Labor Market Response to Gendered Breadwinner Norms: Evidence from India

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Abstract

Despite recent gains in women's educational attainment and reproductive agency, substantial gender gaps in the labor market still remain, particularly in developing countries. In this paper, I study the impact of culture and social norms in explaining this puzzle in the Indian setting. In particular, I examine the role of the male-breadwinner norm, which dictates that husbands should earn more than their wives. I first establish a sharp discontinuity in the distribution of the share of the wife's income at the point where the wife's income exceeds the husband's income. I theoretical show that this pattern can be best explained by gender identity norms which make couples averse to a situation where the wife earns more than her husband. I also provide empirical evidence that this aversion has real implications for the labor market outcomes of the wife. First, the wife is less likely to participate in market activities if her potential income is likely to exceed her husband's. Second, she earns less than her potential if she does work and can potentially out-earn her husband. Evidence from observing couples over time and bunching methods supplement these results. Moreover, these results are more pronounced in couples where the husband is making the labor market decisions of the wife and where other regressive gender norms are prevalent.

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1 Introduction

In recent decades, women have become more empowered with increased educational attainment and technological advancement that has given them greater control over their fertility decisions and has freed up their time from home production activities. These changes have been conducive to improving women's labor market outcomes (Olivetti and Petrongolo 2016; Goldin and Katz 2000; Greenwood, Seshadri, and Yorukoglu 2005). Despite this progress, substantial gender gaps in the labor market still persist (Bertrand 2020), with large variations across countries. Evidence from developed countries suggests that even family policy reforms such as paid parental leaves and childcare subsidies that aim to reduce these disparities have had virtually no effect (Kleven et al. 2022). The limited ability of these economic factors in explaining these persistent gaps suggests the importance of additional forces such as culture and social norms. Akerlof and Kranton (2000) highlighted the important role that identity and cultural norms can play in affecting an economic agent's behavior, but our knowledge about this relationship, especially in the context of driving women's outcomes in the labor market, is very limited.

India provides a model setting for studying the impact of norms on women's labor market outcomes. Despite making progress on various dimensions of social and economic indicators, gender gaps in the Indian labor market are one of the starkest compared to its economic peers.[1] Recent data suggests that fewer than 1 in 4 women participates in the labor market, which makes India an outlier to Goldin (1994)'s U-Shaped explanation of economic growth and female labor force participation (FLFP) (Figure A.1).[2] Traditional economic factors such as education, urbanization, availability of suitable jobs, etc. have been the primary focus of the literature examining the puzzle of low FLFP in India. This has led policies and interventions to largely ignore other important aspects of gender inequality, like culture and social norms,

1. Over the past few decades, India has witnessed an increase in its GDP growth, educational attainment of women, and decline in fertility rates. However, over the years the labor force participation of women in India, if anything, has seen a decline. Compared to female labor force participation rates of around 70% in the U.S., in India, it is around 24-30%. Labor force participation rates of men in both countries are over 90%.

2. Goldin (1994) shows that female labor force participation rates across countries have a U-shaped relationship with economic growth. Countries with low and high levels of economic growth tend to have greater female labor force participation compared to middle-income countries.

and hence their success in increasing women's participation in the labor market has been limited (World Bank 2022). Regressive gender attitudes and norms in India have been shown to impact the outcomes of girls and women at different stages of their lives (Dhar, Jain, and Jayachandran 2019). Hence, the focus of the literature has now shifted to studying the role of social and cultural norms in the context of women's labor market outcomes (Bernhardt et al. 2018; Afridi, Bishnu, and Mahajan 2019; Field et al. 2021), but the difficulty in measuring gender norms directly makes it difficult to establish a causal relationship.[3]

In this paper, I explore the relationship between labor market outcomes of women and the "male-breadwinner" norm, which dictates that "the husband should earn more than his wife." Evidence from the World Value Survey (WVS) and Survey of Gender Equality at Home (SOGEH) suggests that this norm is prevalent across both developed and developing countries, albeit with varying levels of acceptance (Figure 1). Some developing countries in South Asia (and North Africa), especially India, have a much higher prevalence of this norm compared to other western countries like the U.S.[4] The male breadwinner norm is also strongly correlated with women's labor market outcomes across countries (Figure 2). Higher prevalence of this norm is negatively (positively) correlated with female-to-male labor force participation rates (hours women spend on daily chores). This suggests that the male breadwinner norm offers a potential explanation for the dismal labor market outcomes of women. This is especially true for countries like India, where women have far less control over their own labor market decisions, and men, who are likely to influence these decisions, are much more likely to agree

3. Bernhardt et al. (2018) find that men's opposition to female labor due to higher social cost of women's work is associated with wives' lower labor force participation. Afridi, Bishnu, and Mahajan (2019) describe the role of the gendered division of labor in explaining the low FLFP in India.

4. The WVS 1995 and 2012, revealed that more than half of the respondents in India agreed/strongly agreed with the statement- "if a woman earns more money than her husband, it's almost certain to cause problems" compared to 40% in the US. In SOGEH 2020, respondents were asked "Do you agree or disagree that household expenses are the responsibility of the man, even if his wife can help him?" and "How many of your neighbors believe that household expenses are the responsibility of the man, even if his wife can help him?". The patterns are similar.

with this norm.[5,6,7] Despite the potentially important role of this norm, we know little about its effect in a developing country context.

In this paper, I provide theoretical and empirical evidence to establish a causal relationship between the male breadwinner norm and gendered labor market distortions in India. I begin by establishing the fact that among married couples in India, the distribution of the share of household income that is earned by the wife witnesses a sharp drop at the point where the wife starts to earn more than the husband (Figure 3).[8,9] The standard models of the marriage market do not assign any particular significance to this point. Bertrand, Kamenica, and Pan (2015) interpret a similar discontinuity in the U.S. as a consequence of some couples trying to avoid the circumstance where the wife earns more than the husband, but burgeoning literature has begun to question whether this pattern is really due to gender norms in the U.S.[10] In contrast, I find strong evidence suggesting a role for gender norms in India. I observe that in the case of India, less educated couples, people living in rural areas, and those living in northern states (groups that tend to have more regressive gender norms) exhibit a larger discontinuity. This is consistent with the norm-based explanation of the discontinuity.

Next, I develop a theoretical framework to establish links between the male breadwinner norm and labor market distortions. The norm implies that couples dislike being in a situation where the wife earns more than the husband. Thus, it can be modeled as a notch i.e., a discrete

5. Recent work has critically analyzed the causes and consequences of the male-breadwinner norm on marriage and labor market outcomes of women in developed countries like the U.S. (Bertrand, Kamenica, and Pan 2015; Zinovyeva and Tverdostup 2021; Binder and Lam 2018)

6. According to the Indian Human Development Survey (IHDS) - II, more than half of the women report that they don't have the most say in their work decisions.

7. The WVS and SOGEH suggest that the gap in the prevalence of the norm between India and the U.S. is even higher if we only consider responses by men. 60% of Indian men surveyed agree/strongly agree with the statement that "if a woman earns more money than her husband, it's almost certain to cause problems" compared to 36% in the US.

8. I use data from 10 rounds of National Sample Survey's, Employment-Unemployment rounds.

9. This is similar to the western experience in the U.S., Germany, Finland, Canada, etc. (Bertrand, Kamenica, and Pan 2015; Wieber and Holst 2015; Sprengholz, Wieber, and Holst 2019; Roth and Slotwinski 2020; Zinovyeva and Tverdostup 2021), however, consistent with the evidence from the WVS's, I observe a much larger discontinuity in the case of India.

10. Some recent studies have challenged the norm based explanation of the discontinuity in the U.S. (Wieber and Holst 2015; Sprengholz, Wieber, and Holst 2019; Roth and Slotwinski 2020; Zinovyeva and Tverdostup 2021). The main alternative explanations are co-working couples and misreporting of incomes. In section 7, I show patterns in the data that are inconsistent with these explanations in the Indian context.

fall in the joint surplus of a couple if the wife earns more than the husband (Kleven, Landais, and Sogaard 2016). Notches create missing mass above the notch and excess mass below it.[11] This results in a discontinuity in the distributions at the notch like the one I observe in the data. Thus, unlike the standard models of economic behavior and marriage, interpreting the breadwinner norm as a notch allows me to theoretically explain the discontinuity we observe in the distribution of the wife's relative earnings in total household earnings. Moreover, estimating the bunching response to the norm allows me to identify couples most likely to be constrained by it. Additionally, I use the theoretical model to depict how the presence of the male breadwinner norm can lead fewer women to participate in the labor market. I show that a cost of a wife participating in the labor market (independent of her relative share of income) interacts with the identity cost of the male breadwinner and makes labor market participation sub-optimal for some women.

I then empirically show how this norm relates to the FLFP in India. To do so, I study the effect of an increase in the likelihood of a woman potentially earning more than her husband on her labor force participation and show that a 10 percentage point increase in this probability reduces the likelihood of a woman's labor force participation by roughly 1-1.7 percentage points. Moreover, conditional on working, she is likely to work fewer hours and earn less than her potential earnings, which is consistent with the bunching evidence. Both these results are statistically and economically significant and are sizeable compared to the U.S. Moreover, I observe similar patterns in the dynamic behavior of couples over time. I find that if a wife earns more than her husband in a given period, she is less likely to be in the labor market in the following period. I show that these findings are robust to a variety of specification checks.

I then investigate the possible mechanisms for the effect of this norm on women's labor force participation. More precisely, I investigate whether it is the husband or the wife who is driving these results. I show that a wife who earns more than her husband in a given period is more likely to leave the labor market when the husband has more power in making her labor

11. In the absence of the notch, the distribution of couples would be smooth with respect to the relative share of the wife's earnings. But as a consequence of the norm and hence the notch, some people with the wife's share of earnings greater than the husband in the original distribution would prefer that the wife's income is only as much as the husband's. This creates missing mass above the point where the wife starts to earn more than the husband and excess mass below it.

market decisions. This suggests backlash by husbands against wives who earn more than them.[12] Moreover, I find that this phenomenon is also more prevalent in households where other regressive gender norms like *purdah* are practiced.[13]

This paper makes the following important contributions. It is among the first papers to study gender identity and relative income within households and estimates the effect of male breadwinner norms on FLFP in a developing country context. Bertrand, Kamenica, and Pan (2015), Zinovyeva and Tverdostup (2021), Sprengholz, Wieber, and Holst (2019), Roth and Slotwinski (2020), Doumbia and Goussé (2019), and Binder and Lam (2018) explore the distribution of income within households in developed countries like U.S., Sweden, Germany, Canada, Finland and Bertrand, Kamenica, and Pan (2015) and Fortin (2005) discuss the role played by male breadwinner norm in explaining the observed patterns. I look at a context where both the norm and the role played by it in determining real outcomes may be stronger. Furthermore, I also formalize the concept of the male breadwinner norm and develop a theoretical framework to establish a link between this norm and the labor market distortions it can create for married women. I show how this model not only predicts the discontinuity in the distribution of the wife's relative income but also motivates how the male breadwinner norm can contribute towards reduced participation of married women in the labor market.

This paper also adds to the literature on the impact of gender attitudes and norms on economic outcomes, specifically labor market outcomes like female labor force participation. Bertrand, Kamenica, and Pan (2015), Fortin (2005, 2015), and Fernández, Fogli, and Olivetti (2004) focus on the U.S. and OECD nations and Jayachandran (2019), Dean and Jayachandran (2019), Afridi, Bishnu, and Mahajan (2019), and Field et al. (2021) etc. focus on India to look at the role of various norms associated with the social cost of a working wife. This paper is among the first to explore the consequences of a very prevalent norm, the male breadwinner norm, in India. In light of the recent evidence of increasing educational hypogamy (women

12. This is consistent with the findings in Weitzman (2014), which suggests that higher education, employment, or earnings status of a wife, compared to the husband, is met with severe violence.

13. The *purdah* system involves the seclusion of women from public observation by means of concealing clothing like the veil.

marrying partners with lower education), (Lin, Desai, and Chen 2020) in a social construct where there is universal marriage and women have limited say in partner selection (Allendorf and Pandian 2016), investigating the role of this norm becomes crucial.[14]

This paper is also related to the literature that links women's high educational qualification, ambition, and career progression to their reduced attractiveness in the dating and marriage market, especially when it is greater than men's (Fisman et al. 2006; Bursztyn, Fujiwara, and Pallais 2017; Brown and Lewis 2004; Folke and Rickne 2020). This paper provides new evidence on the real effects of such preferences in women's labor market outcomes in a developing country context.

The rest of this paper is structured as follows. In section 2, I discuss the distribution of relative income within households observed in India and show the heterogeneity of this distribution based on demographic and geographical factors. Next, in section 3, I model the breadwinner norm as a notch to study the implications of bunching in my data. Section 4 describes the methodology to study the implications of the male breadwinner norm on labor market outcomes of women in India and the results. In section 5, I confirm the results in section 4 by looking at couples over time. In section 6, I provide a potential mechanism. In section 7, I provide evidence that my results are robust and also discuss the role of alternative explanations. Section 8 provides a discussion and concludes.

2 Distribution of Relative Income within Households

Figure 3 depicts the distribution of the share of the household income earned by the wife across married couples in India. Specifically, I use ten rounds of the Employment-Unemployment module of the National Sample Survey (NSS) from 1983-2012. These individual-level surveys are nationally representative repeated cross-sections that collect information from about 100,000 households comprising 500,000 individuals. Along with demographic data, there is detailed information about the labor market engagement of individuals in the week before the

14. Also, greater emphasis is given to characters like caste and kinship (Banerjee et al. 2013)

survey. From these ten rounds, I construct a sample of couples with both husband and wife engaged in wage or salaried jobs. This sample is comprised of 74,787 couples.[15]

I define relative income for couple i as $\frac{\text{Wife's Income}_i}{\text{Wife's Income}_i+\text{Husband's Income}_i}$ where Wife's Income$_i$ and Husband's Income$_i$ are the total weekly wage/salary income of the wife and the husband, respectively. In Figure 3, I depict the frequency distribution of relative income, grouped in 20 bins, along with a lowess (locally weighted scatter plot smoothing) estimate of the distribution on each side of relative income = 0.5.

We see a sharp drop at the point where wife starts to earn more than the husband. This is commonly observed in the distributions of many other countries like the U.S., Finland, Germany, Denmark, etc. (Bertrand, Kamenica, and Pan 2015; Wieber and Holst 2015; Sprengholz, Wieber, and Holst 2019; Roth and Slotwinski 2020; Zinovyeva and Tverdostup 2021). However, one crucial difference between the observed distribution for India and all these other countries is that the discontinuity size is much larger in the case of India.[16]

In Table 1, I provide the results from the McCrary (2008) test for discontinuity of the distribution function. When considering all the couples in my sample, the estimates suggest that there is a very sharp and statistically significant fall in the distribution to the right of relative income = 0.5.[17] The log difference in heights in the case of the U.S. is -0.124 compared to -2.33 for India.[18] A possible explanation for this difference in the size of the discontinuity is the relatively larger point mass at exactly 0.5 in the case of India compared to the U.S. In Table 1, the second row, I show that the size of the discontinuity even after dropping this

15. More details about the data and construction of the sample can be found in the data appendix (Section B).

16. Additionally, the distribution for India has a much flatter left tail compared to, for example, the US. This could be attributed to women's low labor force participation in India, i.e., many women who otherwise would be earning relatively small amounts compared to their husbands do not participate in the labor force. The relationship between increasing income of the husband and low female labor force participation has been established in the literature (Klasen 2019; Sarkar, Sahoo, and Klasen 2019).

17. There is a huge point mass at 0.5 in my sample, and hence I check for discontinuity to the right of 0.5. More precisely, I check for discontinuity at 0.50001, but my results are robust to changing this to {0.500001,0.5001, 0.501}

18. For comparison, I include the figure from Bertrand, Kamenica, and Pan (2015) in the appendix Figure A.2. They use total wage and self-employment income to plot the relative income distribution within households compared to only wage/salary income in my context.

point mass at 0.5 from my sample, albeit smaller than before, is still significant and larger than in the U.S.

Table 1 summarizes the estimates of the discontinuity for various sub-groups based on time period, industry, geographical location, age, and education. If, as claimed, the discontinuity is primarily an outcome of the breadwinner norm, we expect to see a more considerable discontinuity in cases where we expect the norm to bind more. For example, people in urban areas, highly educated couples, and couples in southern parts of India are shown to have comparatively less regressive gender norms in the context of India. Hence, the observed discontinuity for these groups should be smaller. The estimates suggest roughly a similar size of the discontinuity across time periods.[19] However, if we look at the binned data in Figure 4, we see that the discontinuity seems smaller in the recent years compared to 1980s and 1990s.[20] Although both rural and urban distributions exhibit a sharp drop where the wife starts to earn more than the husband, the drop is smaller for urban couples (Figure A.3). Similarly, though both North and South Indian states display a significant discontinuity, but the size of this discontinuity in the Southern states is roughly half of the discontinuity in the Northern States.[21]

WVS (2006) suggests that overall, as well as for India specifically, more educated people are less likely to agree to the breadwinner norm; hence, a priori, we should expect educated couples to have a smaller discontinuity than illiterate or uneducated couples. This is what I observe. Table 1 reports the size of the discontinuity for at one end, illiterate couples and, on the other end, couples with graduate-level education. Consistent with my expectation, illiterate couples have a much more significant discontinuity. Additionally, the discontinuity is much smaller in cases where the wife is more educated than the husband.

19. Since the size of the sample where both husband and wife have earnings is not very large I divided ten time periods into four larger periods for the rest of the analysis - 1980s, the 1990s, 2004-2006, and 2007-2012.

20. The tiny bin size for McCrary's test is leading to this difference.

21. In panels A and C of Figure A.4, I compare the distribution of relative income in some of the largest southern (Kerala, Karnataka, Andhra Pradesh, and Tamil Nadu) and northern states (Uttar Pradesh, Rajasthan, Bihar, and Haryana from the North). The FLFP rates in the Southern States are also more significant than in the Northern States. The Southern and Northern states may not be comparable regarding co-working couples. Hence I also look at couples with different occupations or industries and see similar patterns as in panels A and C of Figure A.4.

As discussed by Bertrand, Kamenica, and Pan (2015), it is difficult to come up with a standard model of economic behavior and marriage market that yields the kind of discontinuity observed in the data at the wife's share of income equal to 0.5. Neither models that consider marriage as a partnership for the purpose of joint production and consumption nor models that consider marriage as a source of gains from specialization attribute any particular significance to the 0.5 point, suggesting a role for the breadwinner norm. The observed heterogeneity between rural and urban couples, more educated and less educated couples, and regional differences are consistent with this interpretation. Hence, in the next section, I develop a model of female labor force participation in the presence of the breadwinner norm. I use this model to show that, unlike the standard models of the marriage market and economic behavior, this model predicts the discontinuity we observe in the data.

