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## **Competitiveness: A Blessing or a Curse for Gender Equality?**

**Yana van der Muelen Rodgers**

*Selected Paper prepared for presentation at the International Agricultural Trade Research Consortium's (IATRC's) 2015 Annual Meeting: Trade and Societal Well-Being, December 13-15, 2015, Clearwater Beach, FL.*

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# **Competitiveness: A Blessing or a Curse for Gender Equality?**

**Yana van der Meulen Rodgers  
Rutgers University**

*International Agricultural Trade Research Consortium  
Theme Day Program  
December 13, 2015*

# Organization of Presentation

- Introductory Remarks
- Theoretical Model
- Data Description and Methodology
- Gender Equality and Competitiveness: Evidence
  - ❖ India
  - ❖ Taiwan & South Korea
- Take-Home Points and Gender-Aware Policies

# Introductory Remarks

- Greater openness to international trade has brought mixed blessings to women in developing and industrialized countries
- Developing countries: have seen a feminization of foreign exchange earnings through female-labor intensity of export production
- Trade has brought employment gains for women, but:
  - ❖ Often low wage jobs with unfavorable working conditions in LDCs due to intense price competition
  - ❖ Few opportunities to move up the ladder to higher-wage, skilled jobs or to supervisory positions
  - ❖ Firms turning more to flexible and informal work arrangements
  - ❖ Tendency to sub-contract to smaller-scale, home-based operations

# Introductory Remarks

- Some transition and industrialized economies have seen job losses for women and growing gender wage gaps as a result of trade
  - ❖ Shift to higher-tech and capital intensive production has led to substitution away from female labor
  - ❖ Off-shoring of information, communications, and technology services to lower-wage economies also contributed to gender wage gaps and employment losses for women
- Yet gender inequality can also stimulate export-led growth
  - ❖ Relatively low female wages contribute to lower labor costs
  - ❖ Helps to raise investment and improve export performance
  - ❖ Growth in foreign exchange earnings helps finance greater capital goods and intermediate inputs
  - ❖ Contributes to productivity and economic growth

# Introductory Remarks

- Numerous countries have adopted trade liberalization resulting in higher levels of competition
  - ❖ Reductions in non-tariff barriers, fewer export restrictions, tariff cuts across industries
- Greater competition through trade liberalization may have affected wages of men and women differently
- Increased participation in global economy pressures firms to cut costs
  - ❖ If discrimination is costly, increased competition reduces incentives for employers to discriminate
    - Expect to see smaller pay differentials

# Introductory Remarks

- Objective: present and test a theoretical model of competition and industry concentration that incorporates firms' "tastes for discrimination" (Becker 1971)
- Variation in rates of liberalization across industries→ good opportunity for empirical estimation
- Identification strategy: effects from trade competition should be more pronounced in concentrated sectors
  - ❖ employers can use rents to indulge taste for discrimination
  - ❖ any reduction in wage gap in concentrated industries should be attributed to international trade, not domestic forces



# Introductory Remarks

- Test theoretical model with data from India, Taiwan, and S. Korea
  - ❖ Household and labor force survey data, merged with data on trade, output, and industry structure, at industry level
- Contribution to literature
  - ❖ Few econometric studies on competition, trade, and gender wage gap, with conflicting results
- This research adds new evidence to these debates, grounded in a theoretical model of trade competition and wage inequality

# Theoretical Model

- Neoclassical model of foreign competition, market power, and wage inequality (Borjas and Ramey 1995) used as a foundation
  - ❖ Obtain expression for equilibrium wage for workers in concentrated sector
  - ❖ Incorporate “taste for discrimination” (Becker 1971) to model distribution of equilibrium wages for men and women in concentrated sector
  - ❖ Derive expression for gender wage differential
  - ❖ Under certain conditions, international trade competition can cause male-female wage gap to widen
  - ❖ Introduces non-neoclassical elements (lower bargaining power and lower-status jobs for women) into a neoclassical framework

