



# Macro-linkages between gender gaps in access to finance and labor market outcomes

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# Key question

- 1) How do constraints on female entrepreneurs' access to formal finance affect macroeconomic outcomes in India?
  - What is the impact of an increase in female entrepreneurs' access to formal finance on:
    - Macroeconomic outcomes (GDP, unemployment, overall formality)
    - Gender gaps in business opportunities (i.e. entrepreneurship)
    - Gender gaps in labor market (female labor force participation (FLFP), female informality in employment, and wage gaps)

## Key question (contd.)

- 2) Does the impact of financial inclusion reforms depend on existing policy & institutional settings in other areas?
- What is the impact of an increase in access to formal finance for female entrepreneurs under:
    - Low versus high labor market flexibility
    - Low versus high female workers' skill level
  - Featured in: 2017 IMF India Staff Report (17/54); 2017 India Selected Issues Paper (17/55); forthcoming IMF WP.

# Roadmap

- A. Relevance to India
- B. Empirical evidence & Macroeconomic relevance
- C. Modeling framework
- D. Method of analysis
- E. Results
- F. Policy implications

# A. Gender Inequality in India: Economic Opportunities



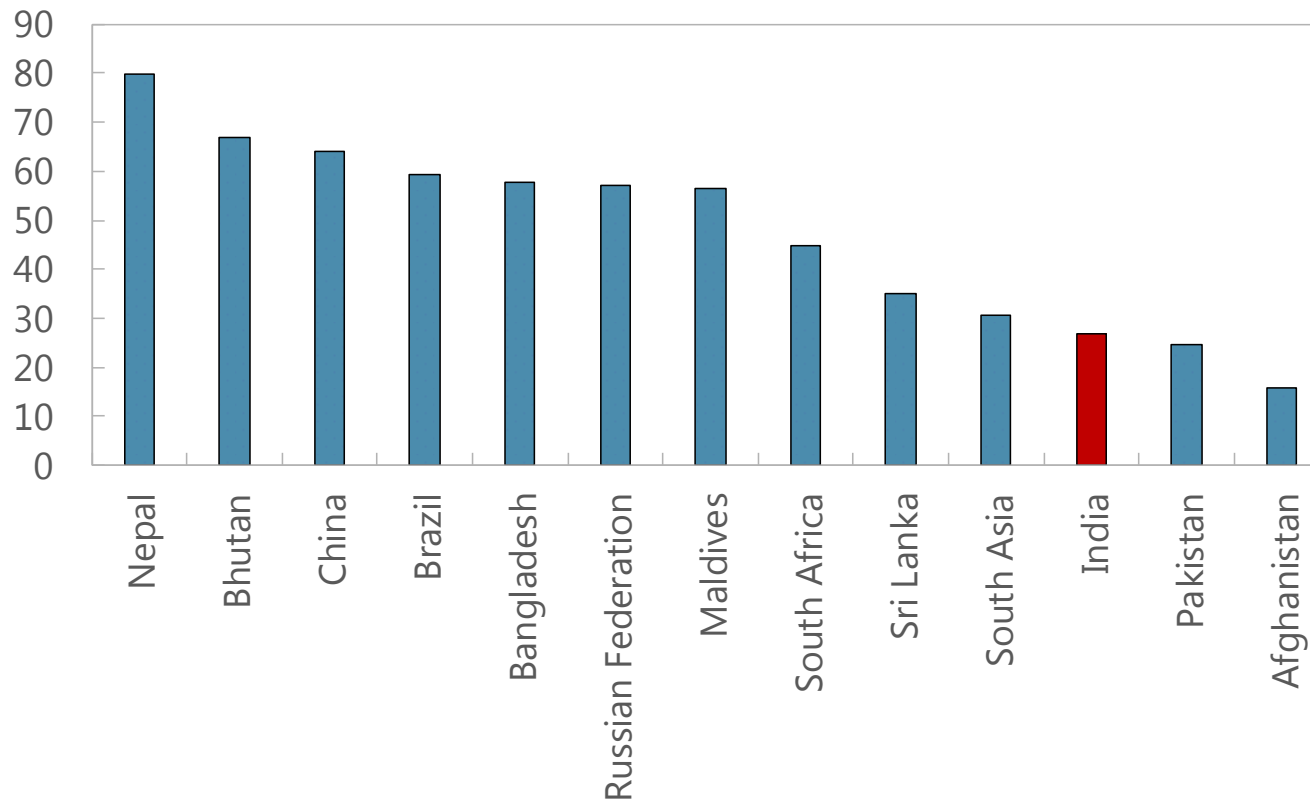
Labor market

Business opportunities

# Female labor force participation rate in India is lower than its peers....

## Female Labor Force Participation Rate (2014)

(in percent)