3 Breadwinner Norm: A Notch in Household Preferences

The male breadwinner norm implies that couples dislike being in a situation where the wife earns more than the husband, i.e., the joint utility or surplus of a couple discretely falls if the wife earns more than the husband. Thus, we can model the norm as a notch in the household preferences at the wife's income share of 0.5 (Kleven, Landais, and Sogaard 2016; Kleven 2016). Notches in preferences are shown to create missing mass above the notch, and excess mass below it (Saez 2010; Kleven and Waseem 2013; Kleven 2016; Best et al. 2020).[22] This phenomenon of people shifting from above the notch to below (termed bunching) creates a discontinuity in distributions at the notch. Thus, unlike standard models of economic behavior and the marriage market, interpreting the breadwinner norm as a notch allows us to theoretically explain the discontinuity we observe in the distribution of the wife's relative earnings in total household earnings.[23]

22. See Kleven (2016) for an excellent review of this literature.

23. Recent literature has pointed towards some other explanations for this discontinuity in developed country contexts like misreporting and co-working couples. In Section 7, I will provide suggestive evidence to rule out these alternative explanations as the primary drivers of this discontinuity in the context of India.

3.1 Framework

A husband with given income level z_H optimizes his utility by choosing wife's income z_W.[24] Husband consumes an exogenous share 's' of the total earnings of the couple, $z_H + z_W$. Cost of home production, $h(z_W)$ is assumed to be iso-elastic and increasing in z_W.[25] Thus husband's utility is given by $s(z_H + z_W) - h(z_W)$. Consider two men A and B. Suppose the parameters of the model for A and B are such that A maximizes his utility by choosing $z_W = z_H$ and B chooses $z_W = z_H + \Delta z_W^* > z_H$.[26]

The male breadwinner norm is modeled as a utility loss (coming from identity loss (Akerlof and Kranton 2000)) for the husband when wife's earnings are more than his. The utility cost associated with the norm can be represented as:[27]

$$\mathbb{B}(z_W, z_H) = \Delta T \cdot \mathbb{1}\{\frac{z_W}{z_H} > 1\} \tag{1}$$

Hence, in the presence of the male breadwinner norm, the utility of the husband is $u(z_W, z_H) = s(z_H + z_W) - h(z_W) - \mathbb{B}(z_W, z_H)$ i.e. the male breadwinner norm creates a notch in husband's utility function at the point where $z_W > z_H$.

3.2 Predicting the Discontinuity

The negative cost of the norm bites only if the husband's optimization in the absence of the norm was such that $z_W > z_H$. In the example considered earlier, this implies that a husband like A (and those with optimization solutions such that $z_W \leq z_H$) remains unaffected. But B might no longer find the original choice optimal. In Figure C.11, B is chosen so that the male breadwinner norm leaves him exactly indifferent between his original choice $z_W = z_H + \Delta z_W^*$

24. more than 50% of married women in India report that their husband's have the most say in their labor market decisions (IHDS 2012).

25. Since most of the home production in India is undertaken by the wife, these seems like a plausible assumption. The more a woman works outside of the home, the higher is the cost of home production thus $h'(z_W) > 0$.

26. Appendix section C provides the details of the model.

27. In section C, I discuss how the implications of the model remain unchanged if we consider an additional term $t\frac{z_W}{z_H}$ as part of the breadwinner norm cost.

and $z_W = z_H$. All husbands with optimal choice between z_H and $z_H + \Delta z_W^*$ in the absence of the norm would prefer $z_W = z_H$ in the presence of the norm. Thus, the norm leads to missing mass above the notch and excess mass below it.

This provides the first testable implication of the model: the male breadwinner norm leads the distribution of wife's relative income to exhibit a huge bunching at wife's share=0.5 compared to a counterfactual distribution without the norm. Therefore, the excess mass and associated bunching provides a potential explanation for the discontinuity we observed in Figure 3.

3.2.1 Estimation

To measure the extent of bunching, I need to create the distribution of the wife's share in total household earnings in the absence of the norm, i.e., the counterfactual distribution. I calculate the potential earnings of each woman in the absence of the norm by computing the mean income of all working women in her demographic group defined by wife's education, age, social group, state of residence, sector (rural/urban), and time period. I then construct the counterfactual relative earnings distribution by replacing a woman's actual income with this potential earnings measure. Counterfactual Relative Income for a couple 'i' is defined as $\frac{\text{Wife's Potential Income}_i}{\text{Wife's Potential Income}_i + \text{Husband's Income}_i}$ where Wife's Potential Income$_i$ and Husband's Income$_i$ are the total weekly potential wage/salary income of the wife based on her demographics and actual weekly wage/salary income of the husband, respectively.[28]

The actual and counterfactual distributions using NSS data are plotted in Figure 5. In this figure, each dot represents the frequency of couples in a 0.025 size bin of share of wife's income in total earnings of the couple. In Panel B, I plot the difference in frequencies between the counterfactual and actual distributions to show excess mass and bunching clearly. A comparison of the counterfactual and actual distributions reveals that, consistent with the

28. It is worth noting that this is not the "standard" way to get counterfactuals in the bunching literature. The standard approach is to fit a flexible polynomial to the observed distribution, excluding data in a range around the point of threshold, and extrapolate the fitted distribution to the threshold. This method is purely an extrapolation exercise and agnostic of data in the excluded range. In my method I make use of the information about other working women to derive my counterfactual.

prediction of the model, most of the excess mass is in a narrow bandwidth to the left of 0.5 (including 0.5). Additionally, the difference between actual and counterfactual distribution to the right of 0.5 (that predicts the missing mass) extends to 0.8. This identification of the bunching window is not only required for measuring the extent of bunching, but has an added advantage in identifying the couples most likely affected by the norm and have potentially distorted incomes.[29]

In Figure 5, Panel B, I show the estimates of bunching based on a bunching window with the lower bound $z^- = 0.35$ and upper bound $z^+ = 0.8$. Since the actual distribution of relative income share is not smooth, the choice of bunching region is not immediately apparent. Thus, in Table 2, I provide bunching estimates based on different bunching regions. 'b' is my estimate of the excess mass just below and at the notch scaled by the average counterfactual frequency in the excluded range. The most conservative estimates suggest that there are around 4 times as many couples bunching near the notch compared to the counterfactual distribution. These estimates are indicative of huge distortions at the intensive margin in the labor market due to the male breadwinner norm.

3.3 Predictions about Labor Market Distortions

The model so far provided predictions about how married working women's earnings could be distorted because of the norm. Thus another testable implication of the model, directly related to the first, is that the male breadwinner norm leads to distortions in the labor market participation of wife at the intensive margin i.e wives who can earn more than their husbands end up choosing jobs/hours of work that pay less than their true potential. Bunching estimation in the previous section provides evidence that such distortions are present in the data. In the next section, I will provide additional evidence in support of this implication of the model.

In addition to these intensive margin responses, the model can be extended to show how this norm can lead to distortions even at the extensive margin (to work or not to work). To

29. This would be useful, as I discuss later, in estimating the distribution of potential earnings of married women.

do this, I introduce an additional parameter in the model, $\bar{u} > 0$. $\bar{u}$ is the utility that the husband derives if the wife is a home-maker i.e. if $z_W = 0$.[30] Presence of this utility (or cost of wife working) implies that some women will not participate in the labor market even in the absence of the male breadwinner norm (e.g. A in Figure C.12). The male breadwinner norm interacts with this cost and leads to an additional dis-utility only for couples where wife earns more than the husband (e.g. B in Figure C.12). If the breadwinner norm cost is large enough, it can induce fewer women to work in the labor market. Thus the model implies that the male breadwinner norm negatively affects likelihood of a woman's participation if she can out-earn her husband.

The framework used in the previous section is not well equipped to measure such extensive margin responses (Kleven 2016). Moreover, to measure these effects, we need a measure of whether the wife would earn more or less than her husband if she were to participate in the labor market. Thus, in the next section I use the NSS data to construct an imputed likelihood that wife's potential earnings are greater than her husband's to study the relationship between this likelihood and her labor market outcomes.

4 Women's Relative Income and Labor Market Distortions

The theoretical predictions from previous section suggest that the breadwinner norm can potentially lead to distortions in labor market participation of married women both at intensive and extensive margins. This is consistent with the suggestive evidence from WVS (1995 and 2012) and SOGEH (2020), wherein we saw that countries with higher acceptance of the breadwinner norm were likely to have lower FLFP, as well as more hours spent by women doing household chores.

30. There are multiple ways of rationalizing this. There are fixed costs associated if the wife works in the labor market irrespective of her income like costs of child care, home production etc. Alternatively, this can also be rationalized as the social cost associated with working women.

To measure the extensive margin (and verify the intensive margin) responses to the norm, we want a measure of the likelihood that a woman earns more than her husband. We can then test whether this likelihood is negatively associated with her labor force participation as predicted by the model.

In observed income data, we don't have information about women who are not employed. Moreover, as discussed previously, some women's income might be distorted due to the norm itself.[31] Hence, we must calculate an imputed likelihood of women earning more than their husbands. This imputed measure will capture the likelihood of a wife earning more than her husband if her income were a random draw from the population of working women in her demographic group, irrespective of whether she works.[32]

The sample for this section comprises married couples from all NSS rounds from 1983 to 2012, where the husband is engaged in a wage/salaried position and I have information about his income. For each couple 'i', I estimate the distribution of the wife's potential earnings by using her observable demographic information. I first assign each woman to a demographic group defined by her education, age, social group, state of residence, sector (rural/urban), and time period.[33,34] Then for each of these groups, I find the p^{th} percentile of earnings among working women, w_i^p, where $p \in 5, ..., 95$.[35,36]

I use the information about the distribution of earnings in a woman's demographic group to define the variable of interest, $P(\text{WifeEarnsMore}) = \frac{1}{19}\sum_p \mathbb{1}_{(w_i^p)>\text{husband's income}}$. As described earlier, this probability captures the likelihood of a wife earning more than her

31. Some women whom we observe as earning less than their husbands, might be doing so in response to the norm.

32. I build on the strategy developed in Bertrand, Kamenica, and Pan (2015) in this section.

33. Since the labor force participation of women in India is low, I define coarser demographic groups to calculate the potential income of most women. For example, I construct ten year age groups and collate data for eastern states together. The qualitative results, however are robust to how I define these demographic groups. I drop demographic groups with less than ten working women from the analysis.

34. In addition to these, I also create demographic groups based on whether a woman belongs to a household that is primarily dependent on agricultural activities. By constructing potential income for women engaged in agriculture separately, I try to ensure that wage-setting practices in agriculture don't drive my results.

35. When considering all working women for calculating this distribution, I am using incomes potentially distorted because of the norm. To account for these distortions, I alternatively calculate potential earnings by dropping from my sample the women with relative incomes in the excess mass region identified in section 3. In the section 7, I show that the results are robust to using this alternative measure.

36. In panel A of appendix Figure A.5, I plot the distribution of actual and both measures of mean potential earnings of women in my sample.

husband if her income were a random draw from the population of working women in her demographic group, irrespective of whether she works. The average value of the probability of a wife earning more than her husband in my sample is 0.21 (Table A10).

Out of the two possible ways of conforming to the breadwinner norm predicted by the model, the stronger response is for a wife to abstain from participating in the labor force and let her husband be the sole provider. To test if couples are conforming to this norm through this extensive margin channel, I test if there is a negative relationship between the likelihood of a woman earning an income higher than her husband and her labor force participation. To do so, I estimate the following linear probability model:

$$LFP_i^{wife} = \beta_0 + \beta_1 P(\text{WifeEarnsMore})_i + \beta_{w^p} w_i^p + \beta_2 \text{lnHusbIncome}_i + \beta_3 X_i + \epsilon_i \qquad (2)$$

where LFP_i^{wife} is an indicator of whether the wife participates in the labor force. I use multiple definitions of labor force participation given the debate surrounding measurement of FLFP in India (Dubey, Olsen, and Sen 2017). The narrow definition considers only women working in a wage/salaried job as employed, and the broader definition also includes self employed women.[37] lnHusbIncome_i is the log of the husband's income, w_i^p controls for the wife's potential income at each of the percentiles, and X_i includes non-income controls such as husband and wife's age groups, education levels, social group, religion, whether they live in urban or rural areas, and state and time fixed effects. All standard errors are clustered at the level of the wife's demographic group.

The primary identification issue here is that of selection into marriage. Unobservable characteristics of a woman who is willing to marry a man with an income lower than her potential income might be at play in keeping her out of the labor force.[38] To address this issue, I test the sensitivity of the coefficient to adding controls. My results are consistent when I add more controls like a cubic polynomial of husband's income, full interaction of husband and wife's demographic groups, the number of kids in the household. Additionally, I show

37. more details about these definitions of the labor force can be found in appendix section B.

38. For example, it is possible that women who are highly educated but marry men with lower education and low earnings might have systematic differences. They may be systematic underachievers or lack the confidence to participate in labor market and might be relatively more drawn towards home production.

that the bounds for these coefficients, calculated using Oster (2019) bounds always exclude 0 (Table A11).[39]

Table 3 summarizes the results of this estimation. The results in Column (1) suggest that a 10 percentage point increase in the probability that a wife would earn more than her husband reduces the likelihood that she participates in the labor force according to the narrow (broader) definition by around 1.30 (1) percentage points. In column (2), I introduce a cubic polynomial in lnHusbIncome_i to allow the husband's income to affect the marginal utility of household income non-linearly. The estimates of β_1 suggest a slight increase in the effect of 1.5 (1.19) percentage points in column (2). All these coefficients are statistically significant at 1% level of significance.

To check the sensitivity of my results to adding other controls, in column (3), I include the number of children residing in the same house and indicator variables for the full interaction of the wife's and the husband's demographic groups based on their age groups and education groups.[40,41] The results across columns (1)-(3) are fairly stable, suggesting that to the extent that in my data the observable characteristics are representative of unobservables, the negative value of my estimates is not likely due to an omitted variable bias (Altonji, Elder, and Taber 2005; Bertrand, Kamenica, and Pan 2015).

As suggested by the model, couples can also conform to the breadwinner norm by altering their behavior at the intensive margin. Women can end up working fewer hours or taking up jobs that pay less if the threat of earning more than their husbands and violating the norm is high. This is consistent with the bunching estimation from section 3. I verify the observation from the bunching estimation using the imputed likelihood measure. For this part, I focus on couples where I have information about the actual income of both husband and wife. For a

39. I further try to alleviate concerns regarding selection by looking at within couple variation over time. I show that adding couple fixed effects does not change my results.

40. In India, couples often reside in joint families where more than one couple co-resides. Ideally, I would like to control for the number of children a couple has, but that is difficult to identify in our data. Thus, I control for the number of children younger than 14 years residing in the same house as the couple. The results are robust if we include an indicator of whether the couple co-resides with a child rather than the number of children.

41. Apart from the included controls, I also include the median of the wife's predicted income interacted with the income of the husband in results not presented here. The coefficients are still negative and statistically significant.

couple 'i', the dependent variable is defined as $\text{IncomeGap}_i = \frac{\text{Wife's Income}_i - \text{Wife's Potential Income}_i}{\text{Wife's Potential Income}_i}$. $\text{Wife's Potential Income}_i$ is the wife's potential income measured using the mean of the distribution of potential earnings in her demographic group.[42] I estimate the following equation:

$$\text{IncomeGap}_i = \alpha_0 + \alpha_1 P(\text{WifeEarnsMore})_i + \alpha_{w^p} w_i^p + \alpha_2 \text{lnHusbIncome}_i + \alpha_3 \times X_i + \epsilon_i \quad (3)$$

The regressors are the same as those used in equation (2), and all standard errors are clustered at the level of the wife's demographic group. To alleviate concerns about selection, as discussed above, I show the stability of my results to the inclusion of observable characteristics.

The results are reported in Table 4, which follows exactly the same structure as Table 3, but with IncomeGap_i as the dependent variable. The estimates across specifications suggest that a 10 percentage point increase in the probability that a wife would earn more than her husband increases the gap between her actual earnings and her potential earnings by about 2-3 percentage points. All the estimates here are negative and statistically significant at 1% significance levels. When I estimate equation (3), replacing IncomeGap_i with $ln(\text{HoursWorked}_i)$, the results, provided in Table 5, suggest that, at least in part, these results are driven by reduction in hours worked by women who have a higher probability of out-earning their husbands.[43]

Both the extensive and the intensive margin effects are sizeable when compared to the results observed for U.S. in Bertrand, Kamenica, and Pan (2015). The estimates in Bertrand, Kamenica, and Pan (2015) suggest that a 10 percentage point increase in the probability that a wife would earn more than her husband reduces the likelihood that she participates in the labor force by around 1.4 percentage points in the U.S. compared to a 1-1.7 percentage point decline in India (based on different definitions and estimates). Although the magnitudes of the coefficients are similar, the benchmark is very different. In the U.S., the female labor force participation is around 70% compared to 24% to 30% in India. Thus, a 1 percentage

42. I show the robustness of my results by excluding "bunchers" from my estimation of the distribution of potential earnings in section 7.

43. NSS measures hours worked coarsely by asking the number of half days spent on each activity. I assume that each half days translates into 4 hours of work. The dependent variable in Table 5 is thus $\ln(\text{HoursWorked}_i)$.

point decline in LFP implies a much larger impact in India as opposed to the U.S. Even the estimates of intensive margin responses in India are at least twice as large compared to the effects estimated for the U.S.

Furthermore, these results are consistent across time periods, although the coefficients are slightly smaller for the most recent time period.[44] Furthermore, if we look at younger couples in Table A1, the effect is comparable to the overall sample, suggesting that, these effects do not appear as marriages progress but rather exist from early in a marriage. When I examine heterogeneity by education, I find that these effects are much stronger among less educated couples which is consistent with the evidence from WVS (1995 and 2012) wherein less educated people were more likely to agree with the male breadwinner norm.[45] The observed heterogeneity is consistent with the gender norm based explanation of my results.

5 Dynamics

The analysis, so far, has looked at the likelihood of a wife earning more than her husband and how it impacts wives' labor force participation in a cross-sectional setting using an imputed measure of the probability of wife earning more than her husband. As a further test, I can choose observe couples over time. This will allow me to understand if and how a wife's earning more than her husband in a given period alters her future labor market participation. This will provide additional support to the model prediction that earning more than one's husband has negative consequences on a woman's participation in the labor market. Additionally, the ability to add couple fixed effects will enable me to alleviate concerns regarding omitted variable bias, which is a potential concern with the cross-sectional analysis in section 4.