# Theoretical Model

- Set-up: domestic economy has 2 sectors
  - ❖ Competitive and concentrated
  - ❖ Assume no wage differential btw men and women in competitive sector
- Next step: model distribution of wages for male and female workers in concentrated sector
  - ❖ Males and females substitutes in production, but each firm has a “taste for discrimination” against female workers
  - ❖ Firms must be willing to pay in order to indulge this taste → male workers paid a relatively higher wage (higher by  $1+d$ , where  $d$ =discrimination coefficient;  $d \geq 0$ )
  - ❖ Firms hire less than the profit-maximizing number of females
  - ❖ For  $d=0$ , males and females get equal share of rents; for  $d>0$ , males get larger share of rents

# Theoretical Model

- Final step: define  $\psi$ , the gender wage differential in concentrated sector
  - ❖ Function of  $d$  and volume of net trade ( $v$ )
  - ❖  $\partial\psi/\partial v < 0$ , so as trade increases, gender wage gap narrows
  - ❖  $\partial\psi/\partial d > 0$ , so gender wage gap widens with an increase in the taste for discrimination parameter
    - Why might  $d$  rise? Following reasoning in Rosen (2003), firms with a lower  $d$  are less profitable and exit the market with competition from trade, while firms with a higher  $d$  remain in the market and protect male workers at expense of female workers with relatively high wage payments and more favorable employment decisions
  - ❖ Net effect on gender gap is ambiguous and depends on the changes in  $v$  and  $d$ ; if  $d$  is initially small, the net effect could be a widening in the wage gap

# Data Description

- Used repeated cross-sections of individual-level surveys
  - ❖ India: National Sample Survey Organization (NSSO)
  - ❖ Taiwan: Manpower Utilization Survey (MUS)
  - ❖ S. Korea: Occupational Wage Survey (OWS)
- Sample: all regular wage employees of working age (15-60) with positive weekly cash wages
- Used to construct residual gender wage gaps by industry in each country
  - ❖ Oaxaca-Blinder procedure: divides overall wage gap into portion explained by measured characteristics and a residual commonly (with caveats) attributed to discrimination

# Data Description

- Combined data on wage gaps with industry-level data, matched by industry codes:
  - ❖ Exports and imports: World Bank's Trade, Production, and Protection Database (India); ANU's International Economic Data Bank (Taiwan \* S. Korea)
    - Used to construct  $x/\text{output}$ ,  $m/\text{output}$ , and  $(x+m)/\text{output}$
  - ❖ Output: Annual Survey of Industries (India); National Income Accounts (Taiwan); UNIDO (S. Korea)
  - ❖ Domestic concentration: Annual Survey of Industries (India); Industrial Census (Taiwan & S. Korea)
    - ❖ 1-# enterprises/output (India, Taiwan, S. Korea)
    - ❖ Pareto function estimates and k-firm concentration ratios (Taiwan, S. Korea)