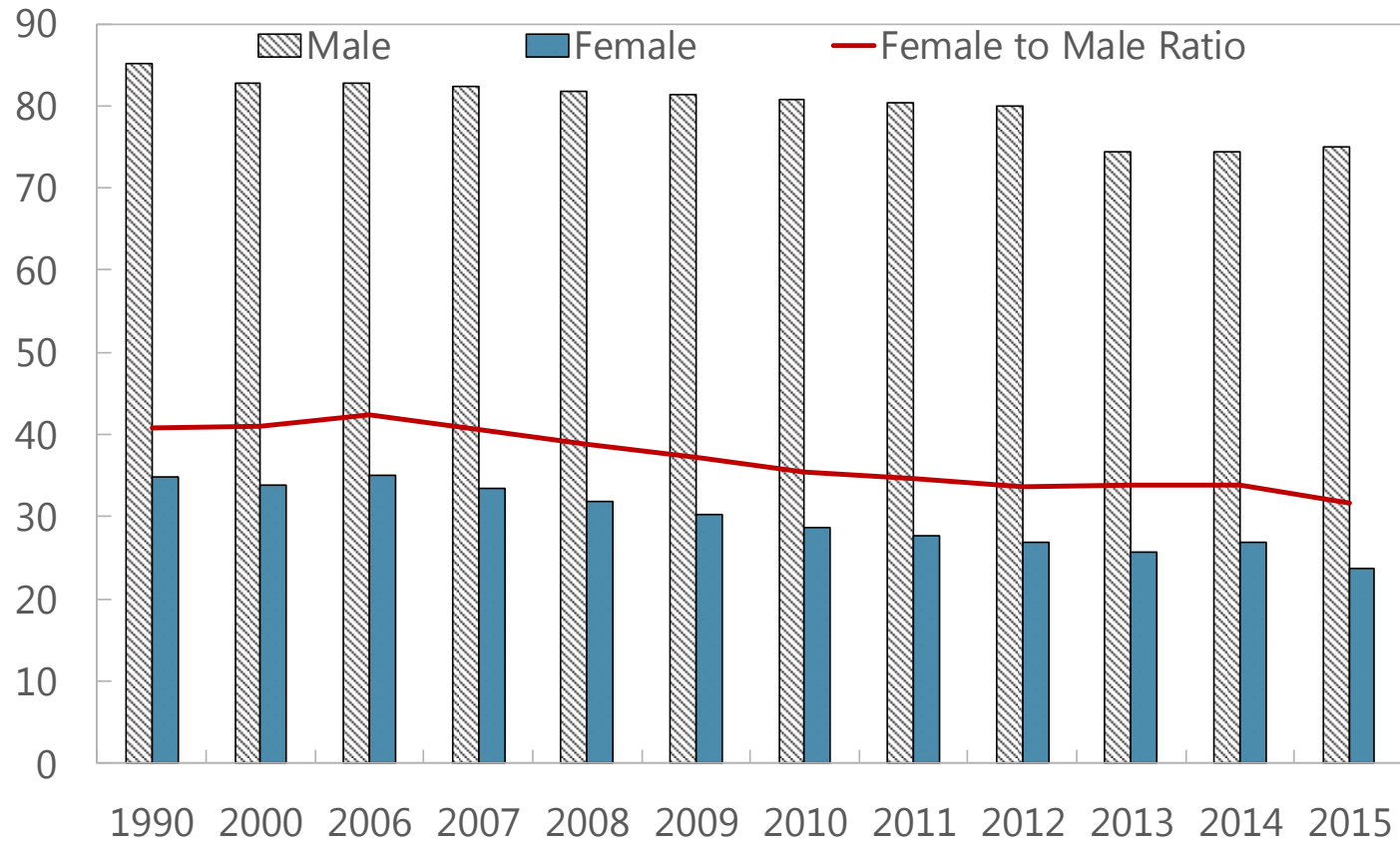


Source: World Bank

...and has been declining over time.

## Female versus male labor force participation

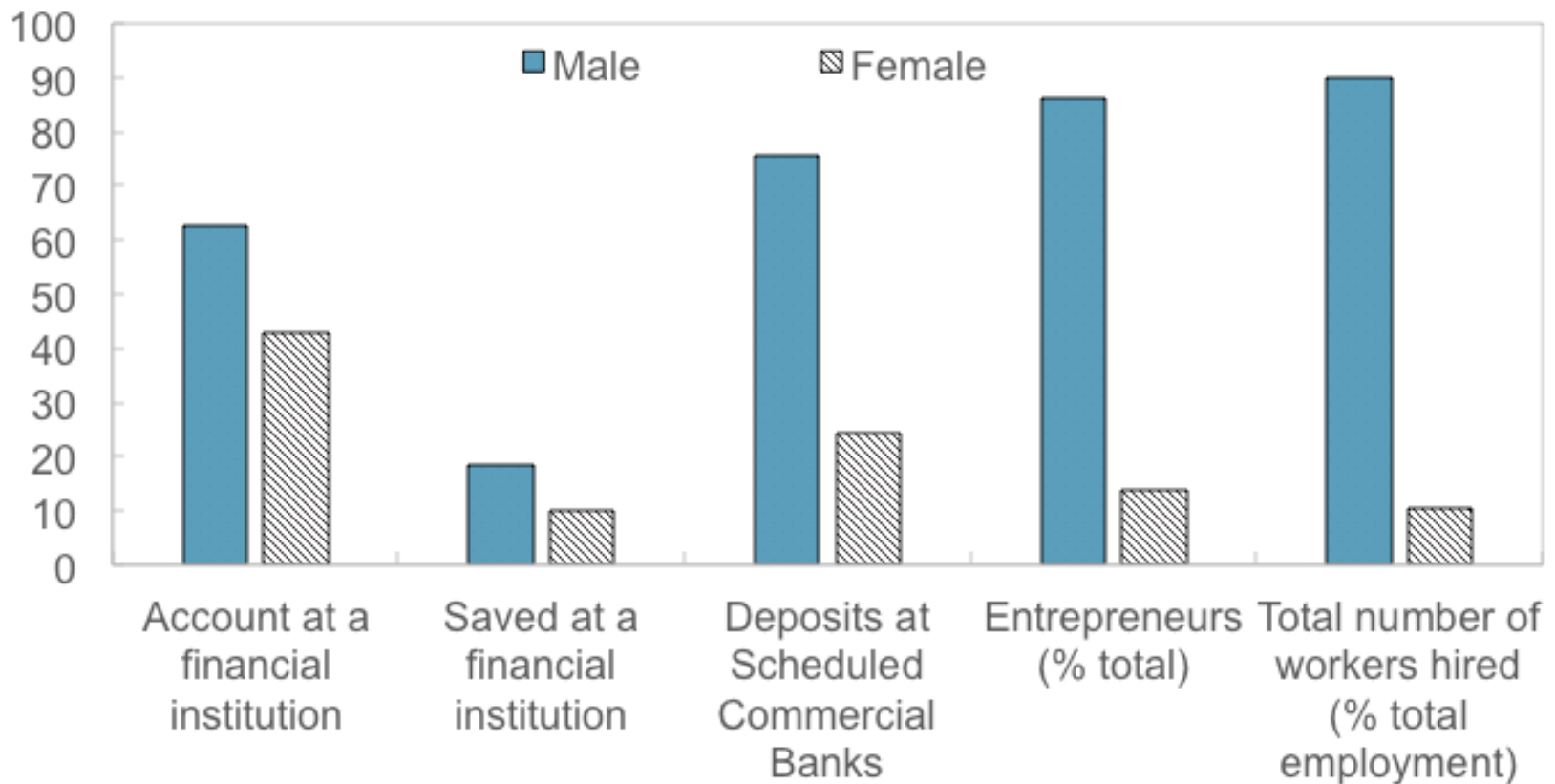
(in percent)