I use the household panel surveys from Consumer Pyramid Household Surveys (CPHS) for this purpose. CPHS is a nationally representative longitudinal survey of households in India. It contains 150,000 households surveyed every four months (described as a wave) and

44. In appendix Table A2-A5 I reproduce results in Table 3 for the four time periods.

45. I reproduce results from Table 3 and 4, column (3) in appendix Table A6 and A7 for less and more educated couples. Results for couples where husband and wife have a high-school education or less are provided in columns (1) and (2), and the results for couples with secondary education or higher are presented in columns (3) and (4).

includes information about household demographics, employment status, income, expenses, amenities, assets, etc. I used twelve waves of data from January 2016 to December 2019.[46]

I construct a sample of married and employed couples aged 18-60 years and follow their labor supply decisions in every subsequent wave when they were interviewed. The sample is restricted to couples where wife and husband were employed for at least one period in my data. For each couple, I use information about their employment status in each wave and monthly earnings to construct my primary variables of interest. $LFP_{i,t}^{wife} = 1$ when wife is employed in period 't', 0 otherwise and $\text{WifeEarnsMore}_{i,t} = 1$ when wife earns more than the husband in period 't', 0 otherwise. I estimate the following linear probability model regressing the wife's labor force participation in period 't' ($LFP_{i,t}^{wife}$) on whether the wife earned more than the husband in 't-1' ($\text{WifeEarnsMore}_{i,t-1}$).

$$\begin{aligned} LFP_{i,t}^{wife} =& \beta_0 + \beta_1 \text{WifeEarnsMore}_{i,t-1} + \beta_2 ln\text{CouplesIncome}_{i,t-1} \\ &+ \beta_3 \text{RelativeEarnings}_{i,t-1} + \beta_4 X_{it} + \mu_i + \gamma_t + \epsilon_{it} \end{aligned} \tag{4}$$

In equation 4, $ln\text{CouplesIncome}_{i,t-1}$ and $\text{RelativeEarnings}_{i,t-1}$ are the log of couple's total income and the relative share earned by the wife in period '$t-1$'. Every regression controls for indicators of only wife working, only husband working, and cubic functions of the age of wife and husband in period '$t-1$'. μ_i and γ_t are couple and time-fixed effects, respectively. The standard errors are clustered at the couple level.

Table 6, reports the estimates of β_1 coefficient. In column (1), the specification includes individual controls and time-fixed effects only. The results suggest that if a wife earns more than her husband, she is 1.3 percentage points less likely to be in the labor force in the following period. The average labor market exit rate of women between any two periods in this data is 11%, which means the norm leads to an additional 12% increase in this probability. Qualitatively, these results are consistent with the results from the cross-sectional analysis; the breadwinner norm seems to affect some women's participation in the labor market.

46. CPHS is the only high-frequency household survey data that tracks households and couples in India, providing information about evolving dynamics within couples over time.

In column (2) of Table 6, I add cubic functions of log total income of the couple and number of children. The results are stable with the inclusion of these variables. In column (3), I further add couple fixed effects. The coefficients only increase slightly from 0.013 to 0.0146. This shows that the role of unobservable variables in driving these results is limited, further alleviating the concern of selection and omitted variable bias in the analysis with cross-sectional data. Since there is substantial attrition of couples from the CPHS data, as a robustness check, I also restrict attention to a balanced sample in column (4), and the results are unchanged. In column (5), I restrict to couple-time observations where both have non-zero earnings in period 't-1', and the coefficient is slightly larger but still negative and significant.

6 Mechanisms

I next probe into who is the main driver behind the observed effects, is it the husband or the wife. This information is not only essential from policy perspective as it would allow policy makers to know the target audience, but it would also enable me to verify the assumption of my model that husband's preferences lead to the observed distortions due to the norm.

For this exercise, I exploit the gender relations module of the Indian Household Development Survey (IHDS). IHDS is a nationally representative, multi-topic panel survey that collected information from 41,554 households. The first round was collected in 2004-05, and most of these households were re-interviewed in 2011-12. In addition to household and individual characteristics and economic activity, this data also collects information about gender relations and norms within households. Specifically, they ask women a set of questions to understand the role they play in decision-making within the household and whether certain norms like *purdah* are practiced at home.

I first replicate the analysis in section 5 using the panel data from IHDS. I show that, consistent with the results from using CPHS data in section 5, if a wife earned more than her husband in 2005, she is five percentage points less likely to be in a wage/salaried job in

2012 (Table 7).[47,48] I then look at the heterogeneity of my results based on who makes the wife's labor market decisions and whether or not other regressive gender norms are practiced at home.

6.1 Decision-Making Regarding Wife's Labor Market Participation

A subset of women in IHDS (2012) are asked "Who has the most say in decisions about your work?". 56% women in my sample responded that they don't have the most say in decisions related to their work. I look at how the effect of a woman earning more than her husband on her labor for participation decision differs based on her response to the question about who makes these decisions. To do so, I estimate the following linear probability model:

$$\begin{aligned} Exit_{i,2012} =& \alpha_0 + \alpha_1 \times \text{WifeEarnsMore}_{i,2005} + \alpha_2 \text{HusbDecides}_{i,2012} m \\ &+ \alpha_3 \text{HusbDecides}_{i,2012} \times \text{WifeEarnsMore}_{i,2005} + \alpha_4 I_{i,2005} + \alpha_5 X_{i,2012} + \epsilon_i \end{aligned} \tag{5}$$

where the dependent variable $Exit_{i,2012} = 1$ if the wife exited from the labor market between 2005 and 2012, and 0 otherwise. Additionally, I include an interaction term $\text{HusbDecides}_{i,2012} \times \text{WifeEarnsMore}_{i,2005}$ where $\text{HusbDecides}_{i,2012} = 1$ if the wife reports that the husband has the most say in her work decisions and 0 otherwise.

47. Using IHDS, I define labor force participation in two ways, (1) if the wife reported being engaged in wage/salaried employment in the year before the survey when surveyed in the second round and (2) if the wife reported being engaged in the household farm, business, or wage/salaried employment in the year before the survey when surveyed in the second round. The results for the second definition of the labor force are provided in Table A9 and are consistent. Moreover, they suggest that not only is a woman who earned more than her husband more likely to leave wage/salaried employment, but she is also (4.3 percentage points) less likely to be engaged in any market activity.

48. The panel is not balanced, and there is substantial attrition of individuals from the survey. To ensure that my results are not biased by attrition, I run the same regressions as in Table A8 with whether the couple is in the panel as the dependent variable. Reassuringly, the results in Table A8 suggest that neither $\text{WifeEarnsMore}_{i,2005} = 1$ nor $\text{RelativeEarnings}_{i,2005}$ predicts the probability of being in the panel. Moreover, In Table 7, column (2), I include cubics of couples' income as additional controls, and in column (3), I include control for the existence of young children (0-5 years old) in household and the estimate largely remains unaffected. Since many people are employed in casual jobs, their industry might determine their likelihood of leaving the labor market seven years later. In column (4), I also include industry controls, and the conclusion remains the same.

The results in Table 8, column (1) suggest that the results in Table 7 are primarily driven by couples where the wife reports that the husband has the most say in her labor market decisions. The exit probability for a woman who makes her own labor market decisions is not affected by her earning more or less than her husband. But if her husband has the most say in her labor market decisions, she is 9 percentage points more likely to exit from the labor force if she earns more than her husband.[49] Looking at responses of men and women surveyed in WVS and Survey of Gender Equality at Home suggests that men are more likely to agree with the norm than women. Hence, results in this section can be interpreted as a backlash by husbands against women who earn more than them which is also consistent with the assumption of my model.

6.2 Other Gender Norms

Households where some other gender norms, like veiling/purdah are prevalent, the social costs associated with women working is also high which affects women's economic participation (Asadullah and Wahhaj 2017). Thus, building on the theoretical model, we should expect the negative effect of the male breadwinner norm on labor force participation of women to be more significant in households where prevalence of other gender norms is high.

To test this, I study how the effect of a wife earning more than her husband on her labor for participation decision varies based on whether she practices *purdah*.[50] For this, I make use of the IHDS survey. Women in IHDS were asked questions about the practice of other gender norms at home. For example, women are asked, "*Do you practice ghungat / burkha/ purdah/ pallu (veil)?*" 58% women say that they do practice the system of veiling.

I use regression 5, but instead of interacting WifeEarnsMore$i, 2005$ with HusbDecides$_{i,2012}$, I interact WifeEarnsMore$i, 2005$ with PracticePurdah$_{i,2012}$. PracticePurdah$_{i,2012}$ equal to 1 when the wife says yes to the question "Do you practice ghungat / burkha/ purdah/ pallu (veil)?" and 0 otherwise. The results in Table 9, column (1) suggest that the results in Table 7

49. In columns (2) and (3), I further control for cubic in couple's income and presence of young children. The positive coefficient of the interaction term in Table 8 is stable across specifications.

50. *Purdah* is the practice that includes the seclusion of women from public observation by wearing concealing clothing from head to toe and by the use of high walls, curtains, and screens erected within the home.

are primarily driven by couples where the wife reports practicing purdah. The exit probability for a woman who doesn't practice purdah is not affected by her earning more or less than her husband. But if she practices purdah, she is 8 percentage points more likely to exit the labor force if she earns more than her husband.[51] Overall, the results add some credibility to the argument that exit from the labor market induced by a woman earning more than her husband is likely to be driven by norms.

7 Robustness

So far, the paper utilizes different methodologies like the bunching approach, imputed likelihood measures, and within couple variation over time to show the distortions created by the male breadwinner norm in the labor market for women. In this section, I demonstrate the robustness of these results to a variety of tests.

7.1 Measuring Counterfactual Incomes

When imputing the likelihood of a wife earning more than her husband, I estimate a distribution of potential earnings of the wife using all the women in her demographic group. However, the results in section 3 and 4 suggest that women's observed income might be distorted because of the norm. Hence, I construct an alternative measure of the distribution of potential earnings, where I drop women's incomes most likely to be affected by the norm. The analysis in section 3 suggests that women with a relative share of income in a small bandwidth to the left of 0.5 are most likely to have distorted incomes. Thus, I calculate my variable of interest, $Prob(\text{WifeEarnsMore})_i$, by dropping women's income with shares $\in (0.45, 5]$.[52] The results are provided in columns (4)-(6) of tables 3 and 4. The magnitude of these results is slightly smaller, but these results are qualitatively consistent with results in columns (1)-(3) and are statistically significant. I also show that the results are robust to

51. The results are robust to other specifications controlling for cubic in couple's income and presence of young children.

52. I show that the results are robust to excluding women's income with share $\in (0.4, 5]$.

dropping all women from the sample with shares > 0.45. Additionally, to alleviate the concern that men are likely to be altering their behavior in response to the norm, I drop couples with wife's share of income $\in (0.45, 5]$ from the analysis and show that the results are still robust.

7.2 Alternative Hypothesis

The analysis so far was developed to understand the role of the male breadwinner norm in explaining the discontinuity observed in Figure 3 and its implications on married women's labor market. However, recent literature studying the distribution of relative income within households has begun to explore factors unrelated to the male breadwinner norm to explain the observed discontinuity at the wife's share equal to 0.5. The most common alternative explanations include co-working couples and misreporting of incomes. In the following subsections, I discuss the implications of these hypotheses in the Indian context. I provide suggestive evidence to support the claim that these are not the primary driving forces behind the distribution and the discontinuity observed in India.

7.2.1 Co-Working Couples

Hederos Eriksson and Stenberg (2015) and Zinovyeva and Tverdostup (2021) respectively show for Sweden and Finland, that the mass at equal earnings of husband and wife which comes from co-working couples (those working in the same sector or for the same employer) is the main driver of the discontinuity at 0.5 share of the wife's relative earnings rather than traditional gender norms.[53] However, to explore the importance of this explanation in my context, I test various testable implications of this hypothesis developed in Zinovyeva and Tverdostup (2021).

First, the hypothesis implies that if we drop couples with equal income shares, the discontinuity will disappear. However, as discussed in section 2, the discontinuity is substantial even when I exclude the couples with equal earnings of wife and husband. Second, this

53. Zinovyeva and Tverdostup (2021) also provide evidence that suggests that co-working spouses play an important role in explaining the discontinuity observed in the U.S.

explanation predicts that the observed discontinuity will only exist for couples who work in the same industry and have the same occupation (co-working). In Figure 6, I plot the distribution of relative income separately for co-working and non-coworking couples. The discontinuity is substantial even for couples who do not work in the same industry and occupation.[54,55,56] Third, the co-working hypothesis doesn't predict a discontinuity in the sample of newly formed couples unless they were already working together. This hypothesis claims that this discontinuity emerges over time when couples start to work together and equalize their earnings. However, results in Table 1, suggest that the discontinuity to the right of 0.5 exists even among younger couples.[57,58]

7.2.2 Misreporting

As another possible explanation for the bunching, Roth and Slotwinski (2020), Hederos Eriksson and Stenberg (2015) and Zinovyeva and Tverdostup (2018) show that the sharp drop to the right of 0.5 in certain countries is less distinct if one uses administrative data instead of survey data. Roth and Slotwinski (2020) compares Swiss administrative and survey data for the same individuals to show that the male breadwinner norm only leads to misreporting of income by couples but does not affect real labor market decisions around this margin.[59] Since most of the employment is informal in India, administrative data would not constitute a representative sample. To test this hypothesis in the Indian context, I use the

54. More rigorously, in Table 1, I test for the existence of observed discontinuity to the right of 0.5 for sub-samples based on occupation and industry. The results substantiate the observation from Figure 6 that there exists a statistically significant discontinuity for all the sub-samples based on industry and occupation of the partners. The log difference in heights at the break point (0.50001) is -2.89 for co-working couples and this difference drops by half if I drop co-working couples with equal earnings. Even for couples who work in different industries and occupations, the discontinuity is sizable at -1.1

55. The distribution of my sample across these groups is given in Table 10. 60% of couples in my sample work in the same industry and have the same occupation. But a substantial part of the sample (40%) is not co-working.

56. In Figure 6, we can see from panels A and B that even in the subset of co-working couples if I drop the point mass at 0.5, the discontinuity doesn't disappear.

57. Since I don't have information about marriage formation and duration, I look at younger couples to proxy for newly married couples.

58. To provide further evidence that co-working couples are not the primary drivers of my results I extend the simulation exercise and show that if the discontinuity observed in the distribution of incomes were entirely due to co-working couples, then we wouldn't observe the negative relationship between labor force participation and $Prob(\text{WifeEarnsMore})_i$ that we observe in section 4.

59. Although norm induced misreporting also gives us information about norms, it would be ideal if we could disentangle real effects from misreporting.

observations by Hurst, Li, and Pugsley (2014) that people are more likely to misreport their earnings/income than consumption on surveys. Assuming consumption is well-measured, I thus use the difference between reported consumption expenditure and total earnings of individuals to shed some light on the presence of misreporting in my case.

Let us suppose there are no real effects of the male breadwinner norm, and that it manifests itself only in strategic misreporting of income (over-reporting husband's income or under-reporting wife's income). This misreporting could then potentially explain the discontinuity we observe in Figure 3. To check if misreporting is the primary driver of the discontinuity, I compare the couple's total earnings with their reported consumption in the survey.[60] If misreporting is the predominant explanation behind the huge bunching at wife's income equal to husband's income, then the difference between their (misreported) income and consumption should be different from couples with slightly smaller and larger share of wife's earnings.[61] As long as the extent of over-reporting of the husband's income is not equal to the under-reporting of the wife's income, the conditional gap between total earnings and consumption along with the share of household income earned by the wife should exhibit a discontinuity around 0.5 relative income share.[62,63] In Figure 7, the conditional gap between total earnings and consumption is smooth around 0.5.[64] Thus, under the assumption that the likelihood of misreporting is uncorrelated with age and education of the husband, misreporting may not be the main driving force behind our observed distribution and the point mass at 0.5.[65]

60. In NSS, dis-aggregated consumption expenditure information is collected in some rounds. It comprises information about household expenditure on various categories like food, clothing, housing, durables, education, etc. I have this information for couples surveyed in Rounds 60 and later, i.e 56% of our sample. The disaggregation of consumption expenditures makes it difficult to misreport consumption strategically.

61. In figure (A.6) I show that many couples with equal incomes are young and have low levels of education. These couples might have different consumption patterns. Similarly, they might have different earning patterns unrelated to the breadwinner norm. Thus, I am looking at incomes and consumption conditional on observable characteristics.

62. If that's the case, then the total reported earnings would be equal to the actual earnings of the couple and my strategy won't be able to detect misreporting. Using Swiss data, Roth and Slotwinski (2020) show that over-reporting of the husband's income and under-reporting of the wife's income is not symmetrically opposite.

63. An additional assumption needed here is that the observable characteristics used for the conditional gap are uncorrelated with likelihood of misreporting.

64. I control for husband's education and age. In Roth and Slotwinski (2020), the authors show that norm complying misreporters and norm violators do not seem to differ systematically based on husband's characteristics.

65. Furthermore, I utilize the information about the gender of the informant to learn about heterogeneity in reporting. The discontinuity, albeit smaller in the case of female informants, is still significant in size, as

The above evidence rests on a strong assumption about the correlation between observable characteristics and norm induced misreporting and hence is only suggestive at best. But as discussed previously, I show that my results are robust to dropping the likely bunchers (potential misreporters) from the sample used to measure counterfactual distributions as well as entire analysis. Hence, all these pieces of evidence alleviate concerns regarding misreporting as being the primary driver of the results.

8 Conclusion

In this paper, I show that the male breadwinner norm has real effects on the labor market outcomes of married women in India. The norm affects the distribution of relative income within households and translates into a large discontinuity in the distribution of wife's relative income within households exactly at the point where she earns more than the husband. I explain this empirical regularity by interpreting the male breadwinner norm as a notch in household preferences and build a theoretical model with testable predictions. I find that due to the norm, a wife who can potentially out-earn her husband reduces her labor force participation at both the extensive and the intensive margins. Furthermore, these patterns are more pronounced in low educated couples, in couples where the husband has greater bargaining power over wife's labor market choices and in households where other regressive gender norms are practiced. I conduct a series of robustness tests to rule out alternative hypotheses such as misreporting and co-working couples as explanations of the observed discontinuity in the data.

How many additional women will be in the labor force if there was no male breadwinner norm? The answer to this question is challenging and involves carefully thinking about the interplay between the economic opportunities, demand side factors and changes in the marriage market. If economic opportunities make a scenario like this unlikely, then this norm would be of no practical relevance. But as opportunities for women increase due to policy

shown in Figure A.7. In addition, the earnings and consumption gap doesn't vary depending on whether the informant is a male or a female. This further supports the claim that strategic misreporting might not entirely be driving the observed distribution.

interventions or economic forces, norms like the male breadwinner norm could start to bite even more especially in developing countries where gender attitudes are more regressive. Thus, policies that promote women's participation in the labor market, should not be agnostic of the norms under which women operate and their labor market decisions are made.

This paper has focused on studying the labor market consequences of the male breadwinner norm but there are other interesting areas for future research. These include quantifying the costs of conforming to this norm and how changes in market opportunities effects its salience. The model developed in this paper provides a useful framework to think about these applications. Furthermore, the model also provides an avenue for non-parametric measurement of the male breadwinner norm using the size of the notch and study its heterogeneity across potentially important groups and also over time. Having an empirical estimate to measure norms can further enable one to see how it responds to market changes and help in construction of more robust policies.

