

Woman Reserved Seats and Female Status in Taiwan

NTU Brownbag Seminar

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Taiwanese women have a relatively well socioeconomic status:

- **Gender Inequality Index**: Ranked as 6th place globally, top 1 among Asian societies
- **> 40% female legislators**: close to Scandinavian countries

What factors contributed to these achievements?

Woman Reserved Seats in Taiwan

- Implemented since 1946, at national and county representatives elections
- For every 4 political seats (or 5 before 1999), 1 seat is reserved for female candidates.
- 14% ~ 25% female councilor for constituencies with ≥ 4 seats
- Man with lowest vote share get replaced by woman with highest vote share.

Impact of Quota Policy in India

Policy intervention randomly reserves village head for female:

- Reduced bias toward female leader's performance
- Girls are more likely to enroll in schools
- Gender gap in educational attainment get closed
- Decreased mortality of higher-order girls
- More women running small business

Let woman becomes political leaders reduces gender gap well beyond political field.

This paper

Examine the casual impact between **political seats reservation** and **son preference**

- A changing and prominent phenomenon of Taiwanese society
- A behavioral indicator for gender attitudes

Data and Identification Strategy

Data

- Councilor elections
- 1994, 1998, 2002, 2006

Instrument: % of reserved seats

- $Z_{ed} = \frac{\# \text{ Reserved Seats}}{\text{Total Seats}}$, in election year e , electoral district d
- Determined by population size of electoral district.

Potential Treatments

1. % female elected
2. % female candidates

Both could affect outcomes. Exclusion restriction not satisfied. Thus I'll present 1st stage and reduced form.

First stage correlation

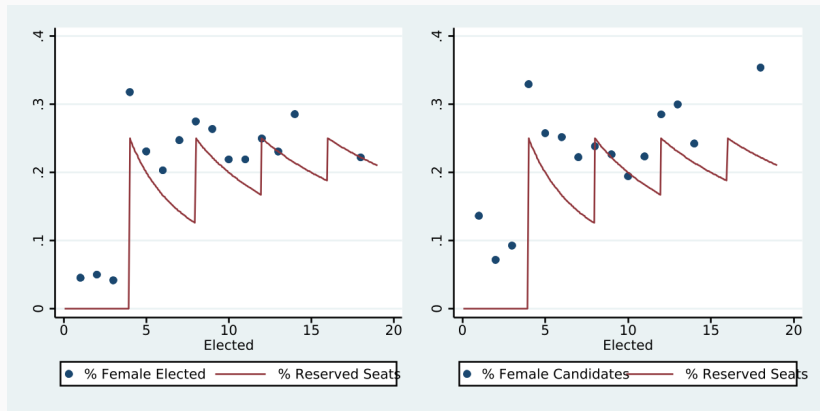


Figure 1: First Stage Correlations of IV and Treatments (2002 Council Election)

3rd parity fertility (conditional on sex composition of first 2 children)

- An indicator for son preference
 - Mothers without son for first 2 parities likely to have additional birth
 - Strong sex selective practice in 3rd parity
- Data gathered from MOI birth record
 - 1994 - 2006, each observation merged with most recent electoral result with 1 year lag
 - Sample consists of mothers with 2 children, not yet having 3rd
 - Outcome = 1 if mother give birth 3rd child at year t , 0 otherwise.

