

# Powerful Women: Does Exposure Reduce Bias? <sup>a</sup>

Applied Microeconomics | 2022 Spring

---

Yu-Hsin Ho

May 23, 2022

Department of Economics, National Taiwan University

---

<sup>a</sup>Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., & Topalova, P. (2009). Quarterly Journal of Economics, 124(4), 1497-1540

# Introduction

---

General discussion around gender quota policy:

1. **Empathy/Information Provision:** exposure improves understanding, updating prior belief to reduce statistical discrimination
2. **Backlash:** "reverse discrimination", threatened status for privileged group

# Identification: Female Quota in Indian Local Councils

*Panchayat*: District > Block > **Village** (*Gram Panchayats, GP*)

- 1993 Constitutional Amendment
  - 1/3 councilor seats reserved for female
  - 1/3 GPs' chief councilor (*Pradhan*) reserved for female, chosen randomly.

## Sample

- Sample: GPs in West Bengal
  - Active elections long before the amendment.
- Electoral results from 1998, 2003, 2008
- Supplemented by survey and experimental data

## Exogenous Treatment: **Reservation**

- (1) Election → Electoral Outcomes: Current and prospect
- (2) Survey → Evaluation of Female Leader's Effectiveness
- (3) Experiments → Gender Bias & Stereotype

TABLE I  
VILLAGE-LEVEL RANDOMIZATION CHECK

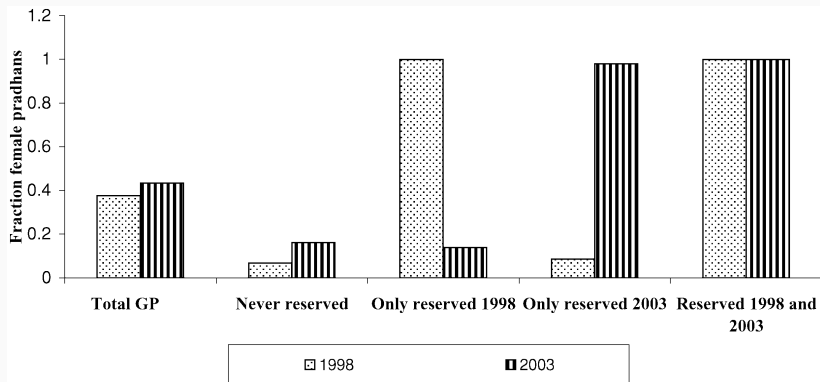
| Census variable                     | Only reserved<br>2003<br>(1) | Reserved<br>1998 and<br>2003<br>(2) | Only reserved<br>1998<br>(3) | Never reserved<br>(4) | Diff: (1)<br>and (2)<br>(5) | Diff: (3)<br>and (4)<br>(6) |
|-------------------------------------|------------------------------|-------------------------------------|------------------------------|-----------------------|-----------------------------|-----------------------------|
| Total population                    | 1,318<br>(1318)              | 1,197<br>(1295)                     | 1,267<br>(1418)              | 1,362<br>(1555)       | -102.279<br>(178.537)       | -78.373<br>(189.410)        |
| Fraction SC/ST population           | 0.432<br>(0.281)             | 0.502<br>(0.256)                    | 0.450<br>(0.235)             | 0.471<br>(0.265)      | 0.004<br>(0.056)            | -0.001<br>(0.033)           |
| Average household size              | 5.436<br>(0.612)             | 5.222<br>(0.449)                    | 5.362<br>(0.571)             | 5.497<br>(2.454)      | 0.137<br>(0.093)            | -0.059<br>(0.135)           |
| Sex ratio under 6                   | 1.093<br>(0.590)             | 1.034<br>(0.276)                    | 1.046<br>(0.218)             | 1.036<br>(0.226)      | 0.206<br>(0.113)            | 0.015<br>(0.025)            |
| Literacy                            | 0.387<br>(0.119)             | 0.351<br>(0.129)                    | 0.391<br>(0.121)             | 0.373<br>(0.137)      | 0.014<br>(0.032)            | 0.021<br>(0.017)            |
