Trade Liberalization in India: Impact on Gender Segregation

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OVERVIEW

- Motivation
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- Trade Liberalization in India
- Conceptual Framework

   Trade and Occupational Gender Segregation

   Trade and Formal-Informal Sector Gender Segregation

- Empirical Specification
- Empirical Results
- Conclusion

MOTIVATION

- Forces of trade and services sector liberalization have connected the countries around the world.

- Trade liberalization does not yield gender neutral results in labor markets; it has different effects on men and women in terms of employment and earnings.

- It effects gender segregation across occupations and sectors (formal-informal sector) in the labor market.

- Segregation has also been identified as a major mechanism through which women are denied access to higher paying and better jobs/sectors, resulting in significant gender wage inequality.

Occupational Gender Segregation

❑ Unbalanced distribution of men and women across occupations, inconsistent with their overall employment shares

❑ Women segregated into low wage occupations like clerical, sales and men segregated into high wage occupations like professionals, managerial.

Sectoral Gender Segregation

❑ Unbalanced distribution of men and women across sectors, inconsistent with their overall employment shares

❑ By Sectors we refer to

Formal Sector: workers who are permanent (regular and salaried) in organized sector establishments (registered under the Factories Act)

Informal Sector: workers who work as contract workers or work for the unorganized sector establishments or those who are self employed.

EFFECTS OF GENDER SEGREGATION

❑ Major mechanism through which women are denied access to higher paying and better jobs/sectors

❑ Explains 12% to 90% of earning differences between men and women (Blau et al., 1998; Petersen and Morgan ,1995)

❑ Inefficient and prevents maximization of productive capacity

❑ Results in misallocation of talent that leads to lower economic growth; elimination of occupational gender segregation can increase GDP between 2% & 9 % (Esteve-Volart , 2000)

❑ In the context of India a 10% increase in female to male ratio of managers raises nonagricultural output by 2% (Esteve-Volart , 2004)

STATISTICS ON GENDER SEGREGATION IN INDIA

	1987-88		1993-94		1999-00	
% Employed	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**
Male Dominated Occupations	**18.5**	75.4	**20.9**	71.1	**37.8**	69.6
Female & Integrated Occupations	**81.4**	24.6	79.1	28.9	**62.2**	28.3
Informal Sector	**77.9**	51.2	**79.0**	48.1	**81.9**	51.5
Formal Sector	22.0	48.8	20.9	51.9	18.1	48.5

A male dominated occupation is defined as one in which men's share of employment in the occupation exceeds their share in the labor force by 5 percentage points.

1987-88 was used as the reference point to define gender occupation dominance

OBJECTIVE

- We explore the linkages between trade liberalization and gender segregation in the labor market for India.

- Specifically , we study the impact of trade liberalization on gender segregation across occupations and sectors in the labor market in urban India.

TRADE LIBERALIZATION IN INDIA

❑ Introduced in 1991 as part of IMF conditioned program in face of domestic and foreign sector crisis

❑ Was unanticipated and domestic policy makers had minimal or no room to cater to the political interests; considered exogenous policy change (Topalova P, 2005)

❑ Tariffs and non-tariff barriers across all industries drastically reduced; average tariff in manufacturing declined from 117% in 1990-91 to 60% in 1992 to 39% in 1999-2000

❑ Import licensing lists were eliminated

❑ Export restrictions were eased and additional export promotion plans introduced

