Municipal mergers and special provisions of local council members in Japan

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Abstract The number of municipalities in Japan has decreased from 3,232 in 1999 to 1,820 in 2006 because of municipal mergers, called *Heisei-no-Daigappei*. This paper estimates the political choices of local council members in Japan's municipal mergers. In Japan, being a local council member is a full-time job. The local council has "veto powers" over local administration. Since the wage for a local council member is quite high, council members like to keep their seats. The jobs of local council members are affected by municipal mergers, as preferential treatment and penalties are delivered by the central government to the local government in municipal mergers. In our results, merged municipalities apply "Special Provisions" for local council members because of the size of the municipality. The choice of municipality is also affected by the national government's political power. In addition, Special Provisions lead to additional fiscal burdens. These fiscal burdens will transfer to the whole country because "the Local Allocation Tax grants system" (abbreviated as LAT grants), a national grants system, works well in Japan. The municipalities that choose the Special Provisions exploit the benefits from other municipalities without any additional costs. Our results show that the central government induces the free-rider problem in Japan.

Keywords: municipal mergers, local council size, intergovernmental relations, free riding
JEL Classifications: H77, H11, D72

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1 Introduction

The number of municipalities in Japan decreased from 3,232 in 1999 to 1,820 in 2006 by municipal mergers, called *Heisei-no-Daigappei*. Municipal mergers intend to strengthen the administrative capacity of municipalities for fiscal decentralization. Furthermore, in terms of the economics-of-scale effect, municipal mergers can decrease the total expenditures of local governments.

The purpose of this paper is to estimate the effects of the political choices of local council members in Japan's municipal mergers. In Japan, being a local council member is a full-time job. The local council has "veto powers" over local administration. Since the wage for a local council member is quite high, council members like to keep their seats. The jobs of local council members are affected by municipal mergers, as preferential treatment and penalties are delivered by the central government to the local government in municipal mergers.

Research on municipal mergers is mainly focused on the decision making process and the economies of scale of expenditure. For example, Sørensen (2006) examined political factors of merger decisions as well as expected efficiency gains with data on Norwegian municipalities. Of the empirical results in Japan, several confirmed incentives for mergers. Hirota (2007), Kawaura (2009) and Kawamura (2010) studied the incentives for municipal mergers in local public finance in Japan using a multinomial and nested logit model. Hirota (2007) reported that factors for the merger of municipalities are bad fiscal conditions, municipalities with depopulated areas and municipalities with small areas. In particular, the results confirm that preferential treatment by the central government has effects on mergers of municipalities. In addition, the behavior of neighboring municipalities affects decision making for mergers. With respect to the effect of economies of scale on expenditure, Hanes (2003) studied amalgamation impact on the local public expenditure in Sweden. Dolley et al. (2007) reported the effect of mergers on total expenditure in Australia, and Geys et al. (2007) considered Germany.[1] Recently, Hirota and Yunoue (2009) investigated the scale effect using panel data on Japanese municipalities and found that municipalities achieved reductions in their total expenditures with mergers.

In this paper, we focus on the relationship between the choices of local councils and municipal mergers. There is a possibility that political and sociogeographic factors influence the decisions of municipalities in Japan to merge. There are policies such that local councils of merged municipalities can choose *Zainin Tokurei* (Special Provisions of Holding Seats (SPHS) and *Teisu Tokurei* (Special Provisions of Relaxation of Legal Size (RLS)). The former deals with the protection of the jobs of local council members and the latter deals with the structural change of local councils. These policies provide preferential treatment for council mergers by the central government, which of course lead to additional

[1] See, for example, Bodkin and Conklin (1971), Hirsh (1959, 1965), and Walzer (1972), who studied European countries and the U.S.

fiscal burdens.

In addition, our research relates to the common pool problem. If some municipalities choose the Special Provisions, they free ride on other municipalities. This is because the structure of Japanese local public finance is that it is received as “large grants” from the central government (general grants system, abbreviated as LAT grants). While a significant portion of local government expenditure is financed by transfers from the central government, the fiscal resource of the LAT grants is national taxes. In addition, the amount of LAT grants of each municipality is determined based on the municipality’s fiscal shortage (Ihori 2009; Saito and Yunoue 2009). Therefore, an increase of a municipality’s expenditure leads to an increase in the LAT grant. This causes an additional fiscal burden nationwide. In Special Provisions for municipal mergers, a merged municipality also receives preferential treatment (for example, expansion of LAT grants) from the central government. In other words, the central government manipulates the merged municipality to take free ride on other local governments to the merged municipality.