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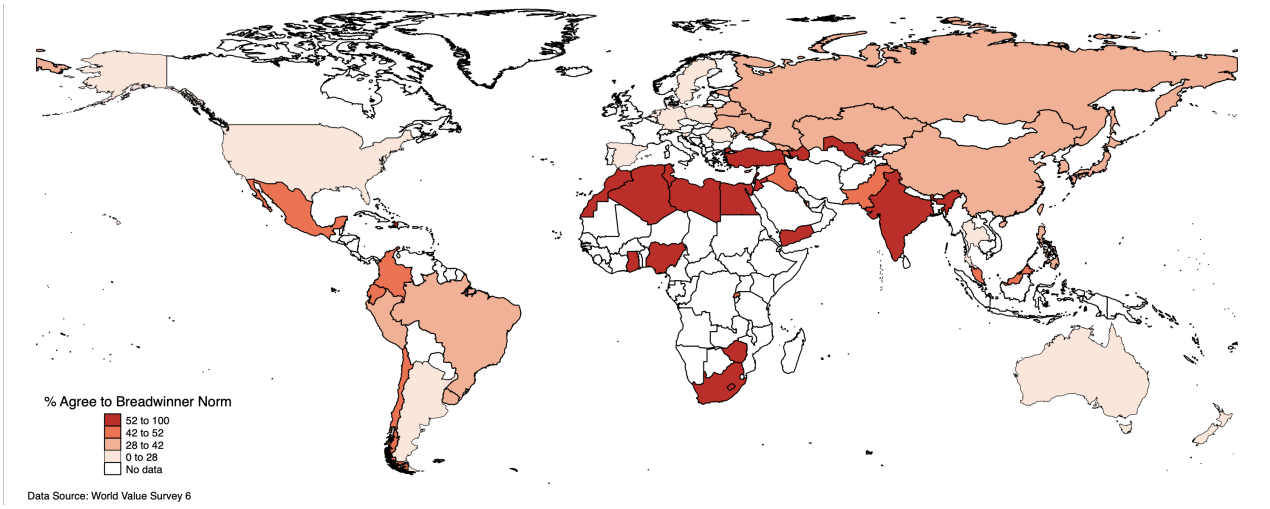
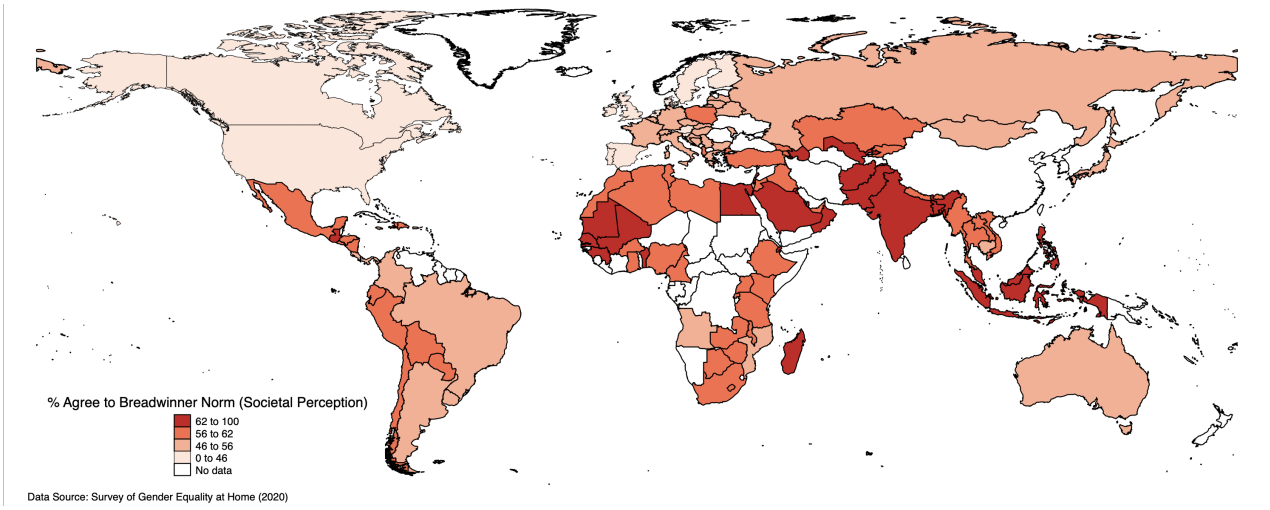
9 Figures



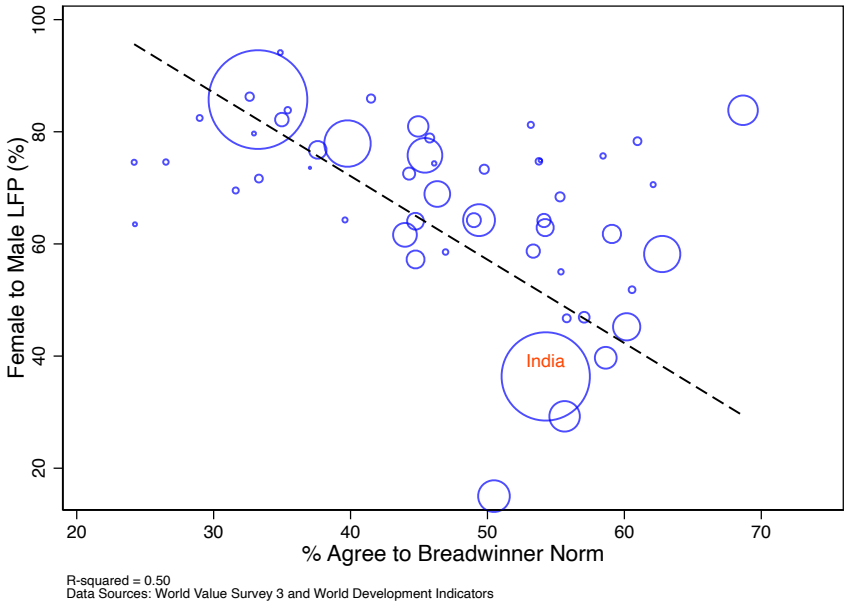
(a) Attitude (World Value Survey 2012)



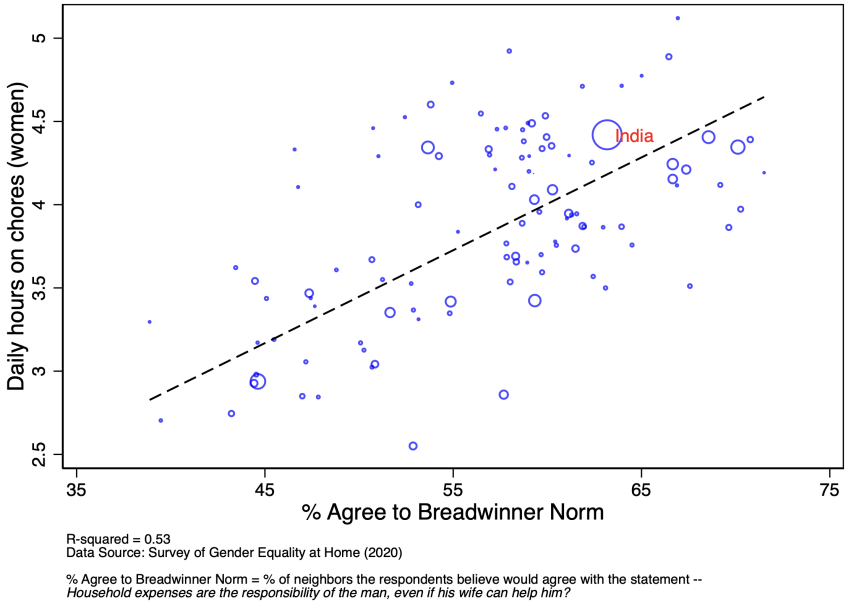
(b) Social Perception (Survey of Gender Equality at Home 2020)

Figure 1: Prevalance of the Male Breadwinner Norm

Note: WVS asks respondents whether they agree/disagaree with the statement "If a women earns more money than her husband, it's almost certain to cause problems." SOGEH 2020 asks respondents "How many of your neighbors believe that household expenses are the responsibility of the man, even if his wife can help him?"



(a) Female Labor Force Participation (WVS)



(b) Hours on Chores (SOGEH)

Figure 2: Male Breadwinner Norm and Women's Outcomes across Countries

Note: WVS asks respondents whether they agree/disagaree with the statement "If a women earns more money than her husband, it's almost certain to cause problems." SOGEH 2020 asks respondents "How many of your neighbors believe that household expenses are the responsibility of the man, even if his wife can help him?"

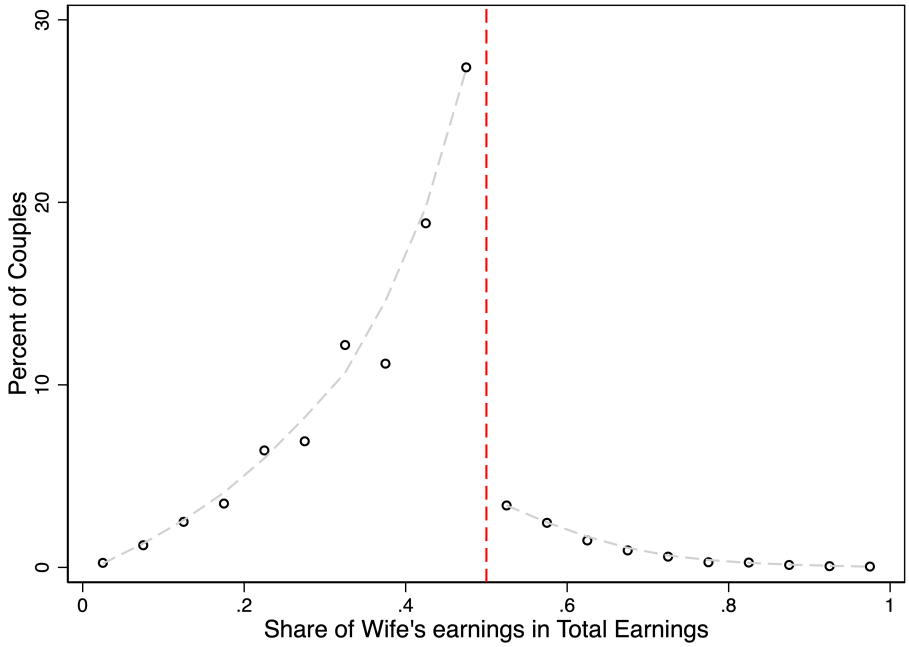


Figure 3: Distribution of Relative Income (NSS data)

Note: The data are from the 10 rounds of NSS from 1983 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5.

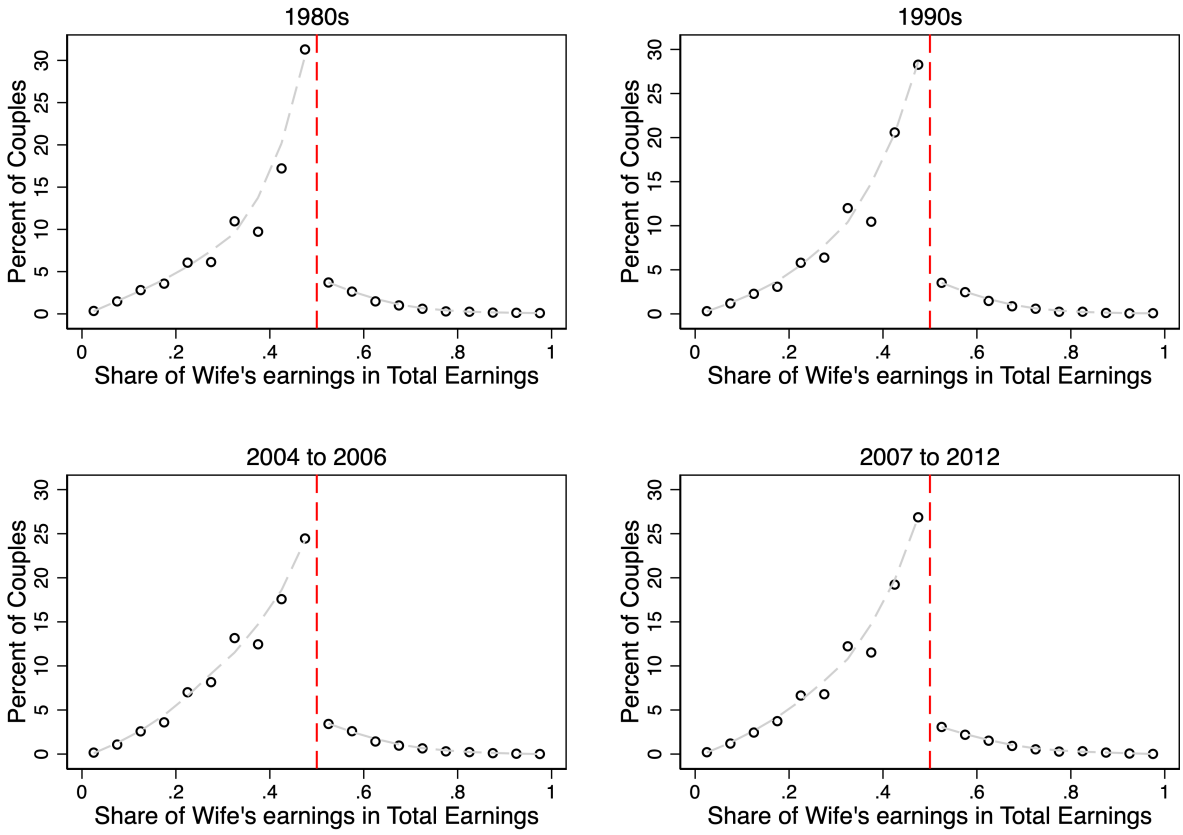


Figure 4: Distribution of Relative Income Overtime

Note: The data are from the 10 rounds of NSS from 1983 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5. Each panel plots the same graph for sample in different time periods.

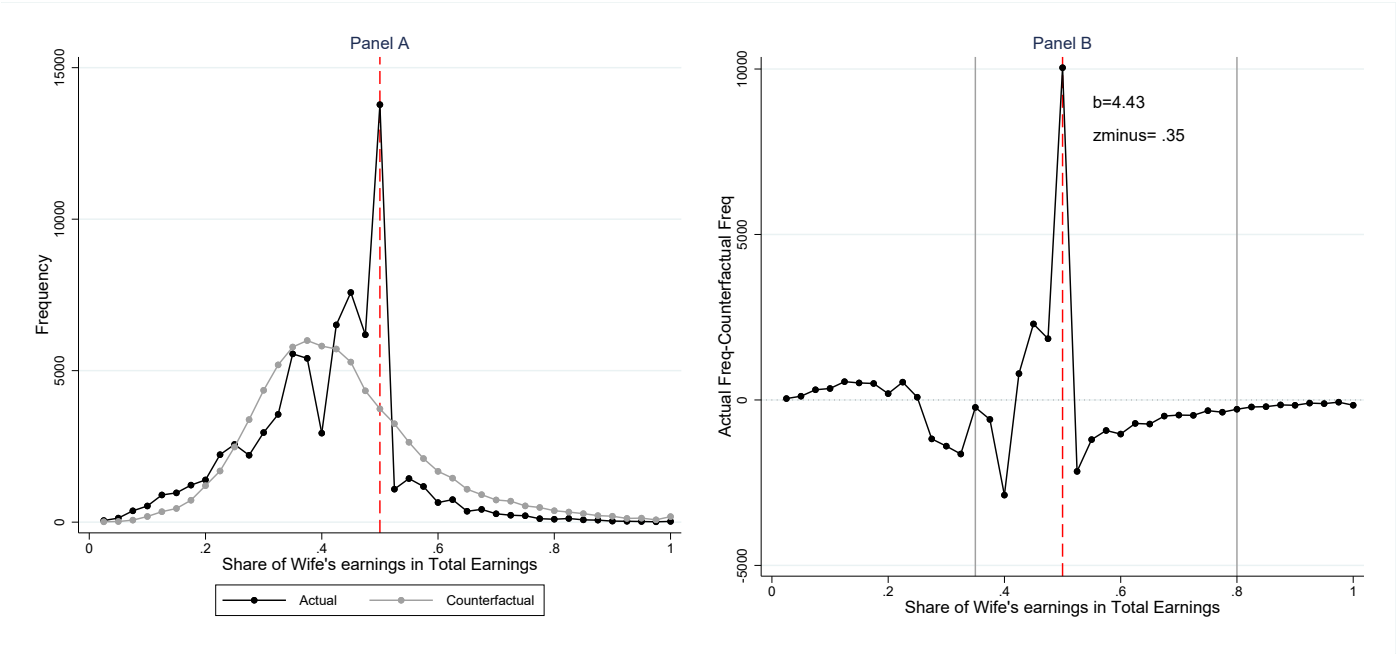


Figure 5: Actual and Counterfactual Distribution of Relative Income

Note:The data are from 10 rounds of NSS from 2004 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the frequency (difference in frequency) of couples in a 0.025 relative income bin in the actual and counterfactual distributions. The vertical line indicates the relative income share = 0.5. Panel A is a plot of the actual and counterfactual distributions of relative income with frequencies plotted on the y-axis. Panel B has difference in actual and counterfactual frequencies plotted on the y-axis.

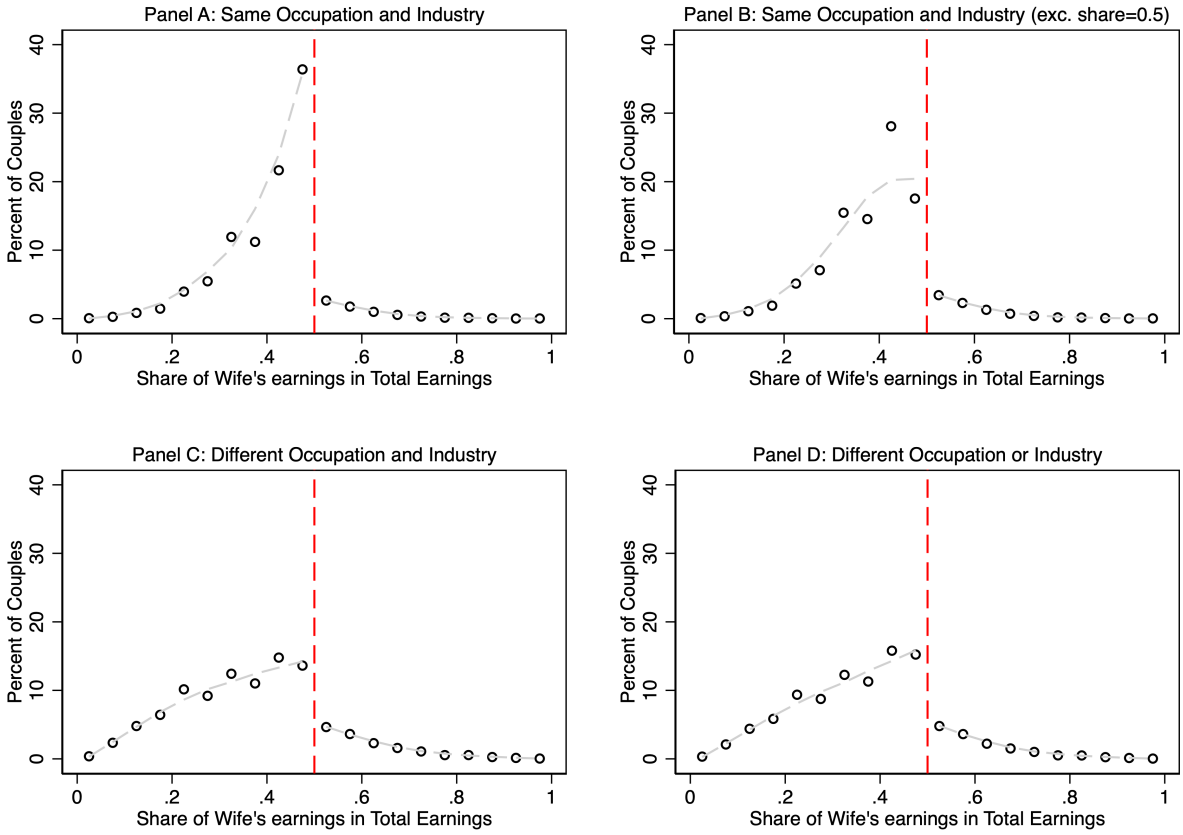


Figure 6: Distribution of Relative Income by Occupation and Industry

Note: The data are from the 10 rounds of NSS from 1983 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5. Each panel plots the same graph restricting to samples constructed based on occupation and industry of husband and wife.