| Fraction women literate             | 0.287<br>(0.125)             | 0.265<br>(0.123)                    | 0.296<br>(0.113)             | 0.275<br>(0.134)      | -0.003<br>(0.033)           | 0.023<br>(0.016)            |
| Fraction irrigated land             | 0.599<br>(0.321)             | 0.485<br>(0.349)                    | 0.607<br>(0.323)             | 0.500<br>(0.352)      | -0.038<br>(0.054)           | 0.054<br>(0.049)            |
| Village has a bus or train stop     | 0.280<br>(0.451)             | 0.433<br>(0.500)                    | 0.290<br>(0.456)             | 0.259<br>(0.439)      | -0.130<br>(0.097)           | 0.061<br>(0.054)            |
| Village has permanent approach road | 0.110<br>(0.314)             | 0.300<br>(0.462)                    | 0.176<br>(0.383)             | 0.194<br>(0.397)      | -0.225<br>(0.082)           | -0.006<br>(0.052)           |
| Village has tube well               | 0.910<br>(0.288)             | 0.933<br>(0.252)                    | 0.912<br>(0.285)             | 0.977<br>(0.151)      | -0.022<br>(0.020)           | -0.018<br>(0.031)           |
| Village has hand pump               | 0.124<br>(0.331)             | 0.000<br>(0.000)                    | 0.100<br>(0.302)             | 0.057<br>(0.233)      | 0.000<br>(0.000)            | 0.013<br>(0.012)            |
| Village has well                    | 0.440<br>(0.499)             | 0.533<br>(0.503)                    | 0.402<br>(0.493)             | 0.528<br>(0.500)      | 0.043<br>(0.082)            | -0.066<br>(0.074)           |
| Village has community tap           | 0.065<br>(0.248)             | 0.050<br>(0.220)                    | 0.042<br>(0.202)             | 0.010<br>(0.098)      | 0.022<br>(0.020)            | -0.018<br>(0.017)           |
| Number of schools                   | 1.190<br>(0.895)             | 1.233<br>(0.810)                    | 1.265<br>(0.889)             | 1.160<br>(0.910)      | -0.167<br>(0.160)           | 0.149<br>(0.111)            |
| Number of health facilities         | 0.170<br>(0.403)             | 0.217<br>(0.490)                    | 0.118<br>(0.324)             | 0.218<br>(0.809)      | -0.036<br>(0.090)           | -0.015<br>(0.069)           |
| Overall effect: $F$ stat            |                              |                                     |                              |                       | 0.300                       | 0.600                       |
| Overall effect: $p$ value           |                              |                                     |                              |                       | .586                        | .438                        |
| $N$                                 | 105                          | 60                                  | 108                          | 222                   |                             |                             |

