple the amount that you send.
- The money that you leave in the BLUE envelope will be for you but will not be tripled.
- For example, if I put 5 notes in my RED envelope, that's 100 pesos so my spouse will receive 300 and I will keep 100 (the 5 notes that stay in my BLUE envelope).
- If I put 8 notes in my RED envelope, that's 160 pesos so my spouse will receive 480 and I will keep 40 (the 2 notes that stay in my BLUE envelope).
- If I put 3 notes in my RED envelope, how much will my spouse receive? (180). How much will I keep? (140). Again, you can give any amount you want to your spouse, between 0 and 200 pesos. It can be the same as in the previous activity or a different amount.
- Please put in the RED envelope the amount of money you want to give to your spouse and in the BLUE envelope the amount you want to keep for yourself.
- Once again, your spouse will receive triple the amount you put in the RED envelope.

[DECISION]

- We will now collect the envelopes and distribute you two other ones. Again, the BLUE envelope will contain 200 pesos in fake 20-peso notes and the RED envelope will be empty.

[COLLECT ENVELOPES AND DISTRIBUTE NEW ONES]

- You are now going to repeat the same task as before: decide how much money to send to your spouse by putting that money in the RED envelope. This time again, your spouse will receive triple the amount you decided to give him/her.
- This time, however, your spouse will then have an opportunity to send back some of the money s/he received. You will then receive the amount sent back by your spouse, which will not be tripled.

- So in the end, you will have the amount of money left in the BLUE envelope and the amount sent back by your spouse. And your spouse will have triple the amount you put in the RED envelope minus what s/he decided to send back to you.
- For example, if I put 5 notes in my RED envelope, that's 100 pesos so my spouse will receive 300. Out of those 300 pesos, she then decides how much to send back, between 0 and 300. Let's say she decides to send back 80. So in the end, I have the 100 pesos I kept in my BLUE envelope plus the 80 sent back by my spouse, so 180 pesos. She has the 300 pesos she received minus the 80 she sent back, so 220 pesos.
- Here is another example. If I put 8 notes in my RED envelope, that's 160 pesos so my spouse will receive 480. Out of those 480, let's say she sends back 200. In the end, I have the 40 pesos I kept in my BLUE envelope and the 200 my spouse sent me, so 240 pesos. She has the 480 she received minus the 200 she sent back, so 280 pesos.
- One last example. If I put 2 notes in my RED envelope, that's 40 pesos, so my spouse will receive 120. If she decides not to send me anything, how much will I have in the end? (160) and how much will she have? (120).
- Please put in the RED envelope the amount of money you want to give to your spouse and in the BLUE envelope the amount you want to keep for yourself.
- Once again, your spouse will receive triple the amount you put in the RED envelope and will then have the opportunity to send you back some money.

[DECISION]

- Imagine now that your spouse has played the same activity, has decided to give you some amount of money out of 200 pesos and that you receive triple that amount.
- You can then decide how much of the money you received to give back to him/her.
- To keep things simple, let's assume that your spouse could have sent you only 5 amounts: 0, 50, 100, 150 and 200 pesos. Which means that you can receive 0, 150, 300, 450 or 600 pesos.

[DISTRIBUTE LIST]

- Here is a list of all the amounts that you can receive. Next to each amount, you will write how much you would like to give back to your spouse.
- For example, the first row shows 150, which means that my spouse decided to send me 50 and that I received the triple, 150 pesos. I can then write any number between 0 and 150 which is the amount I would like to send back to her. If I write 40, this means that I will give her back 40 and keep 110 for myself.
- The second row shows 300, which means that my spouse sent me 100 and that I received the triple, 300 pesos. I can then write any number between 0 and 300, which is the amount I would like to send back to her. If I write 200, this means that I will give her back 200 and keep 100 for myself.
- The last row shows 600, which means that my spouses sent me how much? (200). If I write 100 next to it, how much will I give her back? (100). How much will I keep for myself? (500).
- You can send back any amount you want, between 0 and the amount you received.
- Please write next to each amount how much you would like to send back to your spouse.
- Once again, the amount you write cannot be bigger than the amount you received and your spouse will receive exactly that amount, it will not be tripled.

[DECISION AND COLLECT LIST]

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