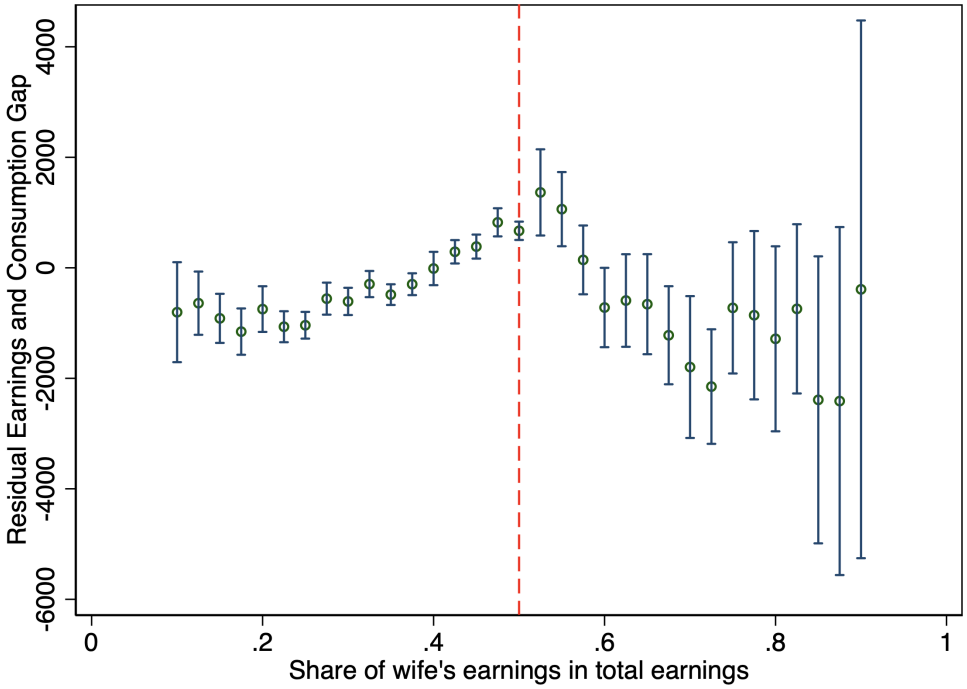


Figure 7: Raw and Residual Earnings and Consumption Gap

Note: The data are from 5 rounds of NSS from 2004 to 2012 Employment-Unemployment Surveys. I plot $E(\text{TotalEarnings} - \text{Consumption})$ conditional on age and education of the husband along with 95% confidence intervals on the y-axis and share of household income earned by the wife on the x-axis for a 0.025 relative income bin.

10 Tables

Table 1: McCrary's Test for Discontinuity

Sample	Bin Size	Bandwidth	Log difference in Heights	Standard Errors
All	0.0009	0.1727	**-2.3285**	0.0236
Excluding Point Mass at 0.5	0.0010	0.1780	**-1.1252**	0.0255
1980's	0.0024	0.1664	**-2.4474**	0.0562
1990's	0.0017	0.1753	**-2.3076**	0.0434
2004 to 2006	0.0018	0.1754	**-2.1263**	0.0468
2007 to 2012	0.0017	0.1544	**-2.4958**	0.0482
Rural Sample	0.0011	0.1723	**-2.5971**	0.0307
Urban Sample	0.0018	0.1728	**-1.7677**	0.0377
Young Couples	0.0015	0.1720	**-2.5375**	0.0413
Older Couples	0.0012	0.1700	**-2.2197**	0.0291
Wife more Educated	0.0039	0.1555	**-1.5113**	0.0755
Wife less Educated	0.0009	0.1757	**-2.3977**	0.0249
Illiterate Couples	0.0013	0.1671	**-2.8033**	0.0438
Graduate or above Couples	0.0030	0.1541	**-1.7841**	0.0615
Same Occupation and Industry	0.0010	0.1738	**-2.8921**	0.0345
Same Occupation and Industry (Excluding Point mass at 0.5)	0.0011	0.1788	**-1.4983**	0.0365
Different Occupation and Industry	0.0021	0.2101	**-1.0718**	0.0377
Different Occupation or Industry	0.0018	0.2122	**-1.1672**	0.0325

Notes: The data is from NSS and sub sampled based on description in the first column. The reported bandwidth and bin size correspond to those automatically selected by the McCrary (2008) test algorithm. Point estimates report the log difference in the height of the density function as one crosses from just left of the supposed break point to just right of it. The breakpoint is chosen to be 0.50001. Bold estimates are statistically significant at the 1 percent level.

Table 2: Bunching Estimates

z^-	z^+	b (with bin width 2.5%)	b (with bin width 1%)
0.35	0.8	4.43	11.08
0.375	0.8	5.04	12.60
0.4	0.8	5.04	12.60
0.425	0.8	6.85	17.13
0.45	0.8	6.93	17.33
0.35	0.9	5.3	13.25
0.375	0.9	6.08	15.20
0.4	0.9	6.08	15.20
0.425	0.9	8.32	20.80
0.45	0.9	8.55	21.38

Table 3: Potential Relative Income and Wife's LFP

	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A. Narrow Definition of LFP			
PrWifeEarnsMore	-0.130***	-0.154***	-0.168***	-0.101***	-0.121***	-0.133***
	(0.00683)	(0.00710)	(0.00740)	(0.00677)	(0.00711)	(0.00737)
Adjusted R^2	0.221	0.225	0.223	0.221	0.224	0.222
			Panel B. Broader Definition of LFP			
PrWifeEarnsMore	-0.0984***	-0.119***	-0.134***	-0.0738***	-0.0893***	-0.103***
	(0.00674)	(0.00688)	(0.00699)	(0.00665)	(0.00690)	(0.00698)
Adjusted R^2	0.192	0.195	0.198	0.192	0.194	0.198
			Panel C. Broadest Definition of LFP			
PrWifeEarnsMore	-0.0641***	-0.0815***	-0.0948***	-0.0527***	-0.0651***	-0.0778***
	(0.00611)	(0.00628)	(0.00629)	(0.00606)	(0.00626)	(0.00626)
N	352244	352244	352244	347681	347681	347681
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Notes. Data are from the 10 rounds of NSS from 1983-2012. The sample consists of couples where both the wife and the husband are between 18 and 60 years old and the husband is working in a wage/salaried job in the week prior to the survey. The dependent variable is whether Wife was in the labor force in the week prior to the survey and is a binary variable that equals 1 if the wife was in the labor force, 0 otherwise. The three panels use different definitions for being in the labor force. The key independent variable Pr(WifeEarnsMore) is the probability that the wife's income would exceed the husband's if her income were drawn from the distribution of positive earnings in her demographic group. Columns(1)-(3) use measure 1 of potential income calculations and columns (4)-(6) are based on the second measure. All regressions include controls for log husband's income, vigintiles of the wife's potential income, wife's and husband's education categories, wife's and husband's age group, wife's and husband's social group, year, and state fixed effects. Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table 4: Potential Relative Income and Wife's Income Gap

	(1)	(2)	(3)	(4)	(5)	(6)
PrWifeEarnsMore	-0.226***	-0.267***	-0.322***	-0.153*	-0.229***	-0.282***
	(0.0541)	(0.0318)	(0.0341)	(0.0930)	(0.0824)	(0.0904)
N	74746	74746	74746	74231	74231	74231
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Notes. Data are from the 10 rounds of NSS from 1983-2012. The sample consists of couples where both the wife and the husband are between 18 and 60 years old and have positive earnings from working in a wage/salaried job in the week prior to the survey. The dependent variable is the income gap which measures the difference between the wife's realized and potential earnings. The key independent variable Pr(WifeEarnsMore) is the probability that the wife's income would exceed the husband's if her income were drawn from the distribution of positive earnings in her demographic group. Columns (1)-(3) use measure 1 of potential income calculations and columns (4)-(6) are based on the second measure. All regressions include controls for log husband's income, vigintiles of the wife's potential income, wife's and husband's education categories, wife's and husband's age group, wife's and husband's social group, year, and state fixed effects. Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table 5: Potential Relative Income and Wife's Hours Worked

	(1)	(2)	(3)	(4)	(5)	(6)
PrWifeEarnsMore	-0.148***	-0.0976***	-0.0735***	-0.115***	-0.0555***	-0.0343***
	(0.0124)	(0.0124)	(0.0126)	(0.0125)	(0.0124)	(0.0126)
N	64577	64577	64577	64118	64118	64118
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Notes. Data are from the 10 rounds of NSS from 1983-2012. The sample consists of couples where both the wife and the husband are between 18 and 60 years old and have positive earnings from working in a wage/salaried job in the week prior to the survey. The dependent variable is the lnHours i.e. the log of number of hours worked by the wife. The survey collects information about number of half days spent on different activities. Number of working hours are imputed by assuming that each half day corresponds to 4 hours of work. The key independent variable Pr(WifeEarnsMore) is the probability that the wife's income would exceed the husband's if her income were drawn from the distribution of positive earnings in her demographic group. Columns (1)-(3) use measure 1 of potential income calculations and columns (4)-(6) are based on the second measure. All regressions include controls for log husband's income, vigintiles of the wife's potential income, wife's and husband's education categories, wife's and husband's age group, wife's and husband's social group, year, and state fixed effects. Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table 6: Relative Income and Wife's Labor Force Participation (CPHS)

	Dependent Variable : LFP_{it}				
	(1)	(2)	(3)	(4)	(5)
WifeEarnsMore$_{t-1}$	-0.0131***	-0.0129***	-0.0146***	-0.0137***	-0.0186***
	(0.00221)	(0.00221)	(0.00249)	(0.00469)	(0.00319)
N	242224	242224	242224	63783	91107
r2	0.97	0.97	0.97	0.98	0.01
TimeFE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
CuLnTotalIncome	No	Yes	Yes	Yes	Yes
Children	No	Yes	Yes	Yes	Yes
CoupleFE	No	No	Yes	Yes	Yes
Balanced Panel	No	No	No	Yes	No
Restricted Sample	No	No	No	No	Yes

Notes. The data are from the 12 waves of CPHS panel from January 2016 to December 2019. The sample is restricted to couples in the age group 18 to 60 years where wife and husband were employed at least in one period in my data. Dependent variable is LFP_{it}^{wife} which is a dummy variable that equals 1 if the wife is in the labor force according in time period t, 0 otherwise. $WifeEarnsMore_{it-1}$ is an indicator variable that equals 1 if relativeIncome>0.5 in $t-1$. All regressions include indicator of only wife working, only husband working, and cubic functions of age of wife and husband and time period fixed effects. Each regression also controls for RelativeIncome which is the share of the household income earned by the wife and lnCouplesIncome which is the log of total income of the couple in $t-1$. Balanced panel restricts attention to couples who we observe in each of the 12 rounds. Restricted sample restricts to couple-time observations where both have non-zero earnings in the previous period. Standard errors are clustered at the couple level. ***significant at 1% level, **at 5%, *at 10%.

Table 7: Relative Income and Wife's Labor Force Participation (IHDS)

	Dep. Var. : LFP^{wife}_{2012}			
	(1)	(2)	(3)	(4)
$\text{WifeEarnsMore}_{2005}$	-0.0518**	-0.0508**	-0.0501**	-0.0570**
	(0.0251)	(0.0250)	(0.0250)	(0.0259)
N	5844	5844	5844	5530
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Cubic in Income	No	Yes	Yes	Yes
Young Children (2012)	No	No	Yes	Yes
Industry	No	No	No	Yes

Notes. The data are from the IHDS panel 2005 and 2012. The sample is restricted to couples in the age group 18 to 60 years and both husband and wife are working in 2005. Dependent variable is LFP^{wife}_{2012} which is a dummy variable that equals 1 if the wife is in the labor force according to IHDS-II survey, 0 otherwise. $WifeEarnsMore_{2005}$ is an indicator variable that equals 1 if relativeIncome>0.5 in 2005. Each regression controls for RelativeIncome which is the share of the household income earned by the wife and lnCouplesIncome which is the log of total income of the couple in 2005, a quadratic in wife's and husband's age, wife's and husband's education, caste, urban/rural residence and state fixed effects. Robust standard errors are reported in parenthesis. ***significant at 1% level, **at 5%, *at 10%.

Table 8: Decision Making Power, Relative Income and Labor Market Decisions

	Dependent Variable : Exited the Labor Force		
	(1)	(2)	(3)
Husband Decides	0.0584***	0.0588***	0.0592***
	(0.0110)	(0.0110)	(0.0110)
$\text{WifeEarnsMore}_{2005}$	-0.00622	-0.00706	-0.00746
	(0.0243)	(0.0242)	(0.0242)
Husband Decides $\times$ $\text{WifeEarnsMore}_{2005}$	0.0937**	0.0929**	0.0920**
	(0.0375)	(0.0374)	(0.0374)
N	4626	4626	4626
R-squared	0.11	0.12	0.12
Sample Mean	0.16	0.16	0.16
Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Cubic in Income	No	Yes	Yes
Young Children (2012)	No	No	Yes

Notes. The data are from the IHDS panel 2005 and 2012. The sample is restricted to couples in the age group 18 to 60 years and both husband and wife are working in 2005. Dependent variable is $Exit_{2012}$ which is a dummy variable that equals 1 if the wife has exited the labor market between 2005 and 2012, 0 otherwise. $WifeEarnsMore_{2005}$ is an indicator variable that equals 1 if relativeIncome>0.5 in 2005 and $HusbandDecides$ equal 1 if wife reports husband has the most say in her labor market decisions, 0 otherwise. Each regression controls for RelativeIncome which is the share of the household income earned by the wife and lnCouplesIncome which is the log of total income of the couple in 2005, a quadratic in wife's and husband's age, wife's and husband's education, caste, urban/rural residence and state fixed effects. Robust standard errors are reported in parenthesis. ***significant at 1% level, **at 5%, *at 10%.

Table 9: Other Gender Norms, Relative Income and Labor Market Decisions

	Dependent Variable : Exited the Labor Force		
	(1)	(2)	(3)
Practice Purdah	-0.00305	-0.00581	-0.00572
	(0.0142)	(0.0142)	(0.0142)
$\text{WifeEarnsMore}_{2005}$	-0.00671	-0.00676	-0.00739
	(0.0296)	(0.0296)	(0.0296)
Practice Purdah $\times$ $\text{WifeEarnsMore}_{2005}$	0.0803**	0.0800**	0.0802**
	(0.0364)	(0.0365)	(0.0365)
N	4936	4936	4936
R-squared	0.12	0.12	0.13
Sample Mean	.17	.17	.17
Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Cubic in Income	No	Yes	Yes
Young Children (2012)	No	No	Yes

Notes. The data are from the IHDS panel 2005 and 2012. The sample is restricted to couples in the age group 18 to 60 years and both husband and wife are working in 2005. Dependent variable is $Exit_{2012}$ which is a dummy variable that equals 1 if the wife has exited the labor market between 2005 and 2012, 0 otherwise. $WifeEarnsMore_{2005}$ is an indicator variable that equals 1 if relativeIncome>0.5 in 2005 and $PracticePurdah$ equal 1 if wife reports that this norm is practiced at home, 0 otherwise. Each regression controls for RelativeIncome which is the share of the household income earned by the wife and lnCouplesIncome which is the log of total income of the couple in 2005, a quadratic in wife's and husband's age, wife's and husband's education, caste, urban/rural residence and state fixed effects. Robust standard errors are reported in parenthesis. ***significant at 1% level, **at 5%, *at 10%.