The recent literature relating to the free-rider problem of municipal mergers is discussed in Nelson (1992), Bradbury and Crain (2001), Baqir (2002), Bradbury and Stephenson (2003), Tyrefors Hinnerich (2009) and Jordahl and Liang (2010). According to Hirota and Yunoue (2011), an additional expense of a local council was observed when a municipality applied the SPHS.

The rest of the paper is organized as follows. Section 2 discusses municipal mergers in Japan. Section 3 defines the empirical model and provides the results of the logit estimation. Section 4 concludes the paper.

2 Municipal mergers in Japan

2.1 Background of municipal mergers

To start with, we briefly explain Japanese fiscal decentralization. There are three layers of government structures in Japan. There are the central, prefectural and municipal governments. The local government involves prefectures and municipalities. Japan has tended toward centralization in administration and public finance for the last several decades. The central government has a strong influence on the prefectural or municipal governments. In local public finance, local government has largely depended on intergovernmental transfers from the central government for a long time. For example, the Local Allocation Tax grants system (abbreviated as LAT grants) has extremely strong effects on fiscal adjustment. The LAT grants system involves about 17 trillion yen every year and contributes about 20% of local government revenues. In fiscal 2003, over 3,000 municipalities received LAT grants from the central government (Ihori 2009; Saito and Yunoue 2009).

In recent years, both central and local governments have suffered from fiscal problems and a declining and aging population, particularly in local government. Given these problems, the central

government has been aggressively promoting fiscal and political decentralization since the Decentralization Act in 2000. In addition, the Koizumi Cabinet implemented the plan on the Triple Reform from 2003 to 2005. These reforms are the shifting of the tax source from the central to the local governments, reducing subsidies and reviewing LAT grants. The intent of the Triple Reform is to replace specific and general-purpose subsidies with local taxes (see Saito and Yunoue 2009). As a result, government subsidies were reduced by about 5.2 trillion yen, the tax source was shifted from the central government to the local governments by about 3 trillion yen, and LAT grants were reduced by about 3.6 trillion yen (Ihori 2009).

The central government encourages municipal mergers in tandem with work on economic and fiscal structural reforms. Through the municipal merger process, known as *Heisei-no-Daigappei*, the number of municipalities in Japan decreased from 3,232 in 1999 to 1,820 in 2006. The principal objectives of municipal mergers are to achieve a strengthening of administration and an improvement in its fiscal condition. Mergers are expected to reduce total expenditure because of economies of scale. In order to promote municipal mergers, the central government variously supports the local government by *Shi Tyo Son no Gappei no Tokurei ni kansuru Horitu*, which is the Special Municipal Mergers Law from the Ministry of Internal Affairs and Communications (MIC).

The Special Municipal Mergers Law, the so-called *Ame to Muchi no Seisaku* (the Carrot-and-Stick Policy), was promised to merged municipalities for various preferential treatments and punishments for a few years. This law was temporary legislation until March 2006. During this period, merged municipalities received preferential treatment (carrot policy) from the central government: expansion of LAT grants and local tax measures, special bonds on the mergers, and special provisions of local council members. On the contrary, nonmerged municipalities, in particular small villages, received punishment (stick policy), such as shrinking of LAT grants.

In addition, there was a relaxation of the population's requirements for upgrading to *Seirei Shitei Toshi* (the government-designated cities). A government-designated city is able to have increased authority as well as prefecture government. The central government relaxed requirements to the extent of setting the population requirements from one million to 0.7 million persons. In addition, when towns are upgraded to cities, the requirements are temporarily relaxed to the extent of setting the population limit at 30,000 or more.

In the policies above, the central government manipulated municipalities with the carrot-and-stick approach. In this paper, we focus on priority local council members and the political choices of merged municipalities.

2.2 Special provisions of the local council members

We briefly explain the size of local councils within municipalities. Table 1 shows an upper limit of the local council size depending on the extent of the municipality's population (Local Autonomy Act, Article 91). The number of local council members usually reaches upper limit. Notice that there are exceptions for large cities. In a city whose population is over 900,000, an upper limit of the local council size is decided as follows. The local council size of a large city is increased by eight persons for each additional 500,000 persons in the population. For example, if the population size is 1,400,000 (equals 900,000 plus 500,000), an upper limit of local council size is 64 (equals 56 plus 8).

In this section, we explain the Act on Special Provisions of the Merger of Municipalities about local council members (abbreviated as Special Provisions). There are two articles of Special Provisions for local councils.[2] Since the central government wishes to promote municipal mergers, the Special Provisions for local councils are preferential treatment (carrot policy) under municipal mergers.

