

MIT OpenCourseWare  
<http://ocw.mit.edu>

## 14.771 Development Economics: Microeconomic issues and Policy Models

Fall 2008

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.

# Gender Discrimination

Esther Duflo

14.771

# Outline

- ① Measuring gender discrimination
- ② What explains/affects gender discrimination

## Measuring Gender Discrimination

Are women treated differently *because they are women*, either as a consequence of taste, statistical discrimination, or (where the word discrimination may not be pertinent) because the returns to investing in girls/women is systematically lower (independently of her abilities).

- 1 Differences in outcomes by gender
- 2 Differences in inputs by gender
- 3 “Experimental” Approach
- 4 Implicit Association Tests

## Difference in outcomes by Gender: mortality

- “Missing Women” (Sen, 1986)
- Ratio of women to men in 1986: Europe: 1.05, SSA 1.022; North Africa: 0.96; China: 0.94; India 0.93
- “Missing woman”: woman who is not alive but should be:  $\text{number of men} * 1.022 - \text{number of women}$
- Intuition: missing women are either not born (selectively aborted) or have died earlier than men, which should reflect miss-treatment.

- Central issue with this approach (or any that look at outcomes): are there other reasons that explain why women are less likely to be born or die earlier in South Asian Countries relative to Sub-Saharan Africa.
- Two examples:
  - Are girls more likely to be born if mother has hepatitis (Oster)?( the answer turn out to be no)
  - Could the results be explained mainly by the fact that girls tend to live in larger family (due to stopping rules) (Jensen)–Jury still out on that one.
- Part of the solution to this problem will be to look at how mortality changes in responses to a situation

## Other outcomes

- Education
- Labor force participation
- Wages
- Political participation

## Inputs

- Expenditures on girls vs boys
- In every day life: food expenditures.
- Central problems with this approach:
  - It is difficult to measure what individual people eat in the households!
  - Girls may “need” less than boys
- Deaton: “Inferential Approach” meant to solve problem 1
  - Estimate the “cost” of a girls or a boy in term of adults goods.
  - How much money to I need to give to a household to keep their consumption of and adult good unchanged?
  - $\Pi$ -Ratio :  $\pi = \frac{\frac{\partial q_i}{\partial n_j}}{\frac{\partial q_i}{\partial x}}$
  - where  $q_i$  is consumption of adult good  $i$ ,  $n_j$  is number of kids of gender and age group  $j$  and  $x$  is total outlay
  - **Results** No significant differences between girls and boys for Cote d'Ivoire (original paper)... or Pakistan (further work).
- When child is faced with a crisis: are parents less likely to hospitalize a child who is sick.

## Experimental Approach

- Place people in front of two situations, otherwise similar, and ask them what they would do/how they judge the person (lab or field).
- Audit studies: how are women treated when they try to purchase a car?
- Bertrand-Mullainathan: Send resumes to firms (with black or white sounding names)

## Experimental Approach (2)

- “Goldberg paradigms” experiments: place people in front of a vignette/speech and ask them to judge the person
- Beaman, Chattopadhyay, Duflo, Pande: Prejudice against female leaders in India.
- Respondent listens to a speech
- Speech is either read by a man or a woman; or vignette is presented for female pradhan name.
- Respondent must rate the speech along several dimensions
- **Results** People who have never been exposed to female leaders rank the speech/vignette much lower when the pradhan in the speech or vignette is a woman

## Implicit Association Tests

- A method developed by psychologists (Banaji, Nosek, Greenwald, etc..)  
<https://implicit.harvard.edu/implicit>
- A computer based test relies on the assumption that, if a participant highly associates two concepts, she will accomplish a categorization task quicker. Detect an automatic association (implicit stereotype) by comparing response latency for different pairs of concepts
- Beaman et al. First IATs that have been done in a field setting in a low income country: used audio stimuli and a joystick
- Beaman et al. implemented three IATs: (i) association between men and women generally and concepts of good and bad; (ii) association between male and female politicians and concepts of good and bad; (iii) attitudes towards gender and domestic versus leadership activities

## Implicit Association Test

- We are interested in the difference in the speed with which an individual completes a double categorization module when the classification on the screen is stereotypic versus non-stereotypic
- Each test block consists of stimuli for each of the four categories represented on the screen. We randomized over whether an individual first received a stereotype or non-stereotype block
- We construct the “D-measure”: difference in time taken to complete the “stereotypic block” and the “non-stereotypic” block.