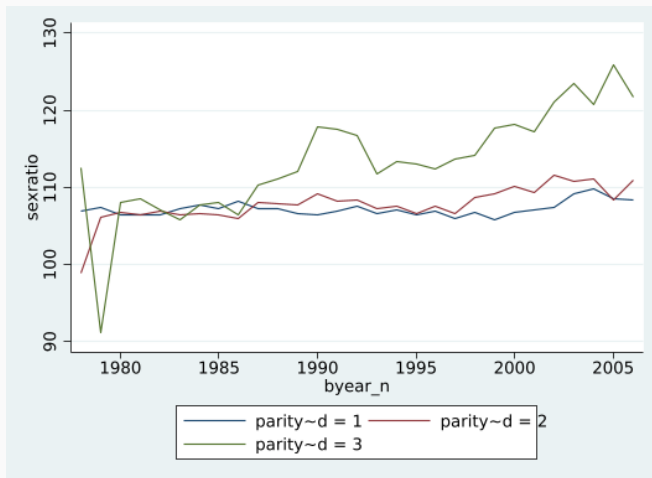


Figure 2: Sex Ratio at Birth by Parities

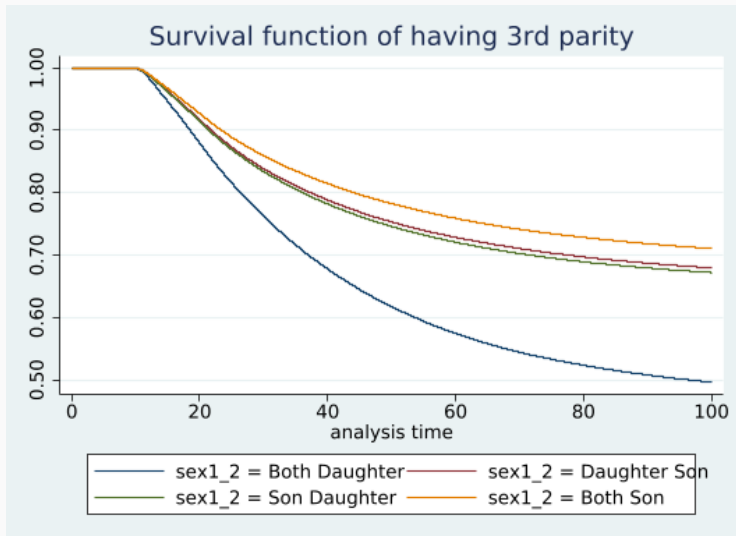


Figure 3: Kaplan–Meier Survival Function Estimate for 3rd Parity Fertility

Table 1: 3rd Parity Fertility Estimates: Reduced Form

	1	2	3	4	5	6
	Full Sample	Full (FE)	High School	Non-HS	Urban	Non-Urban
(β_0) % Reserved Seats	-.0874*** (0.0096)	-.0256*** (0.0056)	-.0272*** (0.0065)	-.0283*** (0.0063)	-.0566*** (0.011)	-.0176*** (0.0064)
(β_1) Daughter Son \times % Reserved Seats	.0382*** (0.0053)	.0353*** (0.0050)	.0331*** (0.0059)	.0425*** (0.0058)	.0585*** (0.011)	.0306*** (0.0056)
(β_2) Son Daughter \times % Reserved Seats	.0386*** (0.0052)	.0359*** (0.0050)	.0379*** (0.0059)	.0402*** (0.0057)	.0659*** (0.012)	.0305*** (0.0054)
(β_3) Both Son \times % Reserved Seats	.0439*** (0.0061)	.0402*** (0.0058)	.0432*** (0.0067)	.0432*** (0.0065)	.0745*** (0.013)	.0339*** (0.0064)
Daughter Son	-.0261*** (0.00085)	-.0235*** (0.00079)	-.0263*** (0.00096)	-.0214*** (0.00089)	-.0221*** (0.0019)	-.0245*** (0.00086)
Son Daughter	-.0261*** (0.00083)	-.0236*** (0.00078)	-.0273*** (0.00097)	-.0209*** (0.00087)	-.0232*** (0.0020)	-.0245*** (0.00084)
Both Son	-.0286*** (0.00098)	-.0257*** (0.00092)	-.0293*** (0.0011)	-.0229*** (0.00099)	-.0249*** (0.0022)	-.0267*** (0.00099)
Parent Age, Edu Control	No	Yes	Yes	Yes	Yes	Yes
Log-Population Control	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
County FE	No	Yes	Yes	Yes	Yes	Yes
Mean	0.0216	0.0215	0.0230	0.0202	0.0148	0.0237
Obs.	11738503	11681499	5610932	6070567	2864694	8816805
Adj. R-square	0.00409	0.0257	0.0249	0.0269	0.0172	0.0272
p-value $H_0 : \beta_0 + \beta_1 = 0$	2.69e-23	0.00604	0.137	0.000182	0.730	0.00196
p-value $H_0 : \beta_0 + \beta_2 = 0$	2.77e-22	0.00303	0.00673	0.00172	0.104	0.00174