Table 10: Distribution of Sample

Occupation	**Industry**	**% Couples**
Same Occupation	Same Industry	61.43
Same Occupation	Different Industry	2.15
Different Occupation	Same Industry	5.16
Different Occupation	Different Industry	31.26

APPENDIX

A Additional Tables and figures

Table A1: Potential Relative Income and Wife's LFP (Young Couples)

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. Narrow Definition of LFP					
PrWifeEarnsMore	-0.113***	-0.152***	-0.157***	-0.0853***	-0.119***	-0.126***
	(0.00936)	(0.00998)	(0.0105)	(0.00918)	(0.00985)	(0.0104)
Adjusted R^2	0.210	0.214	0.206	0.211	0.215	0.207
	Panel B. Broader Definition of LFP					
PrWifeEarnsMore	-0.0990***	-0.138***	-0.142***	-0.0722***	-0.105***	-0.111***
	(0.00934)	(0.00980)	(0.0102)	(0.00909)	(0.00967)	(0.0100)
Adjusted R^2	0.187	0.191	0.185	0.188	0.191	0.185
	Panel C. Broadest Definition of LFP					
PrWifeEarnsMore	-0.0664***	-0.0988***	-0.103***	-0.0536***	-0.0794***	-0.0866***
	(0.00885)	(0.00925)	(0.00950)	(0.00873)	(0.00917)	(0.00944)
N	151741	151741	151741	149555	149555	149555
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Child_Cntren	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Notes. Data are from the 10 rounds of NSS from 1983-2012. The sample consists of couples where both the wife is younger than 30 years old and the husband are between 18 and 60 years old and the husband is working in a wage/salaried job in the week prior to the survey. The dependent variable is whether Wife was in the labor force in the week prior to the survey and is a binary variable that equals 1 if the wife was in the labor force, 0 otherwise. The three panels use different definitions for being in the labor force. The key independent variable Pr(WifeEarnsMore) is the probability that the wife's income would exceed the husband's if her income were drawn from the distribution of positive earnings in her demographic group. Columns(1)-(3) use measure 1 of potential income calculations and columns (4)-(6) are based on the second measure. All regressions include controls for log husband's income, vigintiles of the wife's potential income, wife's and husband's education categories, wife's and husband's age group, wife's and husband's social group, year, and state fixed effects. Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table A2: Potential Relative Income and Wife's LFP Time Period 1

	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A. Narrow Definition of LFP			
PrWifeEarnsMore	-0.129***	-0.162***	-0.161***	-0.0850***	-0.111***	-0.113***
	(0.0172)	(0.0179)	(0.0188)	(0.0180)	(0.0188)	(0.0195)
Adjusted R^2	0.269	0.274	0.276	0.269	0.274	0.275
			Panel B. Broader Definition of LFP			
PrWifeEarnsMore	-0.0942***	-0.120***	-0.120***	-0.0605***	-0.0811***	-0.0822***
	(0.0159)	(0.0165)	(0.0169)	(0.0164)	(0.0172)	(0.0174)
Adjusted R^2	0.239	0.243	0.246	0.240	0.243	0.247
			Panel C. Broadest Definition of LFP			
PrWifeEarnsMore	-0.0691***	-0.0964***	-0.0982***	-0.0718***	-0.0959***	-0.101***
	(0.0154)	(0.0156)	(0.0155)	(0.0154)	(0.0156)	(0.0156)
N	61507	61507	61507	60528	60528	60528
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A3: Potential Relative Income and Wife's LFP Time Period 2

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. Narrow Definition of LFP					
PrWifeEarnsMore	-0.188***	-0.225***	-0.240***	-0.164***	-0.189***	-0.204***
	(0.0128)	(0.0124)	(0.0127)	(0.0126)	(0.0125)	(0.0129)
Adjusted R^2	0.243	0.249	0.245	0.242	0.248	0.243
	Panel B. Broader Definition of LFP					
PrWifeEarnsMore	-0.144***	-0.179***	-0.190***	-0.127***	-0.149***	-0.159***
	(0.0128)	(0.0121)	(0.0120)	(0.0125)	(0.0122)	(0.0123)
Adjusted R^2	0.206	0.212	0.214	0.206	0.211	0.214
	Panel C. Broadest Definition of LFP					
PrWifeEarnsMore	-0.0796***	-0.116***	-0.130***	-0.0726***	-0.0985***	-0.112***
	(0.0114)	(0.0115)	(0.0114)	(0.0116)	(0.0119)	(0.0117)
N	82552	82552	82552	81473	81473	81473
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A4: Potential Relative Income and Wife's LFP Time Period 3

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. Narrow Definition of LFP					
PrWifeEarnsMore	-0.178***	-0.189***	-0.206***	-0.142***	-0.148***	-0.165***
	(0.0107)	(0.0115)	(0.0116)	(0.0113)	(0.0122)	(0.0125)
Adjusted R^2	0.232	0.234	0.231	0.230	0.232	0.230
	Panel B. Broader Definition of LFP					
PrWifeEarnsMore	-0.152***	-0.153***	-0.171***	-0.117***	-0.113***	-0.133***
	(0.0109)	(0.0116)	(0.0115)	(0.0115)	(0.0124)	(0.0124)
Adjusted R^2	0.198	0.199	0.205	0.197	0.198	0.204
	Panel C. Broadest Definition of LFP					
PrWifeEarnsMore	-0.0907***	-0.0871***	-0.104***	-0.0710***	-0.0624***	-0.0814***
	(0.0104)	(0.0111)	(0.0112)	(0.0102)	(0.0111)	(0.0112)
N	89426	89426	89426	88258	88258	88258
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A5: Potential Relative Income and Wife's LFP Time Period 4

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A. Narrow Definition of LFP					
PrWifeEarnsMore	-0.117***	-0.148***	-0.151***	-0.0917***	-0.118***	-0.123***
	(0.00998)	(0.0103)	(0.0105)	(0.00964)	(0.0105)	(0.0107)
Adjusted R^2	0.190	0.193	0.192	0.189	0.192	0.192
	Panel B. Broader Definition of LFP					
PrWifeEarnsMore	-0.0873***	-0.113***	-0.122***	-0.0641***	-0.0857***	-0.0949***
	(0.0101)	(0.0104)	(0.0105)	(0.00973)	(0.0106)	(0.0107)
Adjusted R^2	0.167	0.169	0.174	0.167	0.168	0.174
	Panel C. Broadest Definition of LFP					
PrWifeEarnsMore	-0.0846***	-0.102***	-0.109***	-0.0617***	-0.0749***	-0.0817***
	(0.0102)	(0.0106)	(0.0106)	(0.0101)	(0.0109)	(0.0109)
N	119094	119094	119094	117825	117825	117825
StateFE	Yes	Yes	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
CubicLnHusbIncome	No	Yes	Yes	No	Yes	Yes
Children	No	No	Yes	No	No	Yes
DemographicInteraction	No	No	Yes	No	No	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A6: Potential Relative Income and Wife's LFP

	Less Educated		More Educated	
	(1)	(2)	(3)	(4)
Panel A. Narrow Definition of LFP				
PrWifeEarnsMore	-0.216***	-0.169***	-0.0987***	-0.0347***
	(0.0102)	(0.0102)	(0.00984)	(0.00957)
Adjusted R^2	0.247	0.246	0.148	0.146
Panel B. Broader Definition of LFP				
PrWifeEarnsMore	-0.177***	-0.135***	-0.0836***	-0.0237**
	(0.0100)	(0.0100)	(0.0107)	(0.0102)
Adjusted R^2	0.211	0.210	0.143	0.141
Panel C. Broadest Definition of LFP				
PrWifeEarnsMore	-0.119***	-0.0962***	-0.0634***	-0.0121
	(0.00889)	(0.00876)	(0.0121)	(0.0116)
N	217218	214950	71144	70236
StateFE	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
CubicLnHusbIncome	Yes	Yes	Yes	Yes
Child_Cntren	Yes	Yes	Yes	Yes
DemographicInteraction	Yes	Yes	Yes	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table A7: Potential Relative Income and Wife's Income Gap

	Less Educated		More Educated	
	(1)	(2)	(3)	(4)
PrWifeEarnsMore	-0.612***	-0.475***	0.0767	0.336***
	(0.143)	(0.133)	(0.0490)	(0.0868)
N	56464	56201	13368	13178
StateFE	Yes	Yes	Yes	Yes
TimeFE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
CubicLnHusbIncome	Yes	Yes	Yes	Yes
Child_Cntren	Yes	Yes	Yes	Yes
DemographicInteraction	Yes	Yes	Yes	Yes

Standard errors are clustered at the level of the wife's demographic group and are reported in brackets. ***significant at 1% level, ** at 5%, * at 10%.

Table A8: Balance Test

	Dep. Var. : Wife in the Panel		
	(1)	(2)	(3)
$WifeEarnsMore_{2005}$	-0.0219	-0.0216	-0.0194
	(0.0200)	(0.0199)	(0.0208)
$RelativeIncome_{2005}$	0.00344	0.00891	0.00367
	(0.0411)	(0.0412)	(0.0465)
N	7648	7648	7197
Controls	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Cubic in Income	No	Yes	Yes
Young Children (2012)	No	No	Yes
Industry	No	No	Yes

Robust standard errors are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A9: Relative Income and Wife's Labor Force Participation (IHDS - Broad Definition)

	Dep. Var :LFP^{wife}_{2012}			
	(1)	(2)	(3)	(4)
$WifeEarnsMore_{2005}$	-0.0438**	-0.0432**	-0.0426**	-0.0425**
	(0.0208)	(0.0207)	(0.0207)	(0.0212)
N	5844	5844	5844	5530
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Cubic in Income	No	Yes	Yes	Yes
Young Children (2012)	No	No	Yes	Yes
Industry	No	No	No	Yes

Robust standard errors are reported in brackets.
***significant at 1% level, ** at 5%, * at 10%.

Table A10: Probability that Wife Earns More

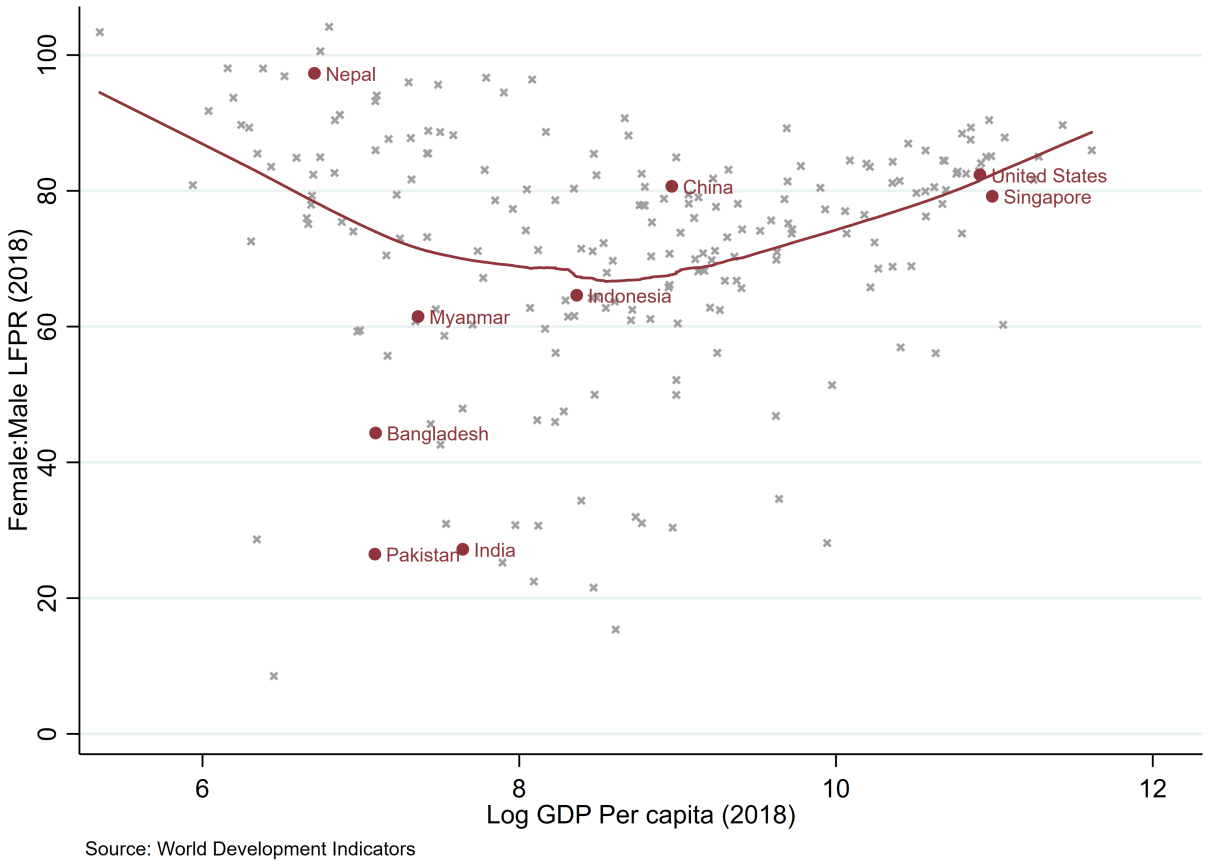
	1980's	1990's	2004-2006	2007-2012	Total
Prob(Wife Earns More)	0.202	0.240	0.198	0.202	0.210
	(0.281)	(0.297)	(0.277)	(0.271)	(0.281)
Prob(Wife Earns More)- Exc. Bunchers	0.185	0.210	0.175	0.174	0.185
	(0.276)	(0.288)	(0.268)	(0.263)	(0.273)

Table A11: Oster (2016) Bounds

Variable	Table	Column	$B(1.3R^2, 0)$	$B^*(1.3R^2, 1)$	Bound Excludes 0
LFP Narrow	3	(1)	-0.13	-0.42	Yes
LFP Narrow	3	(2)	-0.15	-0.47	Yes
LFP Narrow	3	(3)	-0.17	-0.51	Yes
LFP Narrow	3	(4)	-0.1	-0.36	Yes
LFP Narrow	3	(5)	-0.12	-0.41	Yes
LFP Narrow	3	(6)	-0.13	-0.45	Yes
LFP Broader	3	(1)	-0.1	-0.37	Yes
LFP Broader	3	(2)	-0.12	-0.42	Yes
LFP Broader	3	(3)	-0.13	-0.47	Yes
LFP Broader	3	(4)	-0.07	-0.32	Yes
LFP Broader	3	(5)	-0.09	-0.36	Yes
LFP Broader	3	(6)	-0.1	-0.41	Yes
LFP Broadest	3	(1)	-0.06	-0.36	Yes
LFP Broadest	3	(2)	-0.08	-0.4	Yes
LFP Broadest	3	(3)	-0.1	-0.46	Yes
LFP Broadest	3	(4)	-0.05	-0.3	Yes
LFP Broadest	3	(5)	-0.07	-0.34	Yes
LFP Broadest	3	(6)	-0.08	-0.39	Yes
Income Gap	4	(1)	-0.23	0.76	No
Income Gap	4	(2)	-0.27	0.85	No
Income Gap	4	(3)	-0.32	0.84	No
Income Gap	4	(4)	-0.15	0.93	No
Income Gap	4	(5)	-0.23	0.98	No
Income Gap	4	(6)	-0.28	0.96	No

Notes: This table uses psacalc STATA package to implement Oster (2016) bounds for results in tables and columns as mentioned. B(1.3R$\hat{2}$,0) are the coefficients from using $1.3R^2$ of the regressions and $\delta = 0$. $B^*(1.3R^2, 1)$ are the coefficients from using $1.3R^2$ of the regressions and $\delta = 1$

Figure A.1: U-Shape Hypothesis



Source: World Development Indicators

Figure A.2: Discontinuity in the U.S. (Bertrand, Kamenica, and Pan 2015)

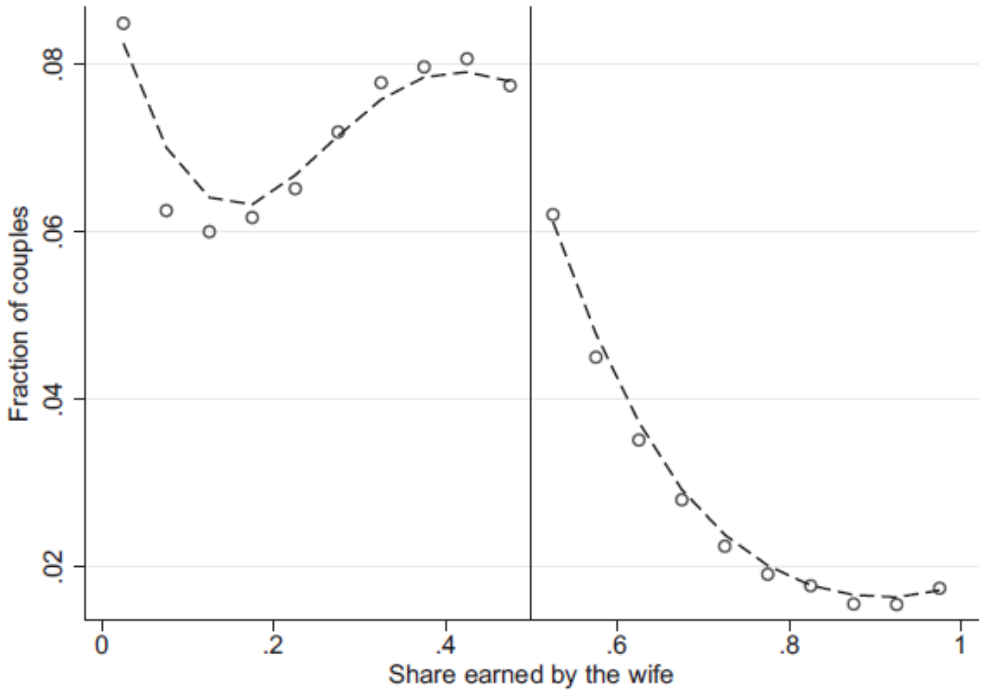


FIGURE I

Distribution of Relative Income (SIPP Administrative Data)

The data are from the 1990 to 2004 SIPP/SSA/IRS gold standard files. The sample includes married couples where both the husband and wife earn positive income and are between 18 and 65 years of age. For each couple, we use the observation from the first year that the couple is in the panel. Each dot is the fraction of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5.

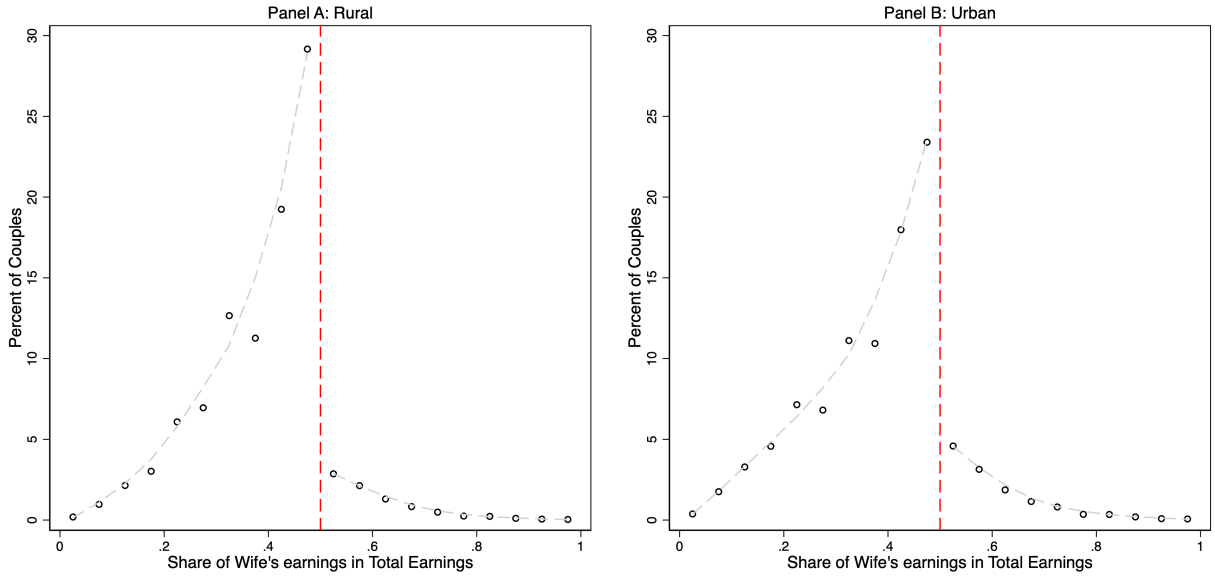


Figure A.3: Sectoral Distribution of Relative Income

Note: The data are from the 10 rounds of NSS from 1983 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5. Each panel plots the same graph restricting the sample to households whose reside in rural or urban areas.