Source: NSSO

# Gender gaps in entrepreneurship and access to formal finance remain high...

## Entrepreneurship & Access to Finance (In percent)



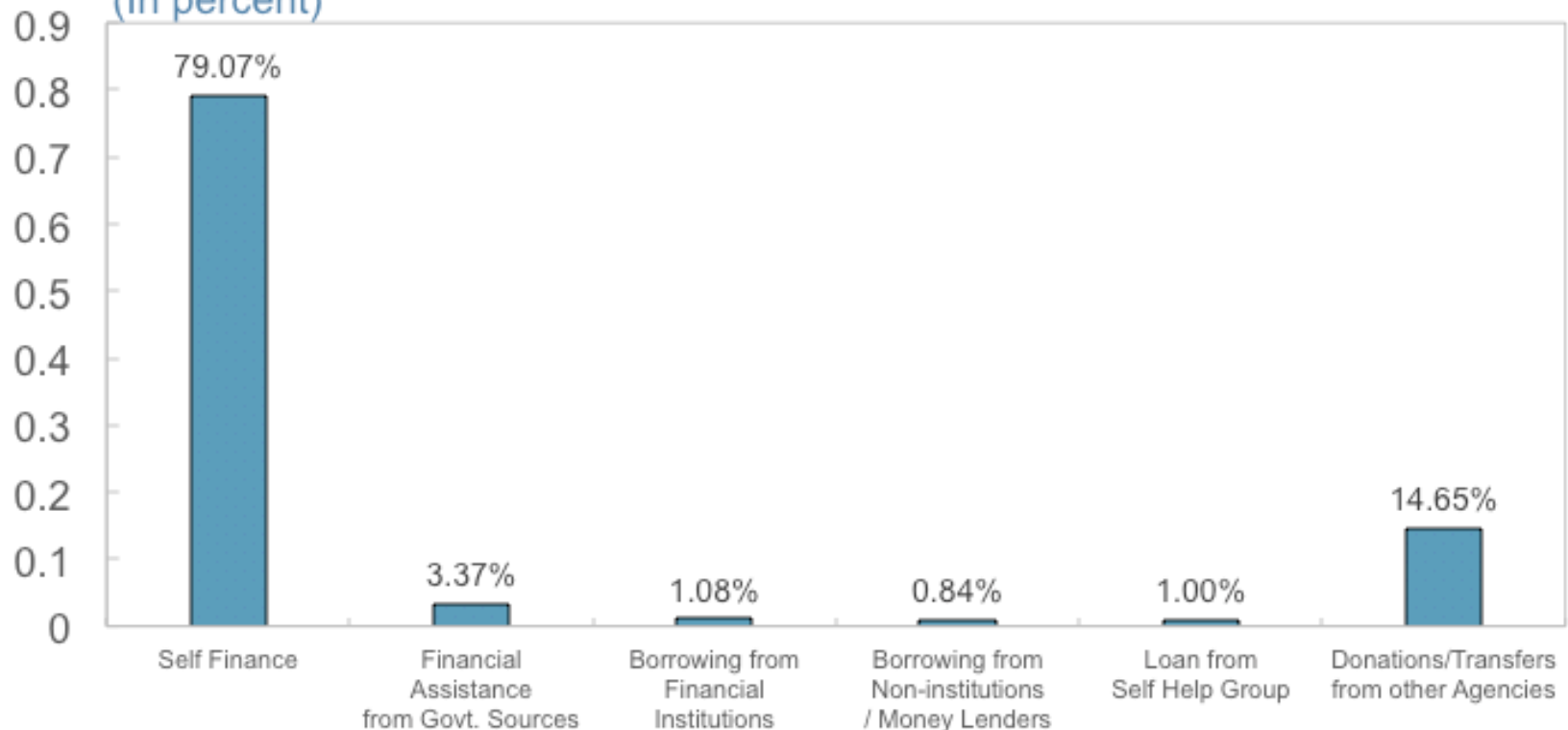
Sources: World Bank, Sixth Economic Census (2014)



...leaving female entrepreneurs to rely on their own resources and/or informal sources of finance.

### Distribution of Number of Establishments under Women Entrepreneurs by Major Source of Finance

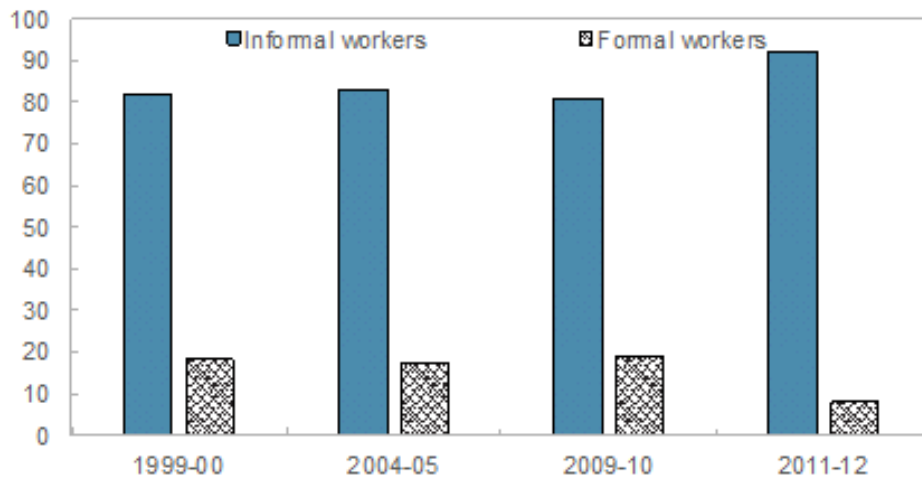
(In percent)



Sources: Sixth Economic Census (2014)

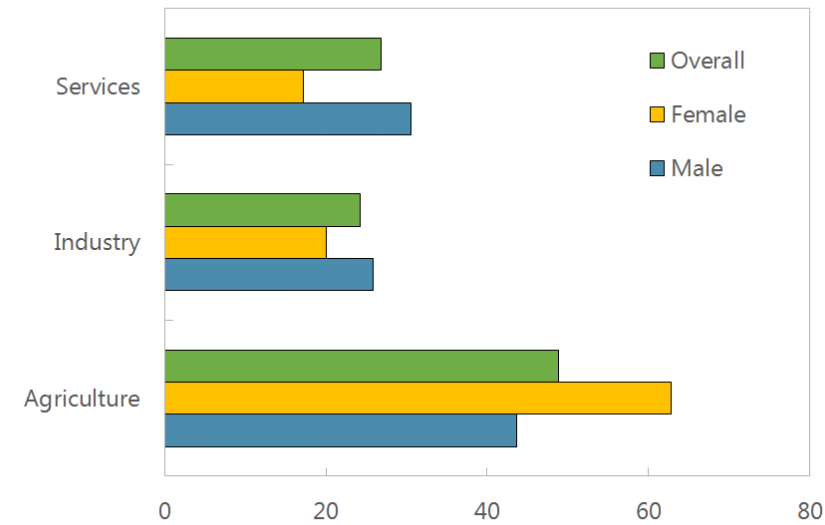
India also has a large informal (unorganized) sector with higher female representation than male.