TRENDS IN AVERAGE DISTRICT TARIFF LEVELS IN INDIA
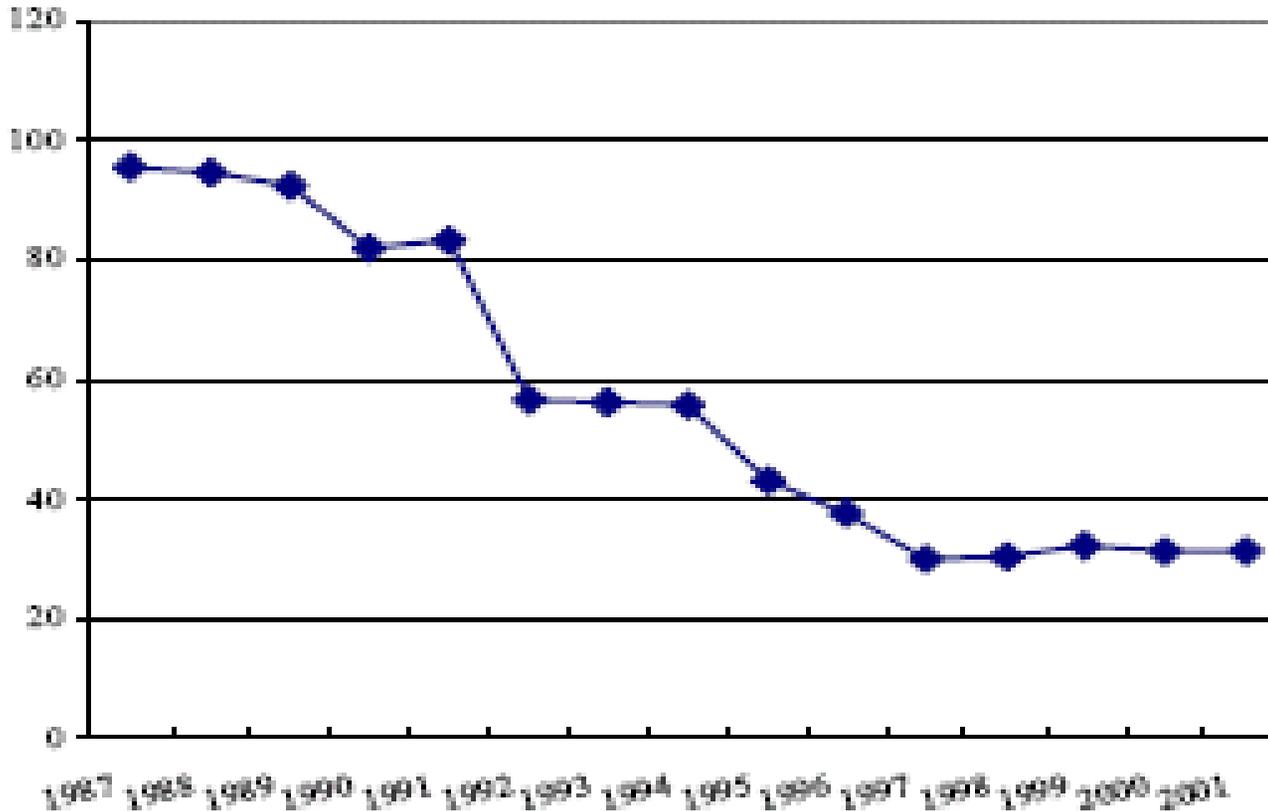
TRADE LIBERALIZATION AND OCCUPATIONAL GENDER SEGREGATION

❑ Increased competition levels in domestic economy.

   (Becker ,1957/71; Phelps & Arrow , 1972)

- ▪ discrimination becomes costly; less opportunity to forgo profits for discrimination
- ▪ spread of knowledge
- ▪ easier monitoring of efficiency and productivity

❑ Creation of new jobs and occupations (Porter,1990)

- ▪ improvement in technology of production through contact with international markets
- ▪ rise in the share of professional and technical workers
- ▪ increased demand for tasks of clerical jobs

❑ Shift in the industrial structure to those with high female intensity: agriculture and allied activities, textiles and garments, micro activities like handicrafts, toys and food processing.

TRADE LIBERALIZATION AND INFORMAL SECTOR

❑ Increase in size of the informal sector

- increase in demand for more "flexible" labor; sub contracting of work (ILO, 2002)
- division of labor and specialization (Marjit S. and Maiti D, 2008)
- job losses in formal sector, shift to informal sector (Goldberg and Pavcnik ,2003)

❑ For women, informal sector jobs attractive, allows them to combine paid work with household or child-raising duties

❑ For employer, cheaper female labor takes over men's jobs in the process of being in-formalized

❑ Women ill equipped to upgrade their productive activities in the face of increased competition, get segregated into the informal sector

EMPIRICAL SPECIFICATION

- **Impact on Occupational Gender Segregation**

  Sub-State Level:

  $$SI_{dt}=a_0 + a_1*T_{dt} +a_2*T_{dt}*PL +a_3*X_{dt} +\gamma_t +\delta_d + \varepsilon_{dt}$$

  $$= \Sigma_i \text{ emply}_{id}*\text{tariff}_{it} / \Sigma_i \text{ emply}_{id}$$

  Post Liberalization Dummy

  Demographic and Socio-economic Controls

EMPIRICAL SPECIFICATION

- **Impact on Occupational Gender Segregation**

   Individual Level:

$$\text{P}\textbf{rob}_{ijt} = \textbf{b}_0 + \textbf{b}_1 \ast \textbf{T}_{jt} + \textbf{b}_2 \ast \textbf{X}_{it} + \gamma_t + \delta_s + \eta_j + \varepsilon_{ijt}$$

$$= \Sigma_i \ \textbf{emply}_{id} \ast \textbf{tariff}_{it} \ / \ \Sigma_i \ \textbf{emply}_{id}$$

Demographic and Socio-economic Controls

Estimate the equation separately for males and females in pre liberalization and post liberalization period.

