Hypocrites in the Household:
Debt & Female Labor-force Participation in India

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Abstract

Employment of females is considered as an indicator of growth in most economies & is an area of major concern in India in recent times. In this study, we examine how female labor-force participation (FLFP) behaves in response to household borrowing, by using two nationally representative surveys in a particular year. We have adopted two methods in exploring this relationship and have checked whether the causality holds across different settings. Our results indicate that the impact of debt on FLFP is significant and positive in case of a Likelihood estimation and are even stronger when we account for endogeneity of Household debt. Furthermore, instead of restricting this study at the individual level, we have also shown that the relationship holds in the region (neighborhood) that a household would belong.

1. Introduction

Female labor supply is both a driver and an outcome of development. As more women enter the labor force, economies have the potential to grow faster in response to higher labor inputs. Women's supply of labor increases household incomes, which helps families escape poverty and increase their consumption of goods and services. At the same time, as countries grow through the path of development, women's capabilities typically improve, while social constraints weaken, enabling women to engage in work outside the home. The relationship between evolving socio-economic and demographic factors and how women participate in the world of work is multifaceted. Whether a woman is working may be driven, on one hand, by poverty (as evident in low-income countries) and, on the other, by women's increasing educational attainment and the opportunities to work that are made available in a more modern economy. Moreover, during periods of crisis and in response to economic shocks, women are often required to take up (typically informal) employment to smoothen household consumption.

This study is based on the simple fact (which **Figure 1** presents) that; women in India are customarily viewed as the weaker sex. The fate of a female (as a child and as an adult) rests largely on the two households that she will be a part of, in her entire life. As young girls, they are less likely to be allowed to complete schooling and pursue a higher degree and then go on to join the labor-force to earn a living. Once married, unlike men, they are again, entitled to stay at home and be involved in household chores, take care of children and the elderly and be involved in other such kinds of activities. So, a household, primarily the men (or the head) in the household, traditionally do not want women to go to school to study or to go to work to earn. These instances are more profound in rural areas of the country. Our belief is that, as a household's borrowings rise (for purposes including business, hosting cultural functions, buying of assets etc.), women from these same households are sent to work, in order to contribute towards the payment of the interest amount or the debt itself. In other words, the men (household heads) act like hypocrites.

Figure 1

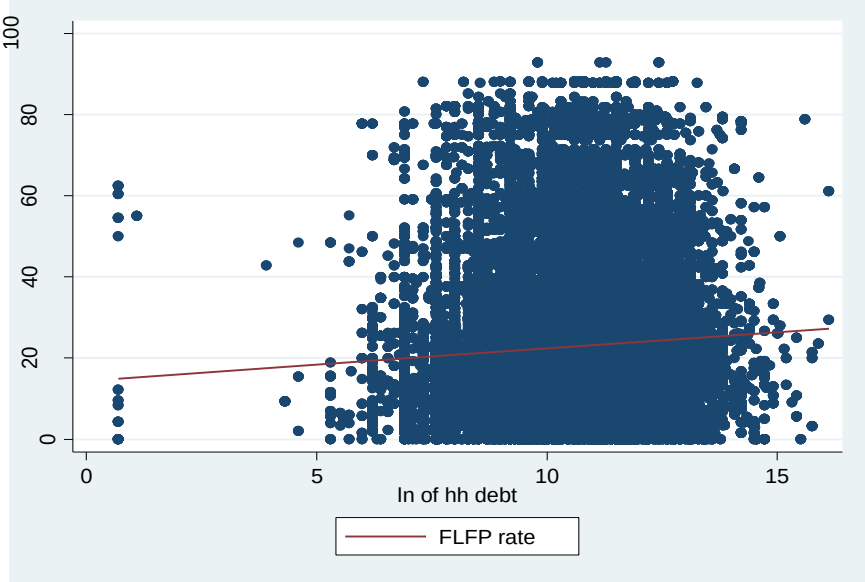


Figure 1 clearly supports this belief; we see as household debt rises (X - axis) Female Labor Force Participation (Y - axis) in a region (mainly in a village or a neighborhood) rises consequently (explained by the red line). Having shown that, we attempt to examine this relationship between household borrowings and female labor-force participation in India.

2. Literature Review

There exists a growing field of literature pertaining to Female Labor Supply in developing countries. The major motivation driving these studies being regular (but extremely important) socio-economic-status indicators of a Household and their effect on our Outcome of interest. *Das and Desai (2003)* mention that social status of families play an important role in their women going to work, implying that families with higher status choose to educate their daughters, but at the same time, restrict their independence through labor force withdrawal. One of its startling findings is that primary and post-primary education each significantly reduces the likelihood of being employed for women, contrary to the faultless belief that more education would lead to better jobs (however, this varies across the caste-category). This could be because; lack of suitable employment reduces the labor force options of educated individuals seeking jobs in the formal sector. *Ettner (1995)* analyze the role of informal caregiving of disabled elderly parents on female labor supply in the US. It runs a 2SLS model where parent-caregiving is instrumented with "coresidential living" of the "employed son/ daughter/ relative "with them and finds that workers would generally withdraw from the labor-force as a result of allotting more time as a care provider for an aged parent/ relative.

Sorsa Et. al, (2015) show that apart from lack of jobs, social and cultural factors keep women outside the labor force, in addition to other determinants like infrastructure, access to finance, labor laws and rural employment programs. They also mention that around 70 million women dropped out of the labor force (between 2000 and 2012) force that leading to a decline in female labor force participation declined from 38% to 32%. In the same context, *Das, Jain-Chandra, Kochhar and Kumar (2015)* exploit cross-state differences in labor force participation rates and labor market regulations to study how labor market rigidities affect labor force participation, and whether adoption of policies (such as the MGNREGA) would lead to increased female participation in the workforce. Relevant results of this paper include; both women and men with young children being less likely to be in the labor force. females in households with higher per capita spending, being less likely to be in the labor force. Also. *Ghani, Mani and O'Connell (2013)* examine the arena of political empowerment and suggest that women's participation in political groups lead to a higher likeliness for them to be employed. It strengthens this hypothesis by showing that political affiliations tend to increase women's involvement in jobs through the MGNREGA. It further shows that increased access to public goods that women care about (e.g.,

roads, health) encourages greater female Labor-force Participation in the presence of women leaders.

Klasen and Pieters (2012) analyze the period between (1983-2005) and focus on the role of education on women's participation in work in the urban sector, where lower education levels are influenced by economic necessity. They states that poorly educated women face a double impact of the decline in unearned (husband's) income works as a 'push-factor', inducing her to work, but at the same time, the decline in her own market wage would reduce her incentive to work thus dominating the decision of poorly educated women to work. On the other hand, more attractive employment opportunities exist for highly educated women, who have higher earnings potential and increasing earnings at the very top and are less likely to face declining unearned income of partners.

On a positive note *Neff, Sen and Kling (2012)* hypothesize and find that women withdraw from/ tend not to join the labor force as household income rises (referred to as income effect). Also, various social and cultural factors interact with each other and lead to a decline in job opportunities for women. In addition, it also illustrates that there exists a U-shaped relationship between rural women's Labor Force Participation and household expenditure. Similarly, *Sanghi, Srija and Shirke (2015)* state that in rural areas, increased Household income levels would lead to women not preferring to work as casual workers unless the work is remunerative (as in MGNREGA). Also, that lack of sufficient non-farm jobs in rural areas has forced women to stay out of the labor force.

Bhalla and Kaur (2011) show that in 1983, almost half the rural female work force was working as "unpaid" labor, and that this number had declined to 43% in 2007 - 2008. However, the fraction of the work force that is "unpaid" is nearly the same for women and men, with the fraction marginally higher for women (54% vs. 46%). It also finds that women tend not to work if married to highly educated males who earn a substantial income. If the earnings gap between the couple was to be too high, the status of the work the woman would engage in would be low. More importantly, it states that discrimination against women in the workplace is a major deterrent for women not going to work. Moreover, there is additional discrimination against the economically backward communities like the scheduled caste and scheduled tribes who together account for a quarter of the population. *Shure (2019)* examine the effect of an increase in Primary School Hours and Maternal Labor Supply and whether the number of working hours for females get extended as a result of this increase (in Germany). The major factors taken into consideration while examining

the relationship are access to day school, presence of primary school aged children in the family. It shows that findings show that having access to a full day school when there is a primary-school-aged-child, leads to an increased likelihood of the mother being employed.

