Yardstick Competition-Driven Political Cycles*

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Abstract: Using novel monthly data on subsidy expansion for child healthcare, we find that when neighbor's eligibility age for subsidy is higher than own, the politician attempts to catch up by increasing own eligibility age. This effect is more pronounced around the critical periods of own election cycles, indicating that yardstick competition amplifies the political budget cycles. If we ignore this yardstick competitions, we underestimate the role of election cycles on subsidy expansion by as much as 42.6%. Our paper highlights the importance of incorporating neighbor politician's behaviors into the own pollical budget cycle to understand overall effect of election cycles on political manipulations.

Keywords: Yardstick Competition, Political Budget Cycles, Elections, Subsidy for Child Healthcare
JEL codes: H75, H73, D78, I18

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1. Introduction

This paper considers how yardstick competition affects political budget cycles (PBC, hereafter)—politicians, when in office, have strong incentives to manipulate the public spending around elections for re-election motives. To the extent that politicians think that voters evaluate their performance *relative* to their neighbors (Besley and Case 1995), their incentives to manipulate public spending around election may be affected by the spending level of the neighbors'. In such cases, election cycles amplify PBC through yardstick competition. In this paper, we study whether such effect of yardstick competition on PBC exits, and, if so, estimate the degree of such an effect. To the best of our knowledge, no prior studies empirically incorporate yardstick competition into PBC.

Japan's municipal election is a nice setting to answer our research question since timing of municipal elections are exogenously determined to every four years. More importantly, timing of elections is *different* across municipalities due to historical idiosyncratic reasons (as discussed later), which allows us to identify election-driven yardstick competition by using the neighbors' election cycle as an instrument for the neighbors' policy level. This is impossible in the setting where the elections are held at the same timing (e.g., US state elections).

As a public spending, we focus on municipal subsidy for child healthcare in Japan. In the last decade, municipalities have rapidly expanded subsidies for child healthcare, and there are substantial variations across municipalities. This specific spending is suitable to study PBC and yardstick competition for following reasons. First, the subsidy for child healthcare is one of the populist policies: it is highly visible to electorate. The generosity is mostly reflected by the age till the subsidy is available, and this discrete number (e.g., 6, 12, 15 years old) is highly comprehensive to voters. Second, at the same time it is not so budgetarily costly. In fact, it may only account for roughly 1-2% of total annual budget of municipalities unlike the policy that targeted at the elderly given the aging society in Japan.[1] Third, it is likely to lead to yardstick competitions as the comparison with other municipalities is clear for both mayors and electorates. For example, with discrete numbers, it is obvious that the coverage in municipality *i* with subsidy up to 6 years old is *relatively* inferior to that of neighbor municipality *j* with subsidy up to 9 years old. Finally, high-frequency data at the monthly level—which we manually collected for the first time—is available. Such high-frequency turns out to be important as we also find that politician increase the eligibility age right *after* the elections unlike other PBC literature. This effect

[1] Authors' calculation.

is complexly masked by low-frequency (yearly- or quarterly) data used in past literature. To the best of our knowledge, the only paper that uses the monthly data in PBC literature is Akhmedov and Zhuravskaya (2005) which studies Russian case.[2]

In sum, we find strong evidence of both PBC and election-induced yardstick competitions, and suggestive evidence of interaction between these two forces. We have four main findings.

First, we document the existence of PBC in Japanese context. Interestingly, we find that incumbents not only expand the eligibility age one year prior to the election—usual political budget cycle effect, but also one year right *after* the previous election, which is similar magnitude or even larger than the effect right before the next election. Such just-after-election pattern disappears for politicians who are elected through uncontested elections, implying that the existence of the elections forces the to-be-elected politicians to promise the subsidy expansion and eventually implement the policy right after the election. This finding also suggests that voters indeed remember the promises made by the incumbents and monitor their actions at least during right after the elections. While this result can be possibly particular to Japanese setting, we also show that low-frequency data used in the other literature are unlikely to detect such political behaviors—even if they exist—because the yearly data basically cannot distinguish the events occurred right before and right after the election.

Second, we show the strong evidence of election-driven yardstick competition. Since the timing of elections differs across the municipalities in Japan, we use the timing of the neighbors' election cycles as instruments for the neighbors' eligibility age. Our IV estimates show that municipality expands the eligibility age when its eligibility age is strictly below that of neighbor, indicating that municipalities try to fill the gap with neighbors and catch up. In addition, when the neighboring municipalities is *weakly* better than that of own municipalities, the municipality expands even more, suggesting that the municipalities even want to surpass neighbors and differentiate themselves from neighbors. As for the choice of neighbors, we find that municipalities are most influenced by the "neighboring" municipalities from or to which their citizens are most likely to move.

The magnitude of the election-driven yardstick competition is large. We convert the estimates into the increase in eligibility age during 10 years of our sample period. When neighbor sets higher eligibility than own municipalities, the election-driven yardstick competition increases eligibility age by 3.25 years while the election cycle, combining first and last year effects, increases eligibility age by 4.38 years. These results suggest that—if we ignore the election-driven yardstick competitions—we underestimate

[2] Interestingly, they find very short-lived increase just before election and decrease right after the election, which also highlight the virtue of high-frequency data. They do not consider the neighbors' behavior, though.

the role of election cycles on subsidy expansion by as much as 42.6%. Since the average yearly outpatient spending at this age range is 731 USD, the combined election cycle effect of 7.63 years increase in eligibility age leads to 5,578 USD per person.

Third, we find some suggestive evidence of *interaction* effects between yardstick competition and PBC. We show that politicians care *more* about neighbor's behaviors especially just before the previous election, or just before the next election. In other words, yardstick competition *amplifies* the PBC. In particular, this is the case for the experienced politicians. We find that 2nd+ term politician indeed care about neighbors' behaviors especially around the critical period of own election cycle. On the other hand, the 1st-term (novice) politicians seem to care about the neighbors' actions regardless of the timing of own election cycles.

Finally, we examine whether the subsidy expansion, while in office, indeed affect the election outcomes of the incumbents. It is worth highlighting that whether incumbents run for the next election is totally endogenous, the evidence here is at best suggestive. We find that if the politician's performance— measured by the eligibility age—is relatively worse than that of neighbors just before the next election (3 or 6 months), the chance that incumbent facing the uncontested election is reduced by 11.9−13.1 percentage points. This is substantial given the mean of incumbent facing uncontested election is 18.6%.

Taken together, to the extent that the subsidy-induced utilization of healthcare is wasteful (Iizuka and Shigeoka 2018), our results question the argument for decentralization (vertical competition) that the local government can deliver more effective public service than central government. In particular, it is questionable to leave such a populist policy like child healthcare in the hands of the local government.

This paper contributes to the literature on PBC (Nordhaus 1975; Rogoff and Sibert 1988; Rogoff 1990).[3] Past studies investigate the evidence of political budget cycle in the cross-country setting (e.g., Alt and Lassen 2006; Brender and Drazen 2005; Janků and Libic 2019; Shi and Svensson 2006) and within-county setting (e.g., Akhmedov and Zhuravskaya 2005; Baskaran et al. 2015; Bostashvili and Ujhelyi 2019; Drazen and Eslava 2010; Repetto 2018). The literature, however, only consider the election cycles of their own jurisdictions. So far to the best of our knowledge, no studies empirically incorporate yardstick competition into PBC.

This paper is related to yardstick competition (Shleifer 1985). In fact, we can rule out most of spatial completion models other than yardstick competition such as Tiebout-type model and benefit spillovers model (Brueckner 2000). First, Iizuka and Shigeoka (2018) shows that children (and hence

[3] See Drazen (2001), Eslava (2011), and de Haan and Klomp (2013) for reviews of literature on the political budget cycle.

parents) do not move to municipalities with subsidy, suggesting that there is no fiscal externality to other municipalities. Second, only children who live in the municipality can enjoy the subsidy, and thus there is by construction no benefit spillovers to the other municipalities.

Finally, this paper is related to the literature on decentralization (e.g., Oates 1972). On one hand, proponents of the decentralization argue that decentralization enables welfare programs to tailor better to the local needs. On the other hand, opponents are concerned by yardstick competition. This debate should be dependent on the item considered. At least in case of populist policy like our case, the appropriate level of the responsibility may not be as local as municipality and the regulation by upper level government may be necessary.

The rest of the paper is organized as follows. Section 2 describes the institutional background on subsidy and election cycles in Japan and related datasets. Section 3 provides graphical evidence, and Section 4 presents our identification strategy. Section 5 documents the results, and Section 6 discuss the results. Section 7 concludes.

2. Institutional background and data

A database that combines information on Japanese municipal elections in any comprehensive way does not exist. In the same vein, a database that combines municipal subsidy information at the *monthly* level in any systematic way does not exist either. Therefore, our first contribution is to construct such datasets for both explanatory (election) and outcome (subsidy) variables. To this end, we hand-collect both through a variety of sources including municipality web pages, municipal ordinances, local newspapers, historical archives, and other resources in Japan. As a result of this labor-intensive effort, we have collected both election and subsidy information for largest 6 prefectures (Saitama, Chiba, Tokyo, Kanagawa, Aichi, and Osaka), resulting in 300 municipalities. According to national statistics, these six prefectures cover as much as 44.9% of children ages 0–15. We eventually dropped Tokyo (57 municipalities) as special wards in Tokyo did not follow simultaneous elections in 1947 as we describe in the next subsection.[4] Overall, our working sample includes 243 municipalities for 10 years between April 2005 and March 2015.[5] The observational unit is each municipality at the monthly level. After collecting the data, we directly contact each municipality and verify the accuracy of our information.

We explain institutional background related to each dataset and describe the data in detail below.

[4] Our results are qualitatively similar if we add back Tokyo to the sample (results available upon request).
[5] This includes some municipalities that experience mergers. The results are very similar when we limit our sample to the balanced panels as shown later.

2.1. Election

Japanese political system consists of nation, prefecture, and municipalities.[6] The municipality is the lowest level of jurisdiction which is responsible for many financial decision-making. The mayor of municipalities is elected through the single vote procedure. There is no explicit term limit for mayors. The majority of mayors are nonpartisan and are not subject to the influence of upper jurisdictions (i.e., prefecture). The municipal election is held every four years. On average, each municipality experienced 2.55 elections in our 10-year sample period. Almost all municipalities experienced either 2 (46.6%) or 3 (49.8%) elections.