**Share of informality in labor market**  
(In percent)



Sources: NSSO, ILO

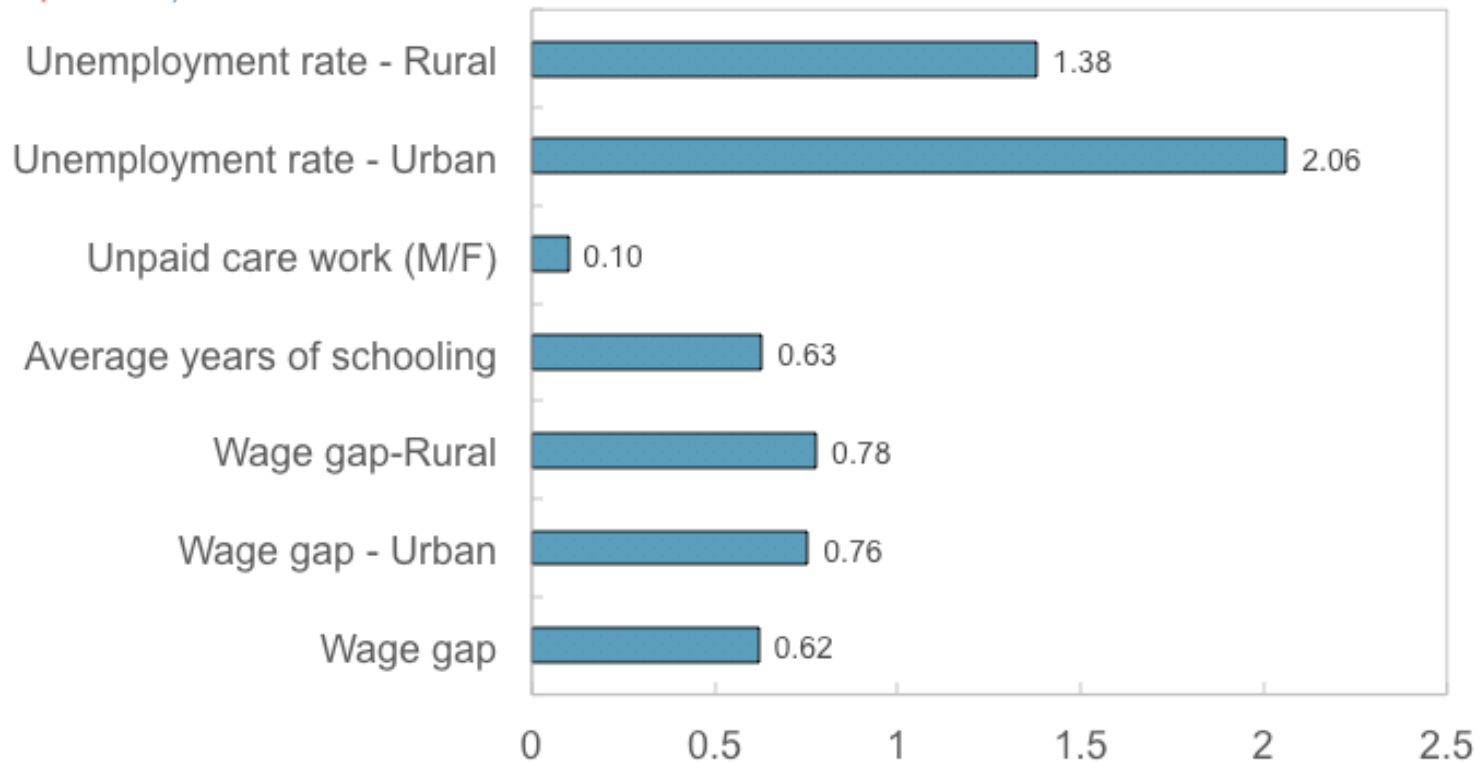
**Sectoral Composition of Employment**  
(In percent)



Sources: NSS, 68th round, 2011-12

In addition, there are gender gaps in wages, education, and unpaid care work.

### Female-to-Male Ratio (In percent)



Sources: Census (2011); NSS (68th round)

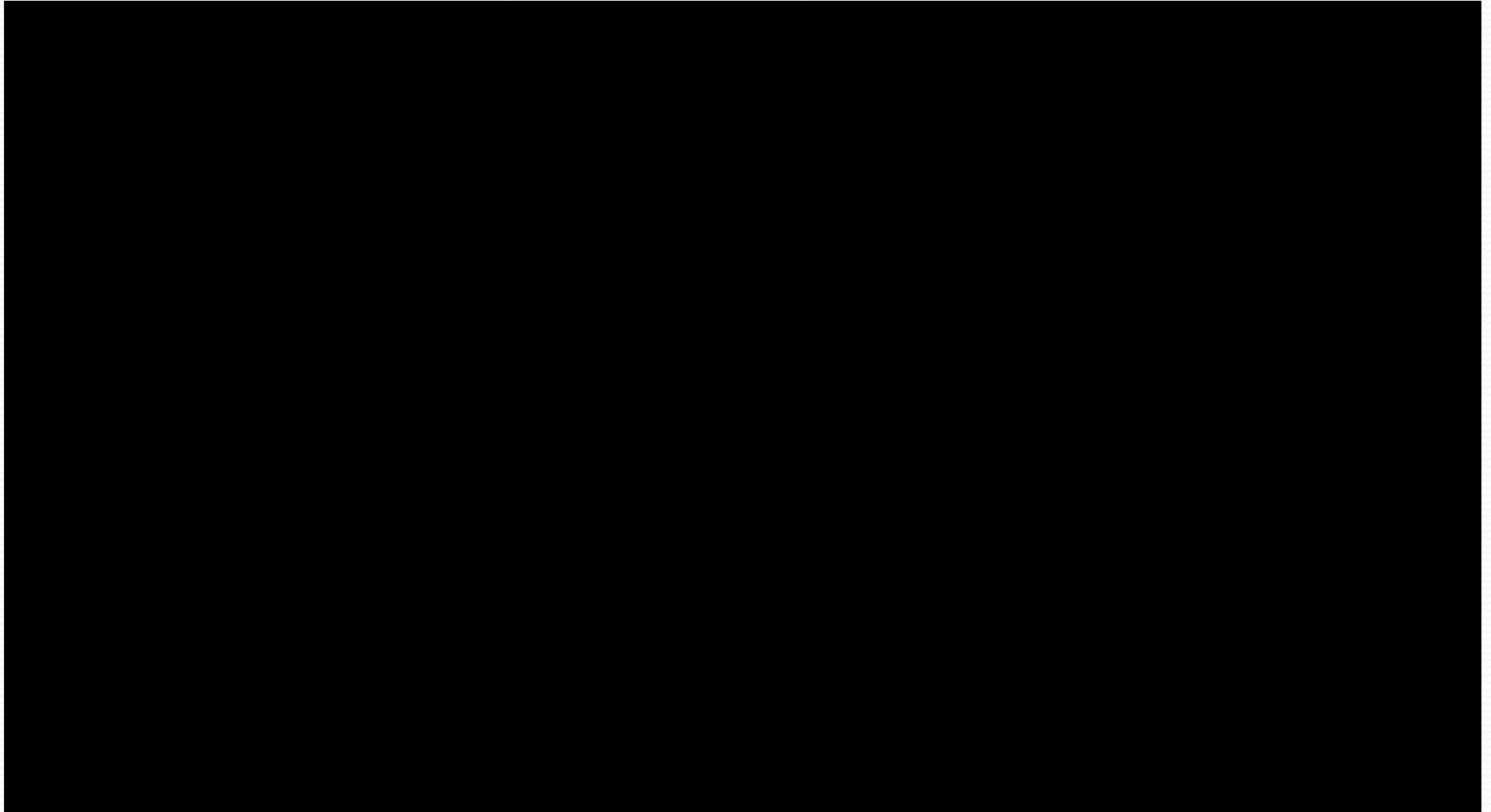
# B. Empirical evidence & Macroeconomic relevance

# Empirical evidence: what explains these gender gaps?

- Gender gaps driven by 3 main factors:
  - **Access to productive inputs:**
    - Education (Eckstein and Lifshitz 2011, Steinberg and Nakane 2012)
    - Lack of control over household financial resources (Gonzales et al. 2015)
  - **Time use:** Domestic responsibilities (Eswaran et al. 2013)
  - **Institutional failure and social norms:**
    - Infrastructure/ Public provisions (Norado 2010, Ghani 2013)
    - Safety and mobility (World Bank, 2011)
    - Discrimination (DFiD-GIZ 2013; Campbell and Ahmed, 2012)
    - Availability of decent formal employment (Das et al. 2015, Chatterjee et al. 2015)
- What explains large informality?
  - largely driven by strict regulations in the formal sector in India (Besley-Burgess 2004, Sharma 2009).