Chakraborty, Mukherjee, Rachapalli and Saha (2017) in a fascinating study of how a woman's labor supply decision would behave to an increased occurrence of crime against women, theorize and show that an increase in perceived crime against women, increases the cost of traveling to work which in turn raises the cost of participating in the workforce for women, thus implying that women would be less likely to participate in the labor force when perceived threat of crime against women is high. They also show that the marginal effect (of going to work) depends on the extent to which a society attaches stigma to victims of sexual crimes. *Uunks, Kalmijn and Muffels (2005)* focus on the impact of childcare institutions on Female (with young children) Labor Supply of 13 countries in the EU. Important findings of this work comprise the following; the degree to which married or cohabiting women withdraw from paid employment after first childbirth – (also known as child effect) - differs considerably between countries of the EU; countries with more generous provision of public childcare and in countries with a lower level of economic welfare, the impact of childbirth on female labor supply is less negative compared to other countries. Similarly, *Kimmel (1998)* uses SIPP survey design to determine the relationship between childcare costs employment for single and married mothers in the US. This paper suggests that mothers aim at maximizing their utility which is a function of leisure time, market costs and childcare quality. Whereas the Female Labor Force Participation is a function, primarily of the average hourly wage rate, average childcare costs etc. The foremost finding of the paper is that changes in childcare costs have a greater impact on labor force participation of married mothers than that of single mothers. On the contrary, *Azimi (2015)* uses variation in family size (which accounts for fertility) to determine the impact on Female Labor Supply decisions. It exploits data from Iranian Household Expenditure and Income Survey to determine the relationship, and the results show that having more children plays no significant role in women going to work, whereas there could arise a change in their work hours in response to having a larger family

Two very informative works based in the neighboring country of Bangladesh by; *Rahman and Islam (2013)* create a commendable link between poverty and female labor supply decisions. It states that Poverty would generally act as a negative force on wage leading to lower productivity and lower bargaining power of poor women and hence to lower earnings for them on one hand, and that poorer women may be in a desperate situation and would be willing to break the social

barrier if it enables them to earn a livelihood, on the other. *Bridges, Lawson and Begum (2011)* show that there exists a positive relationship between extreme poverty and female labor-force participation; young single women are more accepting of employment in the labor market despite rigid social and cultural norms that are still apparent among women, especially in the rural areas.

As per our knowledge, very few studies have exploited the role of debt in this context and by doing this analysis, we hope to contribute towards the literature. The study (despite being conducted in the late 20th century and in a developed country) closest to our scheme of thought is; *Mahoney (1961),* which takes into consideration factors like value of real estates owned, investments, debts, family income, size of family, occupation of husband, and education of specific members and evaluates their effects on Labor force Participation of females in the state of Minnesota, USA. The results in this paper show that factors such as: age of married woman, previous experiences, and family income have a profound impact on Female Labor-force Participation over the other variables. In connection to our research query, Mahoney's work focuses on the role of Family assets and debts (net worth of families to be more specific) on Female Labor-force Participation. It states that the nature of family assets and debts also may influence the valuation of earnings and consequent employment of married women apart from considerations of the value of total assets and debts.

3. Data and Summary Statistics

We have used data from The *India Human Development Survey-II (IHDS-II), 2011-12*, which is a nationally representative, multi-topic survey 42,152 households; (27,579 rural and 14,573 urban). These households are spread across 33 states and union territories, 384 districts, 1420 villages, and 1,042 urban blocks. The survey covers all states and union territories of India except for the Andaman & Nicobar and the Lakshadweep islands. The data covers information on topics concerning health, education, employment, economic status, marriage, fertility, gender relations, social capital, village infrastructure, wage levels, and panchayat composition.

Additionally, we have used data from; *Rural Health Statistics, 2011*, which provides information on state wise number of Sub Divisional Hospital, District Hospital & Mobile Medical Units, Specialist Doctors, Health Workers, Auxiliary Mid wife Nurse (ANM), Nursing Staffs, Health Assistants, Radiographers, Pharmacists etc.

Our dependent variable is whether a woman goes to work (this is binary in nature which takes up a value of 1 for all income rendering primary activity, and 0 for activities like students,

Housewives, retired, others). We have restricted this variable (females going to work) only to women who are eligible to work (i.e. this *does not* include individuals within 13>age>60). Per-capita household debt (at the current period) is our primary independent variable for the study, we have taken log transformation of the variable.

Table 1 presents the summary statistics of different variables for the 2 groups of women. We have reported the t-statistic which show the absolute differences in the mean values of the variables. and their significance levels. We find that there exist significant differences in household level characteristics between "able-bodied" Females who go to work and those who do not.

Table 1

	Females Going to Work			Females NOT Going to Work			
VARIABLES	N	mean	sd	N	mean	sd	t-statistic
years education	9,560	3.98	4.905	29,864	5.576	4.862	1.596 ***
HH size	14,435	5.471	2.525	55,334	6.298	2.893	0.827***
#working males	13,046	1.684	0.927	53,550	1.810	1.030	0.126***
highest educ	14,401	7.513	5.303	55,219	9.346	4.779	1.833***
monthly inc	14,401	$156.30	23,085	55,232	$176.65	20,113	20.35***
#children<14	14,435	1.292	1.403	55,334	1.464	1.538	0.172***
Debt in HH	13,476	$766.25	202,278	51,036	$803.37	197,668	$37.12*

*** p<0.1, ** p<0.05, *** p<0.01**

Tables 2a 2b & 2c show the percentages and total number of able-bodied women who go to work and those who do not, classified by their marital status, category of caste and their educational attainment levels. We find that in all 3 specifications, the percentage of women not going to work, exceeds the percentage of women going to work by a moderate-large amount.

Table 2a

Marital Status	Employment Status		
	No	Yes	Total
Others	53%	47%	5010
Married	79%	21%	48063
Unmarried	89%	11%	16696
Total			69769

Table 2b

Caste Category	Employment Status		
	No	Yes	Total
Brahmin	88.5%	11.5%	3641
Non-Brahmin (Gen)	86%	14%	16312
OBC	80%	20%	28237
SC/ST	72%	28%	20389
Other caste	71%	29%	908
Total			69487

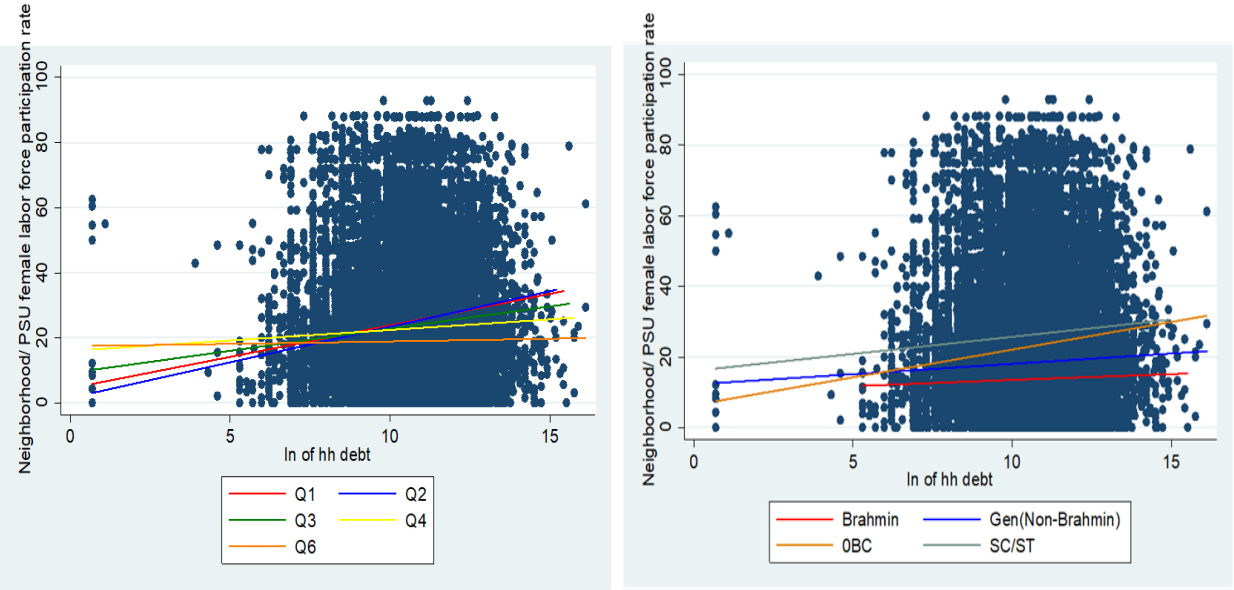
Table 2c

Education Category	Employment Status		
	No	Yes	Total
No Education	70%	30%	22428
Primary	79%	21%	15473
Completed Primary	89%	11%	5643
Secondary	90%	10%	14804
Completed Secondary	87%	13%	4784
College	91.5%	8.5%	1762
Bachelors & Above	74%	26%	4798
Total			69692

