

# **Woman Reserved Seats and Female Status in Taiwan**

NTU Brownbag Seminar

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Nov 10, 2022

Taiwanese women have a relatively well socioeconomic status:

- **Gender Inequality Index**: 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 legislators and county councilors elections
- For every 4 political seats (or 5 before 1999), 1 seat is reserved for female candidates.
- 14% ~ 25% female councilor for constituencies with  $\geq 4$  seats
- Elected man with lowest vote share get replaced by unelected woman with highest vote share.

## **This paper**

Examine the casual relationship between **female political representativeness** and **son preference**

- A changing and prominent phenomenon of Taiwanese society
- An indicator for more general gender attitudes

## Data on Political Representativeness

- Councilor election result from Central Election Committee
- Election years: 1994, 1998, 2002, 2006

## Treatment: % Female Elected

$$\% \text{ Female Elected}_{td} = \frac{\# \text{ Female Elected}_{td}}{\# \text{ Total Seats}_{td}}$$

for year  $t$ , constituency (electoral district)  $d$

- Omitted variable bias: Cultural norm that has less son preference and less bias toward female politician.
- Instrumental variable approach is used to deal with endogeneity.

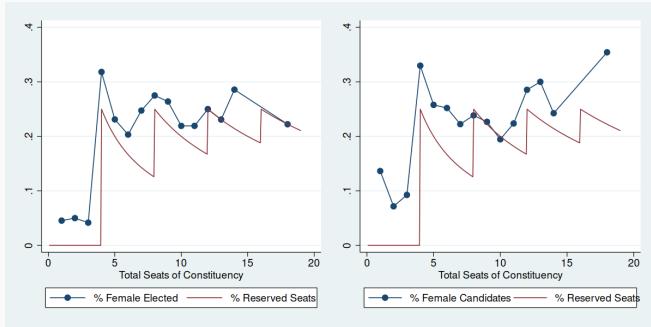
## Source of Exogenous Variation: Woman Reserved Seats

Define instrument as

$$\% \text{ Reserved Seats}_{td} = \frac{\# \text{ Reserved Seats}_{td}}{\# \text{ Total Seats}_{td}}$$

which is determined by population size.

Utilizing local variation in population between constituencies gives us exogenous variation in reserved seats and female elected.



**Figure 1:** Total Seats, Reserved Seats, and Treatments per Constituency (2002)

However, IV correlated not only with female **elected** but also **candidates**.

1st stage and reduced form estimates are presented throughout this paper.

## Fertility of 3rd child

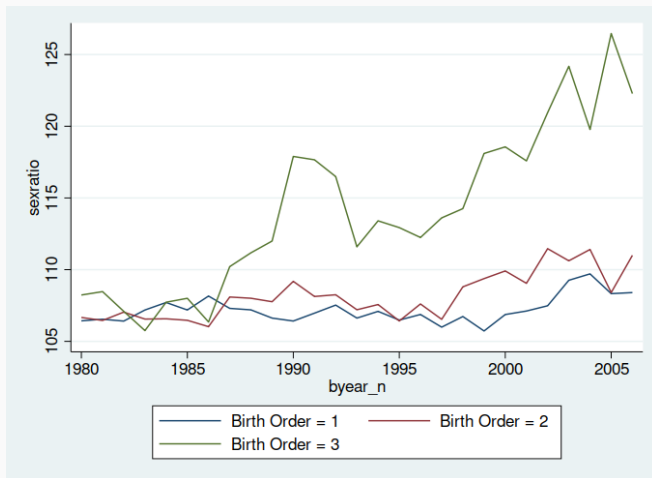
$$\text{Child3}_{itcd} = 1\{\text{3rd child is born at time } t\}$$

for mother  $i$ , living in county  $c$ , constituency  $d$

- An indicator for son preference
  - Strong son preference at 3rd child
  - Mothers with 2 daughters would like to have 3rd child
- Data gathered from MOI birth record
  - Panel data from 1994 – 2006, each observation linked to most recent electoral result with 1 year lag
  - Sample consists of mothers with 2 children, not yet having 3rd