## Example: Male/Female Politicians and Good/Bad Stereotypic Block

Images removed due to copyright restrictions.

Left: Photograph of female politician and drawings of faces with stern expressions.

Center: Photograph of two women.

Right: Photograph of male politician and drawings of faces with pleased expressions.\*

## IAT In Action

Photograph of people taking implicit association test (IAT) removed due to copyright restrictions.

# Implicit Association Test: Stimuli

- IAT 1: Male and Female Names and Good/Bad Words
  - Good words: good, nice, fun, happiness, love, clean, sweet, heaven
  - Bad words: bad, mad, sorrow, inauspicious, sad, dirty, spoiled, hell
  - Female names: Geeta, Minoti, Anjali, Rekha, Jharna, Minu, Rupa, Basanti
  - Male names: Badal, Shyamol, Saurabh, Gopal, Anup, Ashok, Tapan, Raju
- IAT 2: Pictures of Male and Female Leaders and Good/Bad Words

# Perception of Female Ability to Lead: IAT

- IAT 3: Male and Female Names and Domestic and Leadership Activities
  - Domestic activities: Eating puffed rice, Listening to the radio, Sleeping, Taking rest, Clay modelling, Harvesting, Caring for animals, Threshing rice
  - Leadership words: Gram Pradhan, Public speaking, Govern, Chairperson, Lobbying, Leader, Campaigning, Taking bribes
  - Pictures of Men and women are shown doing activities which should invoke the concept of politicians and leaders, such as speaking on a microphone or in front of a group

## Example: Gender and Leadership/Domestic Activities

### Stereotypic Block

Images removed due to copyright restrictions.  
Left: photographs of woman and outdoor scene.  
Center: speech bubble with the name Ashok.  
Right: photographs of man and building."

## What explains (and affects) gender discrimination?

- Extreme situation for the household
  - Back to Das Gupta and Ray model: when things are very tight, households may need to focus resources on one child, may be preferably a boy.
  - Rose: Relative increase in girls' mortality in period of drought, especially for landless households [▶ Table](#)

## Differential Returns to investment

- Foster and Rosenzweig (2001): when there is greater technological progress outside the village, we observe relative improvement in girls survival rate, the opposite is true if there is technological project inside the village [▶ Table](#)
- Qian: tea in China
  - Women have comparative advantage in tea
  - Men have comparative advantage in orchard
  - When households were given the right to cultivate cash crops, in counties that produced tea, relative girls mortality improved; in counties that produced orchard, it worsened [▶ Graph](#) [▶ Table](#)
  - Explanation: it could be either differential returns (investment) or better bargaining power for the mother. Difficult to distinguish

## Exposure

- Persistence of discrimination against women (especially in education; jobs; leadership) may be the result of lack of exposure: people may statistically discriminate against women because they have never seen women in action.
- Beaman et al see how measure of discrimination (IAT, responses to vignettes) change after voters have been exposed to a women due to a mandated representation program
- Village council randomly assigned to be “reserved” for female leaders
- In “reserved” villages, only women can be elected as village head.
- Results: ▶ Taste IAT does not change with exposure. But statistical discrimination is completely erased for men (and not for women) ▶ Stereotypical IAT ▶ Speech and Vignettes

