# Female Entrepreneurship and Gender Norms: Theory and Evidence on Household Investment Choices

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# Motivation

- **Female entrepreneurship:** important contributor to economic growth and poverty reduction in developing countries (The World Bank, 2014)

- **Rise of financial initiatives targeting women**
  - Microcredit, grants, conditional cash transfers...

- Yet, **low returns to capital** observed in female-run enterprises (de Mel et al., 2008; Fafchamps et al., 2014; McKenzie, 2017)
  - Women more vulnerable to **expropriation** / **kin tax** (De Mel et al., 2009; Jakiela and Ozier, 2016; Fiala, 2018)
  - Women often invest in (high-return) **household enterprises** instead of their own (Bernhardt et al., 2019)

→ We analyze the intrahousehold dynamics driving female entrepreneurship decisions and the role of gender norms.

# What the paper does

- We build a **theoretical model** of female entrepreneurship decision within the household:
  - Based on collective household model, w/ risky investment and binary decision.
  - Assuming a gender norm against female entrepreneurship for husbands
  - and **utility transfers** that can be used by women to align incentives.

→ Required transfer increases in the stringency of the gender norms, potentially preventing female investment.

- **We test predictions** using castes as a measure of gender norms in India:
  - Field experiment: investment opportunity through microcredit
  - Natural experiment: termination of export quotas on textile

→ Women from castes more in favour of female investment are more likely to invest but enjoy lower utility levels in some dimensions (evidence for transfers).

# Contributions

- **Collective model of decision making of the household**
  - Chiappori (1988); Bourguignon et al. (1993)

→ Introduce risky investment and dichotomous decision

- **Female entrepreneurship**
  - Berge et al. (2015); de Mel et al. (2008); Fafchamps et al. (2014); Fiala (2018); McKenzie (2017); Bernhardt et al. (2019)

→ Build a theoretical model rationalizing some of the findings (low returns and investment in household business)

- **Gender norms, labour market participation and investment**
  - Bertrand et al. (2015); Field et al. (2010, 2021)

→ Propose a theoretical framework and empirical tests on the effect of restrictive gender norms on investment decisions within the household

# Environment

- Household of two members: $s$ (she) and $h$ (he)
  - initial income $w_s$ and $w_h$
- The wife faces an investment opportunity, denoted $\mathcal{I}$
  - if $\mathcal{I} = 1$ she gets risky income: $(0, 1-p; R, p)$
- Collective household model with endogenous bargaining weights

$\Rightarrow$ investment decision impacts bargaining weights and individual utility

- **Household-level decision-making**:
  - investment only if preferable for both members
  - given the (efficient) allocation of resources within the household.

# Environment (cont.)

- **Bargaining weights** are fixed ex-ante and equal the (expected) share of household income.
  - Perfect insurance and perfect commitment between spouses

- If wife invests, **gender norm** entails a utility loss $\psi$ for husband.
  - Interpreted as a “status loss"
  - Consistent with traditional culture and views on female investment in DC, partic. India (e.g. Bardhan, 1985; Field et al., 2010; Eswaran et al., 2013; Jayachandran, 2015)

- To align preferences and invest, wife can make a **utility transfer** $t$ to husband
  - To compensate for gender norm and loss in bargaining
  - Concessions by the wife on various welfare dimensions

# Predictions

1. An increase in investment opportunities for women translates into actual investment only when the gender norm is sufficiently low.
   - Female investment entails a utility transfer from the wife to her husband;
   - This transfer is increasing in the stringency of the norm.