Figures 2a & 2b explain the relationship between household debt and FLFP rate in the Primary Sampling Unit of the Survey. For a rural area PSU is referred to as a village whereas in an urban area PSU is a neighborhood (generally a block). We have shown the relationship in **2a** for different income quintiles, (Q1 through Q5). The quintiles are explained later in the results section. We see that for all quintiles of income the positive relation between our variables of interest holds, where FLFP is much higher for higher quintiles for lower debt values, however as debt value increases, FLFP for lower quintiles exceeds that of higher quintiles. **Figure 2b** shows that with an increase in debt, FLFP is highest for households belonging to a lower caste (SC/ST, OBC) as compared to households belonging to a higher caste (Brahmins & Non-Brahmin - generals). This relates to the much-debated phenomenon of caste-reservation in the country. One possible reason for this relationship could be that; households higher up in the caste ladder may consider certain jobs unsuitable for themselves and hence the slope of their lines tends to be considerably flatter than that of households' lower down in the caste ladder. There could be

customized loans for minority communities which they can avail more easily and hence FLFP is rising quickly for Households in these minority communities (SC/ST, OBC)

Figures 2a & 2b



4. Method of Study

As has been motivated earlier, the Research Question for this study is; Do households that borrow more, have a higher tendency to allow their women to go to work? Our dependent variable; females (between 14-60 years of age) going to work, is binary in nature. Our primary independent variable is per capita log of per-capita household debt. The main empirical specification (for which we have run a Logistic Regression) to address the question is given by the following equation:

$$ES_{ihd} = \beta_0 + \beta_1 \ln(pcHH\ Debt)_{ihd} + \beta_2 X_i + \beta_3 X_h + D_d + \varepsilon_{ihd}$$

Where ES is; Whether a Woman (i) in the HH between the age group of (14-60) is gainfully employed outside her home (for a household (h) & in a district (d)? Ln (HH Debt) is the log transformed independent variable – Per capita HH debt. X_i & X_h represent the Individual and Household level controls, we have included in our regression analyses. D_d represents District Fixed effects and we have included a notation for the error term. Also, Standard errors have been clustered at the PSU (neighborhood/ village) level.

As the data suggests, households would generally borrow for a host of reasons, that majorly comprise; agricultural expenditures (seeds, manures, animals, tractors etc.), medical expenditures, higher education, marriages, hosting other social functions, buying of assets, construction of houses and so on. So, household debt itself is a function of a wide range of other factors, which indicates that Household debt itself is endogenous in nature. Thus, MLE estimates would be biased in nature if we do not account for the endogeneity of Household Debt. Having said that, we have instrumented log of per-capita household debt with the "ratio of population to government hospitals in a district" for every household (described in the following section). We have facilitated this specific bit of analyses by the technique of Control Function Approach, the empirical specifications for which is stated below:

1st stage (Debt equation), we instrument log of per-capita household debt with the "ratio of population to government hospitals in a state":

$$ln\ (pcHH\ Debt)_{ihd} = \beta_0 + \beta_1\ (population/govt.\ hospitals\ in\ a\ state)_{ihd} + \beta_2 X_i + \beta_3 X_h + D_d + u_{ihd}$$

2nd stage (Employment Status equation):

$$ES_{ihd} = \beta_0 + \beta_1\ ln\ (pcHH\ Debt)_{ihd} + \beta_2 X_i + \beta_3 X_h + D_d + \hat{u}_{ihd} + \varepsilon_{ihd}$$

We have used weighted-OLS for both stages (instead of a Logit in the 2nd stage). These specifications have been used for most regressions that have been presented in this paper. The results of the 2nd stages are discussed in the Results section. All 2nd stage tables report the F-statistics from the first stage regressions and the Kleibergen-Paap Statistics for under identification. Since we are using a single (IV) the equations are exactly identified. The corresponding 1st stage tables have been included as Appendices in addition to the tables of Logit (Marginal Effects) Estimates (without instrumenting for Household Debt)

The Results Section presents the following tables: Table 3 - Logit (Marginal Effects) Estimates of FLFP; Table 4 - 2nd stage Estimates of LFP; Table 5 - 2nd stage Estimates of FLFP by Income Quintile; Table 6 - 2nd stage Estimates of FLFP by Caste Category; Table 7 - 2nd stage Estimates of LFP (comparison of Males & Females); Table 8 - 2nd stage Estimates of FLFP by Source of Loan; Table 9 - OLS Estimates of FLFP in the neighborhood.

5. Validity of Instrument

Using the IHDS data, we find that the four major reasons for a household to take a loan include; agricultural expenses (18%), wedding expenses (17%), medical expenses (15%), construction/ improvement of house (14%). We have focused on households' medical expenses for finding an IV that would explain household debt. The reason being that, according to the data, every family has had at-least one individual with a short-term morbidity in the last 30days of the survey. For wedding expenses and agriculture, it is unlikely that every household has an individual who works in the field of cultivation and again, it is unlikely that every household has an individual who is of "age of marriage". Whereas, it is also unlikely that every family would consider taking a loan for improving their housing conditions. It would always be conforming to our scheme of ideas to have an IV that would affect Households' debt take-up in the largest possible sense, hence according to us finding something related to medical expenditure would be most plausible.

Government hospitals in India provide any kind of treatment, free of cost. This implies that these hospitals always depict a scene where the number of patients far exceed the capacity of treatment in terms of the available infrastructure. In most cases, patients are referred to a different "free" hospital, where the situation might not be any better. Once a person from a poor family falls sick that requires a certain type of specialized treatment (tests, surgery, medicines, admissions etc.) that the local CHC (Community Health-care Centre) cannot attend to, the next option would be to visit the closest government hospital and seek for treatment. As has been said, due to long waiting times in these places, there exist a huge gap (mostly in months) between decision to treat and actual treatment to start. If the ailment is serious, this gap can turn fatal for most patients because progression of a disease would be swift if appropriate interventions are not adopted in time. Thus, families of these ailing individuals would have no choice but to take a loan for expensive treatment at a private hospital, where service is both excludable and rivalrous in nature. But in that case the "gap of fatality" is mitigated and the immediate effect of the ailment is taken care of. This specific phenomenon has helped us identify the instrument for our study, which is the ratio of total population in a state and the number of government hospitals. This (hratio) can positively affect Household debt take-up but it is extremely difficult to find a channel through which it can affect FLFP.

We have used Rural Health Statistics data, in order to obtain information on the number of government hospitals in a state in 2011. From IHDS, we have calculated the population of every state at the time of the survey. Upon merging these two datasets, we have calculated the ratio of

state population and number of government hospitals in a state. Thus, every household would have a similar value of the IV in a state. Few minor concerns that we think need to be addressed are; firstly, we do not have information about the nearest government hospital of a household and the number of patients that get treated out there, in case of which we could have had different values for the (h ratio) for every household in a district. But even in that case, we would have had to account for the fact that a patient may not be treated at the nearest hospital or avail treatment at two different facilities. Secondly, Households higher up in the income bracket, or in any bracket that indicates a higher social status (caste for example) may not consider free government treatment as a part of treatment plan. Therefore, our IV may not be relevant or strong in such cases. Quite expectedly, our results represent the same trends. Unfortunately, we do not have information about the threshold value of every household that would drive the decision to prefer one kind of treatment to another that would have helped us control for such households.

We have checked the F-statistic (for detection of weak IV), under-identification statistic (to satisfy the relevance condition) for every regression we have run. As per Exclusion Restriction is concerned, the reader will have to take our word for it as has been stated before. Also, it needs to be mentioned that our IV tends *not* to be strong or relevant for very few specifications, thus demonstrating the true order of the estimation that we would be throwing at it. Overall, it can be said that our IV is valid in controlling for the endogeneity of Household Debt.

6. Results

This Section is divided into 4 sub-parts. In **part a**, we present **Table 3**, in which we report the causal estimates of the Marginal Effects of Logistic Regressions; and **Table 4**, which comprises the 2nd stage results of the CF method that we have discussed earlier.

In **part b**, we conduct heterogeneity analyses to capture the causal effect for different specifications by using a range of alternatives. This exercise allows us to determine more closely the channels through which the Household debt might affect FLFP. We have reported the 2nd stage results of the CF method here too.

In **part c**, we have conducted a placebo test, for different groups of individuals and show a comparison of the estimates. Again, we have reported the results in the same manner as stated above. Additionally, we have departed from the norm of constricting this study to the household level and have estimated the causal impact by running OLS regressions for all factors aggregated

at the Primary Sampling Unit level (PSU). This last table (part c) included in the paper acts as a theoretical show-down of the first figure that was presented at the beginning of the paper.