The first is *Zainin Tokurei,* which is the Special Provisions of Holdings Seats (SPHS). This law provides job protection for local council members. When a merged municipality selects the SPHS, a local council member of the former municipality can stay in the new municipality for a few years. This is a preferential treatment to address political opposition to the merger by local council members. For example, if two cities (City A and City B) and one town (Town C) have a plan to merge and the numbers of the former council members are 34, 30 and 14, respectively, then the local council size of the new municipality will be 78 when they apply the SPHS. On the contrary, the upper limit of council members would be only 46 without the SPHS. In this example, 32 council members receive the preferable treatment of retaining their seats.

The second is *Teisu Tokurei*, which is the Special Provisions of Relaxation of Legal Size (RLS). This law allows the structural change of a local council. When a merged municipality selects the RLS, it is possible to relax the upper limit of its local council's legal size up to twice the upper limit of normal municipalities for a few years. However, when a merged municipality does not use both the SPHS and the RLS, the merged municipality elects a new local council with an upper limit as reported in Table 1.

[2] Another Special Provision is a retirement pension plan. When former local council members automatically lose their job under municipal mergers, the central government regards retired council members as regular members of the local council and pays them a pension.

3 Empirical analysis

3.1 Data and summary statistics

We estimate a binary choice model using Japanese municipality data. We have cross-sectional data of the 549 merged municipalities for three years (2003-2005). Because we focus on the political choice of the merged municipality, the nonmerged municipalities are excluded from our sample. The municipal government's data are mainly derived from the *Shi Tyo Son Kessan Card* (Statistics of Final Account of Municipal Governments) and the *Gappei Digital Archive* (Digital Archive of Municipal Mergers).[3]

We mainly focus on two kinds of factors, sociogeographic and political. First, we use sociogeographic factors that are represented by population, area, number of former municipalities included in a merged municipality, coalfield areas, remote islands, and depopulated areas. The coalfields, remote islands and depopulated areas have been designated by the MIC as requiring special support. For example, many coalfield areas remain in bad financial circumstances. This sociogeographic factor, which includes the fiscal condition, influences the political choice of the merged municipality. This is the reason why we consider the sociogeographic factors of municipalities as dependent variables.

Second, we are interested in whether the political factors affect the merged municipalities or not. We show the Japanese government structure in Figure 1. In Japan, because not only financial supports but also personnel exchanges have strong influences, the central government controls the prefectures. Moreover, the prefectures influence municipalities with financial and personnel power. For reference, independent variables of each political factor include the following.

Prefecture Instruction Pattern: The MIC requested prefectures to set up Merger Support Measures to help municipalities to progress municipal mergers. Thus, the prefectures instructed a combination of municipalities. Because of the long history of a centralized system in Japan, this instruction to a combination of municipalities is not conclusive but it has a strong influence on the municipalities. If the "observed" combination of municipal mergers coincided with the "instructed" combination, then the dummy variable equals 1 and is zero otherwise. This dummy variable shows the degree of upper-level government's influence on the political choice of the lower-level government. In other words, if the coefficient of the dummy variable is significant, then the upper-level government has influence on the political choice of the lower-level government.

Details of the observed combinations of municipal mergers and the instructed combination set dummy variable involve the following four patterns:

[3] *Gappei Digital Archive* (http://www.gappei-archive.soumu.go.jp/ MIC).

(1) if the instructed combination is (City A, City B and Town C), and the observed combination is (A, B and C), then the dummy variable equals 1;
(2) if the instructed combination is (A, B and C), and the observed combination is (A and B), then the dummy variable equals zero;
(3) if the instructed combination is (A, B and C), and the observed combination is (A, B, C and D), then the dummy variable equals zero;
(4) if the instructed combination has two patterns (A, B and C) (D, E and F), and the observed combination is (A, B, C, D, E and F), then the dummy variable equals 1;

where A, B, C, D, E, F represent the municipalities.

Prefectural Governor from the Bureaucracy: In Japanese local administration and finance, the upper-level government often has a strong influence on the lower-level government because of personnel relationships.[4] MIC bureaucrats have become prefectural governors in some Japanese local administrations for nearly 100 years. They might be actively implementing a policy towards the realization of municipal mergers. If a prefectural governor was previously an MIC bureaucrat, then the dummy variable equals 1 and is zero otherwise.

The numbers of the RLS and the SPHS applications by prefecture are reported in Figure 2. According to Figure 2, Hiroshima and Kagoshima achieved the highest number of applications of the RLS of 8. On the other hand, differences were observed for the SPHS. The highest number of applications of the SPHS was 24 for Ibaraki. Using Figure 2, we confirmed the differences among prefecture governments as regards the choice of Special Provisions of Local Council Members.

Summary statistics are reported in Table 2. The mean value of the population data is 87,975. While the maximum value of the population is about 1.4 million, the minimum value is 1,572. In the data of merged municipalities, sample variability of the population data is large. Similarly, area and number of municipalities included in municipal mergers vary greatly in these data.