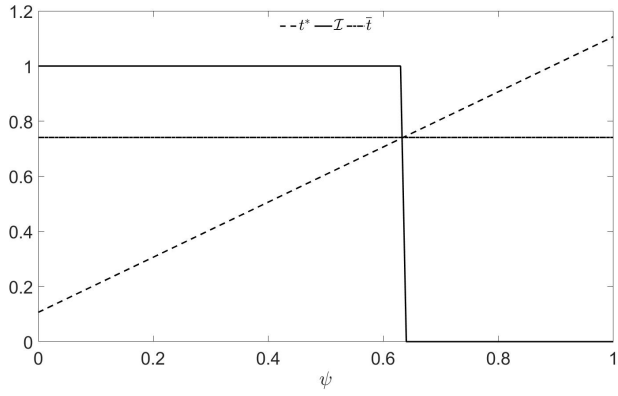


Figure: The impact of gender norms on transfers and investment decision

# Predictions (cont.)

2. An increase in investment returns increases utility transfers from the wife to her husband when the gender norm is sufficiently low.
   - To compensate for larger loss in bargaining power.

3. Women are more likely to take up investment opportunities when the husband is richer, and the utility transfer is decreasing in husband income.
   - Richer husbands require lower compensation (large initial bargaining power, decreasing marginal returns to income, risk aversion).

# Empirical strategy: castes and female investment in India

Important barriers among different social groups in India regarding **female investment**

- Caste system imposes strong restrictions on **higher-caste women**'s ability to go out of home and work
  - To avoid 'pollution' and preserve 'purity' (Eswaran et al., 2013; Agte and Bernhardt, 2023)
- OBC tend to emulate FC and adopt purity norms too, as do Muslims (*purdah*)
  - Upper caste and Muslim women respond less to business opportunities (Field et al., 2010)

→ We use caste / religion groups as a proxy for norms towards female investment.

# Data and context

- Some women in randomly-selected villages of Jharkhand got access to microcredit through NGO-sponsored SHGs (Demont, 2022).

$\Rightarrow$ **Exogenous increase in investment possibility**

- 36 villages spread between treatment and control groups
- 1,000 households followed in 2004, 2006 and 2009
  - Treated villages: 18 SHG-members and 18 non-members
  - Control villages: 18 non-members
- Balanced panel of households headed by males, questioning the head and the head's wife (N=2038)

# Empirical strategy

- Triple-differences strategy

$$Y_{it} = \alpha + \beta SHG_i \times Post_t \times Prowomen_i + \gamma SHG_i \times Post_t$$
$$+\delta Post_t \times Prowomen_i + \zeta_1 Rain_t + \zeta_2 Rain_{t-1} + \eta \boldsymbol{H}_{it} + \lambda_t + \theta_i + \epsilon_{it}$$

Where

- $Y_{it}$: outcome of interest (occupation, well-being)
- $SHG_i$: dummy taking 1 if the wife is a member of an SHG (defined at baseline)
- $Prowomen_i$: dummy taking 1 for Hindus SC, Adivasis (tribes), Buddhists/Christians, and 0 otherwise (Hindus FC/OBC, Muslims) – NB: robustness test excluding FC
- $Post_t$: dummy taking 1 after baseline (2004)
- $Rain_t$: log of monsoon rainfall at the district level (income / opportunity shocks)
- $H_{it}$: household-level time-variant controls (incl. income quartile)
- $\lambda_t$ and $\theta_i$ respectively time and household fixed-effects

# Main results: Predictions 1 and 3

Wives members of SHGs who live in pro-women households:

- strongly **decrease** casual labour supply Go
- strongly **increase** vegetable production Go and small cattle farming Go
  - Female-oriented activities requiring investment

But they experience **lower levels** in some female welfare dimensions:

- lower contraception rates, higher desire for children Go
- less likely to go out of the village Go

→ Consistent with Prediction 1 (investment entails transfers).

And they **invest more** when husband is richer. Go → Consistent with Prediction 3

# Context and data

- Removal of textile's quotas imposed to India for cotton exportation in **2005**
  - dismantling of the Multi Fibre arrangement of the GATT

$\Rightarrow$ **Increases investment returns** in garment-related activities
  - Typically feminine occupations (International Trade Center, 2011)
  - Only in cotton-suitable districts Cotton suitability map

- We study the impact on
  - occupation in garments (i.e. investment decision), and
  - body-mass index (BMI, to proxy well-being and transfers)

- Using the Indian Human Development Survey
  - First wave in 2004-5, second in 2011-12
  - 10,312 women present in both waves; 2,065 of which we know occupation