Baseline (Part a)

Table 3 shows the Logit (Marginal Effects) Estimates of the role of Log of Per-capita Household Debt on FLFP. We examine the effect using different specifications as shown. Columns (4) & (5) includes dummies for different types of Community Participation and Investment that a Household might be involved in. We find positive and consistently significant impact of Household Debt on Female Labor-force Participation across the different conditions imposed. However, our independent variable is in log form, which warrants a cautious interpretation of the coefficients. Age has a positive significant effect on employment status of women indicating that older women are more likely to work outside of home. However, the negative coefficient on the quadratic of age shows that the effect reverses after a threshold. Surprisingly, but in accordance to other studies (that have used this dataset to estimate the relationship), we find that any level of education would have a deterring impact on FLFP. We control for a host of household variables such as household size (hh size), number of males in the household involved in any kind of work (working males), log of household income - ln(hh_inc). Marital status negatively affects women's decision to work. The positive coefficient on household income suggests that an increase in HH income leads too greater FLFP (contradictory of other studies). The negative coefficient on household size suggests that women may have more household chores to attend to in a big household or the household may be characterized by more traditional joint family values thereby discouraging women to work.

Table 4 shows the 2nd stage Estimates of Female Labor-force Participation where upon instrumenting Log of Per-capita Household Debt with the ratio (population / number of govt. hospitals). We have run regressions for the final 3 specifications of the model. We find a magnified impact of household debt on FLFP. The F-statistics (>10) imply that we *do not* have a weak IV problem with our results and significant KP (under-identification) statistics imply that our IV satisfies the relevance condition for estimation, across all specifications. Also, significant 1^{st} stage residuals imply that our independent variable is endogenous in nature (Hausman Test). The direction of coefficients on other controls seem (more or less) significantly consistent with our Logit estimates, except ln (household income), in case of which we find a negative relationship, which is similar to results of other studies. As per religion is concerned, in Table 3 (non IV),

Muslims women are less likely to work as compared to other religion, (for Hindus the results are not significant), whereas in Table 4 (with IV), we find: both Hindu & Muslim Households are more likely to allow their women to work outside their houses, in most cases.

Table 3 - Logit (MFX) Estimates of Female Labor-force Participation
(Dependent Variable – Whether a Woman Goes to Work?)

VARIABLES	(1) No Controls	(2) Individual Controls	(3) HH Controls	(4) Community Participation	(5) Investment
ln(pc_hhdebt)	0.0577***	0.0403***	0.0123***	0.0100***	0.0119***
	(2.46e-05)	(0.00223)	(0.00235)	(0.00263)	(0.00294)
age		0.0327***	0.0311***	0.0301***	0.0306***
		(0.00104)	(0.000890)	(0.000848)	(0.000831)
age sq		-0.000416***	-0.000394***	-0.000380***	-0.000385***
		(1.07e-05)	(9.20e-06)	(8.87e-06)	(8.27e-06)
married		-0.149***	-0.109***	-0.101***	-0.0984***
		(0.00718)	(0.00844)	(0.00801)	(0.00739)
Education					
primary		-0.140***	-0.142***	-0.137***	-0.129***
		(0.0125)	(0.0115)	(0.0116)	(0.0126)
secondary		-0.109***	-0.118***	-0.115***	-0.102***
		(0.0128)	(0.0137)	(0.0147)	(0.0147)
college		-0.0551***	-0.0599***	-0.0522***	-0.0364***
		(0.0120)	(0.0116)	(0.0119)	(0.0120)
Household					
hindu			-0.00939	-0.0136	-0.0154
			(0.0195)	(0.0177)	(0.0195)
muslim			-0.0902***	-0.0883***	-0.0910***
			(0.0211)	(0.0194)	(0.0211)
hh size			-0.00744***	-0.00611***	-0.00504**
			(0.00233)	(0.00211)	(0.00212)
ln (hh inc)			0.00771***	0.00943***	0.0151***
			(0.00209)	(0.00211)	(0.00204)
working males			-0.0120**	-0.0108**	-0.0122***
			(0.00468)	(0.00472)	(0.00469)
Observations	36,816	36,772	34,789	34,661	34,575
DFE	No	Yes	Yes	Yes	Yes
Community	No	No	No	Yes	Yes
Investment	No	No	No	No	Yes
AIC	2.300e+08	2.000e+08	1.800e+08	1.800e+08	1.800e+08
PseudoR2	0.0228	0.148	0.142	0.161	0.167

*Source: IHDS 2011–2012, own calculations. Notes: Max. Likelihood Estimation. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%.*

Table 4 - 2nd stage Estimates of Female Labor-force Participation
(Dependent Variable – Whether a Woman goes to work?)

VARIABLES	(1) HH Controls	(2) Community Participation	(3) Investment
ln (pc hhdebt)	1.804***	0.552**	1.905***
	(0.111)	(0.264)	(0.150)
age	0.0269***	0.0322***	0.0251***
	(0.00178)	(0.00220)	(0.00187)
age sq	-0.000459***	-0.000455***	-0.000436***
	(2.22e-05)	(2.24e-05)	(2.22e-05)
married	-0.193***	-0.182***	-0.180***
	(0.0161)	(0.0162)	(0.0162)
Education			
primary	-0.210***	-0.160***	-0.193***
	(0.0118)	(0.0145)	(0.0121)
secondary	-0.346***	-0.206***	-0.318***
	(0.0189)	(0.0302)	(0.0206)
college	-0.439***	-0.187***	-0.412***
	(0.0265)	(0.0522)	(0.0312)
Household			
hindu	0.0894***	0.0158	0.0729***
	(0.0159)	(0.0189)	(0.0161)
muslim	0.0761***	-0.0447*	0.0607***
	(0.0194)	(0.0269)	(0.0201)
hh size	0.400***	0.117*	0.425***
	(0.0252)	(0.0599)	(0.0341)
ln (hh inc)	-0.0713***	-0.0119	-0.0430***
	(0.00585)	(0.0109)	(0.00584)
working males	-0.0837***	-0.0307***	-0.0909***
	(0.00582)	(0.0115)	(0.00739)
1st stage $\hat{u}$	-1.782***	-0.533**	-1.884***
	(0.111)	(0.264)	(0.150)
Constant	-5.441***	-1.818**	-5.968***
	(0.329)	(0.764)	(0.459)
Observations	30,975	30,861	30,787
R-squared	0.151	0.167	0.172
DFE	Yes	Yes	Yes
Community	No	Yes	Yes
Investment	No	No	Yes
KP-UnderId	72.886	40.698	45.868
	(0.000)	(0.000)	(0.000)
F-statistic	145.7	74.60	76.70

*Source: IHDS 2011–2012, own calculations. Notes: 2nd stage; Control Function Approach. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%.*

Heterogeneity Analyses (Part b)

In this part of the paper, we have considered two important Household characteristics that according to us can create substantial differences on the causal effect in different circumstances.

In **table 5**, we have created Household income quintiles (reported in dollars values) and have followed the similar method like above. Our F-statistics suggest that (ratio of population / govt. hospitals) loses its potency as an IV for the causal inference, as we move higher through the income group. This sheds light on the underlying fact that a household that earns more, would care less to get treated at a government hospital, where treatment is free; as compared to a Household that falls in lower income quintiles, specifically Q1 & Q2. We focus on these 2 groups for our interpretation and find; significant KP (under-identification) statistics implying that our IV satisfies the relevance condition for estimation. Also, significant 1st stage residuals imply that our independent variable is endogenous in nature (Hausman Test). We find large, positive and significant impact of household debt on FLFP for the two quintiles of income. In contradiction to the above results, increase in age leads to a decline in female labor supply. Coefficients & their signs for controls imply the following; Larger household size leads an increase in FLFP. Increase in number of children and number of working males in HH, leads to a decline in FLFP. Households with greater overall education, have a deterring effect on Women's Labor Supply.

In India, caste is an ancient social segregation policy that makes little sense in the 21st century. Caste of an individual determines what kind of benefits she might be entitled for from the government, whom she might marry or even what kind of job she might me doing. There exist perennial debates about the pros and cons of the caste system in the country. However, it is always in the best interest of the researcher to inform the readers about how caste can play a role in determining the effect of household debt on FLFP. **Table 6** presents the causal effect of for different caste categories. Surprisingly, in this case we do find f-statistic>10 for Scheduled Castes/ Scheduled Tribes (SC/ST). significant KP (under-identification) statistics for Brahmins, Other backward Classes (OBC) implying that our IV satisfies the relevance condition for estimation only for these categories. However, first stage residuals imply that household debt is not endogenous for Brahmins. Therefore, we focus only on OBC (Minority group1) and find significant and consistent impact of log of per-capita household debt and other controls on Female Labor Supply decisions.