The key and most important feature for our identification is that timing of elections is different across municipalities. In April 1947, all municipalities simultaneously held their elections of mayors for the first time after the WWII. Since the term of mayor is fixed at four years, subsequent elections were scheduled, in principle, every fourth year (i.e., 1951, 1955, 1959, . . . , 2003, 2007, 2011) in April. However, by now, a large fraction of municipalities does not hold their elections during these simultaneous local elections (hereafter SLE). Once an election is held off the SLE cycle for whatever reason, the following elections usually remain off the SLE cycle, because the length of the subsequent term is always four years, not the remainder of the previous term. For example, in the case of the 2007 SLEs, among 247 municipalities that we study, only 21.4% mayoral elections are held on April 27, 2007. Majority of municipalities dropped out of the SLE cycles by the 1950s, when the national government encouraged the municipal mergers with strong budgetary benefits.[7] These newly established municipalities usually hold their elections before four years have passed since the previous SLEs were held. Indeed, municipal merger is the most common reason for municipalities to drop out from the SLE cycle (42.5%), followed by resignation (34.0%), death (18.2%), and others (5.3%), according to Fukumoto and Ueki (2015).

Figure 1a shows the timing of mayoral elections during our sample period of 10 years from April 2005 to March 2015. Again, while roughly 20% of municipalities follow SLEs, the vast majority of municipalities hold their own elections at different timing. As figure shows, the timing of elections outside of SLEs spread across the years, supporting the argument that the reasons for deviations from SLEs are very idiosyncratic. Indeed, it is hard to imagine that the factors affecting the deviations from the SLEs, in particular municipal mergers five decades ago, still have any substantial influence on citizens' and candidates' behavior in the 2000s. To confirm this, we conduct the balance test of municipal characteristics for 2007 and 2011 SLEs held during our sample period. Appendix Table A-1

[6] There was a total of 47 prefectures and 1,719 municipalities in Japan as of January 2015.
[7] Fukumoto and Horiuchi (2012) displays the cumulative percentages of municipalities, which did not hold an assembly election on April 27, 2003, by years and reasons for deviation from SLEs.

shows that municipal characteristics across two groups (without and with SLEs) are very similar in both 2007 and 2011 SLE, and none of the variables included in our regressions later are statistically different at the conventional levels.[8]

2.2. Subsidy

We briefly provide the background of the Japanese healthcare system related to this study. Japanese healthcare system is heavily regulated by the government. Under universal coverage, all citizens are obligated to enroll either in an employment-based insurance system or a residential-based insurance system. Regardless of the insurer, people face the same fee schedule and benefits package both of which are set by national government.

At the national level, patient cost-sharing—for which the beneficiary is responsible out of the pocket—has been set at 30%. Many municipalities provide subsidies for children to cover this remaining cost, which aims to ensure access to essential medical care for children. Children who are eligible for the subsidy receive an additional insurance card, and by simply showing it, they can receive discounts at medical institutions. Importantly, only residents of the municipality are benefited from the subsidy. In other words, children of residents in municipality *Y* who received the treatment in the hospitals in municipality *X* is not benefited from the subsidy in *X* which is only available for residents in *X*.

To this end, we develop a novel dataset by hand-collecting data on the timing as well as the contents of subsidy expansion at the exact *month* level for 10 years (April 2005–March 2015). This dataset is identical to the one used in Iizuka and Shigeoka (2018). Figure 2 shows the number of subsidy expansions. Only two out of 247 municipalities have no subsidy expansion during our sample period. On average, each municipality has 2.45 subsidy expansions, ranging from zero to seven.

The generosity of the subsidy is largely reflected by the maximum age until which the subsidy is provided (we refer to eligibility age, hereafter).[9] Figure 3 plots the share of municipalities by eligibility age for outpatient care in our sample period. Note that while the eligibility age is often expressed by school grade (e.g., until the end of junior high school), we loosely use ages throughout this study for convenience, as the school grades are almost completely equivalent to age in Japan owing to the strict enforcement of the school entry rule as well as very rare grade retention and advancement rates

[8] Similarly, Fukumoto and Horiuchi (2018) examined the case of SLE 2003 and did the balance test of municipalities characteristics between the municipalities which hold elections in 2003 SLEs, and those which did not hold elections. They find that 14 (7.3%) out of 192 estimates are statistically significant at the conventional five percent levels.
[9] There are three other dimensions in subsidy (level of copayment/coinsurance, a refund or an in-kind payment, and existence of household income restrictions for subsidy eligibility) but the variations along these dimensions are relatively small (Iizuka and Shigeoka 2018). Furthermore, politicians exclusively discuss the eligibility age in the official gazette as shown below.

(Shigeoka 2015). Ages 6,12,15, and 18 correspond to the entry into elementary schools, graduation from elementary schools, graduation from the junior high schools, and graduation from high school, respectively.

Figure 3 clearly shows that the subsidy expanded rapidly to older ages in the last decade. For example, none of the municipalities provided a subsidy until the age of 15 years in April 2005, the beginning of the sample period. However, this number reaches nearly 80% by the end of our sample period a decade later.

A few more important features of subsidy data should be noted. First, most of the municipalities stops the expansion at age 15, which corresponds to the end of junior high schools.[10] This ceiling effects should be properly controlled for in estimation later. In addition, there are no single municipalities which lowered the eligibility age in our sample, that is, the policy change is always monotonic. Finally, Figure 1b plot the exact timing of all subsidy expansion. It clearly shows that the timing of expansion is widespread across the period.[11]

This specific spending is suitable to study PBC and yardstick competition. First, the subsidy for child healthcare is one of the populist policies: while it is highly visible to electorate, at the same time it is not so costly. The discrete number (e.g., 6, 12, 15 years old) is highly comprehensive to voters. At the same time, it may only account for roughly 1-2% of total annual budget of municipalities unlike much costly policy that targeted at the elderly. Second, as the comparison with other municipalities is clear with discrete number, it is suitable to study yardstick competitions. For example, it is obvious that the coverage in municipality i with eligibility age of 6 years old is inferior to that of neighbor municipality j with eligibility age of 9 years old. Finally, high-frequency data at the monthly level is available. To our best of knowledge, the only paper that uses the monthly data in PBC literature is Akhmedov and Zhuravskaya (2005).

2.3. Descriptive statistics

We construct the final dataset by merging the two datasets on election and subsidy information by municipality and year-month. The summary statistics of the final dataset is described in Table 1. 98% of the incumbents is male. On average, the terms are around two, ranging from one to ten. The fraction of first term is 39%. 18% of elections are uncontested. 88% of elections follows the scheduled timing.

[10] Appendix Figure A-1 shows that exact distribution of the eligibility age during our sample period.
[11] The small jump in April 2008 is explained by the fact that the central government expanded the eligibility age for the national-level subsidy (i.e., 20% coinsurance rate) from 3 to 6 years (the start of primary school). This national-level subsidy expansion eased the budgetary burden on municipalities, as part of the cost to provide free care for below 6 years was covered by the central government, allowing municipalities to expand coverage to older ages.

3. Graphical presentation

In this section, before presenting our econometric specification and results in Sections 4 and 5 respectively, we first present the graphical evidence of the PBC in Section 3.1, and then election-induced yardstick competition in Section 3.2.

3.1. PBC

The constructing graphical evidence for the PBC is straightforward. Combining the timing of elections and subsidy expansion from the two figures (Figures 1a and 1b), Figure 5 plots the number of subsidy expansions by the time until next elections at the monthly level. The vertical line separates four-year election cycle into each year. The far-left interval corresponds to four years before election (just after the previous election), and the far-right interval corresponds to the one year before the next elections, and there are two middle years in between.

The figures have two noticeable patterns. First, there are many subsidy expansions one year before the next election compared to the middle years, consistent with usual political budget cycle literature. Second, rather surprisingly, we also see many expansions right after the elections, which is similar in magnitude or even larger than usual political budget cycle effect.

We have some anecdotal and supportive evidence for such politician behaviors. Some municipalities mandate the candidates to create the gazette that summarizes their policies during the municipal elections. Many incumbents often boast of what they have done in the past to signal their competence. The expansion of subsidy for child healthcare is often included as their accomplishment like “I have expanded subsidy from age 9 to 12 during my term”.

It is noteworthy, however, some candidates also list the policies that they claim they are going to implement once elected. The opponents by definitions can only make such promises as they are not in the office and thus cannot describe what they have done in the past. However, incumbent also often post to-do list after being elected on the gazette.

Figure 5 is such an example. This is the official gazette for the municipal election at Tsushima city in Aichi prefecture held in April 15, 2018. The sentences in the red box mention the subsidy expansion for child healthcare. The candidate on the right is the incumbent (ひび 一昭) who promises to raise the eligibility age for free healthcare till the end of the junior high school (中学卒業), which is equivalent to age 15. The candidate on the left is the opponent (杉山 良介) who also promises exactly the same level (中 3) of subsidy expansion. The incumbent won this election and implemented the pledged policy one year after in April 1, 2019.

At a glance, it may look odd as even though politicians promise, there is no reason to follow the pledged promise and actually implement it. This finding suggests that voters indeed monitor their performance at least right after the elections. Interestingly, Figure 6 shows that such pattern right after the previous election disappears for politicians who experience the uncontested elections, implying that having the election itself forces the to-be-elected politicians to promise the subsidy expansion and eventually implement the policy right after the election.

While this can be particular to Japanese setting, we show here that low-frequency data cannot detect such politician behaviors because the yearly data cannot distinguish the events occurred right before and after the election. As we discuss repeatedly, our data advantage is that we have monthly data on eligibility age. Appendix Figure A-1 shows the number of subsidy expansion by years till next election assuming that we only have yearly information about when the subsidy expansion is implemented. The figure shows usual PBC patterns only in the election year as we cannot cleanly separate policies implemented on the election years into pre- and post-elections.[12]

3.2. Election-driven Yardstick Competition

So far, we only consider the election cycles of their own jurisdictions. To the extent that politicians are evaluated *relative* to the spending of neighbors (yardstick competition), and their spending is also driven by their election cycles, ignoring neighbor's influence underestimates the overall effect of election cycles on political manipulations.

Figure 7 is the case of Saitama prefecture, just across the north of Tokyo. The figure demonstrates how the subsidy for child healthcare geographically spreads out across municipalities. Each graph describes the subsidy level at each April from 2005 to 2014. The darker color indicates that the municipalities has expanded the subsidy to age 15 in the year. The lighter color indicates the municipalities has already expanded the subsidy to age 15 in the past. The red dots indicate that there was an election in the same year as the subsidy expansion *conditional on* the municipalities that experiences the subsidy expansion in the year (i.e., darker colored municipalities). If there were no PBC, only one fourth of the municipalities should have a dot as election is only held every four years in principle. If the number of dots is more than one fourth, this is the consistent with PBC.