Table 2: 3rd Parity Sex Ratio Estimates: Reduced Form

	1	2	3	4	5	6
	Full Sample	Full (FE)	High School	Non-HS	Urban	Non-Urban
(β_0) % Reserved Seats	.131*** (0.029)	.0796*** (0.031)	.0488 (0.040)	.0703 (0.044)	.208* (0.11)	.0701** (0.032)
(β_1) Daughter Son \times % Reserved Seats	-.13*** (0.040)	-.127*** (0.040)	-.121** (0.056)	-.0778 (0.059)	-.0947 (0.13)	-.128*** (0.042)
(β_2) Son Daughter \times % Reserved Seats	-.0747* (0.040)	-.0719* (0.041)	.0164 (0.058)	-.101* (0.059)	-.127 (0.14)	-.062 (0.042)
(β_3) Both Son \times % Reserved Seats	-.0868** (0.043)	-.0843** (0.043)	-.131** (0.057)	.0208 (0.059)	-.123 (0.14)	-.0792* (0.045)
Daughter Son	-.0472*** (0.0058)	-.0463*** (0.0058)	-.0653*** (0.0084)	-.0315*** (0.0081)	-.0553*** (0.018)	-.0451*** (0.0061)
Son Daughter	-.055*** (0.0057)	-.0542*** (0.0057)	-.0848*** (0.0084)	-.0291*** (0.0079)	-.0614*** (0.020)	-.0524*** (0.0060)
Both Son	-.0653*** (0.0061)	-.0644*** (0.0061)	-.0777*** (0.0086)	-.0551*** (0.0079)	-.0656*** (0.020)	-.0637*** (0.0063)
Parent Age, Edu, Urban Control	No	Yes	Yes	Yes	Yes	Yes
Log-Population Control	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
County FE	No	Yes	Yes	Yes	Yes	Yes
Mean	0.539	0.539	0.547	0.530	0.544	0.537
Obs.	253096	251662	129152	122510	42383	209279
Adj. R-square	0.00440	0.00481	0.00772	0.00199	0.00591	0.00458
p-value $H_0 : \beta_0 + \beta_1 = 0$	0.976	0.118	0.126	0.862	0.325	0.0692
p-value $H_0 : \beta_0 + \beta_2 = 0$	0.0694	0.012	0.107	0.500	0.510	0.011

Benefit-Cost Hypothesis

- Willing to have daughter due to improved career prospect
- Daughters being more “valuable”
- **Test:** Gender gap in health investment

Intrahousehold Bargaining

- Women preferred less children while men like to have sons
- Woman gains bargaining power, then her preference realized.
- **Test:** Household decision making

NHRI Mortality Record

- Outcome: Neonatal mortality
- Period: 2000 - 2008
- Boys and girls aged under 3
- Outcome = 1 if he/she dies under 3 years old, 0 otherwise.

Neonatal Mortality Estimates

Table 3: Linear Probability Estimates of Neonatal Mortality (Age ≤ 3)

	1	2
	Boys	Girls
% Reserved Seats	0.000927* (0.000521)	0.00129** (0.000525)
# Birth Order=2 \times % Reserved Seats	-0.00273*** (0.000727)	-0.00254*** (0.000795)
# Birth Order=3 \times % Reserved Seats	-0.00358** (0.00146)	-0.00302** (0.00147)
# Birth Order=2	0.000821*** (0.000142)	0.000708*** (0.000152)
# Birth Order=3	0.00120*** (0.000281)	0.00124*** (0.000279)
Parent Age, Edu Control	Yes	Yes
Population Control	Yes	Yes
Year FE	Yes	Yes
County FE	Yes	Yes
Mean Dep. Var.	0.00155	0.00134
Observations	2884286	2633899