(**Table 5**) 2nd stage Estimates of FLFP by Income Quintile
(Dependent Variable – Does a Woman Go to Work?)

VARIABLES	(1) Q1 (0 – 43) USD	(2) Q2 (44 – 75) USD	(3) Q3 (76 – 121) USD	(4) Q4 (122 – 224) USD	(5) Q5 (225 – 13148) USD
ln (pc_hhdebt)	0.854***	3.252***	-5.660***	6.180***	1.776***
	(0.140)	(0.411)	(0.830)	(1.146)	(0.665)
age	-0.00563***	-0.0107***	0.0188***	-0.0248***	-0.00418
	(0.00126)	(0.00172)	(0.00242)	(0.00474)	(0.00273)
married	-0.104**	-0.294***	0.0786**	-0.531***	-0.273***
	(0.0414)	(0.0392)	(0.0370)	(0.0692)	(0.0655)
Education					
primary	-0.124***	-0.213***	-0.0150	-0.651***	-0.0115
	(0.0255)	(0.0282)	(0.0283)	(0.0994)	(0.0287)
secondary	-0.197***	-0.413***	0.663***	-1.002***	-0.0261
	(0.0342)	(0.0547)	(0.116)	(0.175)	(0.0526)
college	-0.161***	-0.768***	1.186***	-1.180***	-0.0993
	(0.0518)	(0.101)	(0.180)	(0.228)	(0.121)
Household					
hindu	-0.0254	0.168***	-0.123***	0.615***	0.0638**
	(0.0550)	(0.0460)	(0.0390)	(0.116)	(0.0260)
muslim	-0.212***	0.266***	-0.565***	1.067***	0.0682*
	(0.0553)	(0.0646)	(0.0770)	(0.217)	(0.0391)
hh size	0.299***	0.927***	-1.434***	1.358***	0.367***
	(0.0488)	(0.118)	(0.210)	(0.253)	(0.141)
working males	-0.105***	-0.357***	0.247***	-0.0556***	-0.0195
	(0.0196)	(0.0422)	(0.0432)	(0.00964)	(0.0135)
highest education	-0.0122***	-0.0314***	0.0152***	-0.0382***	-0.0172***
	(0.00165)	(0.00326)	(0.00398)	(0.00537)	(0.00306)
#children <14	-0.0182***	-0.0902***	0.218***	-0.369***	-0.0722**
	(0.00694)	(0.0128)	(0.0340)	(0.0689)	(0.0312)
1st stage u^	-0.842***	-3.229***	5.709***	-6.180***	-1.763***
	(0.142)	(0.412)	(0.830)	(1.146)	(0.666)
Constant	-2.878***	-10.74***	18.55***	-19.27***	-5.271**
	(0.562)	(1.432)	(2.642)	(3.711)	(2.148)
Observations	6,384	6,552	6,751	6,314	5,321
R-squared	0.174	0.213	0.206	0.184	0.141
DFE	Yes	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes	Yes
KP - UnderID	69.658	9.255	2.179	0.042	6.249
	(0.000)	(0.002)	(0.139)	(0.838)	(0.012)
F-statistic	94.81	13.71	2.815	1.291	4.037

*Source: IHDS 2011–2012, own calculations. Notes: 2nd stage; Control Function Approach. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%. (1INR=$72)*

(Table 6) 2nd stage Estimates of FLFP by Caste Category
(Dependent Variable – Does a Woman Go to Work?)

VARIABLES	(1) Brahmins (General)	(2) Non-Brahmins (General)	(3) OBC	(4) SC/ST
ln (pc hhdebt)	0.143	1.966***	1.234***	5.163***
	(0.265)	(0.434)	(0.0873)	(1.139)
age	0.00282**	-0.0121***	-0.00438***	-0.0133***
	(0.00118)	(0.00273)	(0.000616)	(0.00378)
married	-0.0884	-0.315***	-0.169***	0.140**
	(0.0547)	(0.0470)	(0.0232)	(0.0698)
Education				
primary	0.0567*	-0.175***	-0.164***	-0.172***
	(0.0321)	(0.0438)	(0.0151)	(0.0248)
secondary	0.153***	-0.258***	-0.193***	-0.375***
	(0.0440)	(0.0594)	(0.0236)	(0.0766)
college	0.298***	-0.264***	-0.178***	-0.497***
	(0.0632)	(0.0968)	(0.0274)	(0.123)
Household				
hindu	-0.0228	0.184***	0.134***	-0.271***
	(0.0838)	(0.0375)	(0.0276)	(0.0563)
muslim		0.582***	0.0797***	-0.645***
		(0.134)	(0.0297)	(0.141)
hh size	0.0457	0.460***	0.300***	1.328***
	(0.0735)	(0.102)	(0.0217)	(0.294)
working males	-0.0233**	-0.141***	-0.110***	-0.216***
	(0.0118)	(0.0292)	(0.00817)	(0.0435)
ln (hh inc)	0.00968	0.0162**	0.00376	-0.312***
	(0.0150)	(0.00786)	(0.00481)	(0.0776)
highest education	-0.00880*	-0.00974***	-0.0139***	-0.00952***
	(0.00486)	(0.00201)	(0.00120)	(0.00154)
#children <14	-0.00685	-0.0779***	-0.0621***	0.00418
	(0.0136)	(0.0188)	(0.00558)	(0.00647)
1st stage u^	-0.136	-1.958***	-1.217***	-5.137***
	(0.262)	(0.435)	(0.0878)	(1.139)
Constant	-0.0413	-5.626***	-3.753***	-14.71***
	(0.806)	(1.294)	(0.303)	(3.310)
Observations	1,375	5,840	14,204	8,851
R-squared	0.200	0.112	0.184	0.190
DFE	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes
KP-UnderId	12.166	1.290	60.342	3.898
	(0.0005)	(0.2560)	(0.000)	(0.0484)
F-statistic	16.16	10.63	190.4	2.170

*Source: IHDS 2011–2012, own calculations. Notes: 2nd stage; Control Function Approach. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%.*

Placebo Tests (Part c)

Our primary objective of this paper is to identify the causal impact of log of household debt on female labor force participation. We have shown that our coefficients of most controls are consistent (in sign and significance) across different specifications that we have tested. But it is essential to estimate the impact of the same independent variable on Labor-Supply of a distinctive counter-factual group. We believe that household debt is unlikely to affect Male Labor-force Participation in contradiction to that of females. Also, we test the effect in terms of the type of loan taken (formal or informal). In this section, we conduct two analyses for the causal inference.

Table 7 reveals that for males there exist no significant impact of household debt of their labor supply decisions as compared to females. A married male had a higher likelihood of going to work as compared to females. Both number of children and household size have positive and significant impact on their Labor-force participation. F-statistics>10 & significant KP imply that (population / govt. hospitals) is both strong and relevant, as an instrumental variable in this case. However, first stage residuals suggest that household debt could be exogenous in nature. With males going to work more, households seem to have a perception that an employed man will always find way to pay-off a loan. Hence, there is a greater take-up of loans.

Among other factors, we have focused on the role of ailing health-conditions on household debt and have constructed an IV in the same context. As has been discussed earlier, a poor and sick person would suffer more if she waits to get treated at a free government hospital and hence taking up a loan for treatment is the best option that her household might have. Now, a formal loan takes time to materialize and requires a formidable amount of paperwork to be completed, indicating that there exist procedural hassles for household if it applies for a loan at a bank or a credit institution for treatment of an ailing member. This leaves households to ask for money from informal sources like relatives, moneylenders, friends etc. at exorbitant rates. **Table 8** presents this particular story in the sense that our instrument is both strong and relevant for loans taken from an informal source as compared to a formal source where it would fail to explain the causal effect of our study. We find significant and positive impact on FLFP household debt, religion being hindu and for an increase in household size. Whereas, age, education and number of working males all affect FLFP in a negative manner.

(Table 7) 2nd stage Estimates of LFP Males & Females (Dependent Variable – Does a Woman Go to Work?)