The figures show that the subsidy expansion spread through adjacent municipalities, which seems in favor of yardstick competition. For example, in 2009, all expansions in that year (darker colors)

[12] Since exact election dates are often available, some studies distinguish the election held first half of the year and second half of the year. If election happens in the first half, the election year is regarded as the pre-election year. On the other hand, when the election happens in the second half, the election year is treated as it is (Brender and Drazen 2005).

happens next to the municipalities that have already expanded the subsidy in the past (lighter color). In addition, among seven municipalities that expanded that year, two municipalities had an election, which is slightly more than one fourth. Year of 2010 shows even stronger pattern of yardstick competitions as the subsidy expansion seems to locally cluster. Furthermore, the number of dots is a way more than one fourth. By 2014, eligibility age in all the municipalities in Saitama prefecture reaches 15.

4. Identification Strategy

4.1. Some empirical challenges

Our main specification follows the standard approach to estimating political budget cycle, however, by incorporating the election-driven yardstick competitions. There are two issues in incorporating the yardstick competitions.

First is for decision-making of municipality *i* when's policy level of neighbor *j* most relevant and influential? In other words, how long does it take for municipality *i* to respond to the subsidy expansion by neighboring municipality *j* if necessary? Is it a half year or a year? Closely looking at the Figure 6, the biggest heaps can be observed six months after the previous election. This is also the case even for the mayors who are elected for the first time (Appendix Figure A-2). Thus, we first start with the lag of six months. We later experiment with changing this time lag, but the results are pretty robust to the choice of relevant time period.

Second question is which neighbor have the biggest influence on the municipalities. Based on Besley and Case (1995), voters judge politicians' actions relative to the actions of politicians in neighboring municipalities. This would imply that municipalities are most influenced by the actions of those municipalities that their voters judge to be the most ''similar'' (such as those with similar demographics or per capita income). How are we to judge which is best? Following Baicker (2005), we treat this as an inherently empirical question. This paper does not attempt to determine which neighbor municipalities should respond to. Rather, this paper asks which neighbors do respond to. By analyzing several different ways of defining neighborliness, such as demographics and interstate mobility, we are able to determine which municipalities are most influential and thereby shed light on the reasons behind that influence.

4.2. Specifications

For municipality *i* whose neighboring municipality is *j*, the main specification is written as[13]:

[13] To ease computational burden, we choose one municipality among adjacent municipalities sharing borders. Technically, we also could have used the multiple neighbors in the prefecture by weighting each by some metrics. While first stage becomes stronger (F-statistics gets larger), the estimates tend to become smaller compared to single

$$A_{it} = \sum_{k\neq 2}^{k=1,3,4} \alpha_{-k} E_{it}^{-k} + \beta 1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right) + \gamma A_{it-1} + \delta X_{it}' + \theta_i + \mu_t + \varepsilon_{it}, \quad [1]$$

where $\tilde{t} = t - 6$. A_{it} is the eligibility age for the subsidy. E_{it}^{-k} $(k = 1,3,4)$ is a dummy that take one if the year is k year before the next election. The reference year is two year from the next election (one of the two middle years). Since election cycles are fixed at every four years, we treat them as exogenous.[14] $1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$ is a dummy that takes one if eligibility age in municipality i is strictly below that of municipality j. The discreetness of eligibility age allows us to cleanly define such a variable. We also include lagged eligibility age (A_{it-1}) to capture the monotonicity and ceiling effects of the subsidy expansions as described in Section 2.2.[15] Inclusion of lagged variable (A_{it-1}) introduces mechanical known endogenous issue. Because our panel is relatively long, we estimate equation [1] using a standard fixed effect estimator. Using Arellano-Bond type GMM estimators yields similar results (results available upon request).

We include municipality FEs, which captures any time-invariant municipality characteristics such as the preferences for male candidates. We also include year-month FEs which captures any other policies or economic shocks common across all municipalities. The vector X_{it}' includes both mayor-level and municipality-level controls. Mayor-level controls are gender and terms of incumbents.[16] Municipality-level controls include faction of population aged 0-15, 15-64, population density, log income per capita while all municipality-level controls are available only at yearly level. ε_{it} is the error term. To account for serial correlation within the municipalities, standard errors are clustered at the municipality level.

Our coefficients of interest are α_{-k} $(k = 1,3,4)$ and β. α_{-k} captures the effect of PBC, relative to the 2 year before the next elections. β captures the effect of election-driven yardstick competition.

Since $1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$ is potentially endogenous to the outcome variables of interest, we instrument it by the timing of the neighbor j's and own i's election cycle dummies, $E_{j\tilde{t}}^{-k}$ and $E_{i\tilde{t}}^{-k}$ $(k = 1,3,4)$, as well as lagged eligibility ages, $A_{j\tilde{t}-1}$ and $A_{i\tilde{t}-1}$.[17] In this way, β captures election-driven yardstick competition. The exclusion restriction is in principle that $E_{j\tilde{t}}^{-k}$ affects Y_{it} only through $1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$. Since the timing of two elections are highly likely to be orthogonal to each other, it is likely that

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neighbor case even though they are statistically significant at the conventional levels because we tend to add more neighboring municipalities to which voters may not compare (results are available upon request).

[14] Following Khemani (2005) and Cole (2009), we also use as an instrument for E_{it}^{-k} by years until next *expected* election, yielding almost identical results as nearly 90% elections follow scheduled elections (See Table 1).

[15] As most of the municipalities only expand the subsidy till age 15, the room for expansions are substantially different at age 6 and age 12. A_{it-1} is intended to capture such heterogenous effects.

[16] To construct the gender dummy and terms, we also collect the last election before our sample starts in April 2005.

[17] We obtain qualitatively similar results without own i's election cycle dummies $E_{i\tilde{t}}^{-k}$ and lagged eligibility ages $A_{i\tilde{t}-1}$ (the results available upon request).

exclusion restriction is satisfied. The relevance is by construction coming from the strength of political budget cycle of municipality j.

5. Results

5.1. Main results

Table 2 shows the main findings of this paper where the outcome is the eligibility age. Column (1) reports the OLS estimates of PBC (α_{-4}, α_{-3}, and α_{-1}) where reference year is two years before the next election, and election-driven yardstick competition β. Here, neighbor is chosen from the ‘‘neighboring’’ municipalities to which their citizens move most.

Column (2) presents the IV estimates. The IV estimate on yardstick competition is quantitatively similar to OLS estimate. The municipality expands the eligibility age by 0.113 year per month (1.36 year in 12 months) when its eligibility age is strictly below that of neighbor. It is reassuring that the estimate on PBC is also unchanged in column (2) from column (1) as the instruments (neighbors' elections cycles) should be orthogonal to that of own election cycles. Compared to the two years before the next elections, municipality increases eligibility age by 0.051 year per month in four years before next elections (or equivalently right after the previous election), and by 0.022 year per month in a year before the next election.

The other columns report estimates from several different ways of defining neighborliness: largest migration inflows in column (2), similarity in population, income and financial capability index in columns (3)–(5).[18] It turns out that population by the ‘‘neighboring’’ municipalities to which their citizens move most in column (2) has the largest effect of yardstick competition. Similarity in income per capita in column (5) has the least predicative power and the estimates on yardstick competition is nearly as half as that of column (2).

So far, we arbitrarily choose 6 months lags as a reference period. Table 3 shows that our results are not sensitive to the choice of the reference period. It shows the estimates where reference periods start from 0 month up to 12 months lags. The estimates are similar except for 12 months lags where the estimates are roughly 80% of the baseline estimates (6 months) even though they are still statistically significant at 1 percent level. This may likely to reflect measurement error in defining the reference period. We use the 6 months lag as the reference period hereafter.

[18] Financial capability index, which is an index of judging financial capability of municipalities, is published by Ministry of Internal Affairs and Communications. The higher the index, the higher the financial stability of the municipality is.

5.2. Robustness checks

We subject these results to a series of other robustness checks. Table 4 summarizes these results. Column (1) replicates our baseline estimates from column (2) of Table 2 for the ease of comparison. Column (2) includes municipality linear time trend. It is reassuring that estimates are barely affected. Columns (3) includes fixed effects for each of the twelve calendar months in each municipality to account for municipality-specific seasonality. Again, the estimates are similar. Columns (4)–(6) report estimates with different way of constructing the samples. Column (4) excludes simultaneous elections cycles. Column (5) excludes non-scheduled elections cycles.[19] Column (6) uses the balanced panel which includes 221 municipalities. All estimates are quantitatively similar to baseline estimates in column (1).

Appendix Table A-3 presents another type of robustness check. We drop each prefecture from the sample to see if the estimates change. We are reassured that none of particular prefectures drive our results.

5.3. Strictly or weakly below matters?

Table 5 examines whether mayors of municipalities has the strong desire to differentiate themselves from neighbors. If the eligibility age is the same as other neighboring municipalities, politicians may have less incentive to expand further as they want to leave some room for the future. At least, they can claim that their subsidy level is as good as others. On the other hand, politician may have incentive to further increase eligibility age to differentiate themselves from neighbors to appeal to the voters. To investigate this question, we replace the strictly-below dummy ($1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$) by weakly-below dummy ($1\left(A_{i\tilde{t}} \leq A_{j\tilde{t}}\right)$). Column (1) shows the estimate from strictly-below dummy as before and column (2) shows that of weakly-below dummy. Column (2) shows that the estimate on yardstick competition is nearly 30% larger than that of column (1) (0.145 vs. 0.123), suggesting that the mayors of the municipalities want to surpass neighbors' policy levels and differentiate themselves from neighboring politicians.

5.4. Heterogeneity

Table 6 examines some heterogeneity by political and municipal characteristics. Columns (1) and (2) compare mayors' behavior after being elected through uncontested and contested elections. It is interesting that as discussed in Figure 6, the incumbents who are elected by uncontested elections do not expand the policy right after the election, possibly because they did not make any promises to the voters as there was no election. On the other hand, they are very sensitive to what neighbors are doing. After the

[19] During our sample period, out of 656 elections, 11.3% (74) had non-scheduled election due to resignation (36), merger (24), death (7), and others (7).

uncontested elections, the incumbents are likely to expand the policy by 0.223 year per month when neighbor municipalities set higher eligibility age, which is nearly twice as large as that of mayors elected by contested elections (0.114). This is plausible as the incumbents may be less sensitive to own electoral cycles but may care what other neighbor politicians are doing. On the contrary, after the contested elections, while mayors to some extent react to what neighbors are doing, they care more about their own election cycles.

Columns (3) and (4) show the heterogeneity by the terms of mayors. They show that 1st term mayors and 2nd+ term mayors are equally likely to respond to own election cycles, but as for the response to the neighbor's actions, 1st term mayor is more likely to respond. This might indicate the weakness of political foundations or lack of experiences among the mayors in the 1st term.

