

# Local Economic Impacts of Legislative Malapportionment

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## Abstract

- In Japan, the Lower House seats were severely malapportioned until an electoral reform substantially equalized the geographical distribution of representation for the 1996 election.
- We use this episode as a quasi-experimental setting to investigate the causal effect of malapportionment on the relative performance of local economies.
- We find that an additional seat in the Lower House significantly expands local governments' fiscal space. An extra delegate is associated with more fiscal transfers, more borrowing and more spending (largely on public capital).
- However, over-represented communities ultimately do not seem to benefit from this political and fiscal gift. We detect no discernible effects of legislative representation on establishment or employment.
- We document crowding-out effects in local labor markets. An additional representation and (the resulting additional transfers) produce more construction and public sector jobs, and yet these positive effects are entirely offset by comparable losses of jobs in other sectors.

## Introduction

- Malapportionment, or unequal legislative representation, is a highly contested, and yet a common and persistent feature of electoral systems in many countries where more delegates per capita are granted to rural, sparsely populated, and economically struggling regions.
- For example, the US Senate seats are exceedingly malapportioned since every state is given the same number of seats in spite of sizable differences in population.
  - California and Wyoming are represented by two senators although the population of California is 66 times larger than that of Wyoming.
- If malapportionment were eliminated to the detriment of over-represented communities, would they endure severe economic contraction?
- Legislative bargaining models predict that malapportionment leads to favorable budget allocation for over-represented districts via two interactive mechanisms (e.g., Ansolabehere, Snyder, and Ting, 2003, Knight, 2004).
  - The vote and bargaining power of each delegate is unrelated to her district population.
  - Delegates from districts with fewer voters can be "bribed" more cheaply into supporting the winning coalition's agenda.
- The real economic impact of this fiscal gift depends on the size of local fiscal multipliers (e.g., Cohen, Coval, and Malloy, 2011, Chodorow-Reich, 2019, Nakamura and Steinsson, 2014, Brückner, Markus, and Anita Tuladhar, 2014).
- In Japan, the 1995 electoral reform largely equalized delegate size per population for the 1996 election for the Lower House, which we use as a natural experiment.
  - Horiuchi and Saito (2003) document the re-allocation of fiscal transfer in favor of under-represented municipalities after the re-apportionment.

## Data and Econometric Methods

- We use the survey data on employment and establishment from 1991, 1996, and 2001, which straddle the 41th Lower House election in October 1996.
  - The pre-reform (control) period from 1991-1996 and the post-reform (treatment) period from 1996-2001.
- Basic model:
  - $\Delta Y_{it} = \beta_t + \beta_i + \beta Reform_t \times Delegate_k + \gamma_1 \Delta Population_{it} + \gamma_2 \Delta Elderly_{it} + \varepsilon_{it}$
  - Subscript  $i$  and  $t$  represent municipality and year, respectively
  - Fiscal policy outcome: transfer (grant plus local allocation tax), transfer plus borrowing, local tax revenue, expenditure, public investment, current expenditure (all in 100,000 yen per capita term)
  - Economic outcome: establishment/employment per capita
  - $\Delta Population$  and  $\Delta Elderly$  controls for population growth and changes in elderly population (65 or above) relative population, respectively
  - $Delegate_k$  is delegate size before the reform
  - $Reform_t$  is dummy for the 1996 reform (equals to 1 for 1996-2001)
  - $\beta$  captures the effect of the 1996 reform on **relative** outcome
  - If  $\beta < 0$  for employment per capita, it means that municipalities in previously over-represented district (i.e., large  $Delegate_k$ ) performed more poorly after the reform than other municipalities
- We also estimate local fiscal job multiplier using  $Delegate_k \times Reform_t$  as IV, while controlling for voter preferences and industry shocks
  - $\Delta Transfer_{it} = \alpha_t + \alpha_i + \alpha Reform_t \times Delegate_k + \varepsilon_{it}$
  - $\Delta Employment_{it} = \rho_t + \rho_i + \rho \Delta Transfer_{it} + v_{it}$

Table 4: Differential Effects of the 1996 Electoral Reform on Fiscal and Economic Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Changes in Transfers per Capita	Changes in Transfers plus Borrowings per Capita	Changes in Local Tax Revenue per Capita	Changes in Total Expenditure per Capita	Changes in Investment Expenditure per Capita	Changes in Current Expenditure per Capita	Changes in Employment per Capita	Changes in Establishment per Capita
Reformx(Delegate Size per 1 Million District Population)	-0.0839*** (0.0235)	-0.154*** (0.0541)	0.00916 (0.00925)	-0.197** (0.0783)	-0.157*** (0.0647)	-0.0405 (0.0258)	0.000780 (0.00115)	5.15e-05 (0.000116)
Population Growth	0.679 (1.439)	-0.816 (3.057)	0.256 (0.310)	-2.891 (3.421)	-1.817 (3.517)	-1.073*** (0.404)	0.125*** (0.0306)	0.00941** (0.00408)
Changes in Elderly's (65 Years or Older) Share in Population	11.13*** (3.156)	16.74*** (6.009)	0.125 (1.008)	26.73*** (8.423)	17.70** (7.961)	9.034*** (2.410)	-0.0219 (0.114)	-0.000678 (0.0119)
Observations	6,303	6,303	6,303	6,303	6,303	6,303	6,304	6,304
R-squared	0.135	0.197	0.082	0.234	0.110	0.518	0.250	0.101
Number of municipalities	3,152	3,152	3,152	3,152	3,152	3,152	3,152	3,152