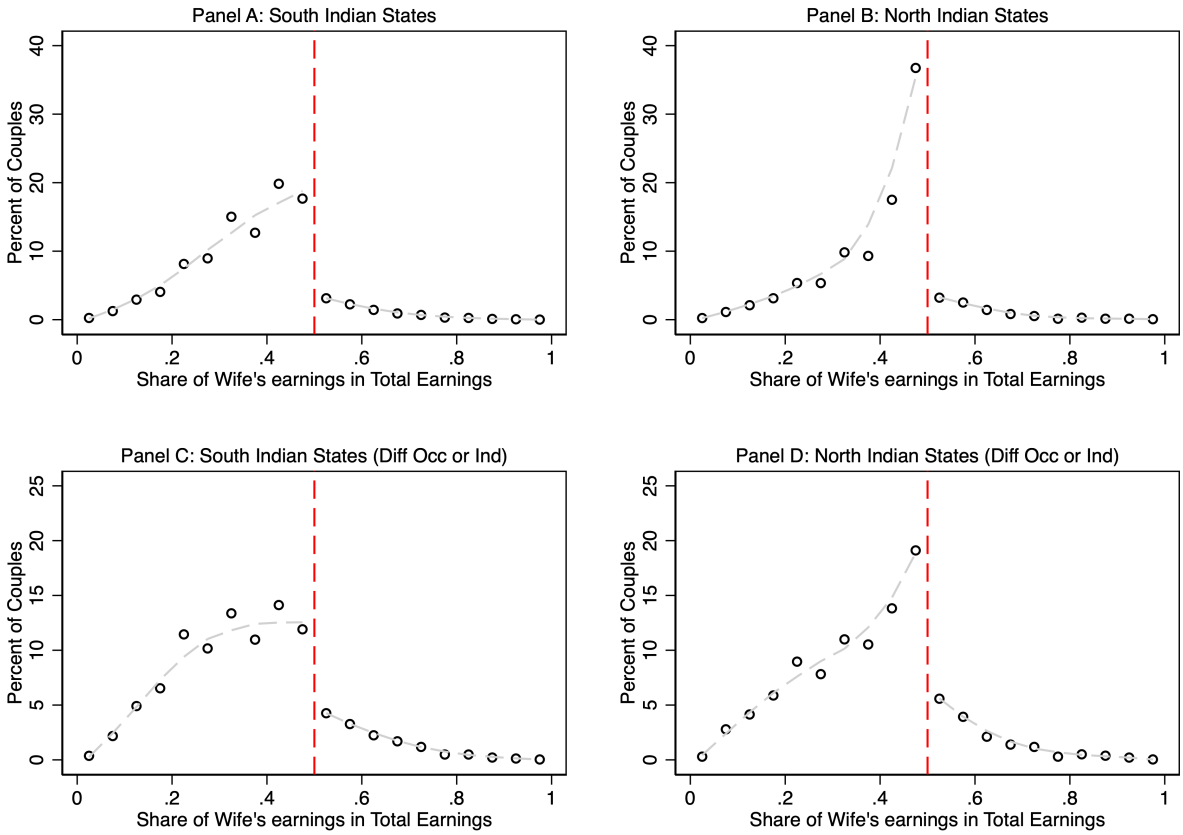


Figure A.4: Regional Variation in Distribution of Relative Income

Note: The data are from the 10 rounds of NSS from 1983 to 2012 Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5. Each panel plots the same graph restricting the sample to households who reside in 4 large states in North India - Uttar Pradesh, Haryana, Rajasthan and Bihar and South India - Tamil Nadu, Karnataka, Andhra Pradesh, and Kerala.

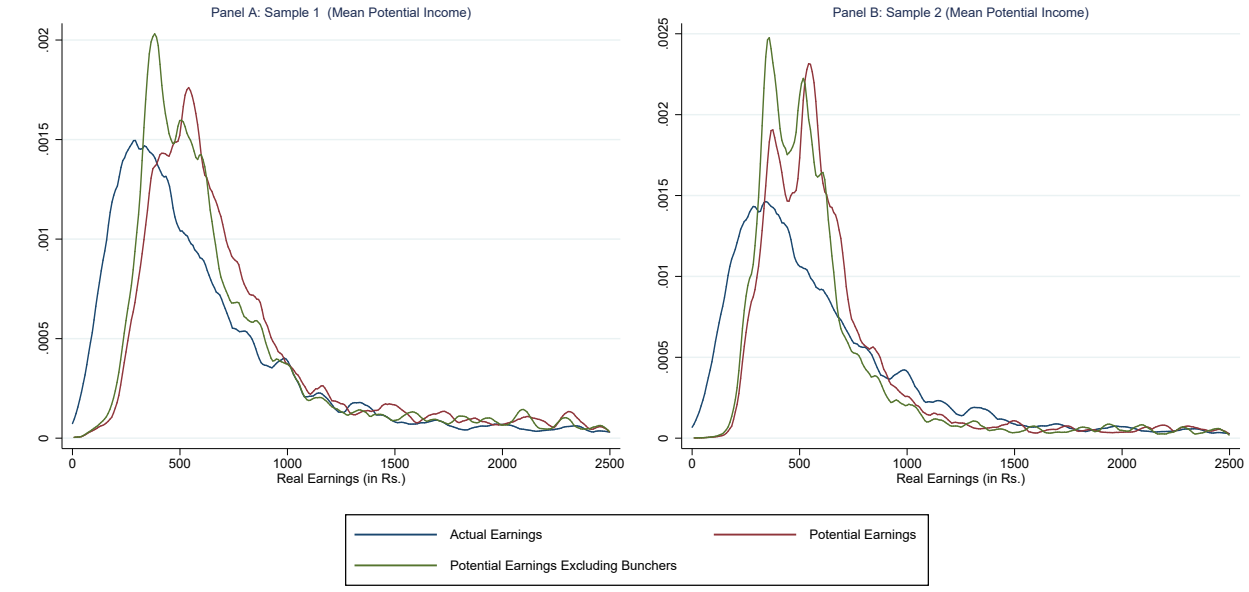


Figure A.5: Kernel Density Plots of Actual and Potential Earnings

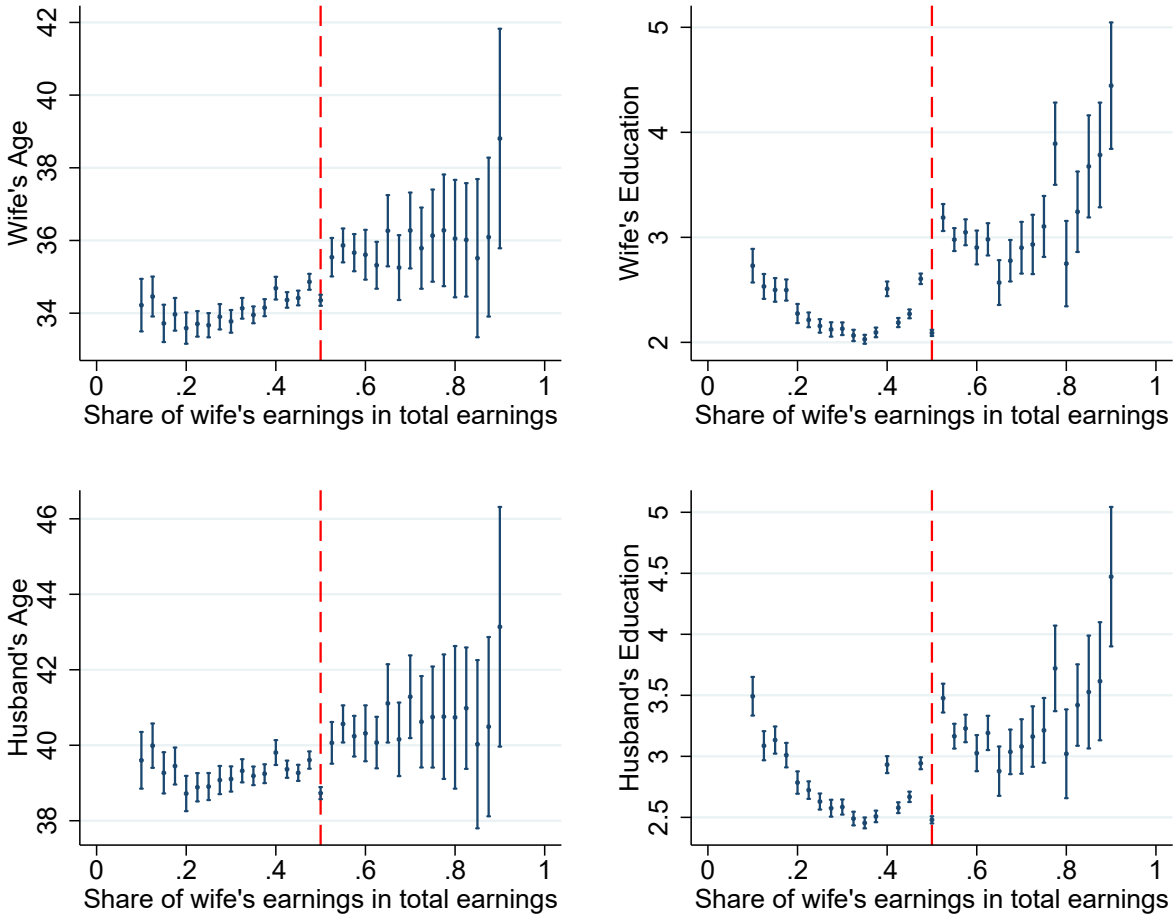


Figure A.6: Distribution of Observable Characteristics with Relative Income

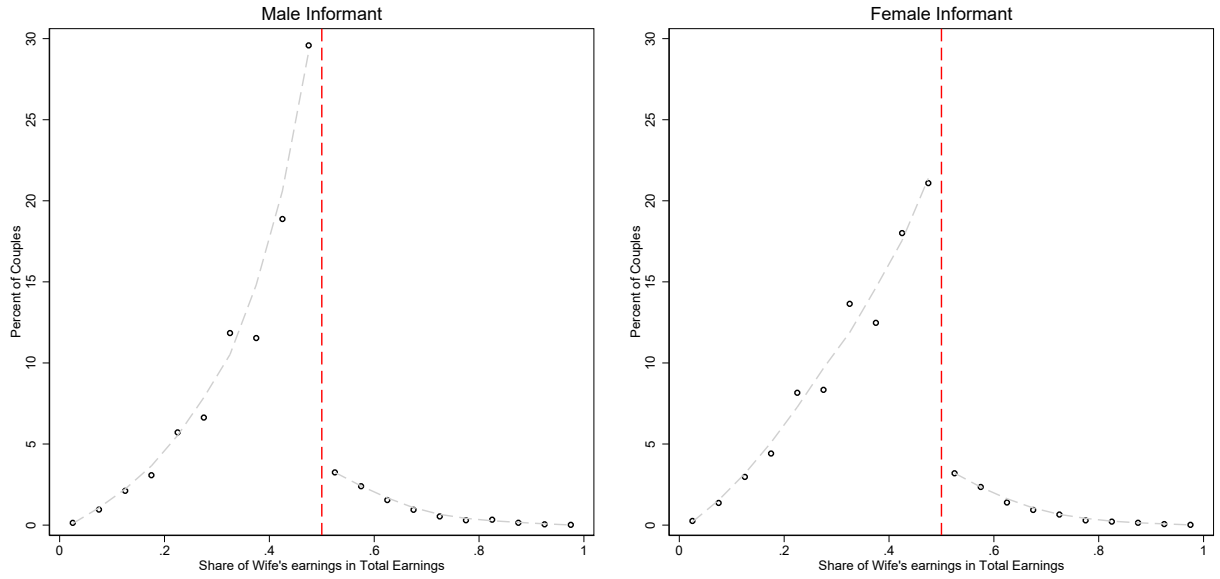


Figure A.7: Variation in Distribution of Relative Income by Gender of Informant

Note: The data is from the NSS Employment-Unemployment Surveys. The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the week prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5. Each panel plots the same graph restricting the sample to households where information was collected from a male informant and a female informant.

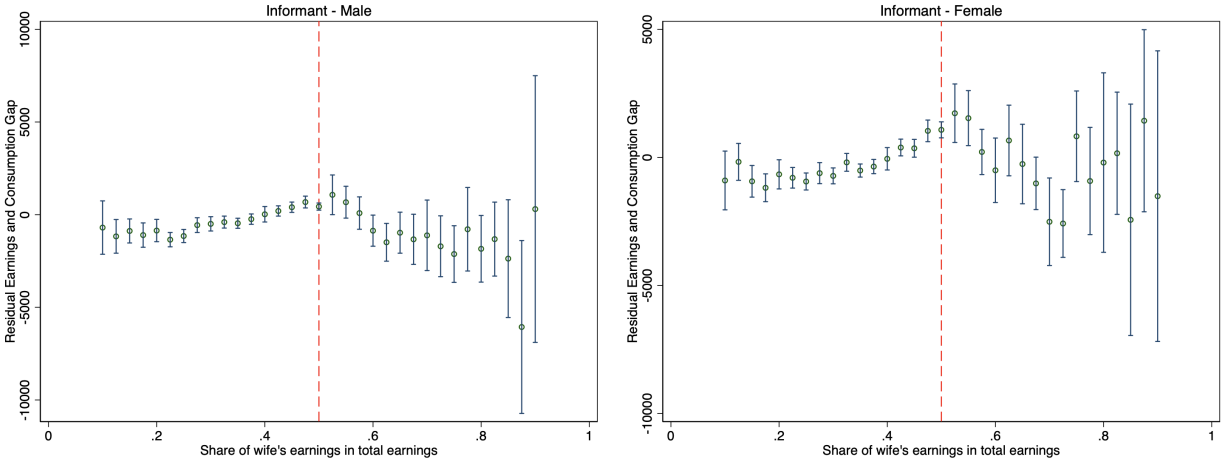


Figure A.8: Conditional Earnings and Consumption Gap by Gender of Informant

B Data Appendix

B.1 National Sample Surveys (NSS)

The main source of data for this project comes from the Employment and Unemployment Surveys of National Sample Survey (NSS) India. These individual-level surveys are the primary sources of data for various Indian labor market indicators over the years. I use data from ten repeated cross sectional rounds of the NSS: 38th (1983-84), 43rd (1987-88), 50th (1993-94), 55th (1999-00), 60th (2004), 61st (2004-05), 62nd (2005-06), 64th (2007-08), 66th (2009-10) and 68th (2011-12). In each survey round, information is collected from nearly 100,000 households comprising about 500,000 individuals. The information collected includes demographics of the household as well as individuals including their age, education levels, social group and religion. Detailed information about employment is also collected including usual principal and subsidiary activity status as well as industry and earnings of individuals engaged in regular or casual wage/salaried employment in the week before the survey is conducted. . Wages are deflated using The World Bank's Consumer Price Index (base=2015) series. Some rounds also have information about household consumption expenditure.

While NSS doesn't identify couples formally, I identify couples using their relationship to the household head and the order in which they appear in the survey. As per the instructions given to enumerators who conduct the survey, they have to record household members and their corresponding details in a pre-specified order. The details of the head of the household are enumerated first, followed by his/her spouse. Next appears the information of sons who reside in the same house: first son, first son's wife and their children, followed by second son, second son's wife and their children and so on. After that the daughters are listed followed by other relations, dependants, servants, etc. I use this fact to identify couples for my final sample.

I consider couples where both husband and wife, both are between the age groups of 18-60 years. Using the data on couples, I then construct two primary samples that are used in this paper. Sample 1 consists of couples which have information about the weekly earnings of the

husband. This sample comprises of 378,858 couples and is used to provide suggestive evidence on the extensive margin responses to the male breadwinner norm in India. Sample 2 is used to look at intensive margin responses and study the relative income within households and hence it comprises of couples which have weekly earnings information for both the husband and the wife[66]. This sample is comprised of 74,787 couples.

The main outcome of interest is female labor force participation. I follow Dubey, Olsen, and Sen (2017) and use three definitions of LFP for women to provide more insight in how the quality of work might also be affected by norms. (1) The narrow definition includes only women for whom the usual principal/subsidiary activity was salaried, waged or casual wage labour; (2) The broader definition also includes those who are self employed, and (3) the broadest definition further includes those involved in "extra-domestic duties."[67]

Summary statistics are provided in Table C1. Column (1) shows that the female labor force participation rates in India are very low. Only 16% of the couples in my sample include women who are engaged in wage or salaried employment, while an additional 8% are self employed. Most of the women are primarily engaged in domestic unpaid work. This is very different for men, where around 49% of men are employed in wage and salaried jobs and additional 43% are self employed. Because so many women are not employed, if one was to look at the relative income share of women in the household, there is a huge mass at zero.[68] Columns (2) and (3) further provide the summary statistics of my samples.

B.2 Indian Human Development Survey (IHDS) and Consumer Pyramid Household Survey (CPHS)

In addition to the data from NSS, I use the panel data from IHDS rounds I and II and CPHS. CPHS is a nationally representative longitudinal survey of households in India. It contains

66. In this sample I only consider couples with non-zero earnings of both husband and wife. Weekly earnings information is available for individuals who were engaged in wage and salaried employment in the past week.

67. This category includes those who attended domestic duties and were also engaged in free collection of goods (vegetables, roots, firewood, cattle feed, etc.), sewing, tailoring, weaving, etc. for household use

68. As mentioned previously, we only have incomes for those engaged in wage or salaried employment. Thus an income share of 0 or 1 in our data may not necessarily imply that husband or wife is the sole earner. It could also mean that only one of the spouses has a wage/salaried job.

Table C1: Descriptive Statistics (NSS Sample)

	All	Sample 1	Sample 2
Wife			
Wife's Age	34.48	33.76	34.39
	(9.862)	(9.251)	(8.843)
Not Literate	0.473	0.432	0.593
	(0.499)	(0.495)	(0.491)
Literate Below Prim	0.0950	0.0902	0.0778
	(0.293)	(0.286)	(0.268)
Primary	0.122	0.121	0.0759
	(0.327)	(0.326)	(0.265)
Middle	0.125	0.133	0.0547
	(0.331)	(0.340)	(0.227)
Secondary	0.129	0.148	0.0836
	(0.335)	(0.355)	(0.277)
Graduate and above	0.0551	0.0757	0.115
	(0.228)	(0.264)	(0.319)
LFP (Narrow)	0.156	0.243	0.971
	(0.363)	(0.429)	(0.168)
LFP (Medium)	0.241	0.314	0.979
	(0.428)	(0.464)	(0.143)
LFP (Broad)	0.580	0.544	0.996
	(0.494)	(0.498)	(0.0630)
Real Earnings (Rs.)	1241.2	1209.0	1209.0
	(5596.9)	(4169.4)	(4169.4)
Husband			
Husband's Age	39.46	38.88	39.30
	(10.38)	(9.731)	(9.382)
Not Literate	0.263	0.250	0.423
	(0.440)	(0.433)	(0.494)
Literate Below Prim	0.116	0.104	0.129
	(0.320)	(0.306)	(0.336)
Primary	0.142	0.127	0.123
	(0.349)	(0.333)	(0.328)
Middle	0.166	0.152	0.0987
	(0.372)	(0.359)	(0.298)
Secondary	0.200	0.205	0.0982
	(0.400)	(0.403)	(0.298)
Graduate and above	0.114	0.163	0.127
	(0.317)	(0.369)	(0.333)
LFP (Narrow)	0.488	0.983	0.981
	(0.500)	(0.127)	(0.136)
LFP (Medium)	0.924	0.998	0.997
	(0.265)	(0.0449)	(0.0518)
Real Earnings (Rs.)	2353.7	2353.7	1698.1
	(4596.6)	(4596.6)	(3174.4)
Household			
Rural HH	0.637	0.536	0.693
	(0.481)	(0.499)	(0.461)
Agricultural HH	0.383	0.256	0.476
	(0.486)	(0.437)	(0.499)
Household Size	5.829	5.297	4.997
	(2.793)	(2.352)	(2.084)
Hindu HH	0.778	0.794	0.857
	(0.415)	(0.404)	(0.350)
SC/ST HH	0.276	0.329	0.448
	(0.447)	(0.470)	(0.497)
Observations	943383	378858	74787

information from 150,000 households surveyed every four months and includes information about household demographics, employment status, income, expenses, amenities, assets, etc. For my analysis, I use data from January 2016 to December 2019 (12 waves). CPHS is the only high frequency household survey data that tracks households and couples in India, providing useful information about evolving dynamics within couples over time.