Columns (5) and (6) shows that rural (villages or towns) mayors are more likely to respond to neighbors' actions. This result may indicate that mayors of small municipalities are more sensitive to neighbor's behaviors. Finally, columns (7) and (8) shows that mayors of municipalities, where the fraction of population relevant to the policy (i.e., population below 15) is higher, are more sensitive to neighbors as well as own election cycles. This result may imply that political budget cycle is driven not only because politicians attempt to convey their competence (Rogoff 1990; Shi and Svensson 2006) but also their preferences regarding the composition of government spending (Drazen and Eslava 2010) for special interests (parents of children) who may provide campaign support.

5.5. Welfare

How much is the overall cost of PBC and election-driven yardstick competition? This depends on whether increase in healthcare spending add any health benefits to the beneficiaries. Iizuka and Shigeoka (2018) document that most of the subsidy-induced increase in the healthcare utilization reflect the low-value care which do not translate into any short- and medium-term health benefits to the children. To the extent that the subsidy-induced healthcare utilization is wasteful, the finding in this paper questions the basic argument in support of the decentralization because of effective service delivery. On the contrary, these results suggest that the appropriate level of the responsibility for such populist policy may not be as local as municipal and the regulation by upper level government may be necessary.

To gauge the size of the welfare "loss", we conduct a rough back-of-envelop calculation here. To do so, we first convert estimates into increase in eligibility age throughout the period (10 years). Table 1 shows that $1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$ takes one with the probability of 0.24 and our sample length is 120 months. Hence, from column (2) of Table 4 (β= 0.113), yardstick competition contributes to the increase in eligibility age by 3.25 years (= 0.113×0.24×120). Similarly, the sum of the estimates α_{-4} (= 0.051) and α_{-1} (= 0.022) from column (2) of Table 4 leads to total of 0.073 years per month. Thus, the election cycles

contribute to the increase in eligibility age by 4.38 years per year (= 0.073×0.50×120). Comparing these two numbers, these results suggest that—if we ignore the election-driven yardstick competitions—we underestimate the role of election cycles on subsidy expansion by as much as 42.6 % (= 3.25/(3.25+4.38) = 3.25/7.63).

Then, how much is the additional spending by the total increase in eligibility age by 7.63 years? Based on Iizuka and Shigeoka (2019), average yearly outpatient spending at this age range is 731 USD. Thus, 7.63 years corresponds to 5,578 USD per person.

6. Discussions

6.1. Is this yardstick competition?

There are a few other theoretical spatial models that might explain our findings other than yardstick competition (Brueckner 2000, 2003; Revelli 2005). But these models are unlikely to explain our results as our setting has no fiscal externality and little evidence of intermunicipal migration. First is the benefit spill-overs model in which local public spending benefits the citizens of the neighbors (e.g., road construction). This model is completely irrelevant for our case since only children whose live in the municipality can enjoy the subsidy, and hence children who lives in neighbor municipalities are not benefited from the subsidy. Second is a Tiebout-type of the model in which people move to the municipalities with better welfare programs. However, Iizuka and Shigeoka (2018)—using monthly residence information from insurance claim data—shows that children (and hence parents) do not move to municipalities with subsidy, suggesting that there are many other reasons (such as school quality) that are more likely to affect the migration decisions.

6.2. Interaction of yardstick competition and PBC

So far, we show that evidence that politicians indeed care about the actions of neighbors. We then ask whether politicians care *more* about neighbor's behaviors around just before the previous election, or just before the next election. In other words, we ask whether yardstick competition *amplifies* the PBC. This question leads to adding the interaction terms between election cycles dummies and a dummy which takes one if the eligibility age is below that of the neighbors to equation [1]. Specifically, we estimate the following equation:

$$A_{it} = \sum_{k\neq 2}^{k=1,3,4} \alpha_{-k} E_{it}^{-k} + \beta 1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right) + \sum_{k\neq 2}^{k=1,3,4} \rho_{-k}\left\{E_{it}^{-k} \times 1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)\right\} + \gamma A_{it-1} + \delta X_{it}' + \theta_i + \mu_t + \varepsilon_{it}, \quad [2]$$

where ρ_{-k} $(k = 1,3,4)$ are the coefficient of interest, which capture additional effect of yardstick competition on PBC.

Table 7 presents the results from estimating equation [2]. Column (1) shows some suggestive evidence that interaction terms indeed matters. The estimates on the interaction term on just after the previous election (ρ_{-4}) is positive, and statistically significant at 5 percent level, suggesting that politicians are more likely to be affected by neighbors' eligibility age just after the previous election. The estimates on the interaction term just before the next elections (ρ_{-1}) is also positive albeit it is barely not statistically significant at 10 percent level (p-value = 0.162). Interestingly, the non-interaction terms α_{-4} and α_{-1} are substantially attenuated from the estimates without interaction terms (column (2) of Table 4), suggesting that the yardstick competition is only important for politicians mostly around the critical time of election cycles.

The rest of Table 7 presents the results from some heterogeneity analysis. In particular, an interesting pattern emerges when we look at the heterogeneity by the terms of the politicians (1st term vs. 2nd+ terms). In the previous table (column (4) of Table 6), we show that 2nd+ term politicians react slightly less to neighbor's action compared to the 1st term politicians. However, column (4) of Table 7 shows that the interaction terms for both just after the previous election, and just before the next elections are positive and highly statistically significant for the 2nd+ term politicians. This result suggests that 2nd+ term politician indeed care about neighbors' behaviors especially around the critical period of own election cycle. On the other hand, the 1st-term politicians seem to care about the neighbors' behavior regardless of the timing of own election cycles. In any case, we find some suggestive evidence that yardstick competition amplifies the PBC.

6.3. Election outcomes

Finally, we briefly examine whether the subsidy expansion, while in office, indeed affect the election outcomes of the incumbents. It is worth highlighting that whether incumbents run for the next election is totally endogenous, the evidence here is at best suggestive.

We run the following equation conditional on incumbent running for the office:

$$Y_i = \alpha + \beta 1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right) + \sum_l \gamma_l Term_i + \delta female_i + \varepsilon_i, \quad [3]$$

where we examine two election-related outcomes Y_i: a dummy that takes one if the incumbent's next election turns out to be the uncontested elections, and a dummy that takes one if the incumbent wins the next election. We control for each dummy for the term, and a female dummy. Our coefficient of interest is β on $1\left(A_{i\tilde{t}} < A_{j\tilde{t}}\right)$ where $\tilde{t}$ is the time when *c* months from the next election. We think that closer the next election, the performance of politicians relative to the neighbor politicians matters for the outcomes of next election. Thus, we examine the relativeness of eligibility age between own and neighbor 3, 6, 9, and 12 months before the next own election (i.e., c = 3, 6, 9 and 12). Of course, we

instrument $1(A_{i\tilde{t}} < A_{j\tilde{t}})$ in the same way as thus far.

Table 8 presents the results. Columns (1)–(4) show the results for incumbent' facing the uncontested elections. If the politician's performance—measured by the eligibility age—is worse than that of neighbors just before the next election (3 or 6 months), the chance that incumbent facing the uncontested election is reduced by 11.9–13.1 percentage points. This is substantial given the mean of incumbent facing uncontested election is 18.6%. The estimates become smaller and lose significance as the reference period is further back (9 or 12 months). These results are plausible since the politicians have more time to expand subsidy before the next election. Columns (5)–(8) presents the results for the incumbent's winning elections. The signs are wrong, and none of the estimates is statistically significant and economically large (given the mean probability of incumbents' winning is 82.3%). These results are not surprising because whether to run for office should be correlated with the subsidy expansion and election outcomes, which we cannot adequately account for.[20]

7. Conclusion

We study whether the election cycles across the jurisdictions amplifies the PBC through election-driven yardstick competition. The literature on PBC only consider the election cycles of their own jurisdictions. To the extent that politicians are evaluated relative to the neighbors' level of public spending (i.e., yardstick competition), and their spending is also driven by their election cycles, ignoring neighbor's influence underestimates the overall effect of election cycles on political manipulations. So far, no studies empirically incorporate yardstick competition into PBC.

We find strong evidence of both PBC and election-induced yardstick competitions in Japan. If we ignore the election-driven yardstick competitions, we underestimate the role of election cycles on subsidy expansion by as much as 45.4%. Furthermore, we find suggestive evidence that yardstick competition accelerates the PBC. Put differently, we show that politicians care more about neighbor's behaviors especially just before the previous election, or just before the next election.

Since Iizuka and Shigeoka (2018) document that most of the subsidy-induced increase in the healthcare utilization seems wasteful, welfare loss from election cycle is roughly 6,000 USD per person. The findings in this paper question the basic argument in support of the decentralization because of effective service delivery, and rather suggest that the appropriate level of the responsibility for such

[20] The direction of bias is not clear. If an incumbent is certain about the results of an upcoming election because he is extremely popular, he has little incentive for pre-electoral manipulations and just run for office without taking any further actions. On the other hand, if he is extremely unpopular, he may still take pre-electoral manipulations to overcome the deficit or just decide not to run for office.

populist policy may be upper level of government structure.

One limitation of this study is that we can examine only child healthcare subsidy. It is possible that increase in expenditures on child healthcare is offset by the reduction in spending on another category. Unfortunately, to the best of our knowledge, such data at the monthly level like ours is not unavailable, which leaves avenue for future research.