## Outlay Equivalence Ratios for Adult Goods, Côte d'Ivoire, 1985

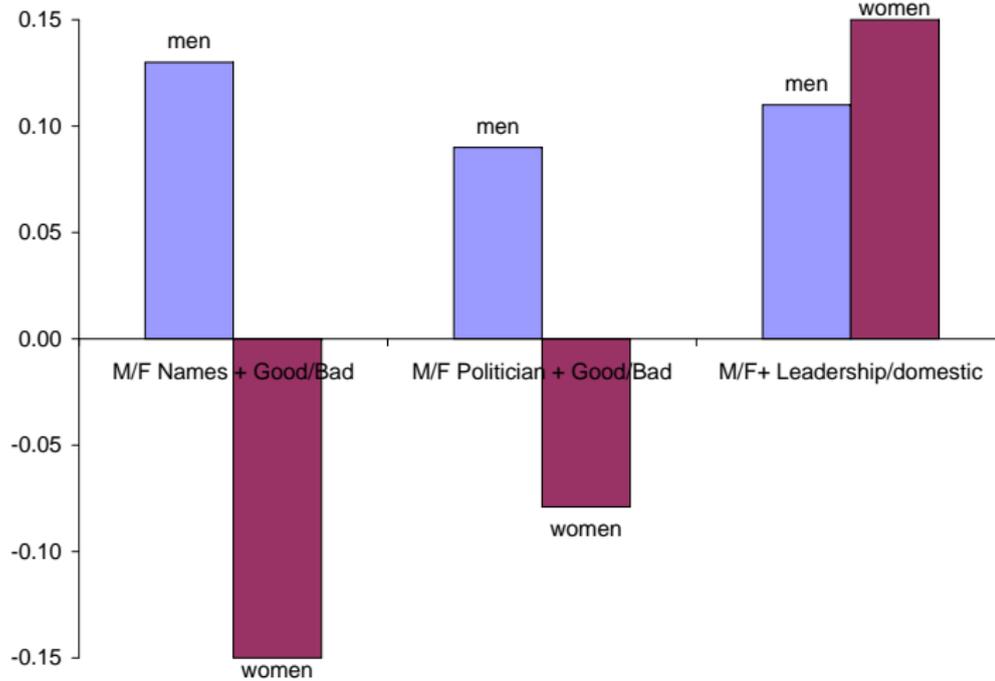
<i>Gender and age<sup>a</sup></i>	<i>Adult clothing</i>	<i>Adult fabric</i>	<i>Adult shoes</i>	<i>Alcohol</i>	<i>Tobacco</i>	<i>Meals out</i>	<i>Entertainment</i>	<i>All adult goods</i>
<i><math>\pi</math>-ratios</i>								
<i>Children</i>								
M 0-4	-0.01	0.37	-0.23	-0.58	-0.89	0.27	-0.42	-0.12
M 5-14	-0.67	-0.35	-0.21	-0.69	-0.71	-0.37	-0.41	-0.49
F 0-4	-0.20	0.41	-0.24	-0.33	-0.45	-0.21	-0.30	-0.22
F 5-14	-0.39	-0.12	-0.45	-0.39	-0.45	-0.62	-0.37	-0.48
<i>Adults</i>								
M 15-55	1.30	0.79	1.63	-0.19	1.88	0.91	0.74	0.81
M > 55	-0.74	0.33	-0.28	1.45	1.06	-0.47	-0.98	0.16
F 15-55	0.32	-0.14	0.17	-0.39	-0.41	-1.33	-1.07	-0.71
F > 55	-1.14	-0.97	-0.69	-1.24	-1.29	-1.33	-0.99	-1.21
<i>Standard errors</i>								
M 0-4	0.46	0.35	0.33	0.38	0.74	0.32	0.40	0.20
M 5-14	0.32	0.25	0.23	0.27	0.52	0.22	0.28	0.14
F 0-4	0.43	0.33	0.30	0.36	0.69	0.30	0.37	0.19
F 5-14	0.33	0.25	0.23	0.27	0.53	0.23	0.29	0.14
M 15-55	0.31	0.22	0.23	0.22	0.54	0.20	0.25	0.13
M > 55	0.45	0.35	0.32	0.39	0.75	0.31	0.39	0.20
F 15-55	0.27	0.20	0.19	0.22	0.43	0.19	0.23	0.11
F > 55	0.53	0.40	0.37	0.44	0.85	0.37	0.46	0.23

*a. M = Male; F = Female.*

*Source: Deaton (1987).*

	Average Coefficients							
	Average Effect		Pradhan				Cares about Villagers' Welfare	
			Perform Duties Well		Is Effective			
	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
<b>Panel A</b>								
Female Pradhan	-0.055 (0.027)	-0.035 (0.031)	-0.076 (0.036)	-0.043 (0.042)	-0.047 (0.032)	-0.029 (0.034)	-0.055 (0.033)	-0.003 (0.032)
Female Pradhan * Ever Reserved	0.096 (0.037)	0.020 (0.039)	0.121 (0.049)	0.026 (0.051)	0.084 (0.042)	0.022 (0.043)	0.102 (0.043)	0.008 (0.041)
Test: Female Pradhan + Female Pradhan * Ever Reserved	0.041 (0.024)	-0.014 (0.023)	0.045 (0.032)	-0.018 (0.029)	0.037 (0.027)	-0.006 (0.026)	0.047 (0.027)	0.005 (0.025)