Moreover, summary statistics of municipalities that apply the SPHS or the RLS, are reported in Tables 3 and 4, respectively. There are 313 municipalities that applied the SPHS. On the other hand, 88 municipalities applied the RLS. It is of interest to point out the statistical difference between the SPHS and the RLS. Comparing the mean value of the population data of the RLS with that of the SPHS, it is clear that the mean value of the population of the RLS is large. The mean value of population data of the RLS is 199,692. On the contrary, that of the SPHS is 72,724. It is likewise clear that area and number of municipalities exhibit statistical differences between the RLS and the SPHS. The mean value of area of the RLS is 581 km^2, but that of the SPHS is 305 km^2. The maximum value of number of municipalities

[4] Sumi (2000) and Yunoue (2005) reported that LAT grants derived by personnel relationships are observed in Japan.

included in merged municipalities is 14 for the RLS and it is 8 for the SPHS.

3.2 Empirical model and results

We estimate what factors of municipalities affect their choice of the Special Provisions in the mergers using the empirical model, defined by equation (1):

$$\begin{aligned} y_i^* = {} & \alpha + \beta_{Pop} \ln(Pop_i) + \beta_{Pop2} \ln(Pop_i)^{*2} + \beta_{Area} \ln(Area_i) + \beta_{Num} Num.ofmun_i \\ & + \beta_{CF} CoalField_i + \beta_r remote_i + \beta_D Depopulated_i + \beta_{p\_I} pre\_Instruction_i , \\ & + \beta_{p\_G} pre\_Governor_i + \varepsilon_i \end{aligned} \tag{1}$$

where

$$y_i = 1 \quad if \quad y_i^* \geq 0$$

$$y_i = 0 \quad if \quad y_i^* < 0$$

and i refers to the i th municipality; β represents the coefficients of independent variables; and ε_i is an error term composed by identically independent random variables with standard logistic distribution. y^* is latent variable. The dependent variable y_i is considered to be two patterns of municipality choice as follows.

(1) "Special Provisions of Holdings Seats (SPHS)": the aim of our regression for the SPHS is to examine the choice of job protection for local council members.
(2) "Special Provisions of Relaxation of Legal Size (RLS)": the objectives of our regression for the RLS are to examine the choice of structural changes of local councils.

The independent variables include sociodemographic characteristics such as population, squared population, area, dummy variable for coalfield areas, dummy variable for remote islands and dummy variable for depopulated areas. The variable $Num.ofmum_i$ represents the number of former municipalities included in a merged municipality. We also consider the political factors: $pre\_Instruction_i$ is a dummy variable indicating the prefecture's political power in municipal mergers; and $pre\_Governor_i$ is a dummy variable representing the presence of MIC's bureaucrat-turned-prefectural governor.

The empirical results of the choice of the SPHS are reported in Table 5.[5] The coefficient of the population term is statistically significant at the 5% level. Because the coefficient of population is positive and the coefficient on squared population is negative, this implies that additional population

[5] See also the marginal effect of the probability of each variable in Figure 3.

size has a positive effect on choice probability of the SPHS for low-population municipalities. On the other hand, the population effect becomes negative for high-population cities. The coefficient of the number of previous municipalities is negative and statistically significant at the 1% level. These results are quite intuitive. The SPHS is the most preferable policy for local council members, and, thus, local council members hope to apply this special provision. However, the physical capacity of the council floor is limited, and, therefore, the small municipalities tend to choose the SPHS. The coefficient of the depopulated area dummy variable is estimated to be negative and statistically significant at the 5% level. This result seems to conflict with the former results. According to Hirota and Yunoue (2011), additional expenses of local councils were observed when a municipality applies the SPHS.[6] Because depopulated areas have poor fiscal conditions, they are unable to afford the additional fiscal burden to increase the number of local council members. The coefficient of the Prefecture Instruction Pattern dummy is positive and statistically significant. A municipality that is affected by the prefecture's political power tends to choose the SPHS. This implies that some merged municipalities were indirectly induced by the carrot policy of the MIC through prefectural instruction.

The empirical results for the RLS are reported in Table 6. The estimated values of the population terms are contrary to those for the SPHS. A large population city has a high probability of choosing the RLS. Similarly, the coefficient of the area term is positive and statistically significant; municipalities whose areas are large tend to choose the RLS. The coefficient of the number of former municipalities is positive and significant at the 1% level. The coefficient of the political term is not estimated to be statistically significant. Prefecture instruction and prefectural governor from the Bureaucracy do not significantly affect the choice of the RLS. These results imply that large cities have an incentive to upgrade their status by mergers. Since upgrading a city status leads to more power of registration, cities that face the promotion of status tend to merge with other cities. Therefore, the instruction of prefecture or the leadership of a governor does not significantly affect the choice of the Special Provisions.