# Empirical strategy

- Triple-differences strategy

$$Y_{i,t,d} = \alpha + \beta_1 Prowomen_i \times Cotton_d \times Post_t + \beta_2 Prowomen_i \times Post_t + \beta_3 Cotton_d \times Post_t + \beta_4 Post_t + \beta_5 X_{i,d,t} + \eta_i + \delta_t + \epsilon_{i,d,t}$$

Where

- $Y_{i,t,d}$: outcome of interest (occupation, BMI)
- $Cotton_d$: dummy taking 1 if the district is suitable to cotton-growing (above median)
- $Prowomen_i$: dummy taking 1 for SC, Adivasis, Jains, 0 otherwise
- $Post_t$: dummy taking 1 for second survey wave
- $X_{i,d,t}$: household-level time-variant controls
- $\delta_t$ and $\eta_i$ respectively time and household fixed-effects

# Results: Prediction 2

After the reform, women living in **cotton-suitable districts** who belong to relatively pro-women social groups

- specialize **more** in garments Go
- but experience **lower levels** of well-being (as proxied by BMI)

→ Consistent with Prediction 2.

Robustness:

- not possible to test for pre-trends
- **placebo** with rice-suitable districts: no such patterns Go

# Conclusion

- We present a theory of household decision-making regarding **female investment** in the presence of **constraining gender norms**.
  - Women can transfer utility to husbands s.t. they let them invest (compensate for status and bargaining power losses).
  - Too costly when the norm is highly constraining.
  - Conditional on investing, transfers increase in the intensity of the norm.

- We test our predictions through **two triple-diff. analyses**, using **caste** / **social groups** as a measure of female entrepreneurship acceptance:
  - field experiment: microcredit access giving new investment possibility
  - natural experiment: termination of quotas on textile increasing returns

→ In both case, women belonging to castes more in favour of female investment are **more likely to invest** but **enjoy lower utility** in some dimensions.

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# Main results: casual labour

Back

Table: Casual labour (days per year)

| | Whole sample | | Without forward castes | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Wife | Husband | Wife | Husband |
| Post | 7.235 | 14.78* | 5.111 | 15.62 |
| | (4.517) | (8.131) | (5.451) | (9.496) |
| SHG × Post | 3.361 | -0.958 | 5.830 | 3.223 |
| | (5.961) | (10.13) | (7.748) | (11.98) |
| Post × Prowomen | -2.796 | -6.073 | -1.731 | -8.487 |
| | (6.437) | (9.845) | (7.362) | (10.91) |
| SHG × Post × Prowomen | -19.97** | -11.55 | -24.27** | -18.20 |
| | (9.286) | (15.10) | (10.69) | (16.71) |
| Observations | 2032 | 2032 | 1725 | 1725 |
| Mean at baseline | 27.46 | 27.46 | 29.60 | 29.60 |

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$).

# Main results: vegetable and grain crops productions

Back

Table: Vegetable and grain crops production (kg)

| | Whole sample | | Without forward castes | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Veg. prod. | Grain prod. | Veg. prod. | Grain prod. |
| Post | 0.838 | 60.03 | -3.297 | 40.45 |
| | (6.510) | (66.56) | (6.222) | (77.94) |
| SHG × Post | -4.775 | -87.04 | -13.77 | 36.07 |
| | (11.06) | (86.15) | (13.20) | (106.0) |
| Post × Prowomen | -2.117 | -36.78 | 4.643 | 5.145 |
| | (7.197) | (72.87) | (6.688) | (80.52) |
| SHG × Post × Prowomen | 33.27** | 103.7 | 40.82*** | -3.090 |
| | (13.87) | (116.7) | (15.27) | (134.0) |
| Observations | 2027 | 2011 | 1720 | 1709 |
| Mean at baseline | 9.390 | 631.4 | 9.763 | 601.4 |

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$).

We trim the top 1% observations.