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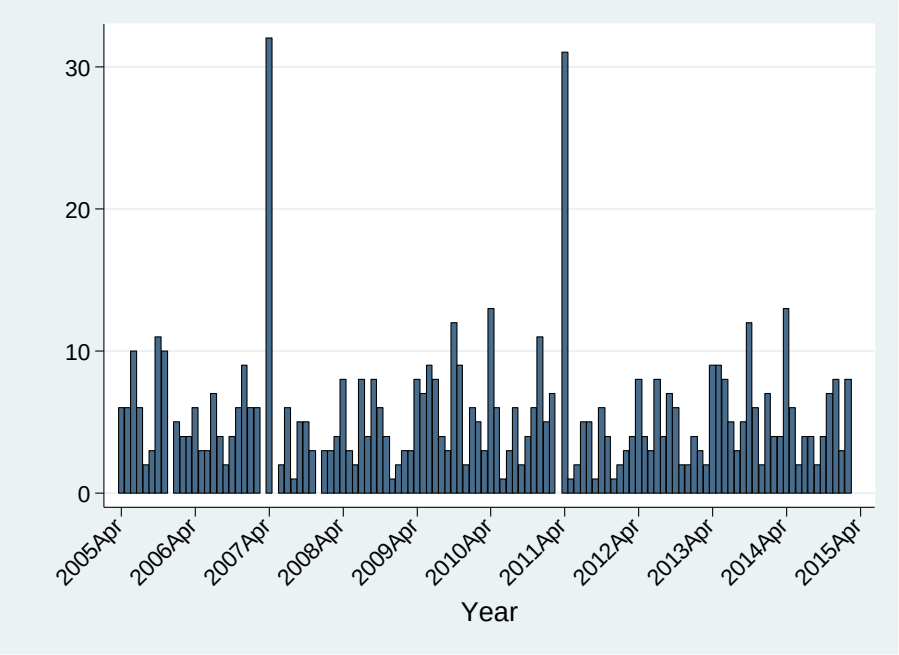
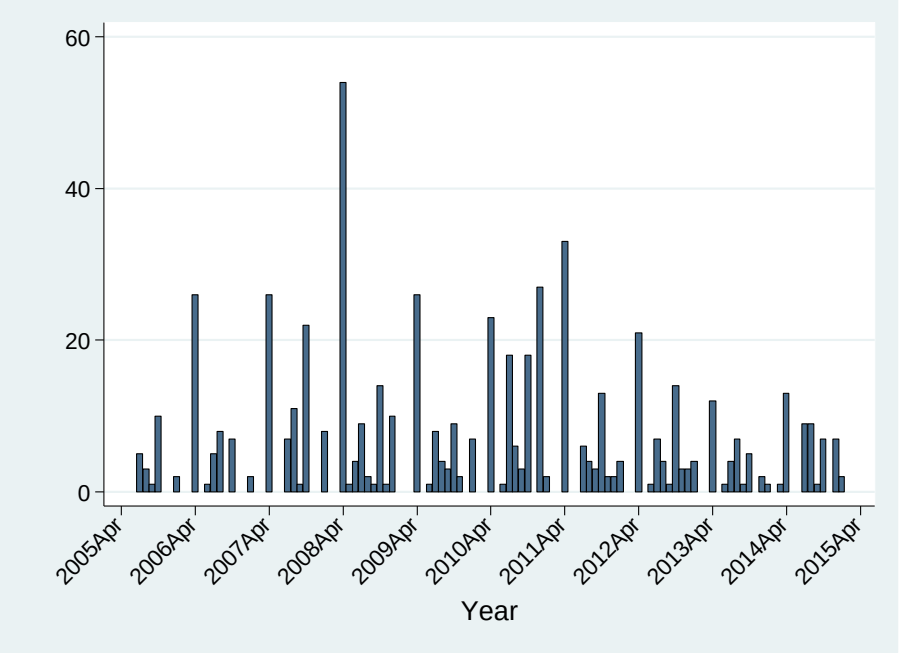
Figure 1: Exact dates of elections and subsidy expansions

a. Municipalities holding elections each month

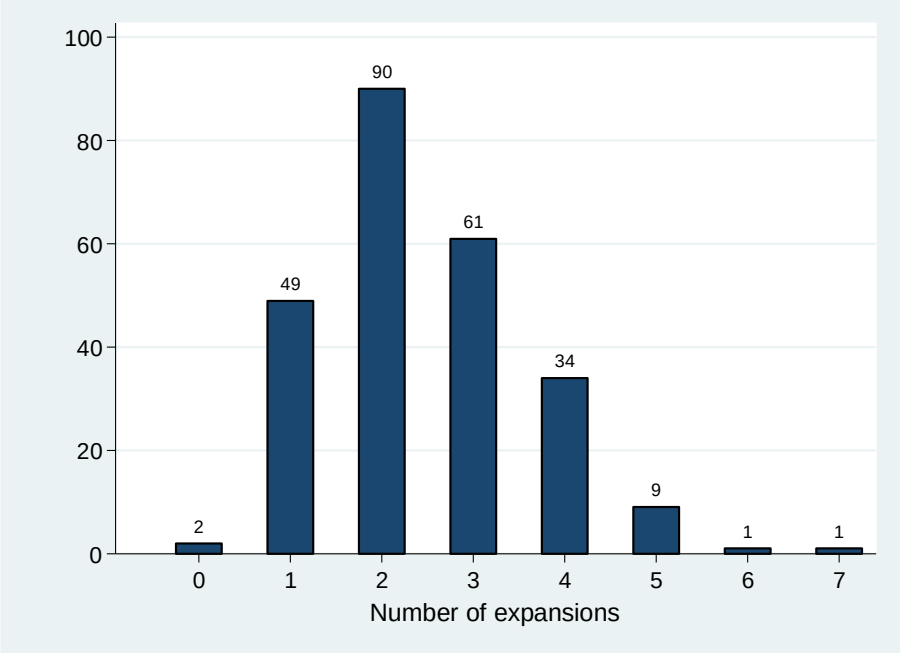


b. Municipalities experiencing subsidy expansions each month



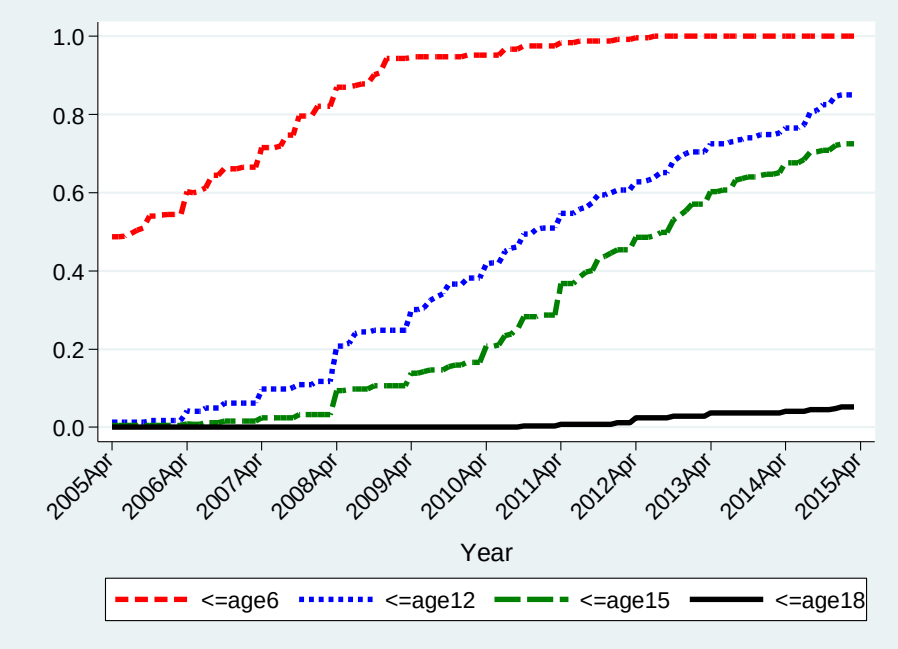
Notes: Figure 1-A plots the number of municipalities holding elections each month during April 2005–March 2015. There are total of 656 elections. Figure 1-B plots the number of municipalities experiencing subsidy expansions each month during the same time period (see Figure 3 on the precise timing of all policy changes). There are total of 606 subsidy expansions. Total number of municipalities is 247.

Figure 2: Number of subsidy expansions



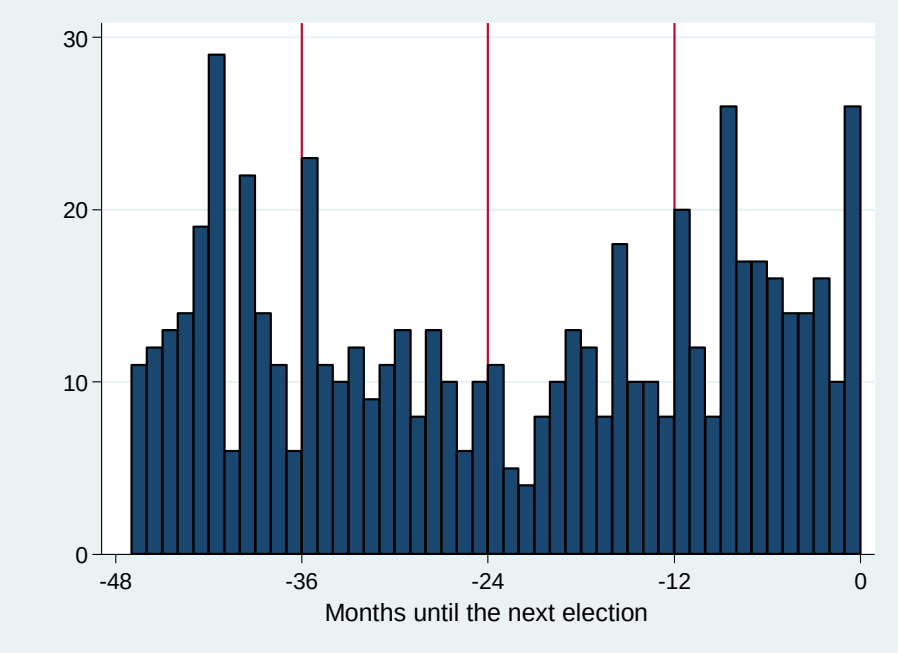
Notes: The figure plots the number of municipalities which experience a particular number of subsidy expansions during April 2005–March 2015 (see Figure 1-B on the precise timing of all policy changes). Only two municipalities out of 247 municipalities did not experience any subsidy expansions. There are total of 606 subsidy expansions. The average number of expansions per municipality is 2.45.