4 Conclusion

This paper has investigated the political choice of municipal mergers in Japan for both the SPHS and the RLS for merged municipalities.

First, a small-sized municipality has a high probability of choosing the SPHS. The carrot policy of the central government leads to the promotion of municipal mergers. The choice of the SPHS is also affected by the prefecture's political power. This implies that some merged municipalities were indirectly induced by the carrot policy of the MIC through prefectural instruction. Second, a large-sized municipality has a high probability of choosing the RLS. Their private incentives tend to merge with

[6] Egger and Koethenbuerger (2010) showed that the size of government spending is positively related to the number of legislators using German municipal panel data.

those of other cities, and they the RLS to upgrade to larger cities. In other words, political factors do not affect the choice of the RLS.

These Special Provisions lead to an additional fiscal burden. This fiscal burden will transfer to the whole country since the LAT grants system, a nationwide grants system, works well in Japan. The municipalities that choose the Special Provisions exploit the benefits from other municipalities without any additional costs. Our results show that the central government induces the free-rider problem in Japan.

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Fig 1. Japanese Government structure

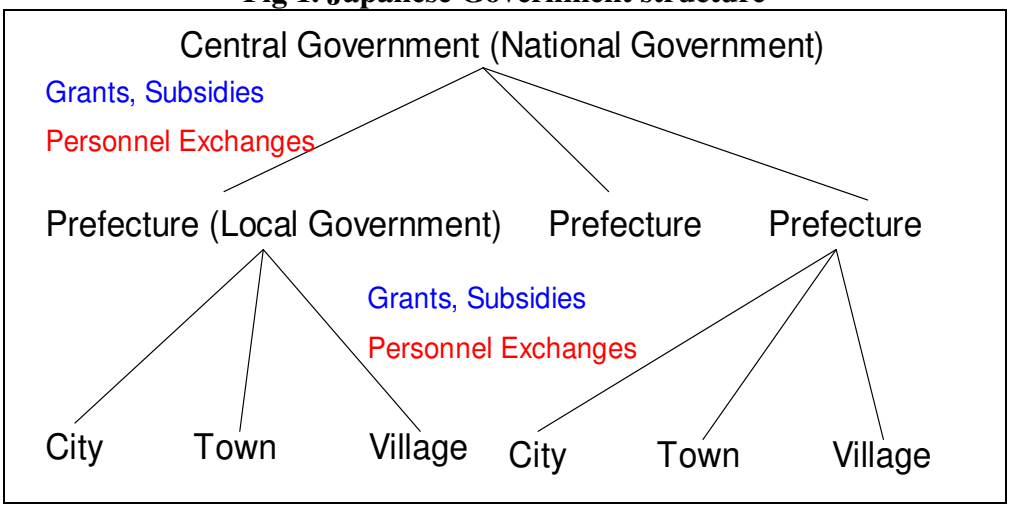


Table 1. Local Council-Size Law: Japanese municipalities

City		Town and village	
Population size	Number of council members	Population size	Number of council members
~50,000	26	~2,000	12
50,000 ~100,000	30	2,000~5,000	14
100,000 ~200,000	34	5,000~10,000	18
200,000~300,000	38	10,000~20,000	22
300,000~500,000	46	20,000~	26
500,000~900,000	56		
900,000~	56~96		

Table 2. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Special Provisions of holdings seats Dummy	549	0.570	0.496	0	1
Relaxation of legal-size Dummy	549	0.160	0.367	0	1
Population	549	87975.890	137236.000	1572.000	1392746.000
Area	549	355.207	292.316	13.310	2179.350
Num. of municipalities	549	3.521	1.867	2.000	14.000
Coal Field Area Dummy	549	0.020	0.140	0	1
Remote Islands Dummy	549	0.104	0.305	0	1
Depopulated Area Dummy	549	0.617	0.486	0	1
Prefecture Instruction Pattern Dummy	549	0.158	0.366	0	1
Prefectural Governor from MIC Dummy	549	0.291	0.455	0	1