IHDS is a nationally representative, multi-topic panel survey which collected information from 41,554 households from villages and urban spaces across India. The first wave was conducted in 2004-5 and most of these households were re-interviewed in 2011-12. Just like NSS and CPHS, IHDS also has information about the demographics of the household as well as individuals including their age, education levels, employment status, social group, religion etc. However, unlike NSS, IHDS collects employment and earnings information about last year instead of last week. An added advantage of using IHDS is that it collects information about gender relations and norms. Using IHDS-I, I construct a sample of married couples in the age group of 18-60 years where both husband and wife have positive annual earnings. I then study the labor supply decisions of these couples in IHDS-II and their interaction with certain norms. The summary statistics of this data are provided in Table C2. In figure , I plot the distribution of relative income for the IHDS-I sample constructed. Just like the NSS distribution, this distribution also has a sharp drop to the right of 0.5.

Table C2: Descriptive Statistics (IHDS Sample)

	IHDS Sample
Wife	
Wife's Age	34.40
	(9.765)
Years of Education	4.092
	(4.662)
LFP (Narrow)	0.216
	(0.412)
In LF(narrow): 2012	0.649
	(0.477)
In LF(broad): 2012	0.812
	(0.391)
Annual Earnings (Rs.)	9889.7
	(20349.6)
Husband	
Husband's Age	39.44
	(10.34)
Years of Education	6.365
	(4.847)
LFP (Narrow)	0.610
	(0.488)
Annual Earnings (Rs.)	29909.2
	(37231.1)
Household	
Urban HH	0.301
	(0.459)
Upper Caste	0.225
	(0.418)
Observations	30842

Notes. Data are from IHDS-I (2005). The sample consists of couples where both the wife and the husband are between 18 and 60 years old and are in the panel.

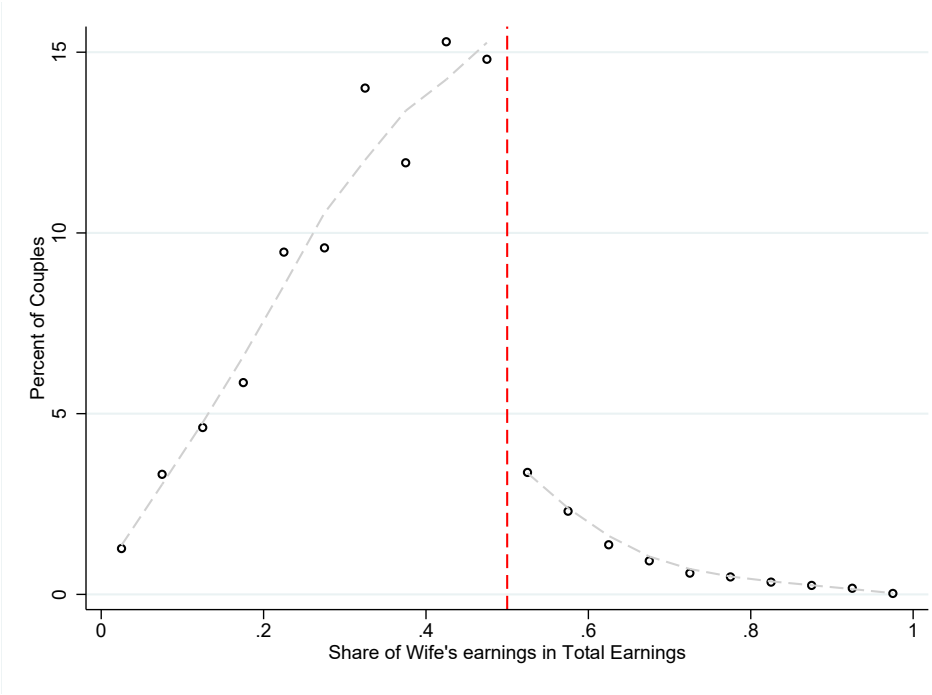


Figure B.9: Distribution of Relative Income (IHDS-I data)

Note: The data are from IHDS-I . The sample includes married couples where both the husband and the wife earn positive wages/salaries and are between 18 and 60 years of age. Income is measured for the year prior to the survey. Each dot is the percentage of couples in a 0.05 relative income bin. The vertical line indicates the relative income share = 0.5. The dashed line is the lowess smoother applied to the distribution allowing for a break at 0.5.

C Bunching Theoretical Framework

In this section I provide the details of the theoretical framework developed in section 3. Suppose z_H and z_W are the respective earnings of a representative husband and wife. Suppose in the population these earnings are smoothly distributed. Individuals consume a share of the total earnings of the couple based on an exogenously given sharing rule s, where s is the share of total earnings consumed by the husband. There is a cost of home production $h(z_W) = \frac{1}{1+\frac{1}{\epsilon}}(z_W)^{1+\frac{1}{\epsilon}}$ which we assume to be iso-elastic in the wife's income[69]. As discussed previously, the breadwinner norm (notch) acts as a utility loss (coming from identity loss Akerlof and Kranton (2000)) for the husband (and thus for the total utility of the couple) when the wife earns more than her husband. Let this utility cost be represented by

$$\mathbb{B}(z_W, z_H) = t\frac{z_W}{z_H} + \Delta T \cdot \mathbb{1}\{\frac{z_W}{z_H} > 1\} \tag{6}$$

For a given level of earnings of the husband z_H, the first term represents the utility loss to the husband for each dollar earned by his wife[70]. The second term represents the notch created due the male breadwinner norm. ΔT is the utility loss faced by the husband when his wife earns more than him. Thus husband's utility function can be written as

$$u(z_W, z_H) = s(z_W + z_H) - h(z_W) - \mathbb{B}(z_W, z_M) \tag{7}$$

The objective of the husband is to maximize the given utility function by choosing the earnings of his wife z_W, given his own earnings z_H[71].

69. Since most of the home production in India is undertaken by the wife, these seems like a plausible assumption. Additionally, if a women works outside of home and earns more, then the cost of home production for the household increases. Thus $h'(z_W) > 0$.

70. The implications of the model are independent of the value of t.

71. Kleven, Landais, and Sogaard (2016) models this as a decision of choosing a partner earning z_W. According to IHDS (2012), more than 50% of the women state that their labor market decisions are made by the husband and hence in our context we can model this as a decision of labor supply choice rather than a choice made in the marriage market.

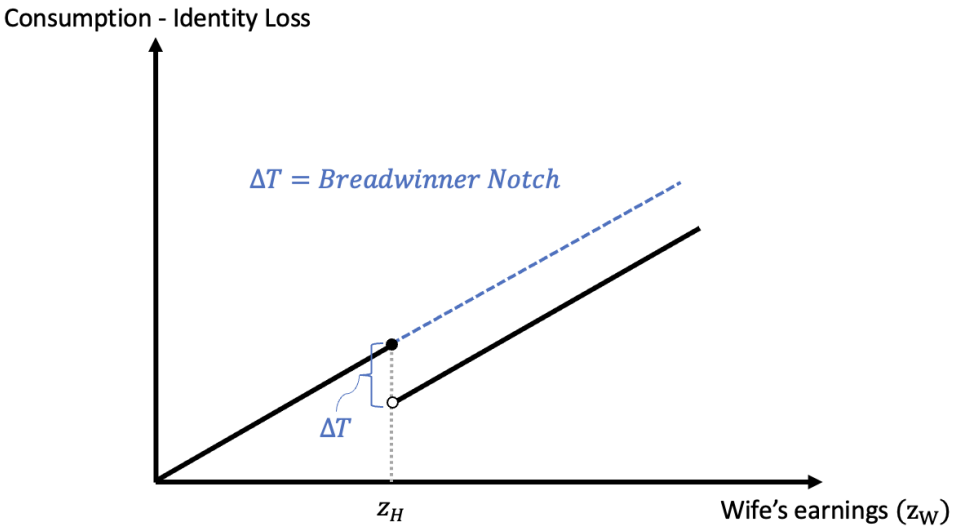


Figure C.10: The Breadwinner Norm Notch

The optimization problem for the husband is given by:

$$\max_{z_W} u(z_W, z_H) \tag{8}$$

where

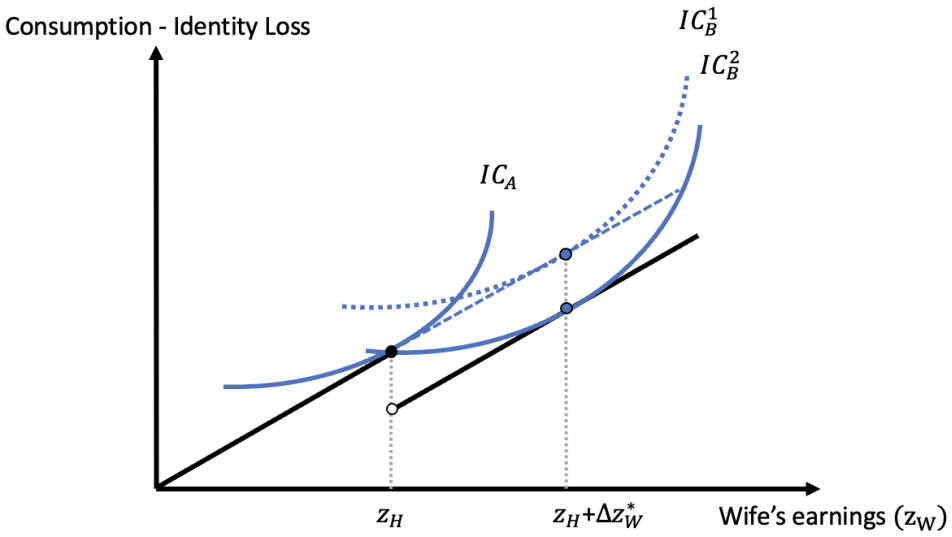
$$u(z_W, z_H) = s(z_W + z_H) - \frac{1}{1+\frac{1}{\epsilon}}(z_W)^{\frac{1}{1+\frac{1}{\epsilon}}} - t\frac{z_W}{z_H} - \Delta T \cdot \mathbb{1}\{\frac{z_W}{z_H} > 1\} \tag{9}$$

The above maximization problem yields the following interior solution

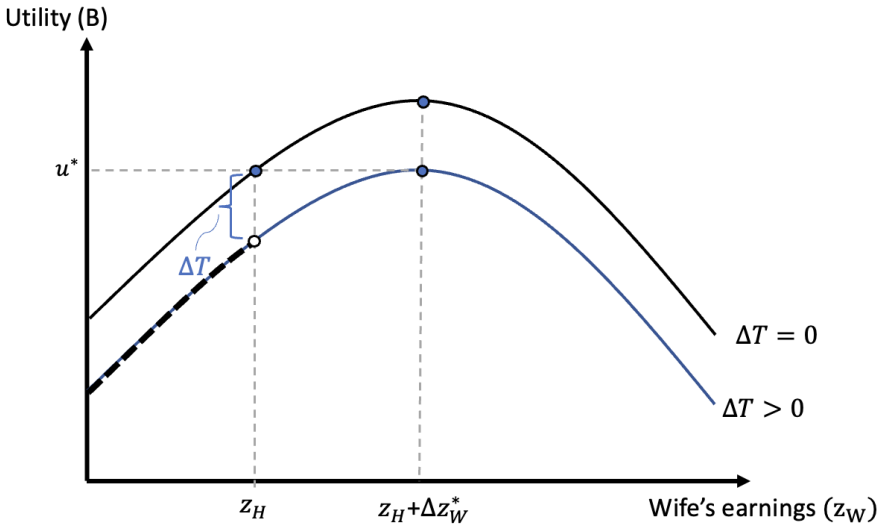
$$z_W = (s - \frac{t}{z_H})^{\epsilon} \tag{10}$$

In the presence of the male breadwinner norm, some couples who otherwise would have had a greater share of total earnings earned by the wife would now alter their behavior such that the wife earns as much or less than the husband. This can be seen from figure C.11.

For couples with wife's earnings between z_H and $z_H + \Delta z_W^*$ in the absence of the norm, the husband is better off if wife's earnings are less than his in the presence of the norm. A couple with $z_W = z_H + \Delta z_W^*$ in the absence of the norm, is indifferent between status quo or



(a) Optimization



(b) Utility of B

Figure C.11: Caption

shifting at the notch in the presence of the norm. Thus there is missing mass between z_H and $z_H + \Delta z_W^*$ and excess bunching at z_H.

To derive the relationship in equation (13) the indifference condition for couples for whom $z_W = z_H + \Delta z_W^*$ i.e. the marginal buncher.

The utility of the couple at the notch (where $z_W = z_H$) is given by

$$u^* = 2sz_H - t - \frac{1}{1+\frac{1}{\epsilon}}(z_H)^{1+\frac{1}{\epsilon}} \tag{11}$$

Using the interior solution in equation 10, we get the following utility for the couple at $z_W = z_H + \Delta z_W^*$

$$\begin{aligned} u^B &= s(z_H + (s - \frac{t}{z_H})^\epsilon) - t\frac{(s-\frac{t}{z_H})^\epsilon}{z_H} - \frac{1}{1+\frac{1}{\epsilon}}((s-\frac{t}{z_H})^\epsilon)^{1+\frac{1}{\epsilon}} \\ &= sz_H + \frac{1}{1+\epsilon}(s-\frac{t}{z_H})^{\epsilon+1} - \Delta T \end{aligned} \tag{12}$$

For the marginal buncher, the utility from being at the notch is the same as u^B. Thus,

$$u^* = u^B$$

$$2sz_H - t - \frac{1}{1+\frac{1}{\epsilon}}(z_H)^{1+\frac{1}{\epsilon}} = sz_H + \frac{1}{1+\frac{1}{\epsilon}}(s-\frac{t}{z_H})^{\epsilon+1} - \Delta T$$

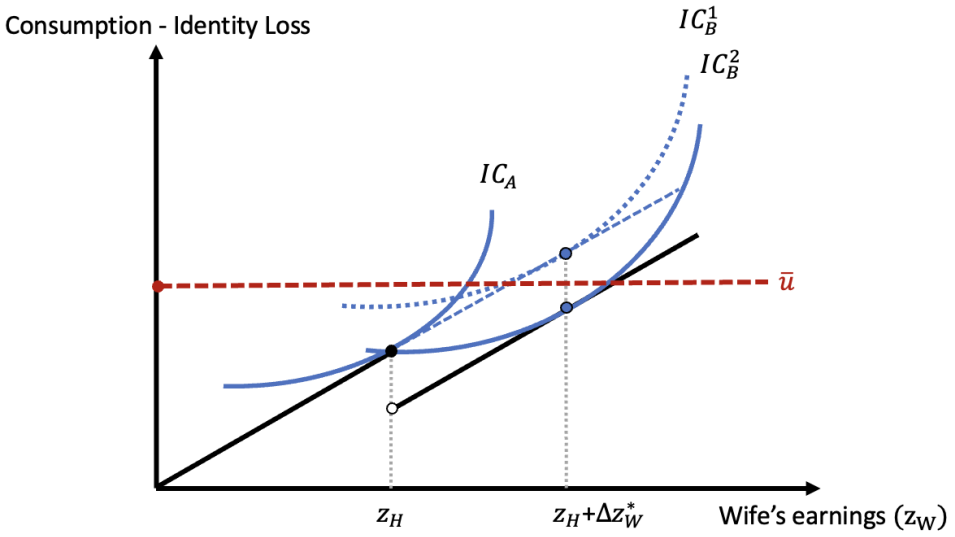
$$\implies \Delta T = \frac{1}{1+\epsilon}(s-\frac{t}{z_H})^{\epsilon+1} + \frac{1}{1+\frac{1}{\epsilon}}(z_H)^{1+\frac{1}{\epsilon}} - (sz_H - t)$$

Using the fact that $z_H + \Delta z_W^* = (s - \frac{t}{z_H})^\epsilon$ and that $z_H = z_W$ at the notch, we can rearrange the above equation to get equation (13). On solving the above optimization problem, I obtain the following relationship between the breadwinner notch ΔT, bunching estimate and elasticity of home production:

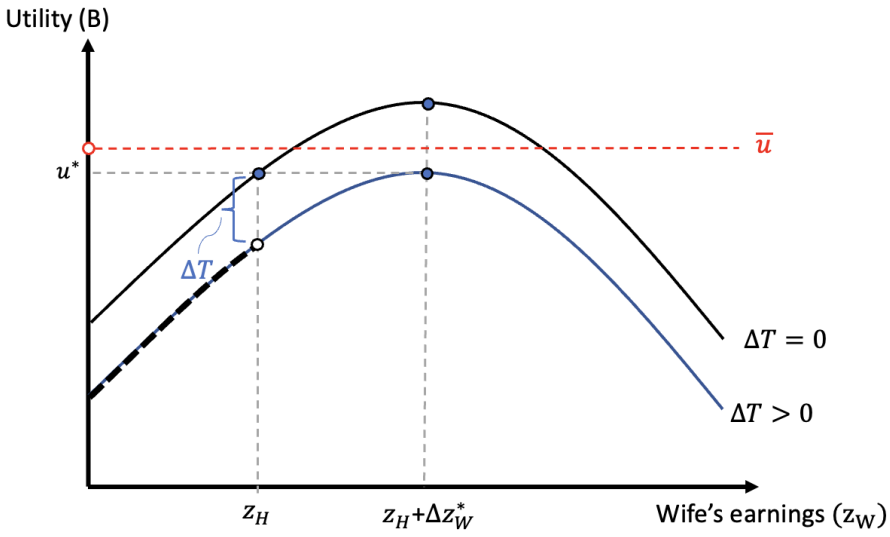
$$\frac{\Delta T}{sz_W - t\frac{z_W}{z_H}} = \frac{1}{1+\frac{1}{\epsilon}}\left(\frac{1}{1+\frac{\Delta z_W^*}{z_H}}\right)^{\frac{1}{\epsilon}} + \frac{1}{1+\epsilon}\left(1+\frac{\Delta z_W^*}{z_H}\right) - 1 \tag{13}$$

The left hand side in the above equation represents the breadwinner notch as a fraction of husband's consumption received from his wife. The right hand side is only a function of elasticity of home production (ϵ) and $\frac{\Delta z_W}{z_H}$ which can be estimated from the excess mass.

Furthermore, let us assume that there is an added fixed cost ($\overline{q}$) that the husband incurs if the wife works, i.e. the utility that husband gets from a wife who doesn't participate in the labor market is $\overline{u} > 0$. Then we can see from the figure C.12 that if $\overline{u}$ is large enough, there will be extensive margin responses as well i.e. couples would find it optimal that the wife doesn't participate in the labor market. Consider the example of couple B. In the absence of the norm, optimal wife's earnings would be $z_H + \Delta z_W^*$. In the presence of the norm but in the absence of any fixed cost of participation, $z_H = z_W$ is an optimal solution. But in the presence of the norm and the added cost of participation, the utility is higher if the wife doesn't participate in the labor market (exterior solution).



(a) Optimization



(b) Utility of B

Figure C.12: Extensive Margin Response