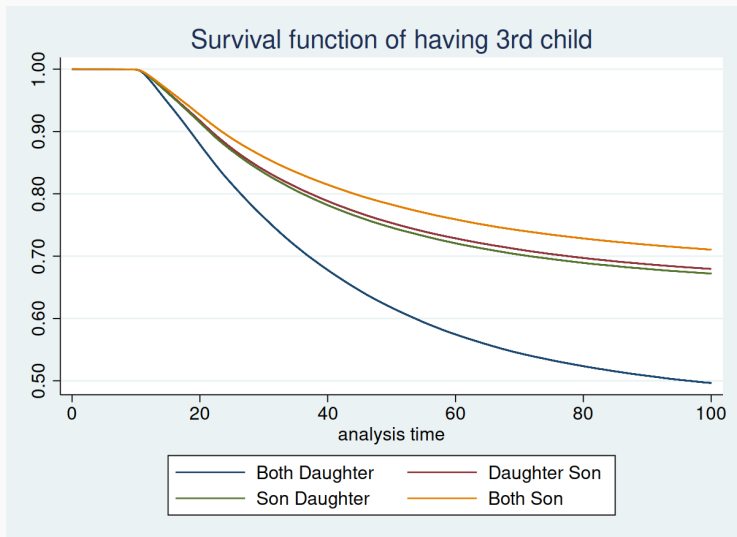


## Strong son preference at 3rd child



**Figure 2:** Time Trend of Sex Ratio, by Birth Order

## Mothers with 2 daughters would like to have 3rd child



**Figure 3:** Survival Function Estimate for 3rd Parity Fertility

# Regression Specification

## First Stage

$$\text{Treatment}_{itcd} = \alpha + \beta \% \text{ Reserved Seats}_{tcd} + \mathbf{X}_i \Gamma + \mathbf{X}_{tcd} \rho + \delta_t + \delta_c + \varepsilon_{itcd}$$

## Reduced Form

$$\text{Child3}_{itcd} = \alpha + \beta \% \text{ Reserved Seats}_{tcd} \times \text{Sex Composition}_i + \mathbf{X}_i \Gamma + \mathbf{X}_{tcd} \rho + \delta_t + \delta_c + \varepsilon_{itcd}$$

**Table 1:** 3rd Child Fertility Estimates: First Stage

	1	2
	% Female Elected	% Female Candidates
% Reserved Seats	.898*** (0.074)	.716*** (0.060)
Mean Dep. Var.	0.202	0.191
Obs.	11681525	11419516
Adj. R-square	0.402	0.423

Clustered (election-township level) standard  
errors in parentheses

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

**Table 2:** 3rd Child Fertility Estimates: Reduced Form

	1	2	3	4	5
	Full Sample	High School	Non-HS	Urban	Non-Urban
$(\beta_0)$ % Reserved Seats	-.0325*** (0.0054)	-.0336*** (0.0062)	-.0357*** (0.0061)	-.0574*** (0.011)	-.0262*** (0.0061)
$(\beta_1)$ Daughter Son $\times$ % Reserved Seats	.0353*** (0.0050)	.0331*** (0.0059)	.0424*** (0.0058)	.0586*** (0.011)	.0305*** (0.0056)
$(\beta_2)$ Son Daughter $\times$ % Reserved Seats	.0357*** (0.0050)	.0376*** (0.0059)	.0401*** (0.0057)	.0658*** (0.011)	.0302*** (0.0054)
$(\beta_3)$ Both Son $\times$ % Reserved Seats	.0400*** (0.0058)	.0431*** (0.0067)	.0430*** (0.0065)	.0746*** (0.013)	.0337*** (0.0064)
Mean	0.0215	0.023	0.0202	0.0148	0.0237
Obs.	11681525	5610905	6070620	2864758	8816767
Adj. R-square	0.0257	0.0249	0.0269	0.0172	0.0271
p-value $H_0 : \beta_0 + \beta_1 = 0$	0.378	0.881	0.051	0.828	0.241
p-value $H_0 : \beta_0 + \beta_2 = 0$	0.294	0.262	0.197	0.132	0.262
p-value $H_0 : \beta_0 + \beta_3 = 0$	0.018	0.008	0.035	0.003	0.043