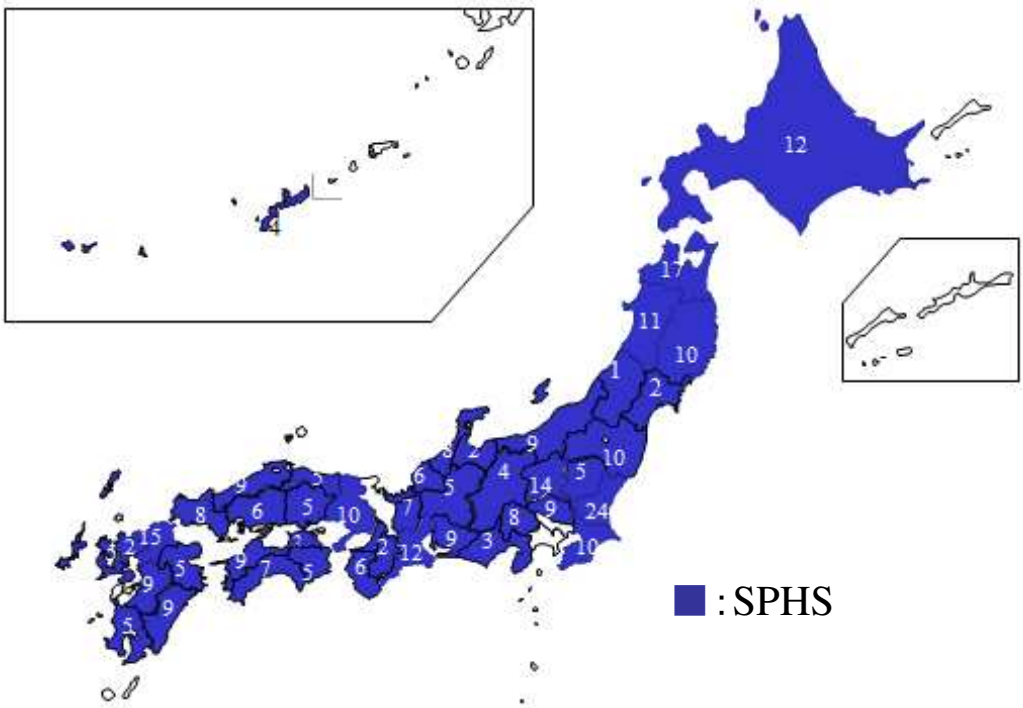
Table 3. Summary statistics of Special Provisions of Holdings Seats (SPHS)

Variable	Obs	Mean	Std. Dev.	Min	Max
Population	313	72724.1	107965.3	1572	1173418
Area	313	305.4	245.63	13.31	1373.89
Num. of municipalities	313	3.1	1.19	2	8
Coal Field Area Dummy	313	0.022	0.1481	0	1
Remote Islands Dummy	313	0.540	0.4992	0	1
Depopulated Area Dummy	313	0.077	0.2665	0	1
Prefecture Instruction Pattern Dummy	313	0.166	0.3728	0	1
Prefectural Governor from MIC Dummy	313	0.300	0.4591	0	1

Table 4. Summary statistics of Relaxation of Legal Size (RLS)

Variable	Obs	Mean	Std. Dev.	Min	Max
Population	88	199692.8	231666.8	6630	1173418
Area	88	581.3	362.61	87.6	2179.35
Num. of municipalities	88	5.3	2.71	2	14
Coal Field Area Dummy	88	0.011	0.1066	0	1
Remote Islands Dummy	88	0.784	0.4138	0	1
Depopulated Area Dummy	88	0.205	0.4057	0	1
Prefecture Instruction Pattern Dummy	88	0.193	0.3971	0	1
Prefectural Governor from MIC Dummy	88	0.239	0.4287	0	1