Change in gender differential in probability of working in a male dominated occupation = $(\textbf{b}_{1,t+1}{}^{\textbf{m}} - \textbf{b}_{1,t+1}{}^{\textbf{f}}) - (\textbf{b}_{1,t}{}^{\textbf{m}} - \textbf{b}_{1,t}{}^{\textbf{f}})$

EMPIRICAL SPECIFICATION

- **Impact on Occupational Gender Segregation**

  Individual Level:

  Pooled Cross Sectional Method

  $$\text{Prob}_{ijt} = c_0 + c_1 * F_i + c_2 * T_{jt} + c_3 * F_i * T_i + c_4 * T_{jt} * PL * F_i + c_5 * X_{it} + \gamma_t$$
  $$+ \delta_s + \eta_j + \varepsilon_{ijt}$$

  Industry Tariff

  Female Dummy

  Post Liberalization Dummy

  Gender differences in probability of working in a male dominated occupation due to trade liberalization is given by $c_3 + c_4$

EMPIRICAL SPECIFICATION

○ **Impact on Sectoral Gender Segregation**

Individual Level:

$$\text{Prob}_{ijt} = d_0 + d_1 * T_{jt} + d_2 * X_{it} + \gamma_t + \delta_s + \eta_j + \varepsilon_{ijt}$$

$$= \Sigma_i \, \text{emply}_{id} * \text{tariff}_{it} \, / \, \Sigma_i \, \text{emply}_{id}$$

Demographic and Socio-economic Controls

Estimate the equation separately for males and females in pre liberalization and post liberalization period.

Change in gender differential in probability of working in the informal sector in an industry = $(d_{1,t+1}^m - d_{1,t+1}^f) - (d_{1,t}^m - d_{1,t}^f)$

EMPIRICAL SPECIFICATION

- **Impact on Sectoral Gender Segregation**

    Individual Level:

    Pooled Cross Sectional Method

$$\text{Prob}_{ijt} = e_0 + e_1 * F_i + e_2 * T_{jt} + e_3 * F_i * T_i + e_4 * T_{jt} * PL * F_i + e_5 * X_{it} + \gamma_t + \delta_s + \eta_j + \varepsilon_{ijt}$$

Industry Tariff

Female Dummy

Post Liberalization Dummy

    Gender differences in probability of working in in the informal sector in an industry due to trade liberalization is given by $c_3 + c_4$

EMPIRICAL RESULTS

EFFECT OF TRADE LIBERALIZATION ON OCCUPATIONAL GENDER SEGREGATION AT THE URBAN REGION LEVEL (PANEL DATA ESTIMATION)

Dependent Variable:	All Industries		Manufacturing Industries	
Occupational Gender Segregation Index	D Index	R Index	D Index	R Index
Trade Protection	**0.4373***	**1.401****	**0.7548****	**6.4378****
	(1.77)	(2.02)	(2.26)	(1.82)
Demographic & Socioeconomic Controls	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	177	177	177	177
Adjusted R squared	0.6658	0.6914	0.7758	0.7763

t-statistics are reported in parenthesis, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

EFFECT OF TRADE LIBERALIZATION ON OCCUPATIONAL GENDER SEGREGATION AT THE URBAN DISTRICT LEVEL (PANEL DATA ESTIMATION)

Dependent Variable: Occupational Gender Segregation Index	All Industries		Manufacturing Industries	
	D Index	R Index	D Index	R Index
Trade Protection	**0.2146*****	**2.5761*****	**0.3264****	**1.4610***
	(3.26)	(2.87)	(2.49)	(1.80)
Demographic & Socioeconomic Controls	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	638	638	638	638
Adjusted R squared	0.7206	0.7345	0.3876	0.3951

t-statistics are reported in parenthesis, *** p<0.01, ** p<0.05, * p<0.1

SEEMINGLY UNRELATED REGRESSION (SURE) ESTIMATES AT THE INDIVIDUAL LEVEL- OCCUPATIONAL GENDER SEGREGATION

**Dependent Variable:
Probability of working in Male Dominated Occupation**

Industry Tariff (Male and Pre Liberalization)	-0.1257 (-1.38)
Industry Tariff (Female and Pre Liberalization)	**-0.1978**** (-2.11)
Industry Tariff (Male and Post Liberalization)	**-0.1133**** (-2.12)
Industry Tariff (Female and Post Liberalization)	**-0.1335***** (-2.89)
Demographic & Socioeconomic Controls	Yes
Industry Fixed Effects	Yes
State Fixed Effects	Yes
Time Fixed Effects	Yes
Observations	32355

t-statistics are reported in parenthesis, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