Test for Intrahousehold Bargaining Hypothesis

Survey on Social Development Trends, SSDT

- Outcome: Household decision making
 - Allocation of daily expenditure
 - Parenting
 - Saving & investment
 - Allocation of housework
- Period: 1998, 2002
- Sample limited to married individuals aged between 16 to 45

Taiwan Social Change Survey, TSCS

- Outcome:
 - *In order to continue to patrilineal family, it's important to have at least one son*
 - Ideal number of children
- Period: 2001, 2006

Household Decision Making Estimates

Table 4: Linear Probability Estimates of Bargaining Power, SSDT

	1	2	3	4	5
	Alloc. Daily Expen.	Parenting	Saving & Investment	Alloc. Houseworks	PCA
Reserved Seats %	-0.123 (0.119)	-0.0726 (0.0900)	-0.124 (0.0890)	-0.151** (0.0610)	-0.699* (0.363)
Woman × Reserved Seats %	0.184*** (0.0686)	0.0289 (0.0569)	0.234*** (0.0651)	0.0783* (0.0474)	0.669*** (0.258)
Woman	0.0138 (0.0118)	0.0238** (0.00947)	0.0115 (0.0105)	0.00607 (0.00907)	0.0781* (0.0427)
Age, Edu Control	Yes	Yes	Yes	Yes	Yes
Log-Population Control	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes
Mean	0.833	0.882	0.895	0.938	0.158
Observations	17358	16384	17013	17358	16039

Clustered (election-township level) standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Logistic Estimates of Bargaining Power, SSDT

	1	2	3	4
	Alloc. Daily Expen.	Parenting	Saving & Investment	Alloc. Houseworks
Woman decides over man decides				
Reserved Seats %	0.46 (0.432)	0.123** (0.127)	0.457 (0.512)	0.0806** (0.0802)
Woman × Reserved Seats %	4.500*** (2.568)	8.060*** (6.153)	4.681* (3.798)	3.879 (3.245)
Woman	1.193* (0.117)	1.055 (0.111)	1.448** (0.224)	1.146 (0.183)
Mutually decides over man decides				
Reserved Seats %	0.372 (0.310)	0.220* (0.189)	0.729 (0.653)	0.0922** (0.0978)
Woman × Reserved Seats %	3.816*** (1.712)	3.809** (2.375)	2.75 (1.870)	3.908* (3.082)
Woman	1.051 (0.0767)	1.126 (0.0875)	1.335** (0.162)	1.061 (0.161)
Age, Edu Control	Yes	Yes	Yes	Yes
Log-Population Control	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Observations	17352	16324	17312	17352

Self-reported Son Preference Estimates

Table 6: Birth Preference Estimates, TSCS

	Important to have at least one son			Number of children willing to have		
	1	2	3	4	5	6
	All age	Age 16-45	Age > 45	All age	Age 16-45	Age > 45
Reserved Seats %	.109 (.243)	.377 (.294)	-.314 (.302)	.012 (.393)	-.502 (.466)	.5 (.478)
Woman × Reserved Seats %	-.501** (.199)	-.397 (.289)	-.617* (.327)	-.244 (.424)	-.0229 (.393)	-.374 (.633)
Woman	-.0645** (.0303)	-.097** (.0464)	-.00571 (.0495)	.0537 (.0833)	.0279 (.0759)	.0497 (.122)
Age, Edu Control	Yes	Yes	Yes	Yes	Yes	Yes
Log-Population Control	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dep. Var.	.46	.356	.594	2.38	2.21	2.55
Observations	3697	2077	1620	4049	2077	1972
Adj. R-square	.133	.0582	.124	.085	.0247	.0585

Clustered (election-township level) standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Conclusions