# Methodology

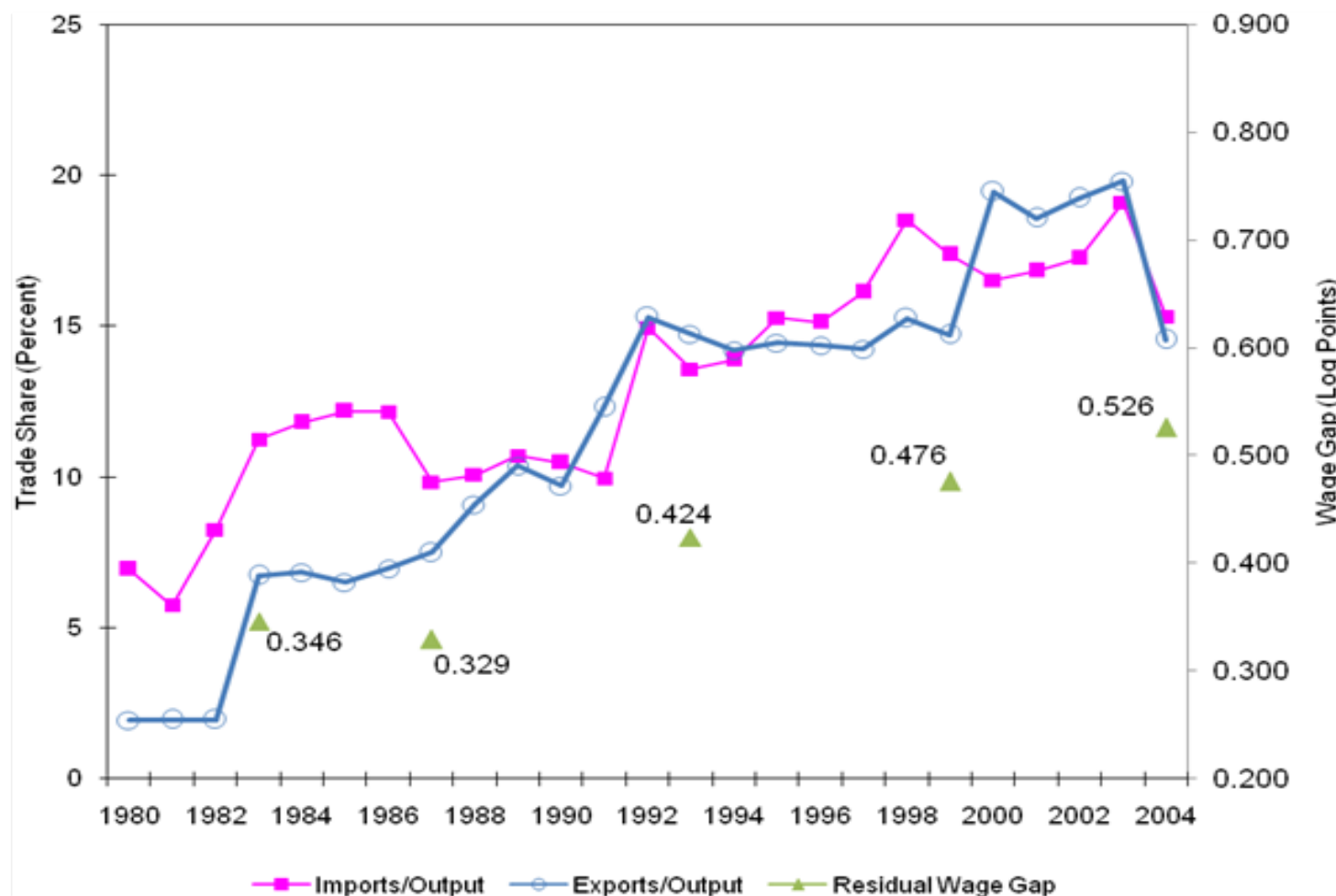
- Empirical strategy: Test relationship between male-female residual wage gap by industry over time, and:
  - ❖ Domestic concentration by industry
  - ❖ Trade share by industry
  - ❖ Post-liberalization dummy variable
  - ❖ Interaction between concentration, trade share, and post-liberalization dummy
- Focus on coefficient on the three-way interaction term as representing marginal effect of more international trade competition in concentrated industries after liberalization

# Evidence for India

- Series of shocks in 1990-91 led to stand-by assistance from IMF in Aug. 1991
- SSA policies included reduction in tariff levels across sectors, with subsequent waves of reform in '94, '97
- Imports and exports responded with strong growth (next figure)
- Superimposed on figure: residual gender wage gaps
- In midst of trade liberalization, residual wage gap increased