Clustered (election-township level) standard errors in parentheses

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

**Table 3:** 3rd Child Sex Ratio Estimates: Reduced Form

	1	2	3	4	5
	Full Sample	High School	Non-HS	Urban	Non-Urban
$(\beta_0)$ % Reserved Seats	.0926*** (0.030)	0.0605 (0.038)	.0836* (0.044)	.243** (0.11)	.0865*** (0.031)
$(\beta_1)$ Daughter Son $\times$ % Reserved Seats	-.127*** (0.040)	-.122** (0.056)	-0.0772 (0.059)	-0.0893 (0.13)	-.128*** (0.042)
$(\beta_2)$ Son Daughter $\times$ % Reserved Seats	-.0742* (0.041)	0.0149 (0.057)	-.105* (0.059)	-0.148 (0.14)	-0.0633 (0.043)
$(\beta_3)$ Both Son $\times$ % Reserved Seats	-.0853** (0.043)	-.131** (0.057)	0.0184 (0.059)	-0.127 (0.14)	-.0798* (0.045)
Mean	0.539	0.547	0.53	0.545	0.537
Obs.	251671	129151	122520	42386	209285
Adj. R-square	0.00484	0.00772	0.00204	0.00597	0.00461
p-value $H_0 : \beta_0 + \beta_1 = 0$	0.253	0.184	0.881	0.179	0.187
p-value $H_0 : \beta_0 + \beta_2 = 0$	0.564	0.116	0.644	0.459	0.484
p-value $H_0 : \beta_0 + \beta_3 = 0$	0.82	0.133	0.021	0.403	0.844

Clustered (election-township level) standard errors in parentheses

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

## Benefit-Cost Hypothesis

- Satisfied with daughters due to improved career prospect
  - Female councilors delivering beliefs of promising future
- Daughters being more “valuable”
- **Test:** Gender gap in health investment

## Intrahousehold Bargaining Hypothesis

- Men like to have sons, but women simply prefer less children
- When women are gaining awareness in participating household decisions, her preference are more likely to be realized.
- **Test:** Gender division in 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 4:** Linear Probability Estimates of Neonatal Mortality (Age  $\leq 3$ )

	1	2
	Boys	Girls
% Reserved Seats	0.000872* (0.000487)	0.00104** (0.000489)
# Birth Order=2 $\times$ % Reserved Seats	-0.00273*** (0.000728)	-0.00254*** (0.000795)
# Birth Order=3 $\times$ % Reserved Seats	-0.00357** (0.00146)	-0.00303** (0.00147)
# Birth Order=2	0.000821*** (0.000142)	0.000710*** (0.000152)
# Birth Order=3	0.00120*** (0.000281)	0.00124*** (0.000279)
Mean Dep. Var.	0.00155	0.00134
Observations	2884286	2633899
Adj. R-square	0.00140	0.00124

Clustered (election-township level) standard errors in parentheses

Joint Hypothesis Test p-value = 0.906

# 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 the patrilineal family, it's important to have at least one son*
  - Ideal number of children
- Period: 2001, 2006

# Household Decision Making Estimates

**Table 5:** Linear Probability Estimates of Bargaining Power, SSDT

	1	2	3	4	5
	Alloc. Daily Expen.	Parenting	Saving & Investment	Alloc. Houseworks	PCA
Reserved Seats %	-0.0849 (0.112)	-0.0416 (0.0827)	-0.123 (0.0863)	-0.135** (0.0585)	-0.574* (0.345)
Woman × Reserved Seats %	0.184*** (0.0686)	0.0296 (0.0569)	0.234*** (0.0651)	0.0783* (0.0473)	0.669*** (0.258)
Woman	0.0161 (0.0118)	0.0232** (0.00944)	0.0125 (0.0106)	0.00684 (0.00907)	0.0790* (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 6:** Logistic Estimates of Bargaining Power, SSDT

	1	2	3	4
	Alloc. Daily Expen.	Parenting	Saving & Investment	Alloc. Houseworks
<b>Woman decides over man decides</b>				
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)
<b>Mutually decides over man decides</b>				
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)
Observations	17358	16384	17013	17358

Exponentiated coefficients;

Clustered (on election-township level) standard errors in parentheses

\* p &lt; 0.1, \*\* p &lt; 0.05, \*\*\* p &lt; 0.01

# Self-reported Son Preference Estimates

**Table 7:** 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 %	-0.0813 (.264)	0.23 (.313)	-0.526 (.318)	-0.0141 (.357)	-0.405 (.42)	0.349 (.473)
Woman × Reserved Seats %	-.494** (.2)	-0.384 (.288)	-.626* (.331)	-0.249 (.424)	-0.0278 (.392)	-0.383 (.633)
Woman	-.0671** (.0305)	-.0993** (.0463)	-0.00758 (.0505)	0.0547 (.0834)	0.029 (.0757)	0.0504 (.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.	0.46	0.356	0.594	2.38	2.21	2.55
Observations	3697	2077	1620	4049	2077	1972
Adj. R-square	0.131	0.0567	0.123	0.0854	0.0246	0.059

Clustered (election-township level) standard errors in parentheses

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

- Increasing female political representativeness has an impact on family birth decision
- 3rd parity fertility decreased for mothers without son.
- Female gaining more awareness in decision making which affects joint decision (including birth) outcome