**Figure 1:** Randomization Check

## **Outcome: Electoral Results**

---

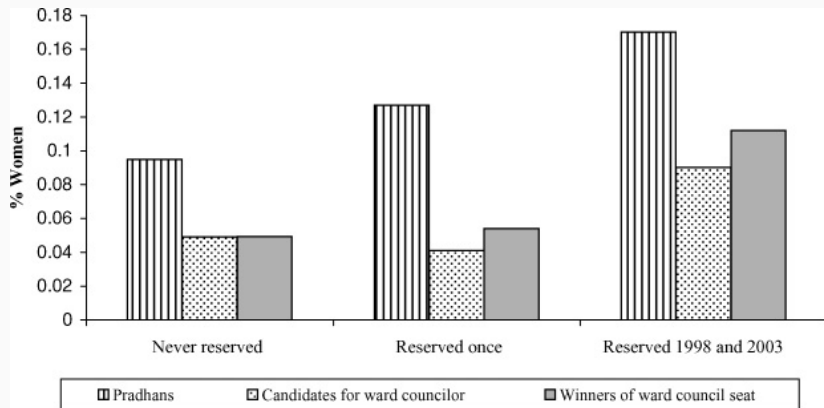
## Short-term: Reservation is Binding



**Figure 2:** Fraction of Female Pradhan by Reservation Status



## Long-term: Improved Female Electoral Prospect



**Figure 3:** 2008 Ward Council and Pradhan Election Outcomes

TABLE III  
ELECTORAL OUTCOMES FOR 2003 AND 2008

|                                                                | Pradhans         |                  |                  | Contestants       |                   |                   | Winners          |                  |                  |
|----------------------------------------------------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|
|                                                                | (1)              | (2)              | (3)              | (4)               | (5)               | (6)               | (7)              | (8)              | (9)              |
| Only reserved 1998                                             | 0.027<br>(0.023) | 0.056<br>(0.031) |                  | -0.003<br>(0.011) | -0.009<br>(0.011) |                   | 0.015<br>(0.020) | 0.002<br>(0.019) |                  |
| Only reserved 2003                                             |                  | 0.003<br>(0.026) |                  |                   | -0.007<br>(0.011) |                   |                  | 0.000<br>(0.018) |                  |
| Only reserved once<br>(either 2003 or 1998)                    |                  |                  | 0.031<br>(0.022) |                   |                   | -0.004<br>(0.008) |                  |                  | 0.012<br>(0.013) |
| Reserved 1998 and 2003                                         |                  | 0.076<br>(0.041) | 0.079<br>(0.041) |                   | 0.037<br>(0.014)  | 0.036<br>(0.014)  |                  | 0.057<br>(0.032) | 0.057<br>(0.030) |
| Test: equality of reservation<br>indicators [ <i>p</i> values] |                  | .157             | .253             |                   | .009              | .006              |                  | .224             | .127             |
| Year of election                                               | 2003             | 2008             | 2003 and 2008    | 2003              | 2008              | 2003 and 2008     | 2003             | 2008             | 2003 and 2008    |
| Never reserved sample:                                         |                  |                  |                  |                   |                   |                   |                  |                  |                  |
| Mean                                                           | 0.092            | 0.109            | 0.099            | 0.076             | 0.049             | 0.066             | 0.083            | 0.049            | 0.071            |
| Standard deviation                                             | (0.290)          | (0.312)          | (0.299)          | (0.265)           | (0.216)           | (0.248)           | (0.276)          | (0.217)          | (0.257)          |
| <i>N</i>                                                       | 870              | 875              | 1,745            | 3,880             | 3,431             | 7,311             | 1,425            | 1,191            | 2,616            |

**Figure 4:** Electoral Outcomes for 2003 and 2008

# **Survey: Evaluation of Pradhan**

---

# Survey: Evaluation of Pradhan

- Survey: 2006-2007 (in-office pradhan elected in 2003)
- 495 villages, 165 GPs in Birbhum District, West Bengal
- 15 households per village
- Questions
  1. "Is pradhan effective"
  2. "Did pradhan look after village needs"
  3. "Did pradhan look after your needs"
  4. "Did pradhan make BPL<sup>1</sup> lists well"

---

<sup>1</sup>Below poverty line

TABLE IV  
EVALUATION OF ACTUAL PRADHAN: AVERAGE EFFECT

|                                                           | Male              |                   |                   |                   | Female            |                   |                   |                   |
|-----------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                                           | (1)               | (2)               | (3)               | (4)               | (5)               | (6)               | (7)               | (8)               |
| Only reserved 2003                                        | -0.197<br>(0.058) | -0.139<br>(0.063) | -0.210<br>(0.058) | -0.152<br>(0.063) | -0.075<br>(0.060) | -0.012<br>(0.061) | -0.076<br>(0.060) | -0.015<br>(0.062) |
| Reserved 1998 and 2003                                    | 0.014<br>(0.072)  | 0.013<br>(0.083)  | 0.013<br>(0.072)  | 0.011<br>(0.083)  | -0.006<br>(0.050) | 0.010<br>(0.057)  | -0.004<br>(0.050) | 0.011<br>(0.057)  |
| Only reserved 1998                                        | 0.001<br>(0.056)  | -0.010<br>(0.057) | 0.003<br>(0.056)  | -0.009<br>(0.056) | 0.037<br>(0.054)  | 0.018<br>(0.052)  | 0.040<br>(0.054)  | 0.021<br>(0.052)  |
| With pradhan characteristics controls                     | N                 | Y                 | N                 | Y                 | N                 | Y                 | N                 | Y                 |
| With pradhan action controls                              | N                 | N                 | Y                 | Y                 | N                 | N                 | Y                 | Y                 |
| Test: 2003 = both 1998 and 2003 = 1998 [ <i>p</i> -value] | .008              | .124              | .004              | .080              | .216              | .904              | .191              | .866              |
| Test: 2003 = both 1998 and 2003 [ <i>p</i> -value]        | .012              | .084              | .009              | .065              | .301              | .736              | .285              | .686              |
| <i>N</i>                                                  | 6,642             | 6,642             | 6,642             | 6,642             | 6,568             | 6,568             | 6,568             | 6,568             |