Figure 3: Time series of maximum age covered by healthcare subsidy



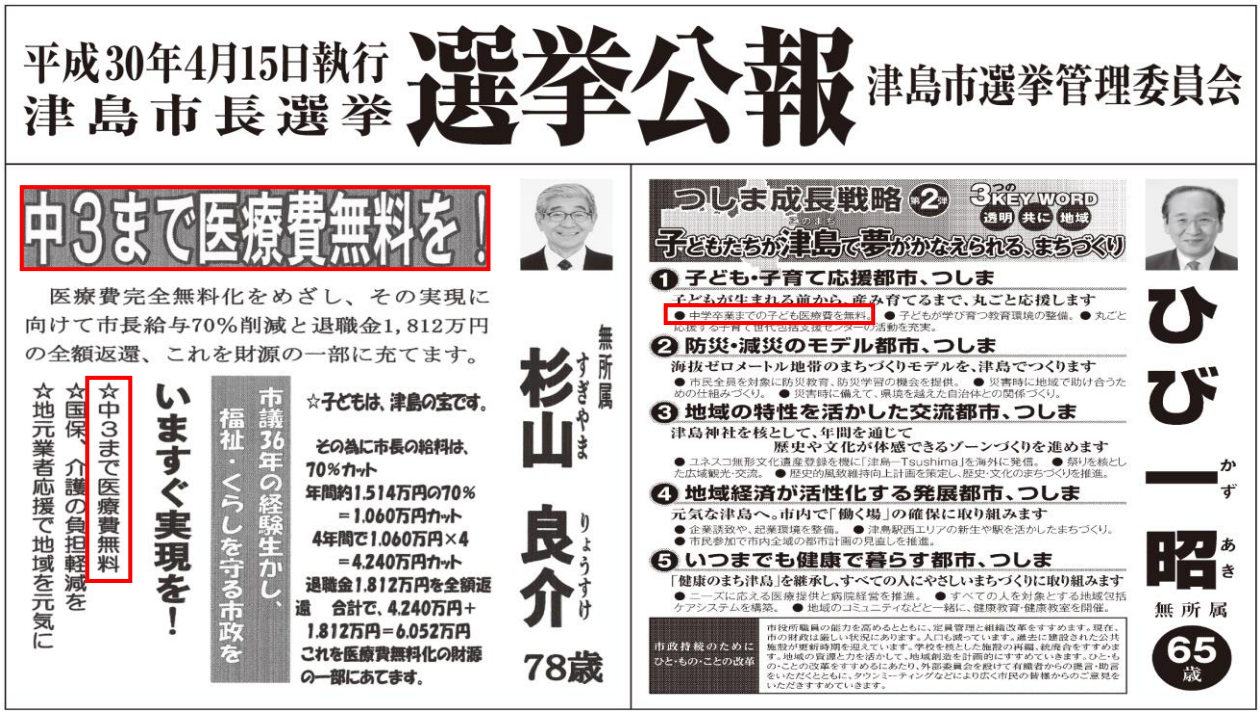
Notes: The figure plots the share of municipalities in our insurance claims data by the maximum age for the subsidy eligibility for outpatient care at the monthly level during April 2005–March 2015 (see Figure 1-B on the precise timing of all policy changes). There are total of 247 municipalities. Ages 6,12,15, and 18 correspond to the entry into elementary schools, graduation from elementary schools, graduation from the junior high schools, and graduation from high school, respectively.

Figure 4: Timing of the subsidy expansions vis-à-vis election



Notes: The figure plots the number of subsidy expansions by the month until the next election. There are total of 606 subsidy expansions. There are total of 247 municipalities.

Figure 5: The official gazette for elections


平成30年4月15日執行
津島市長選挙
選挙公報
津島市選挙管理委員会

中3まで医療費無料を！

医療費完全無料化をめざし、その実現に向けて市長給与70%削減と退職金1,812万円の全額返還、これを財源の一部に充てます。

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☆国保、介護の負担軽減を
☆地元業者応援で地域を元気に

いますぐ実現を！

市議36年の経験生かし、福祉・くらしを守る市政を

☆子どもは、津島の宝です。

その為に市長の給料は、
70%カット
年間約1,514万円の70%
＝1,060万円カット
4年間で1,060万円×4
＝4,240万円カット
退職金1,812万円を全額返還　合計で、4,240万円＋1,812万円＝6,052万円
これを医療費無料化の財源の一部にあてます。

無所属
杉山 良介
78歳

つしま成長戦略 2期
3つのKEY WORD 透明 共に 地域
子どもたちが津島で夢がかなえられる、まちづくり

❶ 子ども・子育て応援都市、つしま
子どもが生まれる前から、産み育てるまで、丸ごと応援します
● 中学卒業までの子ども医療費を無料。 ● 子どもが学び育つ教育環境の整備。 ● 丸ごと応援する子育て世代包括支援センターの活動を充実。

❷ 防災・減災のモデル都市、つしま
海抜ゼロメートル地帯のまちづくりモデルを、津島でつくります
● 市民全員を対象に防災教育、防災学習の機会を提供。 ● 災害時に地域で助け合うための仕組みづくり。 ● 災害時に備えて、県境を越えた自治体との関係づくり。

❸ 地域の特性を活かした交流都市、つしま
津島神社を核として、年間を通じて歴史や文化が体感できるゾーンづくりを進めます
● ユネスコ無形文化遺産登録を機に「津島―Tsushima」を海外に発信。 ● 祭りを核とした広域観光・交流。 ● 歴史的風致維持向上計画を策定し、歴史・文化のまちづくりを推進。

❹ 地域経済が活性化する発展都市、つしま
元気な津島へ。市内で「働く場」の確保に取り組みます
● 企業誘致や、起業環境を整備。 ● 津島駅西エリアの新生や駅を活かしたまちづくり。 ● 市民参加で市内全域の都市計画の見直しを推進。

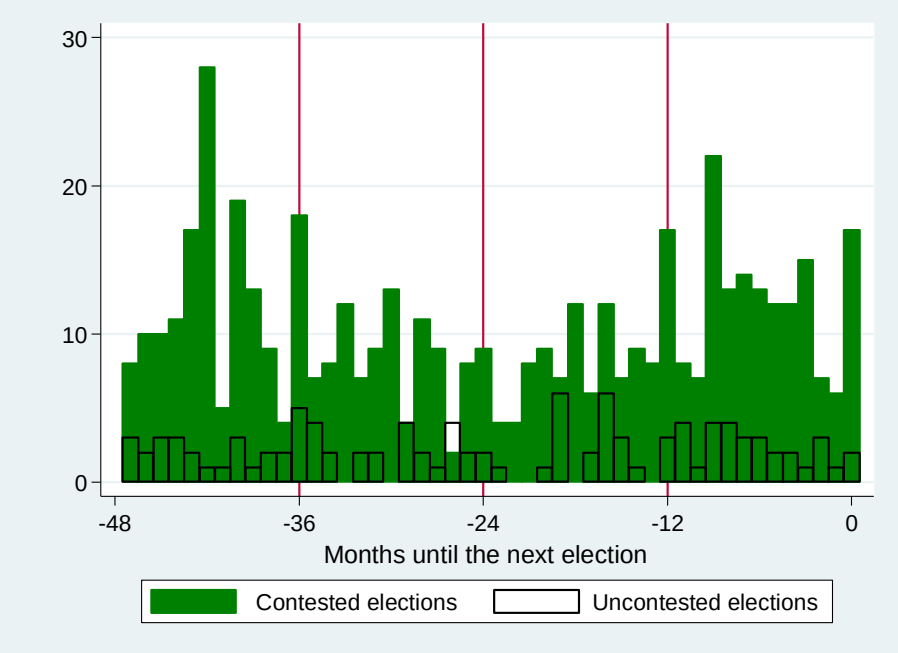
❺ いつまでも健康で暮らす都市、つしま
「健康のまち津島」を継承し、すべての人にやさしいまちづくりに取り組みます
● ニーズに応える医療提供と病院経営を推進。 ● すべての人を対象とする地域包括ケアシステムを構築。 ● 地域のコミュニティなどと一緒に、健康教育・健康教室を開催。

市政持続のために ひと・もの・ことの改革
市役所職員の能力を高めるとともに、定員管理と組織改革をすすめます。現在、市の財政は厳しい状況にあります。人口も減っています。過去に建設された公共施設が更新時期を迎えています。学校を核とした施設の再編、統廃合をすすめます。地域の資源と力を活かして、地域創造を計画的にすすめていきます。ひと・もの・ことの改革をすすめるにあたり、外部委員会を設けて有識者からの提言・助言をいただくとともに、タウンミーティングなどにより広く市民の皆様からのご意見をいただきすすめていきます。

ひび 一昭
かずあき
無所属
65歳

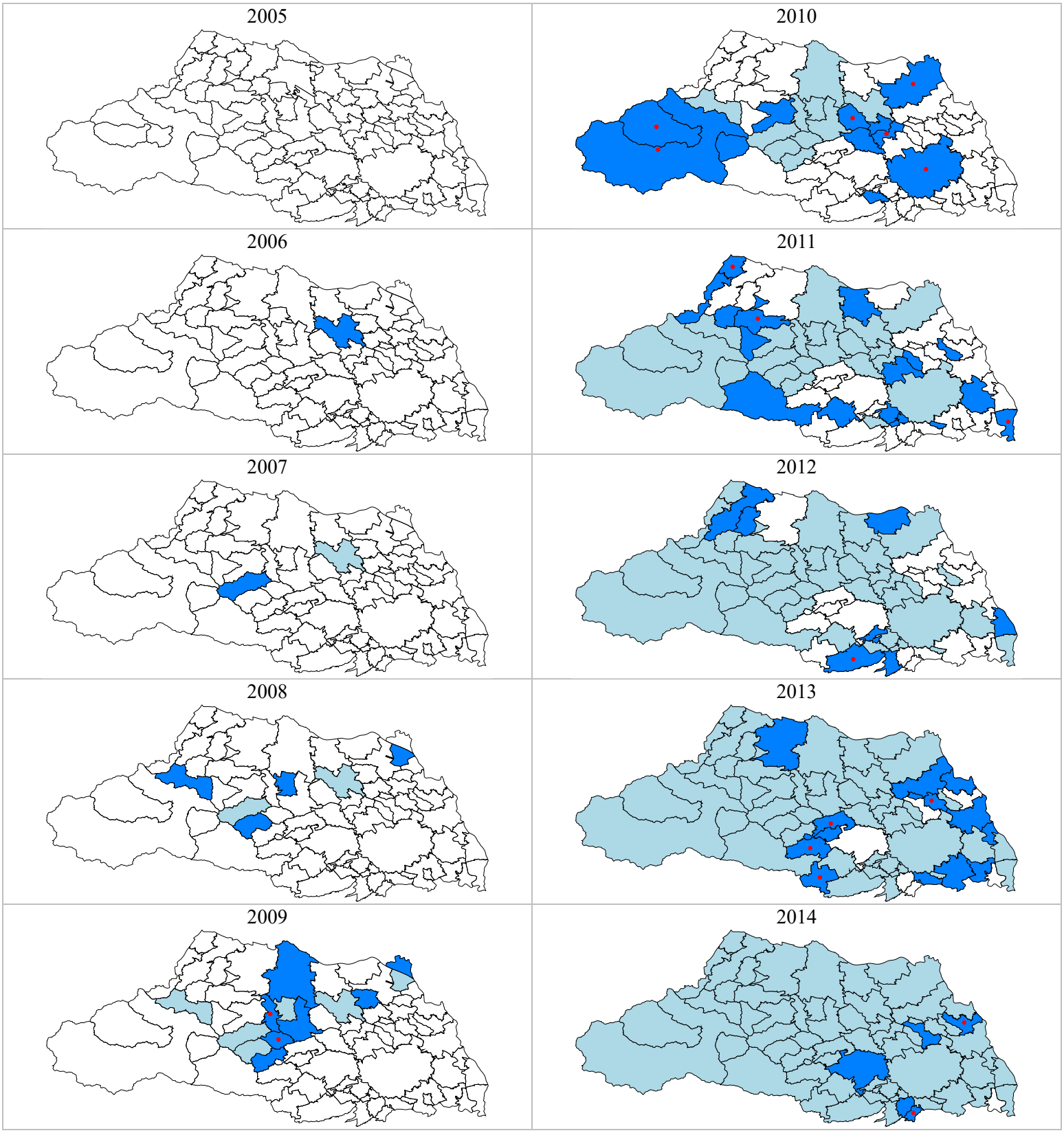
Notes: The official gazette for the municipal election at Tsushima city in Aichi prefecture held in April 15, 2018. The sentences in the red box mentions the subsidy expansion for child healthcare. The candidate on the right is the incumbent (ひび 一昭) who promises to raise the eligibility age for free healthcare till the end of the junior high school (中学卒業 on the right or 中 3 on the left in the gazette), which is equivalent to age 15. The candidate on the left is the opponent (杉山 良介) who also promises the same subsidy expansion. The incumbent won this election and implemented the policy one year after in April 1, 2019.