# Main results: cattles

Back

Table: Cattle farming (number of heads)

| | Whole sample | | Without forward castes | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Small cattle | Big cattle | Small cattle | Big cattle |
| Post | 1.470*** | 0.348 | 1.409*** | 0.375 |
| | (0.412) | (0.280) | (0.500) | (0.353) |
| SHG × Post | -1.144** | -0.406 | -1.320** | -0.450 |
| | (0.576) | (0.357) | (0.659) | (0.431) |
| Post × Prowomen | -1.037 | 0.180 | -1.134 | 0.0299 |
| | (0.660) | (0.352) | (0.722) | (0.403) |
| SHG × Post × Prowomen | 2.390** | -0.418 | 2.720** | -0.263 |
| | (0.995) | (0.522) | (1.075) | (0.585) |
| Observations | 2008 | 2016 | 1703 | 1711 |
| Mean at baseline | 3.823 | 4.179 | 4.102 | 4.248 |

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$).

We trim the top 1% observations.

# Main results: agricultural activity depending on husband's wealth

Back

Table: Female agric. investment conditional on husband's wealth

| | Husband owns large land at baseline | | Husband owns small land at baseline | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Veg. prod. | Small cattle | Veg. prod. | Small cattle |
| Post | -3.700 | 2.232*** | 4.048 | 0.592 |
| | (12.25) | (0.738) | (7.496) | (0.454) |
| SHG × Post | -10.42 | -1.820* | 0.148 | -0.717 |
| | (21.19) | (0.946) | (9.003) | (0.705) |
| Post × Prowomen | 5.034 | -1.269 | -7.294 | -0.790 |
| | (10.57) | (1.070) | (9.950) | (0.824) |
| SHG × Post × Prowomen | 53.58** | 2.690* | 16.24 | 2.516* |
| | (27.20) | (1.553) | (12.74) | (1.303) |
| Observations | 931 | 921 | 1096 | 1087 |
| Mean at baseline | 19.12 | 4.828 | 1.112 | 2.979 |

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*p<0.10, **p<0.05, ***p<0.01).

We trim the top 1% observations.

# Main results: contraception and fertility

Back

Table: Contraception and desired fertility

| | Whole sample | | Without forward castes | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Contraception use | Children desired | Contraception use | Children desired |
| Post | -0.0188 | -0.0750 | 0.00101 | -0.0650 |
| | (0.0227) | (0.0595) | (0.0214) | (0.0752) |
| SHG × Post | -0.0578* | -0.0891 | -0.0551 | -0.132 |
| | (0.0342) | (0.0893) | (0.0379) | (0.107) |
| Post × Prowomen | 0.0140 | -0.118 | 0.0123 | -0.128 |
| | (0.0268) | (0.116) | (0.0265) | (0.128) |
| SHG × Post × Prowomen | -0.0876* | 0.282* | -0.0899* | 0.320* |
| | (0.0487) | (0.166) | (0.0521) | (0.181) |
| Observations | 1948 | 1900 | 1654 | 1609 |
| Mean at baseline | 0.0875 | 0.403 | 0.0817 | 0.416 |

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$).

# Main results: Women's involvement in activities outside the home

Back

Table: Women's involvement in activities outside home

| | Whole sample | | Without forward castes | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Out of village freq. | Participation | Out of village freq. | Participation |
| Post | -0.0576 | -0.0162* | -0.0511 | -0.00901 |
| | (0.0418) | (0.00964) | (0.0485) | (0.00903) |
| SHG × Post | 0.0379 | 0.0186 | 0.0641 | 0.0116 |
| | (0.0547) | (0.0143) | (0.0674) | (0.0185) |
| Post × Prowomen | 0.0188 | 0.0132 | 0.0371 | 0.0136 |
| | (0.0554) | (0.0128) | (0.0603) | (0.0143) |
| SHG × Post × Prowomen | -0.125 | -0.0730*** | -0.177* | -0.0688** |
| | (0.0819) | (0.0279) | (0.0925) | (0.0314) |
| Observations | 2032 | 2032 | 1725 | 1725 |
| Mean at baseline | 0.360 | 0.0230 | 0.374 | 0.0259 |

The outcome in col. 1 and 2 a dummy indicating that the wife goes outside of the village more than twice a month.