**Figure 5:** Evaluation of 2003-elected Pradhan

- Worse evaluation for “reserved 2003”, compared to “non-reserved”
- Improved evaluation for twice reserved (not significant)
  - Characteristic difference? No
  - Behavioral difference?
  - Backlash?

# No Behavioral Difference

TABLE V  
PRADHAN PERFORMANCE: PUBLIC GOODS, BRIBES, AND SATISFACTION

|                                                           | Average public good provision |                   | Average satisfaction |                   | Average bribes    | Alignment with female preferences |
|-----------------------------------------------------------|-------------------------------|-------------------|----------------------|-------------------|-------------------|-----------------------------------|
|                                                           | Quantity                      | Quality           | Male                 | Female            |                   |                                   |
|                                                           | (1)                           | (2)               | (3)                  | (4)               | (5)               | (6)                               |
| Only reserved 2003                                        | 0.192<br>(0.070)              | -0.043<br>(0.046) | 0.037<br>(0.042)     | -0.001<br>(0.039) | -0.094<br>(0.031) | 0.521<br>(0.279)                  |
| Reserved 1998 and 2003                                    | 0.039<br>(0.061)              | -0.030<br>(0.052) | -0.063<br>(0.052)    | -0.042<br>(0.044) | -0.072<br>(0.029) | 0.659<br>(0.358)                  |
| Only reserved 1998                                        | 0.097<br>(0.082)              | -0.069<br>(0.037) | -0.008<br>(0.045)    | 0.025<br>(0.038)  | -0.045<br>(0.038) | 0.563<br>(0.243)                  |
| Test: 2003 = both 1998 and 2003 = 1998 [ <i>p</i> -value] | .127                          | .763              | .242                 | .381              | .360              | .942                              |
| Test: 2003 = both 1998 and 2003 [ <i>p</i> -value]        | .343                          | .847              | .095                 | .435              | .493              | .730                              |

**Figure 6:** Pradhan Performance: Public Goods, Bribes, and Satisfactions

- Performance and satisfaction was even greater for “reserved 2003”
  - Not taking bribes: public opinion adversely influenced
  - Aligned preference for women

# **Experiments: Stereotypes Against Female**

---

## Experiment (1) Hypothetical Leader Effectiveness

- Respondents were provided tape/vignette for policy speeches given by a pradhan
- Same tape/vignette for each respondent, but substituting protagonist's gender to elicit implicit bias
- Same questions regarding leader effectiveness



**TABLE VI**  
**PERCEPTION OF FEMALE EFFECTIVENESS AS LEADERS: EXPERIMENTAL EVIDENCE**  
**(SPEECH AND VIGNETTES)**

|                                                                               | Average effect    |                   |
|-------------------------------------------------------------------------------|-------------------|-------------------|
|                                                                               | Male              | Female            |
|                                                                               | (1)               | (2)               |
| <b>Panel A</b>                                                                |                   |                   |
| Female pradhan                                                                | -0.054<br>(0.027) | -0.035<br>(0.031) |
| Female pradhan × ever reserved                                                | 0.091<br>(0.036)  | 0.024<br>(0.038)  |
| Test: female pradhan + female pradhan<br>× ever reserved                      | 0.038<br>(0.023)  | -0.011<br>(0.022) |
| <b>Panel B</b>                                                                |                   |                   |
| Female pradhan × only reserved 2003                                           | 0.112<br>(0.047)  | -0.001<br>(0.048) |
| Female pradhan × reserved 1998 and 2003                                       | 0.092<br>(0.062)  | 0.052<br>(0.060)  |
| Female pradhan × only reserved 1998                                           | 0.073<br>(0.046)  | 0.035<br>(0.045)  |
| Test: FP × 2003 = FP × (both 1998 and 2003)<br>= FP × 1998 [ <i>p</i> -value] | .774              | .652              |