# Evidence for India



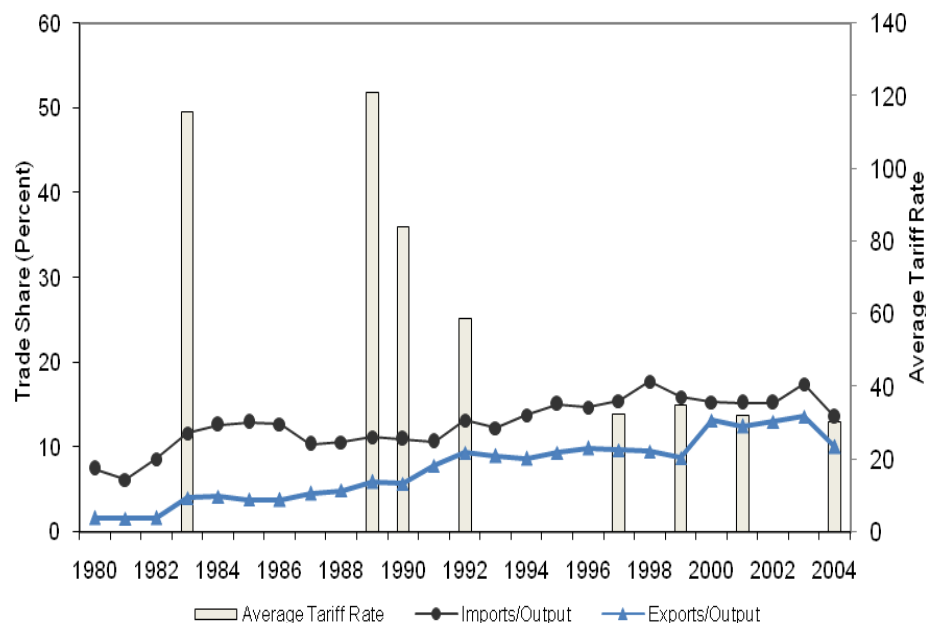
Source: Menon and Rodgers (2009)

# Evidence for India

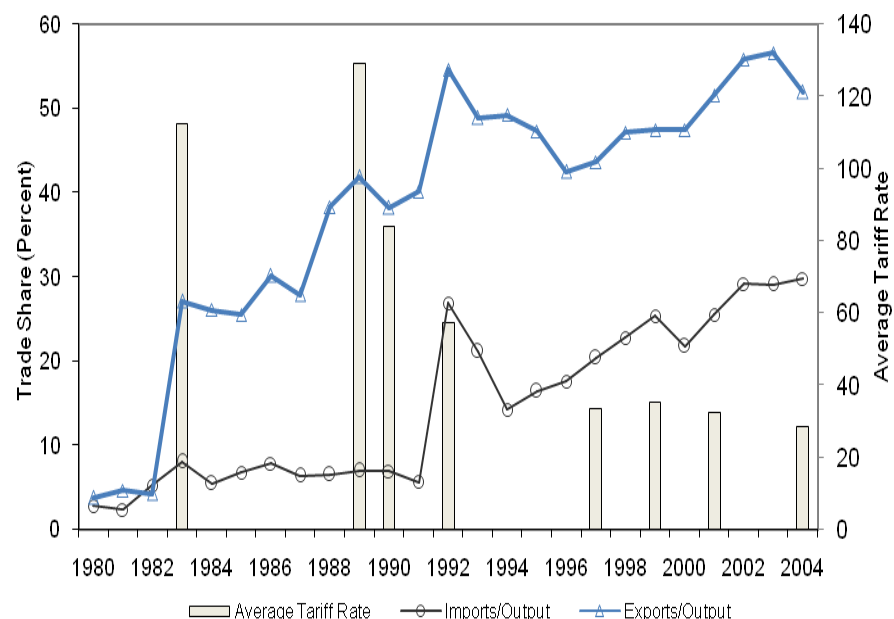
- Industries classified according to index of domestic concentration
  - ❖ Higher values correspond with greater concentration (fewer establishments)
  - ❖ Most concentrated: petroleum refinery, industrial chemicals, iron and steel
  - ❖ Least concentrated: wood products, furniture, tobacco, pottery
- Less concentrated industries opened more to trade after trade policy reforms
- Data on tariffs show drastic cuts post-1990 in across industries

# Evidence for India: Average Trade Ratios and Tariff Rates by Levels of Domestic Concentration

## More Concentrated Industries



## Less Concentrated Industries



# Evidence for India

- Test 6 specifications with OLS
  - ❖ Variations by measurement of time (post-liberalization vs. time trend) and by measurement of trade share ( $x/\text{output}$ ,  $m/\text{output}$ , and  $(x+m)/\text{output}$ )
- Greater trade openness over time in more concentrated industries associated with higher male-female residual wage gaps
  - ❖ Result statistically significant across 4/6 models (all but specifications with  $m/\text{output}$ )
  - ❖ Robust to estimations with fixed effects to control for time-invariant, industry-specific characteristics