Macroeconomic relevance: why should policymakers care?



# Motivation & contribution

- Gender differences in a macro context have been examined more recently:
  - Policy recommendations based on policies that increase FLFP and growth. Do not take into account informality of female employment and wages.
  - Literature linking financial resource restrictions & LFP is limited (Babilla et al 2016; Gonzales et al. 2015 ).
- We study the macroeconomic inter-linkages between:
  - Gender inequality in the labor market, access to finance, and in entrepreneurship.
  - Informality and gender inequality.

# C. Theoretical Framework



# Structure of the economy

- New Keynesian SOE-DSGE model (build on Khera, 2016):
  - 2 sectors: formal (F) and informal (I) labor, goods and financial markets
- Households: males and females
  - participate in the labor market: formal, informal or unemployed
  - entrepreneurs: formal or informal
  - stay at home: home-production (unpaid, unaccounted in GDP) and leisure
  - intra-household bargaining power related to income
  - maximize utility (consumption, home production, leisure)

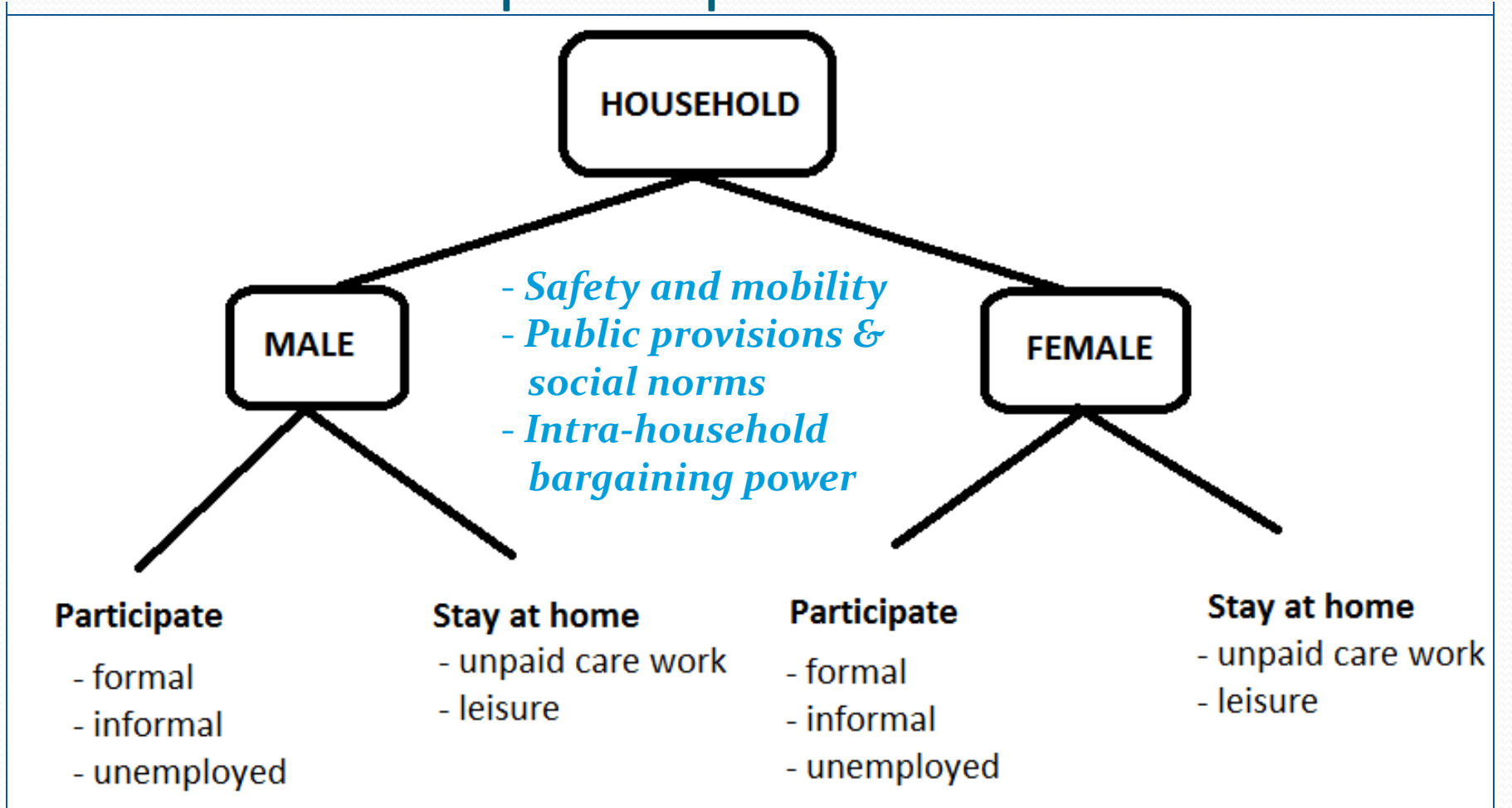
# Structure of the economy 1

- Perfectly competitive wholesale good producers (F and I):
  - male and female owners (Babilla et al, 2016)
  - produce intermediate goods that are sold to the retailers
  - hire male and female workers (CES), rent capital
  - financial frictions: collateral constraint when borrowing from bank (Kiyotaki-Moore, 1997)
  - wage bargaining and hiring cost (Blanchard and Gali, 2006)
- Monopolistically competitive retailers (F and I):
  - short run price rigidity
  - sell goods domestically and F-sector firms also export
  - firm entry and exit, sunk entry cost (product market regulation)
  - competition and price mark-ups related to number of firms

# Structure of the economy 2

- Banks (F and I):
  - receive deposits from households
  - issue loans to entrepreneurs based on the value of their collateral
  - maximize dividends paid to households
- Capital Producers:
  - invest to produce new capital and supply it to wholesale producers
  - costs to adjusting investment
- Government:
  - collects wage income taxes from the formal sector to finance government consumption
  - distributes unemployment (social) benefits
  - sets interest rate using a standard Taylor-type rule