## Experiment (2) Implicit Bias of Gender

- IAT Experiment: Matching two concepts in short time

| Left                   | Right               |
|------------------------|---------------------|
| Male/Female Picture    | Leadership/Domestic |
| Male/Female Name       | Good/Bad            |
| Male/Female Politician | Good/Bad            |

TABLE VII  
EXPLICIT AND IMPLICIT PREFERENCES FOR FEMALE LEADERS

|                                                              | IAT (D-measure of bias against females) |                   |                                |                   |                                     |                   | Feeling ladder             |                  |
|--------------------------------------------------------------|-----------------------------------------|-------------------|--------------------------------|-------------------|-------------------------------------|-------------------|----------------------------|------------------|
|                                                              | Leadership/domestic and male/female     |                   | Male/female names and good/bad |                   | Male/female politician and good/bad |                   | Male versus female pradhan |                  |
|                                                              | Male<br>(1)                             | Female<br>(2)     | Male<br>(3)                    | Female<br>(4)     | Male<br>(5)                         | Female<br>(6)     | Male<br>(7)                | Female<br>(8)    |
| Panel A                                                      |                                         |                   |                                |                   |                                     |                   |                            |                  |
| Ever reserved                                                | -0.076<br>(0.032)                       | 0.021<br>(0.041)  | -0.004<br>(0.031)              | -0.007<br>(0.043) | 0.014<br>(0.037)                    | -0.023<br>(0.038) | 0.208<br>(0.112)           | 0.099<br>(0.110) |
| Panel B                                                      |                                         |                   |                                |                   |                                     |                   |                            |                  |
| Only reserved 2003                                           | -0.090<br>(0.041)                       | 0.112<br>(0.053)  | -0.023<br>(0.045)              | 0.005<br>(0.051)  | 0.024<br>(0.051)                    | -0.004<br>(0.049) | 0.271<br>(0.158)           | 0.088<br>(0.145) |
| Reserved 1998 and 2003                                       | -0.023<br>(0.052)                       | -0.098<br>(0.075) | 0.016<br>(0.041)               | 0.035<br>(0.074)  | 0.036<br>(0.057)                    | -0.011<br>(0.056) | 0.063<br>(0.159)           | 0.053<br>(0.152) |
| Only reserved 1998                                           | -0.098<br>(0.042)                       | -0.022<br>(0.051) | 0.001<br>(0.045)               | -0.061<br>(0.052) | -0.012<br>(0.048)                   | -0.050<br>(0.051) | 0.240<br>(0.150)           | 0.139<br>(0.140) |
| Test: 2003 = both 1998<br>and 2003 = 1998 [ <i>p</i> -value] | .402                                    | .021              | .756                           | .316              | .704                                | .709              | .560                       | .875             |
| Never reserved sample:                                       |                                         |                   |                                |                   |                                     |                   |                            |                  |
| Mean                                                         | 0.110                                   | 0.150             | 0.134                          | -0.157            | 0.093                               | -0.079            | 1.446                      | 0.560            |
| Standard deviation                                           | (0.340)                                 | (0.384)           | (0.425)                        | (0.418)           | (0.452)                             | (0.441)           | (2.655)                    | (2.572)          |
| <i>N</i>                                                     | 477                                     | 357               | 510                            | 408               | 554                                 | 510               | 3,511                      | 3,671            |

**Figure 8: IAT Results and Feeling Ladder**

## Conclusion

---

# Conclusion

- Gender quota helps improving female's political representation.
- Gender quota reduced bias in evaluating female's political effectiveness, but some stereotypes persists.

## **Related Subsequent Literatures**

- Female entrepreneurship (Ghani, Kerr, and O'Connell 2014)
- Report of crimes against women (Iyer et al. 2012)
- Neonatal mortality of female (Kalsi 2017)
- Female educational attainment (Beaman et al. 2012)

## **Linkage to My Proposal**

---

- Taiwanese experience: Better IV consists of time and geographical variation
- Further evidence on affirmative actions, public exposure of powerful women

## Current Findings

- More female politician, less son preference.
  - Supported by both newborn data and survey data.
- Improved female's gender role self-recognition.