VARIABLES	(1) Males	(2) Females
ln(pc_hhdebt)	-0.0275	1.531***
	(0.0911)	(0.121)
age	-0.00301***	-0.00923***
	(0.000579)	(0.000631)
married	0.335***	-0.0693***
	(0.0180)	(0.0131)
Education		
primary	0.0131	-0.192***
	(0.00972)	(0.0122)
secondary	0.00530	-0.238***
	(0.0159)	(0.0200)
college	0.0209	-0.240***
	(0.0218)	(0.0274)
Household		
hindu	-0.0136	0.0540***
	(0.0107)	(0.0146)
muslim	0.00609	0.0139
	(0.0136)	(0.0173)
hh size	0.0938***	0.360***
	(0.0224)	(0.0295)
working males		-0.108***
		(0.0104)
#children <14	0.0778***	-0.0351***
	(0.00389)	(0.00414)
1st stage u^	0.0520	-1.495***
	(0.0912)	(0.121)
Constant	0.858***	-4.442***
	(0.299)	(0.397)
Observations	38,726	35,330
R-squared	0.463	0.133
DFE	Yes	Yes
Community	Yes	No
Investment	No	No
KP-UnderId	69.166	62.254
	(0.000)	(0.000)
F-statistic	45.68	56.47

(Table 8) 2nd stage Estimates of FLFP by Source of Loan (Dependent Variable – (Does a Woman Go to Work?)

VARIABLES	(1) Formal	(2) Informal
ln (pc hhdebt)	4.170***	2.400***
	(0.396)	(0.276)
age	-0.0336***	-0.00973***
	(0.00332)	(0.00146)
married	0.0898***	0.0847**
	(0.0288)	(0.0378)
Education		
primary	-0.338***	-0.239***
	(0.0281)	(0.0222)
secondary	-0.593***	-0.346***
	(0.0568)	(0.0391)
college	-0.785***	-0.299***
	(0.0844)	(0.0441)
Household		
hindu	0.0836***	0.0760***
	(0.0204)	(0.0292)
muslim	0.0763***	0.0506
	(0.0258)	(0.0340)
hh size	1.080***	0.615***
	(0.103)	(0.0710)
working males	-0.161***	-0.176***
	(0.0152)	(0.0180)
1st stage u^	-4.154***	-2.384***
	(0.397)	(0.276)
Constant	-12.87***	-7.423***
	(1.265)	(0.881)
Observations	14,349	15,241
R-squared	0.146	0.191
DFE	Yes	Yes
Community	Yes	Yes
Investment	Yes	Yes
KP-UnderId	28.178	10.739
	(0.000)	(0.0010)
F-statistic	7.279	16.05

*Source: IHDS 2011–2012, own calculations. Notes: 2nd stage; Control Function Approach. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%.*

Aggregated Estimates

The results in all previous tables, show a causal relationship between Household Debt and FLFP at the Household level. Logit MFX estimates show a positive effect, whereas IV estimates show an even stronger impact. In this last table **(Table 9)** of this paper, we present OLS results explaining the causal relationship, by aggregating all variables at the neighborhood level (PSU). Instead of considering the log transformed value of household debt, we have created 5 categories of debt and have calculated the number of households in each category. Our dependent variable is Female Labor-force Participation rate at the PSU level. We have created scores for harassment of unmarried females, trust and community participation and have used them as controls in addition to other variables. We present the INR values of the Debt categories as rows and their respective dollar amounts as columns. It is found that; 1 unit increase in the number of households with debt between INR(25000 – 50000) leads to a 9.9% increase in FLFP in the neighborhood, whereas an increase in the number of households with debt between INR (50000 – 200000) leads to 12% increase in FLFP. Trust among households & higher number of working males lead to higher FLFP. Whereas, an increase in income and higher perception of harassment tend to have a deterring impact on households' decision for women to join the labor-force.

(Table 9) OLS Estimates of Female Labor-force Participation
(Dependent Variable – Number of HH in each Debt Category)

VARIABLES	(1) #HH with Debt $347	(2) #HH with Debt $349 - $694	(3) #HH with Debt $695 - $2777	(4) #HH with Debt $2778 - $6944	(5) #HH with Debt >$6944
Debt Category					
<25001	-0.00206				
	(0.0243)				
25001 – 50K		0.0998**			
		(0.0392)			
50001 – 200K			0.120***		
			(0.0311)		
200001- 500K				-0.0676	
				(0.0487)	
>500K					-0.104
					(0.0773)
Neighborhood					
%working males (PSU)	0.202***	0.203***	0.206***	0.202***	0.201***
	(0.0399)	(0.0398)	(0.0396)	(0.0398)	(0.0399)
% married females (PSU)	-0.0939	-0.139**	-0.173***	-0.0800	-0.0869
	(0.0626)	(0.0604)	(0.0597)	(0.0596)	(0.0596)
harassment	-2.773**	-2.665**	-2.443**	-2.860**	-2.847**
	(1.245)	(1.237)	(1.236)	(1.243)	(1.243)

Community	0.351	0.333	0.303	0.361	0.340
	(0.388)	(0.386)	(0.385)	(0.386)	(0.385)
trust	3.835***	3.619***	3.521***	3.860***	3.877***
	(1.281)	(1.275)	(1.273)	(1.279)	(1.279)
Mean income of PSU	-6.157***	-6.006***	-6.190***	-6.036***	-6.015***
	(0.695)	(0.666)	(0.665)	(0.670)	(0.671)
Constant	78.37***	77.22***	78.81***	77.06***	76.93***
	(11.20)	(11.01)	(11.03)	(11.09)	(11.05)
Observations	2,265	2,265	2,265	2,265	2,265
R-squared	0.388	0.390	0.393	0.389	0.389
DFE	Yes	Yes	Yes	Yes	Yes
SFE	Yes	Yes	Yes	Yes	Yes

*Source: IHDS 2011–2012, own calculations. Notes: Ordinary Least Squares Regression. All regressions include district Fixed Effects. Standard errors in parentheses, adjusted for clustering at village level. ***significant at 1%; **significant at 5%; *significant at 10%.*

7. Conclusion

Upon comparing the results for the above tables, we can infer that Household debt creates a significant impact on Females going to work. Literature suggests that factors like; women's household workload, lack of information, and mobility and safety concerns, external environment (e.g., childcare arrangements and safety in public spaces) and ideology of the marital household seem to be important constraints to their participation in the labor-force. Our IV estimates indicate a much higher impact of household debt on FLFP. We have considered different specifications to check how the causal estimates behave in response to them. In order to validate our claims, we have performed routine (validity) tests on our instrument, that has been constructed from a different survey on health. Heterogeneity Analyses reveal that the relationship holds across most designs viz. Quintiles of Income and caste Categories. In order to establish a strong argument in favor of our research question, we have presented estimates of placebo tests for different groups. Finally, we have considered conducting the study at greater scale of by estimating the causal impact at the PSU level (village or neighborhood). OLS regression results show that the relationship which was presented in (Figure 1) holds true.

Some factors that we would want to probe further into in this context are; the kind of job that women are most likely to join as a result of an increase in the household debt amount, the role of bank deposit account or health insurance, the role of institutions (in a region) on female labor supply.

We find that higher debt leads to higher FLFP, but an increase in debt would not be a healthy sign of a household. Therefore, policies need to be designed in a manner such that females

who go to work would find it easier to help pay off their households' debts. Our recommendation would be differential interest rates based on the Female Labor Force Participation in HH. Providing cheaper/ easy loans to households with more working females or providing incentives to firms that have loan schemes for women. However, it always rests in the family's perception to determine whether a woman should go to work or not. Well-planned policies would fall flat if this perception works in an ignorant manner.

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Appendix

(Table 4.1)1st stage Estimates of Female Labor-force Participation
(Dependent Variable – Log of Per-Capita HH Debt)

VARIABLES	(1) HH Controls	(2) Community Participation	(3) Investment
Ratio (population/govt hospitals)	0.000197***	0.000147***	0.000149***
	(1.63e-05)	(1.70e-05)	(1.71e-05)
age	0.00533***	0.00535***	0.00552***
	(0.000632)	(0.000631)	(0.000630)
age_sq	-1.16e-05	-1.24e-05	-1.50e-05*
	(7.77e-06)	(7.75e-06)	(7.75e-06)
married	0.00390	0.00370	0.00108
	(0.0185)	(0.0186)	(0.0186)
unmarried	0.0400*	0.0398*	0.0387*
	(0.0209)	(0.0209)	(0.0209)
<primary	0.00814	0.00653	0.00420
	(0.00633)	(0.00634)	(0.00633)
primary	0.0367***	0.0358***	0.0314***
	(0.0102)	(0.0102)	(0.0102)
<secondary	0.0633***	0.0575***	0.0537***
	(0.00792)	(0.00794)	(0.00793)
secondary	0.107***	0.0998***	0.0951***
	(0.0118)	(0.0118)	(0.0119)
<college	0.145***	0.136***	0.131***
	(0.0174)	(0.0173)	(0.0173)
college	0.194***	0.188***	0.180***
	(0.0136)	(0.0136)	(0.0137)
hindu	-0.0532***	-0.0424***	-0.0422***
	(0.0127)	(0.0127)	(0.0128)
muslim	-0.0951***	-0.0801***	-0.0798***
	(0.0136)	(0.0135)	(0.0136)
hh size	-0.226***	-0.226***	-0.227***
	(0.00191)	(0.00193)	(0.00194)
ln(hh inc)	0.0431***	0.0389***	0.0307***
	(0.00314)	(0.00319)	(0.00330)
working males	0.0415***	0.0414***	0.0430***
	(0.00290)	(0.00288)	(0.00287)
Constant	2.921***	2.989***	3.029***
	(0.0523)	(0.0517)	(0.0517)
Observations	98,441	98,085	97,845
R-squared	0.597	0.600	0.601
DFE	Yes	Yes	Yes
Community	No	Yes	Yes
Investment	No	No	Yes