The outcome in col. 2 and 3 is a dummy indicating that the wife participates in any social or political group (excl. SHG).

OLS estimation. All equations include time and household fixed effects.

All equations control for rainfall in t and t-1 as well as household size and income quartile.

Std errors clustered at the household level in parentheses (*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$).

# Distribution of cotton suitability

Back

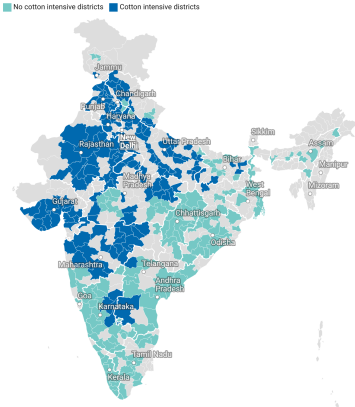


Figure: Map of cotton-intensive districts present in the Indian Human Development Survey

Notes: The darker shade indicates a share of district land suitable to cotton higher from the median, using FAO's Global Agro-Ecological Zones (GAEZ) data.

# Main results: occupation and BMI

Back

Table: Impact of the GATT reforms on BMI and occupation in garments

| | Whole sample | Without FC | Whole sample | | Without FC | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | BMI | BMI | BMI | Garment | BMI | Garment |
| Cotton × Post | -0.0376 | -0.0157 | 0.0169 | -0.00112 | 0.0413 | -0.00318 |
| | (0.0314) | (0.0309) | (0.0573) | (0.0192) | (0.0649) | (0.0202) |
| Prowomen × Post | 0.0657 | 0.0676 | 0.228 | -0.0136 | 0.232 | -0.0130 |
| | (0.0736) | (0.0746) | (0.163) | (0.0112) | (0.163) | (0.0107) |
| Cotton × Prowomen × Post | -0.117 | -0.143* | -0.308* | 0.0259* | -0.334* | 0.0281* |
| | (0.0818) | (0.0814) | (0.172) | (0.0137) | (0.179) | (0.0151) |
| Observations | 20624 | 18088 | 4130 | 4130 | 3978 | 3978 |
| Mean | 2.21 | 2.19 | 2.08 | 0.02 | 2.08 | 0.02 |

Triple differences results from equation 15. All equations include time and individual fixed effects.

All equations control for the number of children, the age of women (quadratic), and the GDP of the State of residence.

Columns 3-6 focus on women for whom we know the occupation.

* $p < 0.10$, ** $p < 0.05$, ***

Std errors clustered at the district level in parentheses.

# Placebo-test results: rice-suitable districts

Back

Table: Impact of the GATT reforms on BMI and occupation in garments - Rice placebo test

| | Whole sample | Without FC | Whole sample | | Without FC | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | BMI | BMI | BMI | Garment | BMI | Garment |
| Rice × Post | 0.0323 | 0.0159 | -0.0353 | 0.00979 | -0.0349 | 0.00980 |
| | (0.0352) | (0.0353) | (0.0701) | (0.0160) | (0.0772) | (0.0174) |
| Prowomen × Post | 0.0283 | 0.00971 | 0.259 | 0.0243* | 0.256 | 0.0255* |
| | (0.0646) | (0.0616) | (0.301) | (0.0131) | (0.303) | (0.0139) |
| Rice × Prowomen × Post | -0.0477 | -0.0330 | -0.213 | -0.0382** | -0.215 | -0.0380** |
| | (0.0709) | (0.0698) | (0.309) | (0.0153) | (0.315) | (0.0152) |
| Observations | 20624 | 18088 | 4130 | 4130 | 3978 | 3978 |
| Mean | 2.21 | 2.19 | 2.08 | 0.02 | 2.08 | 0.02 |

Triple differences results from equation 15. All equations include time and individual fixed effects.

All equations control for the number of children, the age of women (quadratic), and the GDP of the State of residence.

Columns 3-6 focus on women for whom we know the occupation.

* $p < 0.10$, ** $p < 0.05$, ***

Std errors clustered at the district level in parentheses.