Figure 6: Timing of the subsidy expansions: Contested vs. uncontested elections



Notes: The figure plots the number of subsidy expansions by the month until the next election for two types of elections: contested and uncontested. There are total of 606 subsidy expansion, of which 497 (72%) are contested, and 111 (18%) are uncontested.

Figure 7: Yardstick competition (case of Saitama prefecture)



Notes: Each graph describes the subsidy level at every April from 2005 to 2014 in Saitama prefecture. The darker color indicates that the municipalities has expanded the subsidy to age 15 (the end of junior high school) in the year. The lighter color indicates the municipalities has expanded the subsidy to age 15 in the past. The red dots indicate that there was an election in the same year as the subsidy expansion.

Table 1: Summary statistics

Variable	N	Mean	SD	Min	Max
A. Subsidy characteristics					
Expansion dummy	29,428	0.02	0.14	0	1
Eligibility age (A_i)	29,428	9.33	4.35	2.5	18
No more than 6 ($A_i \leq 6$)	29,428	0.88	0.33	0	1
No more than 9 ($A_i \leq 9$)	29,428	0.50	0.50	0	1
No more than 12 ($A_i \leq 12$)	29,428	0.40	0.49	0	1
No more than 15 ($A_i \leq 15$)	29,428	0.28	0.45	0	1
No more than 15 ($A_i \leq 18$)	29,428	0.01	0.11	0	1
Strictly below ($A_i < A_j$)	29,428	0.24	0.42	0	1
Weakly below ($A_i \leq A_j$)	29,428	0.75	0.43	0	1
B. Election characteristics					
Female	29,428	0.02	0.13	0	1
Terms	29,428	2.07	1.19	1	10
1st term	29,428	0.39	0.49	0	1
2nd+ term	29,428	0.61	0.49	0	1
Uncontested election	29,428	0.18	0.39	0	1
Scheduled election	29,428	0.88	0.33	0	1
Simultaneous election	29,428	0.10	0.30	0	1
C. Municipality characteristics					
Population btw 0-14	29,428	0.14	0.02	0.08	0.19
Population btw 15-64	29,428	0.65	0.04	0.44	0.75
Population btw 65+	29,428	0.21	0.05	0.09	0.48
Population density	29,428	2,705	2,690	9	14,020
Per capita income	29,428	3.26	0.40	2.41	4.94
Financial capability index	29,296	0.86	0.28	0.18	2.89

Notes: Subscripts *i* and *j* indicate own and neighbor municipality, respectively. Sections A and B are hand-collected by authors. For Section C, all variables except for financial capability index comes from "Sichoson no Sugata" published by Statistics Bureau (https://www.e-stat.go.jp/regional-statistics/ssdsview, last accessed at August 1, 2019). Financial capability index, which is an index of judging financial capability of municipalities, is published by Ministry of Internal Affairs and Communications (http://www.soumu.go.jp/iken/shihyo_ichiran.html last accessed at August 1, 2019).

Table 2: Choice of neighbors

	OLS	IV				
Choice of neighbor	*Move-out population*	*Move-out population*	*Move-in population*	*Size of population*	*Income per capita*	*Financial capability index*
	(1)	(2)	(3)	(4)	(5)	(6)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.115***	0.113***	0.109***	0.103***	0.060***	0.084***
	(0.013)	(0.021)	(0.021)	(0.020)	(0.020)	(0.021)
4 years before election	0.044***	0.051***	0.051***	0.049***	0.048***	0.050***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
3 years before election	0.008	0.012	0.013	0.012	0.010	0.011
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
1 year before election	0.022**	0.022**	0.022**	0.021**	0.022**	0.022**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
R-squared	0.98	0.98	0.98	0.98	0.98	0.98
N	27,566	27,566	27,603	27,699	27,699	27,699
F-stats	-	56.94	47.28	39.81	45.76	42.57

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} $(k = 4,3,1)$ and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. For columns (2)-(6), Kleibergen-Paap rk Wald F statistics are reported. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Table 3: Length of lag

	$\tilde{t}$ (t is lagged by c months)				
c=	*0*	*3*	*6*	*9*	*12*
	(1)	(2)	(3)	(4)	(5)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.123***	0.135***	0.113***	0.108***	0.092***
	(0.024)	(0.023)	(0.021)	(0.020)	(0.018)
4 years before election	0.056***	0.056***	0.051***	0.050***	0.048***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
3 years before election	0.012	0.013	0.012	0.011	0.012
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
1 year before election	0.026***	0.024**	0.022**	0.021**	0.019*
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
R-squared	0.98	0.98	0.98	0.98	0.98
N	29,048	28,307	27,566	26,825	26,084

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} ($k = 4,3,1$) and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Table 4: Robustness checks

	Baseline	Mun trend	Each calendar month FE by mun	Drop simultaneous election cycles	Drop non-scheduled election cycles	Balanced panel
	(1)	(2)	(3)	(4)	(5)	(6)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.113***	0.162***	0.145***	0.119***	0.105***	0.112***
	(0.021)	(0.024)	(0.020)	(0.022)	(0.023)	(0.021)
4 years before election	0.051***	0.054***	0.051***	0.050***	0.055***	0.046***
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
3 years before election	0.012	0.020**	0.012	0.016	0.017*	0.012
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)
1 year before election	0.022**	0.024**	0.022**	0.024**	0.027**	0.023**
	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.010)
R-squared	0.98	0.98	0.98	0.98	0.98	0.98
N	27,566	27,566	27,566	23,739	24,235	24,973
Mun FE, time FE	X	X	X	X	X	X
Other covariates	X	X	X	X	X	X
Mun trend		X				
Each calendar month FE by mun			X			

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} ($k = 4,3,1$) and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. Column (1) replicates our baseline estimates from Column (2) of Table 1. Column (2) includes municipality linear time trend. Columns (3) includes fixed effects for each of the twelve calendar months in each municipality to control for municipality-specific seasonality. Column (4) excludes simultaneous elections cycles. Column (5) excludes non-scheduled elections cycles. Column (6) uses the balanced panel which includes 221 municipalities. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Table 5: Strictly vs. weakly below

	Strictly below	Weakly below
	(1)	(2)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$ or $1(A_{i\tilde{t}} \leq A_{j\tilde{t}})$	0.113***	0.145***
	(0.021)	(0.033)
4 years before election	0.051***	0.041***
	(0.010)	(0.011)
3 years before election	0.012	0.007
	(0.009)	(0.009)
1 year before election	0.022**	0.019*
	(0.010)	(0.010)
R-squared	0.98	0.98
N	27,566	27,566

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} $(k = 4,3,1)$ and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Table 6: Heterogeneity

	Political characteristics				Municipal characteristics			
	Uncontested	Contested	1st term	2nd+ term	Urban	Rural	Age<15 above median	Age<15 below median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.223***	0.114***	0.187***	0.131***	0.091***	0.150***	0.134***	0.094***
	(0.052)	(0.023)	(0.046)	(0.027)	(0.024)	(0.038)	(0.031)	(0.027)
4 years before election	0.044	0.056***	0.056***	0.061***	0.052***	0.045***	0.051***	0.049***
	(0.031)	(0.011)	(0.019)	(0.014)	(0.013)	(0.017)	(0.015)	(0.014)
3 years before election	0.030	0.011	0.023	0.012	0.014	0.012	0.013	0.010
	(0.025)	(0.010)	(0.016)	(0.011)	(0.011)	(0.015)	(0.014)	(0.011)
1 year before election	0.047	0.018	0.017	0.025*	0.023**	0.024	0.020	0.022*
	(0.029)	(0.011)	(0.016)	(0.013)	(0.012)	(0.019)	(0.015)	(0.013)
R-squared	0.11	0.09	0.11	0.09	0.09	0.09	0.10	0.09
N	5,047	22,519	10,905	16,661	18,618	8,948	13,793	13,773

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} $(k = 4,3,1)$ and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

Table 7: Interaction of yardstick competition and PBC

	Overall	Heterogeneity			
		Uncontested	Contested	1st term	2nd+ term
	(1)	(2)	(3)	(4)	(5)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.091**	0.266***	0.092**	0.260***	0.092**
	(0.044)	(0.098)	(0.044)	(0.073)	(0.042)
4 year before election × $1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.143**	-0.077	0.100*	-0.104	0.104*
	(0.063)	(0.118)	(0.058)	(0.083)	(0.060)
3 year before election × $1(A_{i\tilde{t}} < A_{j\tilde{t}})$	-0.026	0.018	0.030	-0.029	0.105*
	(0.045)	(0.139)	(0.049)	(0.078)	(0.054)
1 year before election × $1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.081	0.057	0.081	-0.007	0.157**
	(0.058)	(0.154)	(0.055)	(0.074)	(0.067)
4 years before election	0.019	0.063**	0.034***	0.082***	0.037**
	(0.013)	(0.032)	(0.013)	(0.021)	(0.015)
3 years before election	0.017	0.026	0.004	0.033*	-0.011
	(0.010)	(0.038)	(0.012)	(0.018)	(0.015)
1 year before election	0.001	0.037	-0.004	0.020	-0.013
	(0.013)	(0.039)	(0.013)	(0.019)	(0.016)
R-squared	0.98	0.98	0.98	0.98	0.98
N	27,566	5,047	22,519	10,905	16,661