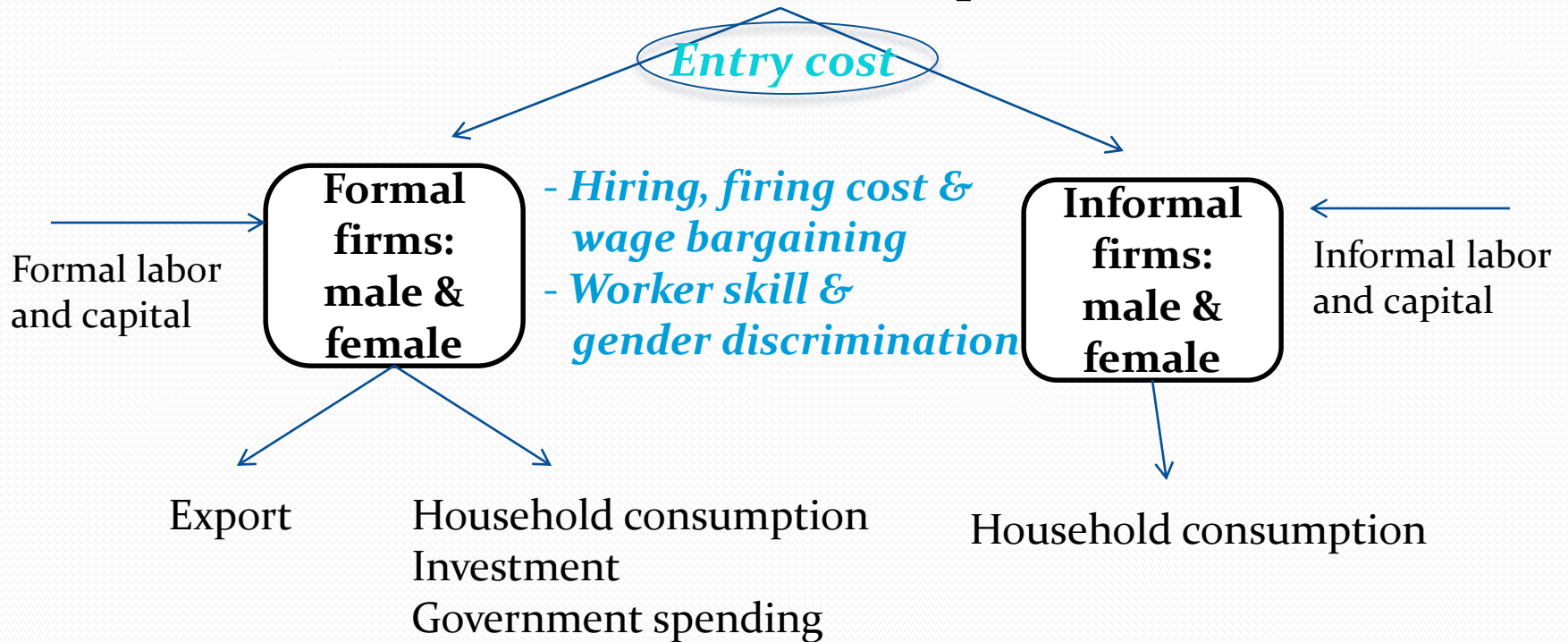
# Labor force participation



- Income from wages, shares in firms and banks, interest income from domestic & foreign bond holdings is used to finance consumption, and investment in bonds

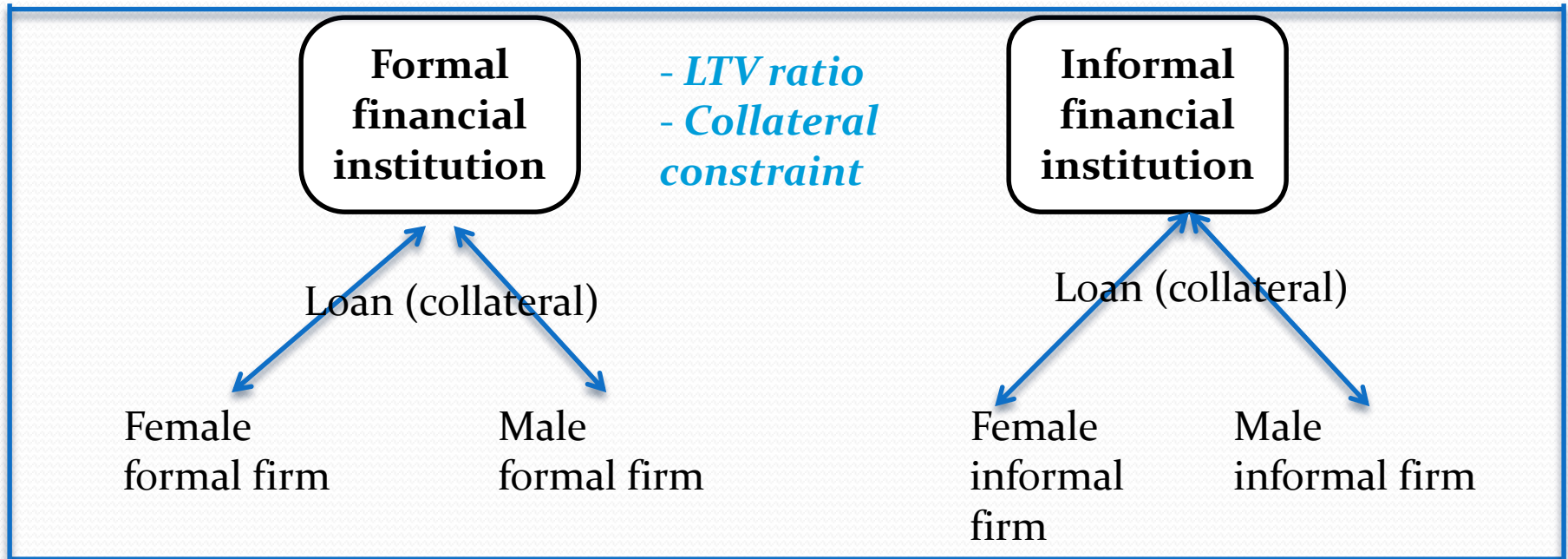
# Entrepreneurship & labor demand

## Male and female entrepreneurs



- Number of male and female firms in each sector determined by cost of starting business.
- Firms determine how much labor to employ, new hires, capital and loans consumption.
- Maximize profits = Revenue – Labor wage cost – Labor hiring cost – Cost of capital (loans from banks).

# Financial constraint



- Firms face collateral constraint for loans from banks (Kiyotaki-Moore, 1997).
- Physical capital used as collateral.
- Loans =  $f(\text{value of collateral}) = g(\text{banks' minimum loan return})$
- Amount of loan =  $f\{\text{LTV ratio (+), expected future value of collateral (+), real interest rate on loans (-)}\}$

# D. Method of analysis

# Characterizing gender inequality & gender-based reforms

	Male	Female	Gender Reform
<b>Access to productive inputs:</b>			
- Credit	High	Low	↑
- Skill	High	Low	↑
<b>Time use: household care</b>	Low	High	
<b>Institutional failure &amp; social norms:</b>			
- Workers' wage bargaining	High	Low	
- Safety/ mobility outside home	High	Low	
- Discrimination in employment	✘	✓	

- Increase in female financial inclusion: no gender gaps in access to credit
- Increase in female skill: no gender gaps in skills



# Characterizing informality, regulations & labor market reforms

	Formal (Regulated)	Labor Market Reform	Informal (Not regulated)
<b>Labor &amp; Product</b>			
- Workers' bargaining	High	↓	Low
- Labor hiring/ firing cost	High	↓	Low
- Firm entry cost	High		Low
<b>Financial Market</b>			Low
- LTV ratio	Low		High
<b>Traded good</b>	✓		✗
<b>Taxation</b>	✓		✗

High vs. low labor market flexibility:

➤ Eg.: Permanent fall in labor hiring/ firing costs.