## Implicit Associations



Logits Dependent Variable: Girl						
Sample	Pooled		Landed		Landless	
	All (1)	No floods (2)	All (3)	No floods (4)	All (5)	No floods (6)
RF shock (year of birth)	0.26 (2.6)	0.39 (2.4)	-0.02 (0.1)	0.17 (0.9)	0.89 (3.5)	0.92 (2.0)
RF shock (age 1)	0.39 (2.6)	0.57 (3.5)	0.40 (2.2)	0.54 (2.5)	0.11 (0.23)	0.63 (1.5)
RF shock (age 2)	0.27 (1.5)	0.09 (0.4)	0.09 (0.4)	-0.22 (0.9)	0.73 (1.8)	0.75 (1.4)
RF shock (age 3)	0.11 (0.7)	0.03 (0.2)	0.10 (0.5)	-0.06 (0.3)	0.70 (1.8)	0.60 (1.4)
RF shock (age 4)	0.20 (1.0)	0.29 (1.4)	0.28 (1.3)	0.13 (0.5)	0.33 (1.0)	0.59 (1.4)
RF shock (age 5)	0.11 (0.8)	0.17 (1.1)	0.11 (0.6)	0.06 (0.3)	0.13 (0.4)	0.40 (1.2)
Land owned	0.001 (1.5)	0.002 (1.8)	0.002 (1.5)	0.002 (1.9)		
Mother educated	0.25 (2.1)	0.31 (2.1)	0.23 (1.5)	0.27 (1.6)	0.39 (1.5)	0.44 (1.3)
Head educated	-0.28 (2.5)	-0.38 (3.3)	-0.32 (2.3)	-0.50 (3.2)	-0.16 (0.7)	-0.16 (0.7)
Educational institution	-0.28 (2.5)	-0.30 (2.5)	-0.13 (1.1)	-0.17 (1.3)	-1.2 (3.4)	-0.99 (3.0)
Health institution	0.19 (1.6)	0.21 (1.6)	0.14 (0.9)	0.22 (1.3)	0.38 (2.1)	0.25 (1.2)
Factor1	0.25	0.25	0.25	0.25	0.25	0.25
Factor2	0.83	0.82	0.82	0.80	0.85	0.86
N	2,297	1,926	1,722	1,418	575	508

# Foster and Rosenzweig (2001)

## Determinants of the Difference in Mortality Rates of Boys and Girls: Children Aged 0-4

<i>Variable/Estimation procedure</i>	<i>OLS: 1971</i>	<i>FE-IV: 1971-82</i>	<i>FE-IV: 1971-82</i>	<i>FE-IV: 1971-82</i>
Log of land price - village	.0944 (1.82)	.00238 (0.08)	-.373 (2.37)	-.415 (2.41)
Mean log of land price - marriage market (Radius=67Km)	-	-	.343 (2.09)	.434 (2.20)
Mean log of land price - marriage market (Radius>67, <314Km)	-	-	-	-
Mean log of land price - marriage market (Radius>314, <1000Km)	-	-	-	-
Mean log of yield - village	-.0292 (1.60)	-.0105 (0.36)	.00794 (0.08)	.0364 (0.32)
Mean log of yield - marriage market	-	-	-.0115 (0.10)	-.0466 (0.36)
Mean household wealth ( $\times 10^{-5}$ ) - village	-.0838 (1.48)	.00740 (0.10)	.104 (0.98)	.197 (1.21)
Mean household wealth ( $\times 10^{-6}$ ) - marriage market	-	-	-	-.247 (1.04)
Proportion mother literate - village	.0918 (1.94)	.181 (2.79)	.0418 (0.38)	.0312 (0.22)
Proportion mother literate - marriage market	-	-	-	-.0169 (0.11)

Qian (2008)