Fig 2. Application numbers of Special Provisions



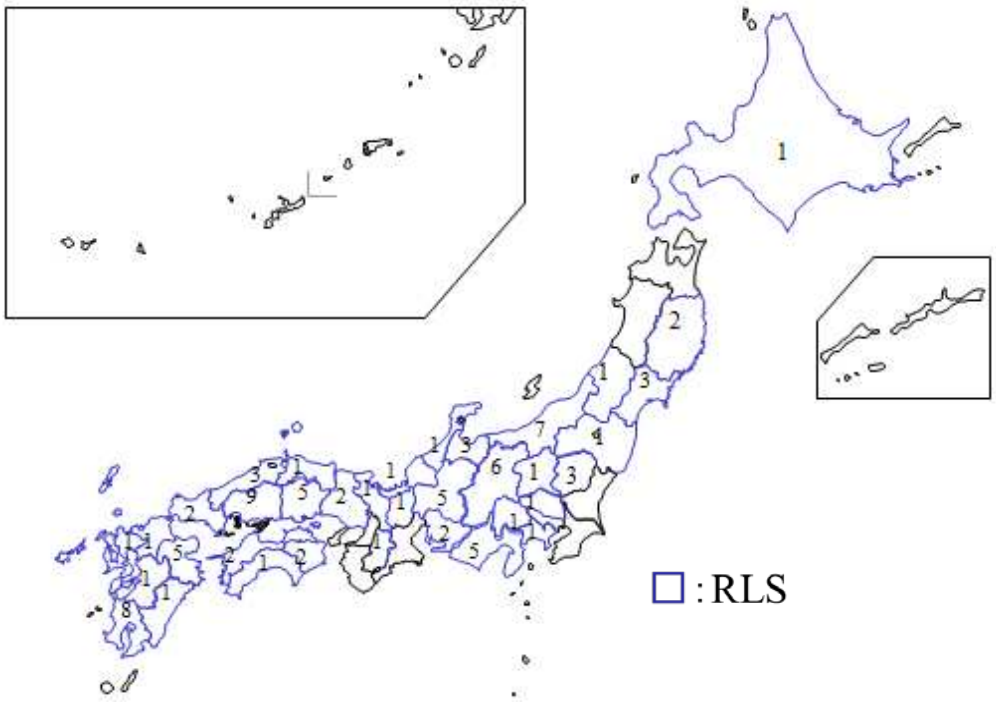


Table 5. Binary logit model estimation results:
Special Provisions of Holdings Seats

Variables	(1) Special Provisions of holdings seats	Marginal effects
ln(Population)	3.308**	0.811**
	(1.341)	(0.329)
ln(Population)2	-0.156**	-0.038**
	(0.061)	(0.015)
ln(Area)	0.071	0.017
	(0.148)	(0.036)
Num. of municipalities	-0.346***	-0.085***
	(0.070)	(0.017)
Coal Field Area Dummy	0.610	0.140
	(0.706)	(0.147)
Remote Islands Dummy	-0.282	-0.070
	(0.323)	(0.081)
Depopulated Area Dummy	-0.574**	-0.138**
	(0.255)	(0.060)
Prefecture Instruction Pattern Dummy	0.499*	0.118*
	(0.269)	(0.061)
Prefectural Governor from Bureaucrat Dummy	-0.089	-0.022
	(0.207)	(0.051)
Constant	-15.984**	
	(7.352)	
Observations	549	549
Log likelihood	-341.079	
Pseudo R2	0.090	
Marginal effects after logit		0.569

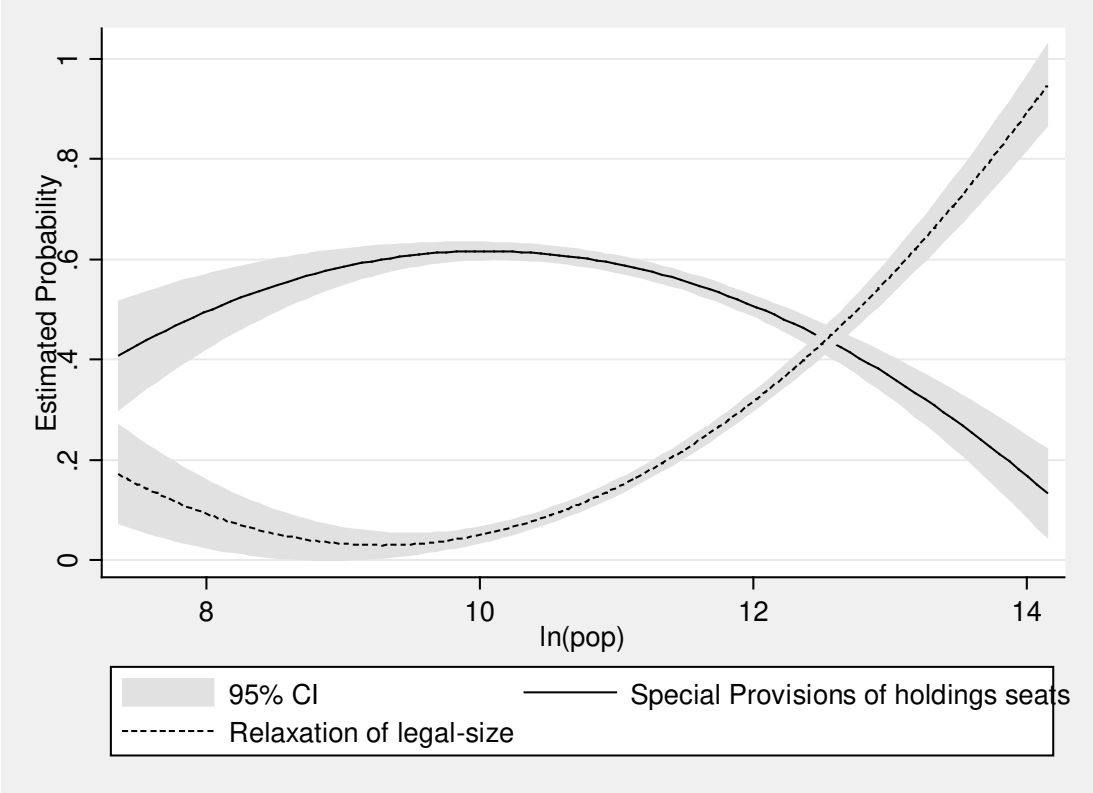
Notes: Standard errors are in parentheses. Variables whose coefficients are significant at the 10%, 5%, and 1% levels are indicated by *, **, and ***, respectively.