Notes: The outcome is an eligibility age for the subsidy. The estimates α_{-k} $(k = 4,3,1)$, β, and ρ_{-k} $(k = 1,3,4)$ from estimating equation [2] are reported with standard errors clustered at the municipality level reported in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

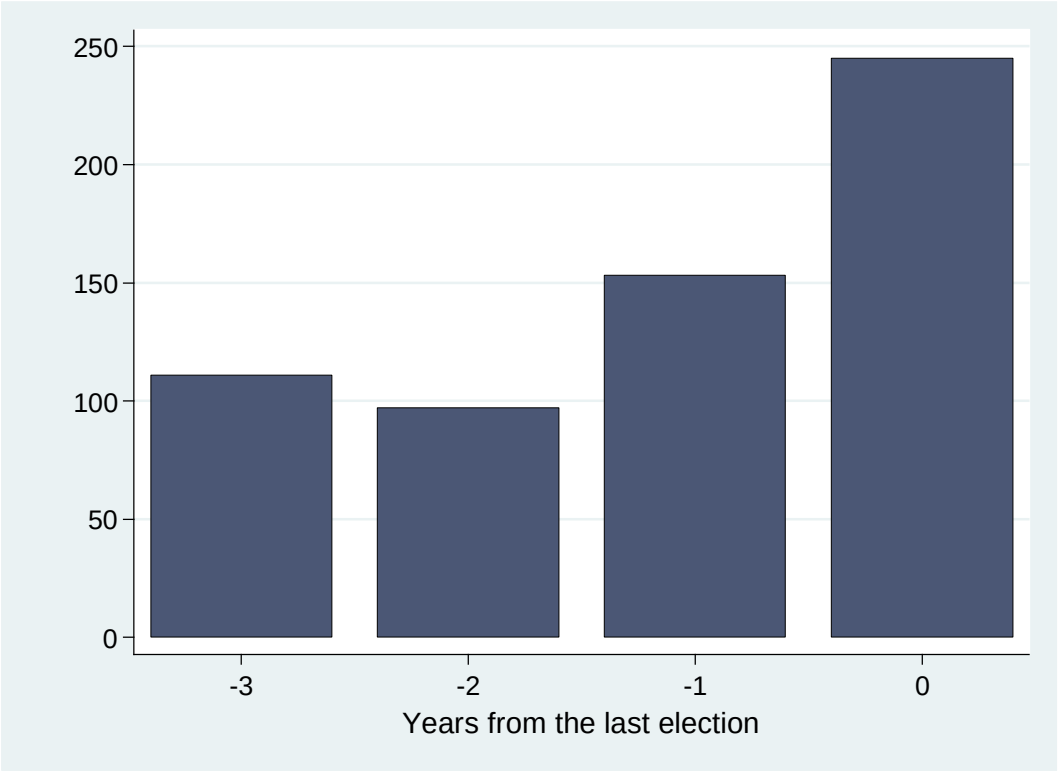
Table 8: Election outcomes

	Incumbent facing uncontested election				Incumbent winning election			
	c=3	*c=6*	*c=9*	*c=12*	*c=3*	*c=6*	*c=9*	*c=12*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	-0.119**	-0.131**	-0.079	-0.046	0.026	0.041	0.062	0.071
	(0.055)	(0.053)	(0.054)	(0.053)	(0.065)	(0.061)	(0.062)	(0.057)
R-squared	0.14	0.15	0.15	0.14	0.06	0.06	0.06	0.06
N	465	452	443	432	465	452	443	432

Notes: The estimates β rom estimating equation [3] are reported with robust standard errors reported in parentheses. The outcome for columns (1)–(4) is a dummy that takes one if incumbent faces uncontested elections. The outcome for columns (5)–(8) is a dummy that takes one if the incumbent wins the elections. $\tilde{t}$ is *t* minus *c* so that time is c months from the next election. We also control for each dummy for the term of the incumbents, and a female dummy for incumbents. Significance levels: *** p<0.01, ** p<0.05, * p<0.10

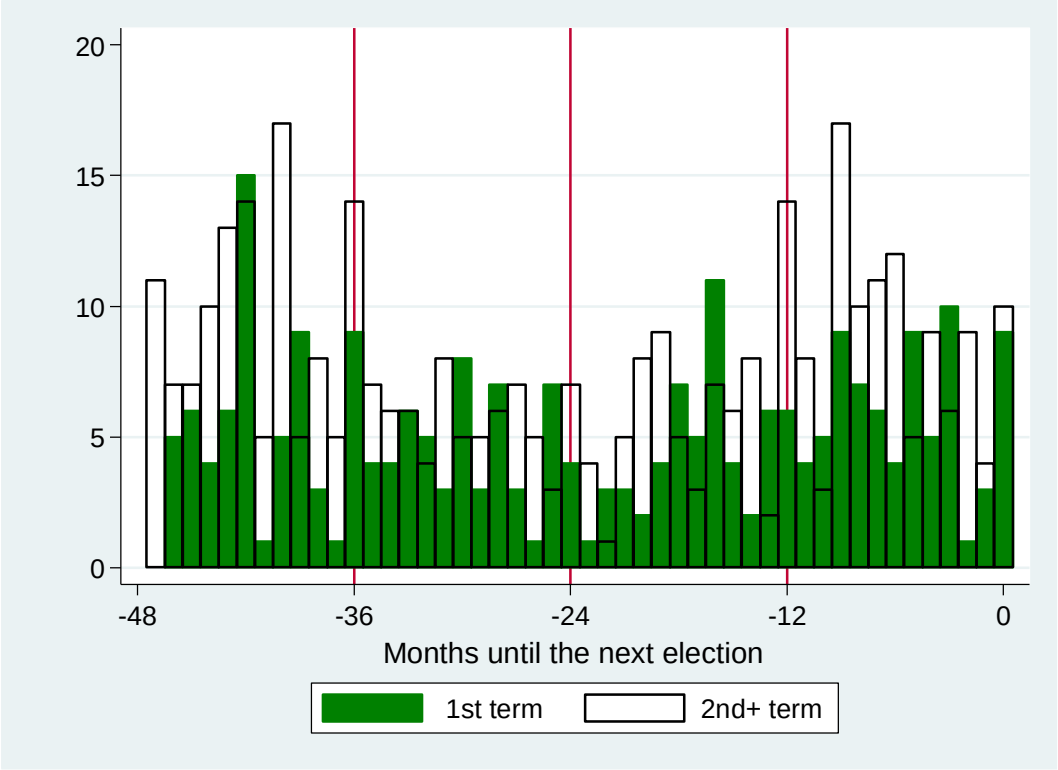
Online Appendix (Not for Publication)

Figure A-1: Year-level aggregations



Notes: This figure shows the number of subsidy expansion by years till next election assuming that we only have yearly information about when the subsidy expansion is implemented.

Figure A-2: Timing of the subsidy expansions: 1st term vs. 2nd+ term



Notes: The figure plots the number of subsidy expansions by the month until the next election for two types of elections: 1st-term and 2nd+ term. There are total of 606 subsidy expansion, of which 245 (40.4%) are implemented during the first term, and 361 (59.6%) are implemented during 2nd+ term.

Table A-1: Balanced checks

	Simultaneous elections	Not in simultaneous elections	*Dif* =(1)-(2)
	(1)	(2)	(3)
A. 2004 elections			
Population btw 0-14	0.140 [0.01]	0.140 [0.02]	0.000 (0.000)
Population btw 15-64	0.670 [0.05]	0.670 [0.04]	0.000 (0.010)
Population btw 65+	0.190 [0.06]	0.190 [0.05]	0.000 (0.010)
Population density	3648.600 [2851.94]	2535.450 [2614.92]	762.220 (483.510)
Per capita income	1.240 [0.10]	1.220 [0.12]	0.010 (0.020)
Financial capability index	0.890 [0.24]	0.920 [0.32]	-0.050 (0.050)
Number of municipalities	32	214	
B. 2007 elections			
Population btw 0-14	0.132 [0.016]	0.132 [0.020]	-0.003 (0.003)
Population btw 15-64	0.629 [0.045]	0.636 [0.035]	-0.004 (0.007)
Population btw 65+	0.235 [0.057]	0.228 [0.050]	0.008 (0.010)
Population density	3629.955 [2870.764]	2589.725 [2681.578]	653.153 (506.495)
Per capita income	1.162 [0.104]	1.140 [0.111]	0.006 (0.021)
Financial capability index	0.816 [0.195]	0.840 [0.262]	-0.041 (0.046)
Number of municipalities	31	216	

Notes: The table compares that municipal characteristics across two groups (without and with simultaneous elections) in each 2007 and 2011 elections.

Table A-2: Distribution of eligibility age (A_i)

A_i	N	%
2.5	1,283	4.36
3.5	1,308	4.44
4.5	709	2.41
5	12	0.04
5.5	360	1.22
6	10,301	35.00
6.5	291	0.99
7	353	1.20
7.5	24	0.08
8	105	0.36
9	2,527	8.59
9.5	24	0.08
10	180	0.61
11	36	0.12
12	3,548	12.06
15	7,957	27.04
16	32	0.11
17	24	0.08
18	354	1.20
Total	29,428	100

Notes: Ages 6,12,15, and 18 correspond to the entry into elementary schools, graduation from elementary schools, graduation from the junior high schools, and graduation from high school, respectively. Age 9 correspond to the 3rd grade of the elementary school. Ages 6, 9, 12, and 15 accounts for 82.7% of all age distributions. Only 1.39% is above age 15, indicating the celling effects.

Table A-3: Other robustness checks

	Exclude				
	Saitama	Chiba	Kanagawa	Aichi	Osaka
	(1)	(2)	(3)	(4)	(5)
$1(A_{i\tilde{t}} < A_{j\tilde{t}})$	0.110***	0.114***	0.110***	0.112***	0.122***
	(0.025)	(0.023)	(0.022)	(0.023)	(0.022)
4 years before election	0.048***	0.048***	0.052***	0.046***	0.057***
	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)
3 years before election	0.020**	0.005	0.011	0.015	0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
1 year before election	0.024**	0.016	0.022**	0.026**	0.024**
	(0.011)	(0.011)	(0.011)	(0.010)	(0.011)
R-squared	0.09	0.10	0.09	0.07	0.10
N	20,474	21629	23,861	21,593	22,707

Notes: The outcome is a dummy that takes one if there is subsidy expansion (×100). The estimates α_{-k} $(k = 4,3,1)$ and β from estimating equation [1] are reported with standard errors clustered at the municipality level reported in parentheses. Each prefecture is dropped from the sample. Significance levels: *** p<0.01, ** p<0.05, * p<0.10