POOLED CROSS SECTIONAL REGRESSION ESTIMATES AT THE INDIVIDUAL LEVEL –OCCUPATIONAL GENDER SEGREGATION

Dependent Variable:	(3)	(4)	(5)
Probability of Working in Male Dominated Occupation			
Female Dummy	-0.2853***	-0.2733***	-0.2175***
	(-4.84)	(-4.80)	(-2.92)
Industry Tariff	**-0.1906*****	**-0.1932*****	**-0.1536*****
	(-4.68)	(-4.92)	(-3.47)
Female Dummy *Industry Tariff	**-0.1729*****	**-0.1728*****	**-0.1122***
	(-2.93)	(-2.92)	(-1.65)
Postlib Dummy* Female Dummy		-0.0118	-0.0678
		(-0.29)	(-0.69)
Female Dummy*Industry Tariff *Postlib Dummy			-0.0606
			(-0.67)
Observations	32355	32355	32355

All regressions Demographic & Socioeconomic controls, Industry Fixed Effects, State Fixed Effects and Time Fixed Effects.

 t-statistics are reported in parenthesis, *** p<0.01, ** p<0.05, * p<0.1

SEEMINGLY UNRELATED REGRESSION (SURE) ESTIMATES AT THE INDIVIDUAL LEVEL- INFORMAL SECTOR GENDER SEGREGATION

Dependent Variable:
Probability of working in Informal Sector in an Industry

Industry Tariff (Male and Pre Liberalization)	**-0.0497*** (-4.13)
Industry Tariff (Female and Pre Liberalization)	**-0.0986*** (-4.49)
Industry Tariff (Male and Post Liberalization)	**-0.4124*** (-5.96)
Industry Tariff (Female and Post Liberalization)	**-0.4817*** (-5.43)
Demographic & Socioeconomic Controls	Yes
Industry Fixed Effects	Yes
State Fixed Effects	Yes
Time Fixed Effects	Yes
Observations	39083

t-statistics are reported in parenthesis, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

POOLED CROSS SECTIONAL REGRESSION ESTIMATES AT THE INDIVIDUAL LEVEL –INFORMAL SECTOR GENDER SEGREGATION

Dependent Variable:	(3)	(4)	(5)
Probability of Working in Informal Sector in an Industry			
Female Dummy	0.2332***	0.2583***	0.1845***
	(4.49)	(4.40)	(3.76)
Industry Tariff	**-0.1608*****	**-0.1608*****	**-0.2154*****
	(-4.68)	(-4.92)	(-3.47)
Female Dummy *Industry Tariff	**-0.1220****	**-0.1220****	-0.0429
	(-2.05)	(-2.04)	(-0.80)
Postlib Dummy* Female Dummy		-0.0249	0.0489
		(-0.56)	(0.65)
Female Dummy*Industry Tariff *Postlib Dummy			**-0.0792****
			(-1.95)
Observations	39083	39083	39083

All regressions Demographic & Socioeconomic controls, Industry Fixed Effects, State Fixed Effects and Time Fixed Effects.

t-statistics are reported in parenthesis, *** p<0.01, ** p<0.05, * p<0.1

RESULTS

❑ Relatively more reduction in occupational gender segregation index in those regions and districts which saw greater trade liberalization

  10% point fall in trade protection level leads to a decline of 4.3% in occupational gender segregation index.

❑ Fall in gender differential in probability of working in a male dominated occupation due to trade liberalization

  10% point fall in industry tariff level leads to a 1.7% increase in the women's probability of working in a male dominated occupation.

❑ Rise in gender differential in probability of working in the Informal Sector due to trade liberalization

  10% point fall in industry tariff level leads to a 2.9 % increase in the women's probability of working in the informal sector in the industry.

CONCLUSION

❑ Trade liberalization influences gender segregation in the labor market

- ▪ Higher the trade liberalization in a region/district/industry, lower is the occupational gender segregation
- ▪ Increase in segregation of women into the informal sector of the labor market with greater trade liberalization

❑ Relative female employment in different occupations increases

❑ Quality of female employment i.e. types of jobs, earnings and benefits etc. and how the jobs with some positive qualities are distributed among men and women may deteriorate

THANK YOU