# Method of analysis

Calibrate parameters in the model  
to match Indian data  
(initial steady state)



Run policy experiments  
(new steady state)

# Steady state

Variable	Data (%)	Steady (%) State
$\frac{G}{GDP}$ , $\frac{Export}{GDP}$ , $\frac{Import}{GDP}$	11; 19; 21	11; 19; 21
Labor formality	8 - 19	25
Unemployment rate	5 - 22*	13
Share of female-firm output	3.09	6
Share of female-formal finance	5 - 27*	23
Share of empl. in female-firm	3	12
Female LFP	25	20
Male LFP	80	85
Share of female-informal emp	86	80
Share of male-informal emp	74	70
Gender wage gap	1.62	1.4

\* range of estimates from various sources.

# How to calibrate informality & labor market reform?

	Source	Evidence	Calibration
		India (US)	
<b>Regulations</b>	<b>2014</b>		
- Labour hiring cost	Redundancy cost (weeks of salary, WEF)	15.8 (0)	$F \left( \frac{\text{hiring cost}}{\text{wage}} \right) > I \left( \frac{\text{hiring cost}}{\text{wage}} \right)$
- Firm entry cost	Starting firm cost (% lost loutput, WB)	13.8 (1.1)	$F \left( \frac{\text{entry cost}}{\text{output}} \right) > I \left( \frac{\text{entry cost}}{\text{output}} \right)$
- Firm exit rate - Prob. of fired - Bargaining		calibrated to match key statistics relating to the F and I sector	

# How to calibrate gender inequality & reforms?

	Evidence	Initial SS	Reform Scenario
Entrep' discount factor	calibrated to match Indian evidence on gender	$m > f$	$m = f$
LTV ratio in F-sector	gaps in entrepreneurship & financial access	$m > f$	$m = f$
Skills	avg. years of schooling (NSSO)	$m > f$	$m = f$
Rest of parameters	calibrated to match Indian statistics on gender gaps in the labor market		

# E. Results

# Impact of an increase in female entrepreneurs' access to formal finance under baseline scenario

- **Long-run gains**: lower gender gaps in entrepreneurship and LFP; lower unemployment; increase in output, cons. & investment
  - Higher access and lower cost of formal credit for females=> increases female entrepreneurship & investment in the F-sector => raises value of collateral which further increases access to finance for both males and females => higher overall entrepreneurship => formal hiring & employment goes up => increasing both male & FLFP => lower unemployment, higher cons. & GDP.
  - **However**, given the rigidities in the formal labor market, a larger share of workers get employed in low productivity informal jobs => lower formality in the labor market. Moreover, gender wage gaps do not improve.

# Impact of an increase in female entrepreneurs' access to formal finance under higher labor market flexibility

- **Long-run gains** of lower regulations in the formal labor market:
  - Lower cost of hiring formal workers => increases formal employment and LFP => higher profits as lower wage and hiring costs => firm entry in the formal sector => increases competition and competitiveness => higher exports, investment, cons. & GDP.
  - **Combined** with the long-run impact of higher female formal financial access leads to a:
    - Larger increase in output, cons., LFP & employment.
    - Formality in the labor market is now higher.
  - **However**, given the gender-specific constraints faces by females in access to labor market opportunities, male workers gain more => wider gender gaps in formal employment and LFP.



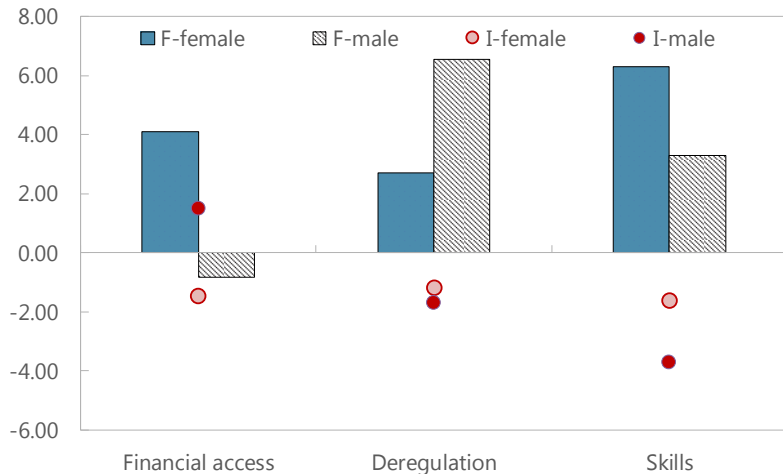
# Impact of an increase in female entrepreneurs' access to formal finance under higher female worker skill

- **Long-run gains** of no gender gaps in worker skills:
  - Higher female worker skill => increases female workers' efficiency => more number of females get employed formally => lowers gender wage gaps & increases FLFP => improves overall efficiency and size of the formal sector => higher output, lower unemployment
- **Combined** with the long-run impact of higher female formal financial access leads to a:
  - Larger increase in output, cons. & employment.
  - Larger fall in gender gaps in LFP and wages.
  - Formality in the labor market is now higher.

# Results

## Entrepreneurship

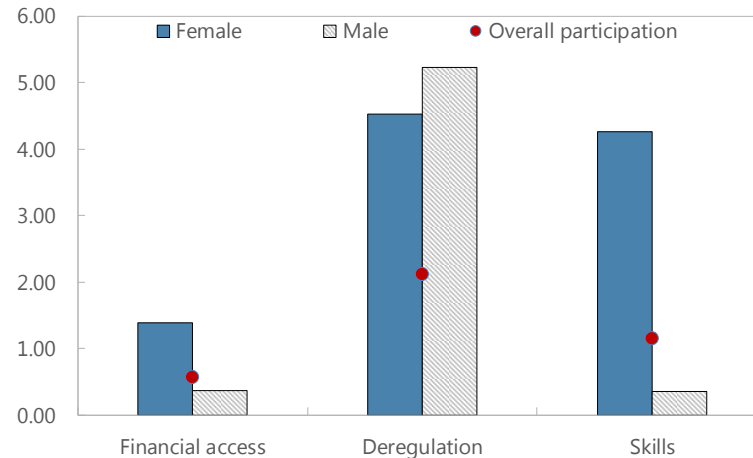
(in percent)