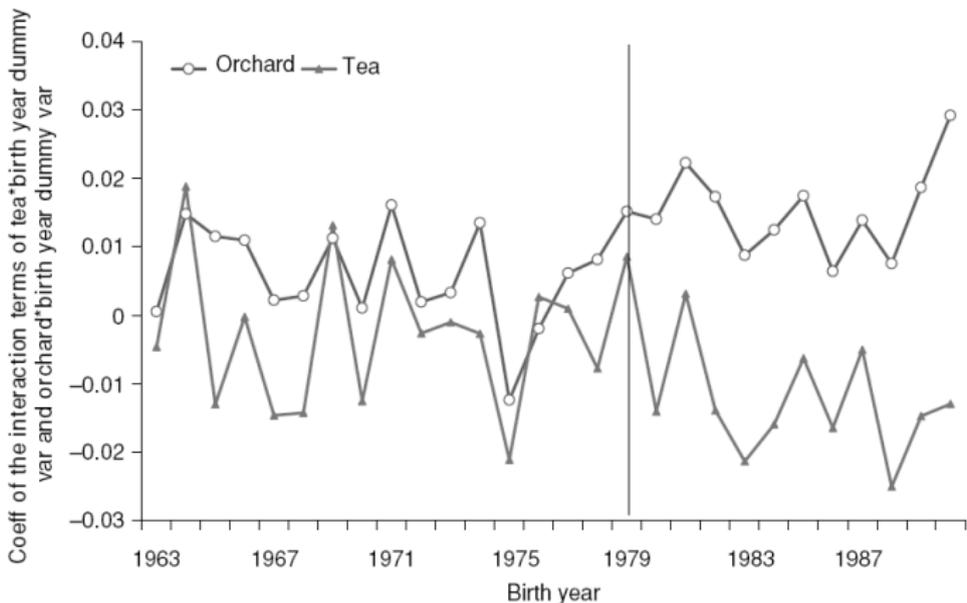


FIGURE V

The Effect of Planting Tea and Orchards on Sex Ratios

Coefficients of the interactions of birth year  $\times$  amount of tea planted and birth year  $\times$  amount of orchards planted controlling for year and county of birth FEs.

Courtesy of MIT Press. Used with permission.

TABLE III  
 OLS AND 2SLS ESTIMATES OF THE EFFECT OF PLANTING TEA AND ORCHARDS ON SEX  
 RATIOS CONTROLLING FOR COUNTY LEVEL LINEAR COHORT TRENDS

	Dependent variables					
	Fraction of males			Tea $\times$ post	Fraction of males	
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	1st	IV	IV
Tea $\times$ post	-0.012 (0.007)	-0.013 (0.006)	-0.012 (0.005)		-0.072 (0.031)	-0.011 (0.007)
Orchard $\times$ post	0.005 (0.002)					
Slope $\times$ post	-0.002 (0.002)			0.26 (0.057)		
Linear trend	No	No	Yes	Yes	No	Yes
Observations	28,349	37,756	37,756	37,756	37,756	37,756

*Notes.* Coefficients of the interactions between dummies indicating whether a cohort was born post-reform and the amount of tea planted in the county of birth. All regressions include county and birth year fixed effects and controls for Han, and cashcrop  $\times$  post. All standard errors are clustered at the county level. In column (1), the sample includes all individuals born during 1970–1986. In columns (2)–(6), the sample includes all individuals born during 1962–1990. Post = 1 if birthyear > 1979. Data for land area sown are from the 1997 China Agricultural Census.

Courtesy of MIT Press. Used with permission.

Table 3: Implicit Association tests

	Male/Female Names and Good/Bad IAT		Male/Female Politician and Good/Bad IAT	
	Male (3)	Female (4)	Male (5)	Female (6)
<b>Panel A</b>				
Ever Reserved	-0.001 (0.032)	0.006 (0.042)	-0.008 (0.034)	-0.015 (0.037)
<b>Panel B</b>				
First Reserved 2003	-0.039 (0.042)	0.020 (0.051)	-0.005 (0.049)	0.010 (0.049)
Reserved 1998 and 2003	0.039 (0.041)	0.044 (0.068)	0.004 (0.052)	-0.008 (0.052)
Only Reserved 1998	0.011 (0.047)	-0.048 (0.051)	-0.020 (0.044)	-0.043 (0.051)
Test: 2003 = both 1998 and 2003 = 1998	0.301	0.299	0.908	0.636
Mean of Never Reserved Sample	0.134 (0.025)	-0.157 (0.026)	0.093 (0.027)	-0.079 (0.025)
N	510	408	554	510

Table 4: Implicit Association Test Measure of Implicit Bias and Ladder

	Leadership/Domestic and Male/Female IAT	
	Male (7)	Female (8)
<b>Panel A</b>		
Ever Reserved	-0.070 (0.030)	0.022 (0.041)
<b>Panel B</b>		
First Reserved 2003	-0.089 (0.040)	0.104 (0.053)
Reserved 1998 and 2003	-0.024 (0.045)	-0.079 (0.067)
Only Reserved 1998	-0.080 (0.039)	-0.021 (0.050)
Test: 2003 = both 1998 and 2003 = 1998	0.390	0.032
Mean of Never Reserved Sample	0.110 (0.021)	0.150 (0.027)
N	477	357