# Evidence for India

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Interaction	0.197**	0.054	0.222*	0.496*	0.214	0.730*
Term	(0.099)	(0.106)	(0.123)	(0.260)	(0.297)	(0.399)

Models 1 & 4: X/output

Models 2 & 5: M/output

Models 3 & 6: (X+M)/output

Models 1-3: Time specified as trend term

Models 3-6: Time specified as post-liberalization dummy

# Evidence for Taiwan and S. Korea

- Both economies known for:
  - ❖ High degree of outward orientation and export-oriented growth
  - ❖ Trade growth accompanied by rapid structural transformation
  - ❖ Active role of their governments in guiding development and using subsidies, tax privileges, and trade policies to promote exports
- Taiwan has relatively more competitive industrial structure with numerous SME's; S. Korea's industrial structure dominated by very large firms
- During period of analysis, Taiwan's trade openness increased while it stagnated and even declined somewhat in S. Korea

# Evidence for Taiwan and S. Korea

- Most concentrated industries: chemical materials, petroleum, coal products, iron & steel, and electronic products
- Least concentrated industries: fabricated metal products, wood products, and furniture
- Regression results show that in both economies, greater trade openness associated with larger residual gender wage gaps
  - For Taiwan, holds mostly for imports
  - For S. Korea, holds mostly for exports

# Evidence for Taiwan & S. Korea

	Model 1	Model 2	Model 3	Model 4
<b>Taiwan</b>				
Interaction with X/output	11.07** (3.72)	9.41** (3.68)	49.85** (17.86)	131.35** (43.59)
Interaction with M/output	8.64 (6.04)	11.77* (5.91)	25.90 (15.01)	78.42 (55.95)
<b>S. Korea</b>				
Interaction with X/output	-1.36 (3.80)	3.03 (4.18)	6.36 (15.94)	0.50 (2.78)
Interaction with M/output	7.05 (6.34)	15.09** (6.41)	21.46* (10.45)	6.30 (4.97)

Models 1-4 vary with specification of Concentration: (1)  $C$  = Pareto-function estimates, dummy; (2)  $C$  = # enterprises/output, dummy; (3)  $C$  = Pareto-function estimates, continuous; and (4)  $C$  = # enterprises/output continuous.



# Take-Home Points

- Summary: competition from international trade associated with increased wage discrepancies between men and women
  - ❖ Identification strategy controls for domestic concentration and worker characteristics
- Results consistent with theoretical model under the condition of an increasing taste for discrimination
  - ❖ Declining rents post-liberalization put pressure on firms to cut costs; women bore the brunt of these cuts

# Take-Home Points

- Female workers relatively vulnerable in the global market place:
  - ❖ have weak bargaining power, low workplace status→ less able to negotiate for higher pay
  - ❖ employer practices favor male workers
  - ❖ lack of enforcement of anti-discrimination labor standards
- Policy implications of this research and other studies on gender and trade competition center on gender-aware policies with links to trade-related outcomes

## Gender-Aware Policies

1. Use positive trade incentives to improve working conditions in developing countries, similar to U.S. trade agreement with Cambodia
2. Direct spending on infrastructure: Reduces costs of doing business and care burden
  - ❖ **Physical infrastructure:** Roads, transportation, green energy research
  - ❖ **Social infrastructure:** Education, child care, health care, training for young and older adults, food and housing support
  - ❖ These investments more than pay for themselves because they raise productivity, business investment, job growth, and tax revenues

## Gender-Aware Policies

3. Mobilize resources for investment in human capital. Examples include:
  - ❖ Promote skill development through better education and vocational training
  - ❖ In developing countries: support small-scale farmers with extension services to improve productivity, and fund conditional cash transfer programs
  - ❖ Requires a new approach to fiscal budgeting recognizing that returns from human capital investments are realized over the long-run
4. Enforcement of anti-discrimination legislation in pay and employment