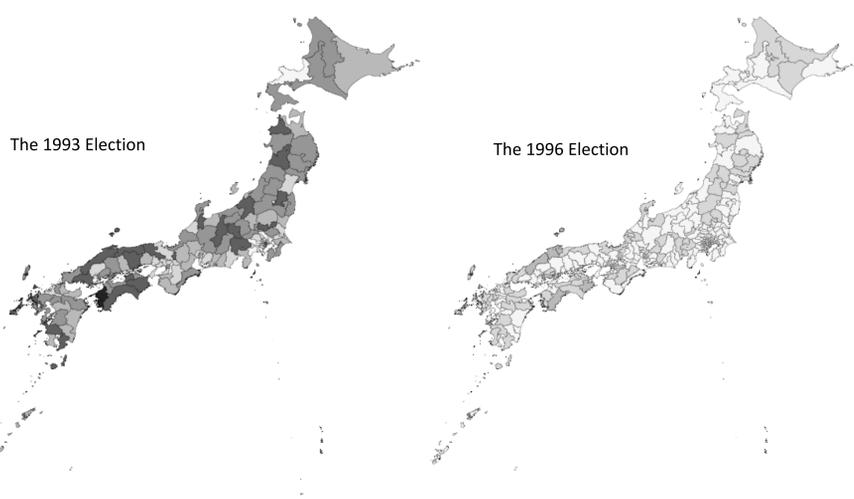
Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
The data cover 3152 municipalities for two time periods, 1991-1996 and 1996-2001. All of fiscal variables are measured in 100,000 yen (approximately, 1,000 dollars). Reform is a dummy variable that equals 1 for 1996-2001 and zero otherwise. Regressions include year fixed effects and municipality fixed effects. Standard errors are clustered by electoral districts.

Table 9: Local Fiscal Job Multipliers (Instrumental Variable Estimation)

	(1)	(2)	(3)	(4)	(5)	(6)
	Changes in Employment per Capita	Changes in Employment per Capita (Construction & Public Sector)	Changes in Employment per Capita (Construction & Public Sector)	Changes in Employment per Capita (Non-Construction & Non-Public Sector)	Changes in Employment per Capita (Non-Construction & Non-Public Sector)	Changes in Employment per Capita (Non-Construction & Non-Public Sector)
Changes in Transfers per Capita	-0.00924 (0.0138)	-0.0211 (0.0153)	0.00999* (0.00564)	0.00809 (0.00582)	-0.0192 (0.0121)	-0.0292** (0.0142)
Population Growth	0.131*** (0.0333)	0.133*** (0.0432)	0.00933 (0.00937)	0.0106 (0.00841)	0.121*** (0.0341)	0.122*** (0.0434)
Changes in Elderly's (65 Years or Older) Share in Population	0.0810 (0.216)	0.213 (0.253)	-0.0830 (0.0922)	-0.0603 (0.0938)	0.164 (0.199)	0.273 (0.240)
Bartik Industry Shift-Share		0.797*** (0.141)		0.105** (0.0506)		0.692*** (0.149)
Vote Share for the Ruling Party (the LDP)		0.0137 (0.00846)		0.00592*** (0.00216)		0.00782 (0.00870)
Observations	6,302	6,302	6,302	6,302	6,302	6,302
R-squared	0.232	0.166	0.014	0.112	-0.011	-0.196
Number of municipalities	3,151	3,151	3,151	3,151	3,151	3,151
First Stage F Statistic	12.77	11.90	12.77	11.90	12.77	11.90
P-Value of Anderson-Rubin Weak IV Robust Test	0.501	0.140	0.0674	0.158	0.0996	0.0172
Anderson-Rubin Weak IV Robust Confidence Set	[-0.045748, 0.20736]	[-0.071534, 0.074311]	[-0.000514, 0.28093]	[-0.003203, 0.26305]	[-0.05613, 0.04258]	[-0.081339, -0.005108]

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
The data cover 3152 municipalities for two time periods, 1991-1996 and 1996-2001. Changes in transfer capita are measured in 100,000 yen (approximately, 1,000 dollars). The instrumental variable is Reformx(Delegate Size per 1 Million District Population) where Reform is a dummy variable that equals 1 for 1996-2001 and zero otherwise. Regressions include year fixed effects and municipality fixed effects. Standard errors are clustered by electoral districts.

## Delegate per 1 million District Population



## Discussion

- The 1996 electoral reform transformed the geographical distribution of representation and central government transfers, and yet it did not have first-order impacts on the geographical distribution of productive activities.
- More research on other countries' experiences are needed to better understand how legislative malapportionment affects fiscal and economic outcomes of local communities.

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## References

- Ansolabehere, S., J. Snyder, and M. Ting. 2003. "Bargaining in Bicameral Legislatures: When and Why Does Malapportionment Matter?," *American Political Science Review* 97 (August): 471-81.
- Brückner, M., and A. Tuladhar. 2014. "Local Government Spending Multipliers and Financial Distress: Evidence from Japanese Prefectures." *Economic Journal* 124 (581): 1279-1316.
- Chodorow-Reich, G. 2019. "Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned?" *American Economic Journal: Economic Policy* 11 (2): 1-34.
- Cohen, L., J. Coval, and C. Malloy. 2011. "Do Powerful Politicians Cause Corporate Downsizing?" *Journal of Political Economy* 119 (6): 1015-60.
- Horiuchi, Y., and J. Saito. 2003. "Reapportionment and Redistribution: Consequences of Electoral Reform in Japan," *American Journal of Political Science*, 47 (4): 669-682.
- Knight, B. 2004. "Legislative Representation, Bargaining Power, and the Distribution of Federal Funds: Evidence from the U.S. Senate", NBER Working Paper No. 10385 (March).
- Nakamura, E., and J. Steinsson. 2014. "Fiscal Stimulus in a Monetary Union: Evidence from US Regions." *American Economic Review* 104 (3): 753-92.