Table 6. Empirical results for Relaxation of Legal Size

Variables	(2) Relaxation of legal-size	Marginal effects
ln(Population)	-3.934*	-0.345*
	(2.242)	(0.206)
ln(Population)2	0.212**	0.019**
	(0.099)	(0.009)
ln(Area)	0.468*	0.041*
	(0.246)	(0.021)
Num. of municipalities	0.324***	0.028***
	(0.082)	(0.008)
Coal Field Area Dummy	-1.530	-0.076**
	(1.361)	(0.034)
Remote Islands Dummy	0.212	0.020
	(0.416)	(0.042)
Depopulated Area Dummy	0.633	0.053
	(0.408)	(0.032)
Prefecture Instruction Pattern Dummy	-0.096	-0.008
	(0.371)	(0.031)
Prefectural Governor from Bureaucrat Dummy	-0.112	-0.010
	(0.332)	(0.028)
Constant	11.255	
	(12.605)	
Observations	549	549
Log likelihood	-172.569	
Pseudo R2	0.285	
Marginal effects after logit		0.097

Notes: Standard errors are in parentheses. Variables whose coefficients are significant at the 10%, 5%, and 1% levels are indicated by *, **, and ***, respectively.

Fig 3. Marginal effects



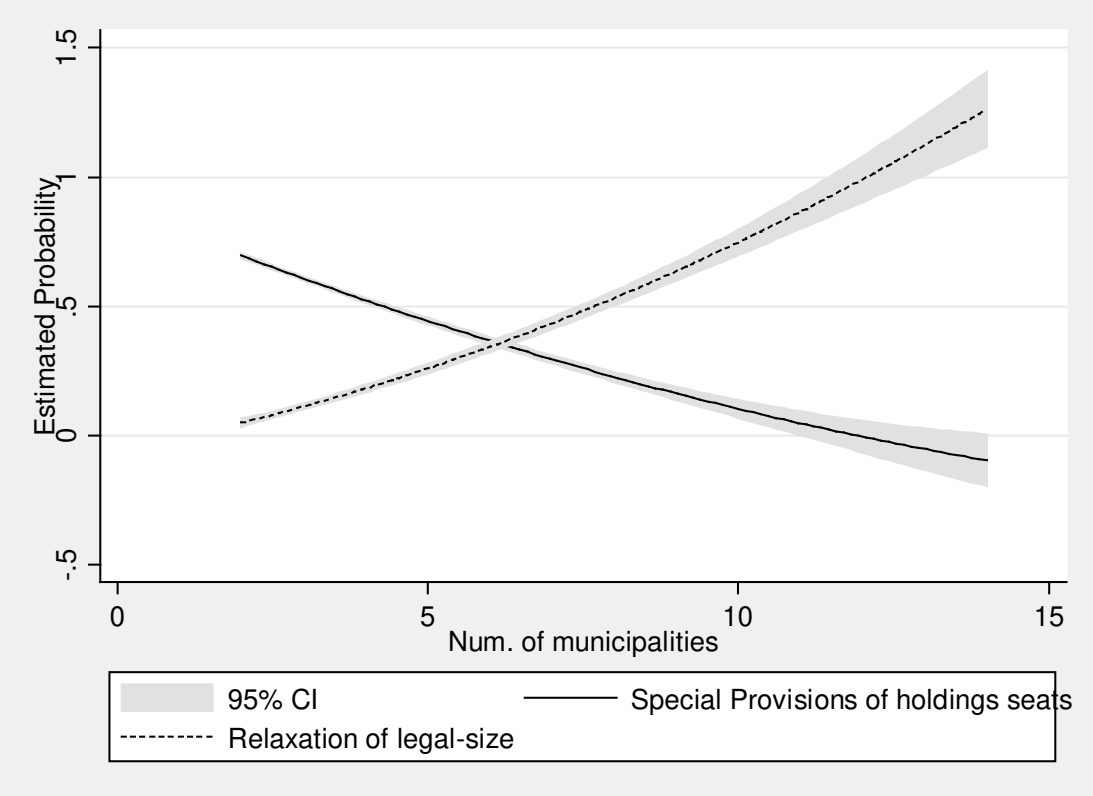


Fig 3. (Continued.)