(Table 5.1)1st stage Estimates of FLFP by Income Quintile
(Dependent Variable – Log of Per-Capita HH Debt)

VARIABLES	(1) Q1 0 - 43 USD	(2) Q2 44 - 75 USD	(3) Q3 76 - 121 USD	(4) Q4 122 - 224 USD	(5) Q5 225 - 13148 USD
Ratio (population/govt hospitals)	0.000386***	0.000128***	-6.03e-05*	4.19e-05	6.77e-05**
	(3.97e-05)	(3.47e-05)	(3.59e-05)	(3.68e-05)	(3.37e-05)
age	0.00755***	0.00376***	0.00291***	0.00414***	0.00393***
	(0.000617)	(0.000526)	(0.000430)	(0.000425)	(0.000396)
married	-0.0858*	0.0564*	0.0234	0.0547**	0.0796***
	(0.0453)	(0.0312)	(0.0323)	(0.0258)	(0.0259)
unmarried	0.0213	0.0612	0.0304	0.119***	0.170***
	(0.0524)	(0.0390)	(0.0376)	(0.0317)	(0.0314)
<primary	0.0142	-0.00399	-0.0101	0.0427***	0.0117
	(0.0127)	(0.0105)	(0.0114)	(0.0119)	(0.0130)
primary	0.0407*	0.0268	0.0204	0.0826***	-0.0160
	(0.0215)	(0.0180)	(0.0164)	(0.0223)	(0.0171)
<secondary	0.0642***	0.0669***	0.0579***	0.0879***	0.0581***
	(0.0184)	(0.0162)	(0.0129)	(0.0127)	(0.0140)
secondary	0.104***	0.0998***	0.136***	0.147***	0.0621***
	(0.0355)	(0.0286)	(0.0214)	(0.0200)	(0.0180)
<college	0.132**	0.119***	0.0689**	0.184***	0.185***
	(0.0515)	(0.0408)	(0.0275)	(0.0309)	(0.0288)
college	0.0970***	0.226***	0.214***	0.197***	0.176***
	(0.0294)	(0.0472)	(0.0461)	(0.0228)	(0.0189)
hindu	-0.0683*	-0.0539	-0.0160	-0.0972***	-0.0124
	(0.0399)	(0.0361)	(0.0240)	(0.0264)	(0.0193)
muslim	0.0239	-0.112***	-0.0763***	-0.186***	-0.0372*
	(0.0422)	(0.0375)	(0.0251)	(0.0265)	(0.0219)
hh size	-0.347***	-0.285***	-0.253***	-0.221***	-0.211***
	(0.00605)	(0.00463)	(0.00388)	(0.00404)	(0.00321)
working males	0.117***	0.101***	0.0508***	0.00598	0.0163***
	(0.00825)	(0.00717)	(0.00516)	(0.00525)	(0.00515)
Highest educ	0.00404***	0.00685***	0.00440***	0.00428***	0.00333**
	(0.00120)	(0.00107)	(0.00107)	(0.00124)	(0.00148)
#children<14	0.0173***	0.0265***	0.0398***	0.0601***	0.0465***
	(0.00597)	(0.00455)	(0.00438)	(0.00487)	(0.00429)
Constant	3.853***	3.421***	3.190***	3.220***	3.218***
	(0.131)	(0.0875)	(0.0902)	(0.0899)	(0.0674)
Observations	21,203	21,381	21,356	19,428	16,188
R-squared	0.636	0.629	0.644	0.669	0.692
DFE	Yes	Yes	Yes	Yes	Yes
PSCL	Yes	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes	Yes

(Table 5.1A) Logit (MFX) Estimates of FLFP by Income Quintile

VARIABLES	(1) Income Q1 0 - 43.43 USD	(2) Income Q2 43.45 - 75.34 USD	(3) Income Q3 76 - 121.52 USD	(4) Income Q4 122 – 224 USD	(5) Income Q5 225 – 13148 USD
pc_hhdebt	0.0227***	0.0192**	0.0269***	-0.00116	0.0198*
	(0.00771)	(0.00910)	(0.00823)	(0.0116)	(0.0110)
age	-0.00305***	-0.00240***	-0.00182***	-0.00218***	-0.000365
	(0.000699)	(0.000430)	(0.000580)	(0.000631)	(0.000457)
1.martl_status	-0.0528***	0.0246	0.0810***	-0.0184	0.00510
	(0.0199)	(0.0320)	(0.0116)	(0.0180)	(0.0320)
2.martl_status	-0.217***	-0.139***	-0.0845***	-0.127***	-0.0880***
	(0.0313)	(0.0310)	(0.0222)	(0.0347)	(0.0291)
1.education	-0.0440***	-0.0705***	-0.0619***	-0.0486***	-0.0335
	(0.0111)	(0.0177)	(0.0116)	(0.0125)	(0.0317)
2.education	-0.107***	-0.142***	-0.169***	-0.164***	-0.0471
	(0.0122)	(0.0345)	(0.0212)	(0.0161)	(0.0329)
3.education	-0.0946***	-0.142***	-0.147***	-0.165***	-0.0467*
	(0.0183)	(0.0171)	(0.0177)	(0.0198)	(0.0242)
4.education	-0.123***	-0.110***	-0.144***	-0.105***	0.0658
	(0.0304)	(0.0419)	(0.0362)	(0.0336)	(0.0467)
5.education	-0.155***	-0.204***	-0.237***	-0.178***	0.00905
	(0.0486)	(0.0285)	(0.0267)	(0.0271)	(0.0561)
6.education	-0.0620	-0.0797	-0.0451	0.0236	0.225***
	(0.0749)	(0.0538)	(0.0526)	(0.0475)	(0.0403)
1.religion	-0.0885*	-0.0386	-0.0361	0.00709	0.0407**
	(0.0454)	(0.0238)	(0.0552)	(0.0269)	(0.0161)
2.religion	-0.191***	-0.116***	-0.117*	-0.0861***	0.00166
	(0.0532)	(0.0277)	(0.0626)	(0.0253)	(0.0250)
hhsize	0.00566	0.00187	-0.00391	-0.0153**	-0.00813
	(0.00512)	(0.00840)	(0.00605)	(0.00745)	(0.00625)
numemp	-0.000922	-0.0338***	-0.0412***	-0.00700	0.0106
	(0.00989)	(0.0114)	(0.0101)	(0.0108)	(0.0144)
HHEDUC	-0.00811***	-0.00753***	-0.00706***	-0.00896***	-0.00915***
	(0.000764)	(0.00109)	(0.00103)	(0.00159)	(0.00296)
hhsize2	-0.00935***	-0.00790	-0.00746	0.00686	0.0122**
	(0.00342)	(0.00593)	(0.00731)	(0.00726)	(0.00569)
Observations	7,157	7,279	7,389	7,020	5,869
DFE	Yes	Yes	Yes	Yes	Yes
PSCL	Yes	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes	Yes
AIC	4.300e+07	4.200e+07	4.000e+07	3.400e+07	2.300e+07
PseudoRsqd	0.143	0.163	0.158	0.148	0.130

(Table 6.1)1st stage Estimates of FLFP by Caste Category
(Dependent Variable – Log of Per-Capita HH Debt)