Sources: Author's calculations

## Labor force participation

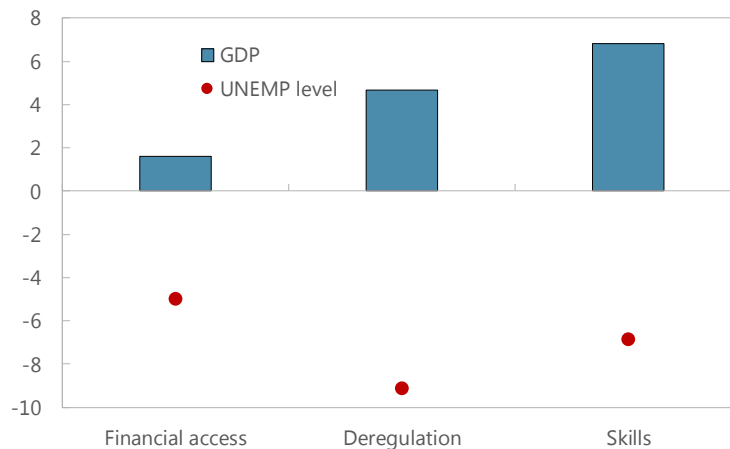
(in percent)



Sources: Author's calculations

## GDP & unemployment

(in percent)

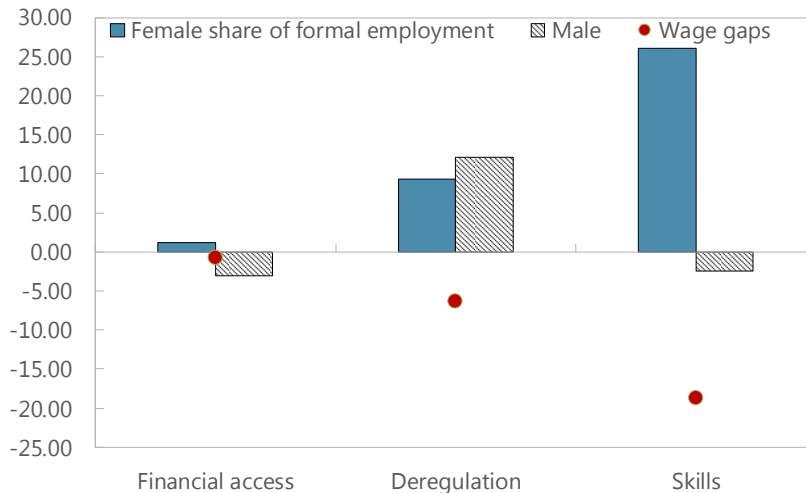


Sources: Author's calculations

# Results (contd.)

## Quality of employment & wages

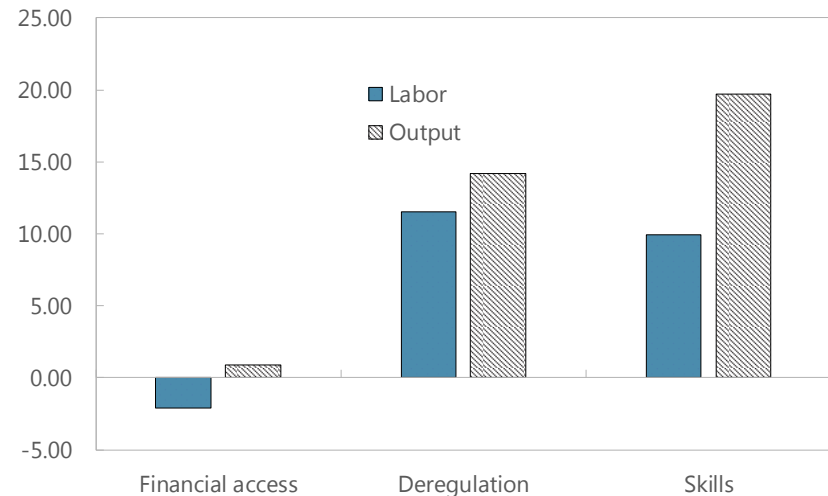
(in percent)



Sources: Author's calculations

## Overall formality

(in percent)



Sources: Author's calculations

Note: Financial access in the figure refers to an increase in access to formal finance for female entrepreneurs (i.e. no gender gaps in access to formal finance); Deregulation refers to lower hiring costs in the formal labor market along with no gender gaps in financial access; Skills refers to an increase in females' average years of schooling (i.e. no gender gaps) along with no gender gaps in access to finance.

# Conclusions and Policy Implications

# Conclusion

*Closing the gender gap in skills and access to formal finance increases female economic participation, which could boost the GDP of India by close to 6-7 percent.*

- Single-sector interventions have limited impact, as women face multiple and intertwined constraints.
- Increase in female entrepreneurs' access to formal finance leads to an increase in their entrepreneurship and LFP, which leads to higher GDP and lower unemployment.
- However, unless accompanied by reforms to decrease labor market rigidities it does not generate sufficient formal sector job creation.
- Similarly, improved access to credit for females without their skills training will have limited positive impact.

# Policy implications

- Various financial inclusion schemes have been implemented recently (Jan Dhan Yojana, MUDRA, Stand-Up India).
- However, a *multi-dimensional policy* approach is required for the success of these interventions.
- A range of fiscal & structural measures could be used.
  - To improve financial access & demand for formal finance:
    - ❖ Spreading awareness and strengthening the implementation of females' inheritance rights on land (Hindu Succession Act, 2005).
    - ❖ Financial literacy programs targeting women, especially in rural areas (Project Financial Literacy, RBI).
    - ❖ Establishing more women-only banks that cater to female entrepreneurs (Bharatiya Mahila Bank).
  - To improve employment in good-quality jobs:
    - ❖ Effective & more targeted implementation of skill training programs for women.
    - ❖ Labor market reforms: ease regulations.
    - ❖ Access to safe and affordable transportation to work.
    - ❖ Access to water, sanitation, cooking materials to reduce time spent in care work.

Thank you

# Appendix



# Results: Long-run impact on the overall economy

Table : Long-run impact on the overall economy

Case	GDP	Unemp.	Formality		LFP	Entrepreneurship	
			Labor	Product		Formal	Informal
Financial access	1.6	-5	-2.1	0.9	0.6	1.8	0.07
Deregulation	4.7	-9.1	11.5	14.1	2.1	4.5	-1.5
Skills	6.8	-6.8	10	19.7	1.1	4.9	-2.7

Note: All values are percentage deviations from steady state. Unemp. is unemployment, LFP is labor force participation, formality is the share of formal sector in each market.

# Results: Long-run impact on gender gaps

Table : Long-run impact on gender gaps

Case	Entrepreneurship		LFP		Formal share of employment		Wage gap		
	Formal	Informal							
	M	F	M	F	M	F			
Financial access	-0.8	4	1.5	-1.5	0.4	1.4	-3	1.2	-0.8
Deregulation	6.6	2.7	-1.7	-1.2	5.3	4.5	12.1	9.3	-6.4
Skills	3.3	6.3	-3.7	-1.6	0.4	4.3	-2.5	26	-18.7

Note: All values are percentage deviations from steady state. LFP is labor force participation.

M and F correspond to male and female. Wage gap is male-to-female wage ratio.