VARIABLES	(1) Brahmins - General	(2) Non-Brahmins - General	(3) OBC	(4) SC/ST
Ratio (population/govt hospitals)	0.000335***	0.000113***	0.000399***	3.87e-05
	(8.34e-05)	(3.48e-05)	(2.89e-05)	(2.62e-05)
age	0.00290***	0.00615***	0.00455***	0.00324***
	(0.000927)	(0.000536)	(0.000364)	(0.000453)
married	0.0165	0.0855**	0.0265	-0.0523
	(0.0460)	(0.0343)	(0.0261)	(0.0345)
unmarried	0.0708	0.169***	0.0526*	-0.0452
	(0.0668)	(0.0399)	(0.0312)	(0.0375)
<primary	0.000706	0.00413	0.00949	-0.0107
	(0.0220)	(0.0154)	(0.00857)	(0.00897)
primary	0.00105	0.0654***	0.0476***	0.00742
	(0.0285)	(0.0240)	(0.0153)	(0.0136)
<secondary	0.0447*	0.0706***	0.0623***	0.0357***
	(0.0267)	(0.0174)	(0.0106)	(0.0135)
secondary	0.0394	0.119***	0.102***	0.0570**
	(0.0318)	(0.0221)	(0.0176)	(0.0235)
<college	0.172***	0.110***	0.158***	0.112***
	(0.0593)	(0.0414)	(0.0243)	(0.0285)
college	0.106***	0.211***	0.157***	0.102***
	(0.0347)	(0.0237)	(0.0188)	(0.0245)
hindu	-0.0905	-0.0763***	-0.108***	0.0428**
	(0.220)	(0.0237)	(0.0248)	(0.0175)
muslim		-0.308***	-0.119***	0.115***
		(0.0240)	(0.0258)	(0.0328)
hh size	-0.281***	-0.233***	-0.246***	-0.258***
	(0.00870)	(0.00451)	(0.00286)	(0.00361)
ln(hh inc)	0.0460***	-0.00245	0.0163***	0.0675***
	(0.00968)	(0.00847)	(0.00420)	(0.00689)
working males	0.0237**	0.0629***	0.0742***	0.0374***
	(0.0104)	(0.00671)	(0.00454)	(0.00505)
highest educ	0.0153***	0.00233	0.00291***	-0.000107
	(0.00251)	(0.00150)	(0.000871)	(0.000908)
#children <14	0.0431***	0.0419***	0.0454***	-0.000650
	(0.00956)	(0.00560)	(0.00321)	(0.00377)
Constant	2.941***	2.930***	3.297***	2.895***
	(0.267)	(0.0996)	(0.0753)	(0.104)
Observations	4,272	18,229	45,531	28,256
R-squared	0.699	0.599	0.622	0.630
DFE	Yes	Yes	Yes	Yes
PSCL	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes

(Table 6.1A) Logit Mfx Estimates of FLFP by Caste Category

VARIABLES	(1) Brahmins General	(2) Non-Brahmins General	(3) OBC	(4) SC/ST
pc_hhdebt	-0.0136	0.0119	0.0154***	0.0307**
	(0.0306)	(0.00772)	(0.00403)	(0.0123)
age	0.000934	-0.00221***	-0.00229***	-0.00139***
	(0.000595)	(0.000651)	(0.000305)	(0.000414)
1.martl_status	-0.0243	-0.0308	-0.00539	0.0390**
	(0.0346)	(0.0268)	(0.0165)	(0.0182)
2.martl_status	-0.114***	-0.134***	-0.140***	-0.138***
	(0.0367)	(0.0292)	(0.0155)	(0.0126)
1.education	0.0413	-0.00142	-0.0432**	-0.0789***
	(0.0277)	(0.0246)	(0.0206)	(0.0201)
2.education	0.0270	-0.0522*	-0.126***	-0.179***
	(0.0238)	(0.0268)	(0.0220)	(0.0192)
3.education	0.0338	-0.0622*	-0.116***	-0.158***
	(0.0290)	(0.0322)	(0.0172)	(0.0122)
4.education	0.156***	-0.0310	-0.0788**	-0.105***
	(0.0456)	(0.0417)	(0.0360)	(0.0326)
5.education	0.136	-0.0512	-0.137***	-0.208***
	(0.102)	(0.0458)	(0.0344)	(0.0341)
6.education	0.342***	0.147***	0.0150	0.0250
	(0.0571)	(0.0324)	(0.0293)	(0.0313)
1.religion	-0.00679	0.0332*	-0.00632	-0.0573
	(0.0577)	(0.0196)	(0.0381)	(0.0363)
2.religion		-0.0183	-0.0715*	-0.0472
		(0.0127)	(0.0413)	(0.0664)
hhsize	0.000293	0.000198	-0.00831**	0.000712
	(0.0117)	(0.00597)	(0.00348)	(0.00707)
ln_inc	0.0123	0.0153***	0.0275***	0.0360***
	(0.00960)	(0.00511)	(0.00464)	(0.00916)
numemp	-0.0220**	-0.0161	-0.0128**	-0.0211
	(0.00967)	(0.0135)	(0.00535)	(0.0132)
HHEDUC	-0.00677*	-0.00475***	-0.00813***	-0.00790***
	(0.00353)	(0.00154)	(0.00110)	(0.00172)
hhsize2	-0.00646	0.00487	-0.00521	-0.00360
	(0.0110)	(0.00505)	(0.00571)	(0.00544)
Observations	1,373	6,571	15,944	9,744
DFE	Yes	Yes	Yes	Yes
PSCL	Yes	Yes	Yes	Yes
Community	Yes	Yes	Yes	Yes
Investment	Yes	Yes	Yes	Yes
AIC	4.100e+06	2.700e+07	8.300e+07	6.100e+07
PseudoRsq	0.204	0.107	0.145	0.134

(Table 7.1)1st stage Estimates of LFP Males & Females
(Dependent Variable – Log of Per-Capita HH Debt)

VARIABLES	(1) Males	(2) Females
Ratio (population/govt hospitals)	0.000162***	0.000179***
	(2.39e-05)	(2.38e-05)
age	0.00589***	0.00466***
	(0.000369)	(0.000362)
married	-0.0406	0.0441**
	(0.0477)	(0.0192)
unmarried	0.0609	0.0453*
	(0.0498)	(0.0244)
<primary	0.00969	0.00767
	(0.00890)	(0.00798)
primary	0.0386***	0.0424***
	(0.0143)	(0.0132)
<secondary	0.0705***	0.0783***
	(0.0104)	(0.0109)
secondary	0.127***	0.101***
	(0.0160)	(0.0172)
<college	0.181***	0.117***
	(0.0243)	(0.0208)
college	0.205***	0.183***
	(0.0179)	(0.0177)
hindu	-0.0444**	-0.0437**
	(0.0175)	(0.0183)
muslim	-0.0844***	-0.0712***
	(0.0186)	(0.0196)
hh size	-0.245***	-0.243***
	(0.00287)	(0.00291)
working males	0.0582***	0.0777***
	(0.00409)	(0.00484)
#children <14	0.0361***	0.0258***
	(0.00352)	(0.00326)
Constant	3.236***	3.233***
	(0.0714)	(0.0604)
Observations	51,977	47,579
R-squared	0.596	0.609
DFE	Yes	Yes
PSCL	Yes	Yes
Community	Yes	No
Investment	No	No

(Table 8.1)1st stage Estimates of FLFP by Source of Loan
(Dependent Variable – Log of Per-Capita HH Debt)

VARIABLES	(1) Formal	(2) Informal
Ratio (population/govt hospitals)	7.55e-05***	0.000129***
	(2.80e-05)	(3.23e-05)
age	0.00821***	0.00498***
	(0.000529)	(0.000537)
married	-0.0438	-0.102***
	(0.0338)	(0.0313)
unmarried	0.0598	-0.0547
	(0.0371)	(0.0340)
<primary	0.0350**	0.0157
	(0.0146)	(0.0121)
primary	0.0524***	0.0591***
	(0.0185)	(0.0158)
<secondary	0.0826***	0.0737***
	(0.0143)	(0.0140)
secondary	0.127***	0.115***
	(0.0183)	(0.0210)
<college	0.150***	0.173***
	(0.0234)	(0.0301)
college	0.204***	0.123***
	(0.0213)	(0.0212)
hindu	-0.0193	-0.0409
	(0.0187)	(0.0285)
muslim	-0.0391*	-0.0671**
	(0.0215)	(0.0293)
Hh size	-0.260***	-0.257***
	(0.00352)	(0.00356)
Ln (hh inc)	0.0371***	0.0200***
	(0.00600)	(0.00519)
numemp	0.0365***	0.0618***
	(0.00533)	(0.00477)
Highest educ	0.000961	0.00108
	(0.00125)	(0.00100)
#children<14	0.0408***	0.0324***
	(0.00442)	(0.00421)
Constant	3.185***	3.156***
	(0.0860)	(0.0830)
Observations	30,332	32,457
R-squared	0.647	0.609
DFE	Yes	Yes
PSCL	Yes	Yes
Community	Yes	Yes
Investment	Yes	Yes