The Effect of Governor Tenure on Local Expenditures: Focusing on Differences in Governor Attributes*

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Abstract

Although many discussions have been held through previous research on the relationship between the length of a politician's tenure and fiscal management, there is controversy about whether the impact is positive or negative. As much of the previous research analyzing fiscal management by Japan's local governments involved verification based on data up till the early 2000s, it is also difficult to say if discussions have been conducted with due consideration for the changes surrounding the environment of local finances that occurred around 2000. The purpose of this research is to empirically clarify the relationship between a governor's tenure and local expenditures by using panel data on prefectural governments from 1975 to 2017. To do so, we conducted an empirical analysis that focused on the possibility of differences in the relationship between local expenditures and a governor's tenure before and after 2000, or on the possibility of differences in this relationship arising from the governor's attributes and the timing when they assumed office. We drew the following three conclusions from the empirical analysis. Firstly, while the overall data (1975-2017) did not show that a longer tenure for the governor is related to greater restraint on local expenditures, this trend of restraint was identified for 2000 and after. It is inferred that this relationship was more strongly impacted by the enforcement of the Comprehensive Decentralization Law in 2000. This study also confirmed that the impact of the length of a governor's tenure on local expenditures, observed for 2000 and after, gives rise to different effects depending on the attributes related to the governor's background. Furthermore, it showed that the effects caused by differences in the governor's background varied depending on whether a new governor assumed office after 2000. The conclusions drawn include several points that have not been elucidated in previous research to date or points that differ from the views presented in previous research, as well as several suggestions. Based on these results, there

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is a need to conduct more in-depth research in the future about the effects of the length of a governor's tenure and how the related systems work.

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I. Introduction

In a nation that is committed to democracy, who is elected not only in national elections to elect members of the Diet, but also in local elections, is an important issue. In local governments, if the local governors are in power for a long period of time, vested interests will be entrenched, corruption will develop within the organizations, and discipline over local expenditures may be loosened.

In the discussion of previous studies abroad, it has often been pointed out that the lack of political competition, depending on the degree of political participation of the population and the state of political polarization, has a negative impact on the efficiency of local governments (Ashworth et al., 2014; Borge et al., 2008; Geys et al., 2010). For example, Borge et al. (2008) and Geys et al. (2010), considering voter turnout as a proxy variable for political competition, point out that the more political competition increases, the better the efficiency of local governments. Therefore, the presence of political competition in elections is an important institutional guarantee for improving the efficiency of local governments.

Looking around at prefectural governors' elections in Japan, the number of candidates tends to be considerably smaller when incumbents run for election (Yoneoka, 2022a). To begin with, incumbent governors tend to be reelected more often in elections, and they have an overwhelming advantage over other new candidates (Kataoka, 1994). As these factors accumulate, it is likely that long-term administrations by incumbent governors will become more likely to continue, and the lack of political competition will loosen the fiscal discipline of local governments and reduce their efficiency.

On the other hand, however, it is conceivable that even if local governors are elected many times, if this is seen as a manifestation of residents' trust in the governor concerned, the need for profit-driven spending is reduced and efficiency is improved (Kondo, 2011; Kondo and Miyamoto, 2010; Sumi, 2018, 2021). In addition, according to empirical studies abroad, Brender (2003) points out that a pre-election fiscal surplus is an indication of the high competence of a governor and increases the probability of reelection of the governor in question.

Long-term government is not necessarily inefficient for local governments if the governors, even if they are highly elected, already possess a high level of administrative and financial management skills, or if these skills can be expected to gradually increase as they

remain in office longer, regardless of their previous experience. But it is not necessarily the case. In fact, some studies analyzing local governments in Japan support such a view (Yoneoka, 2022a).

As is well known, in Japan, there is no legal restriction on multiple elections for the heads of local governments. Therefore, we believe that it would be of great significance to empirically clarify whether long-term governors bring inefficiency to local governments or, conversely, whether they bring efficiency. Furthermore, even if governors have been in office for the same length of time, it is possible that different attributes of governors have different effects on local expenditures. However, this is still an issue that remains to be addressed, as previous studies have not examined this issue at all.

The purpose of this study, while being aware of the problematic situation of previous studies as described above, is to overcome this issue by empirically clarifying the relationship between governor's tenure and local expenditures using prefectural panel data from 1975 to 2017, which can be traced back as data. In doing so, we will focus on the changes in expenditure brought about by differences in the attributes of governors and the timing of their appointment, both before and after the year 2000.

The structure of this paper will be as follows. In the following Chapter II, the background of the study is presented. In Chapter III, the empirical analysis is presented. Finally, in Chapter IV, we present our conclusions.

II. Research Background

II-1. Theoretical Backgrounds

This section discusses the theoretical background of the possible influence of the tenure of the local governor on local expenditures.

In the field of political economy, there has been a lot of research on governors' terms of office and fiscal spending, especially in U.S. cases (e.g., Alt et al., 2011; Besley and Case, 1995; Carey et al., 2006; Erler, 2007; Johnson and Crain, 2004; Tien, 2001; Yakovlev et al., 2012, etc.).

According to Besley and Case (1995), who pioneered theoretical work in this academic field, elections encourage incumbent politicians to increase the effort and performance they put in. In their model, which assumes that there is information asymmetry between both the residents as voters and the politicians as administrators, they focus on the following three main variables.

(1) The "type of politician" which expresses the willingness to increase the amount of effort and performance
(2) The "high and low outputs a politician is willing to achieve" for getting higher utility of residents
(3) The "amount of effort or performance of the politician" required for increasing the

probability of realizing high outputs.

Based on this theoretical model, residents will judge the type of incumbent politician based on the high and low realized outputs. To realize such outputs, residents are expected to prefer to elect a type of politician who is willing to work hard in elections.

The theoretical model by Besley and Case (1995) led to the accumulation of many studies since then on the relationship between politicians' years in office and fiscal management. For example, Alt et al. (2011) examined the effect of years in tenure on the fiscal management performance of governors, and found that fiscal management performance was best in the first term of an incumbent governor.[1] Alternatively, Johnson and Crain (2004) note that a system of multiple-election bans reduces the amount of effort and performance of governors with respect to fiscal health because governors facing their final term no longer consider the next election.

However, it can be said that these theoretical models are unique in that they consider as variables that are difficult to capture in practice, such as "differences in the type of politician" and "amount of effort and performance of the politician". Looking around at the reality of politics, "different types of politicians" is not necessarily a single aspect of the criterion of willingness to increase the amount of effort and performance. For example, the type of position held before becoming a politician could be an important factor directly related to "differences in the type of politician". Indeed, pioneering research in the field of political economy has theoretically indicated that politicians exhibit different financial preferences depending on whether their career was in the central bureaucracy (Niskanen, 1971).

Kawamura (2008), who examines local governor elections in Japan using Schlesinger's (1975) theory of electoral strategy as an aid, points out the following. The electoral strategy of a local governor who is up for reelection is not merely aimed at winning his or her own election, but often considers intentionally maximizing or minimizing the number of parliamentary forces that support them after being elected, and creating a political environment in which he or she can manage the legislature without bending his or her own policy preferences.[2] In this case, if different electoral strategies are employed depending on the "different types of politicians" (i.e., what their previous positions were and what their political backgrounds are), the governor will attempt to maximize their own intentions in situations such as budget allocation (especially for public works projects).

On the other hand, with regard to the "amount of effort and performance of the politicians," theoretical studies have focused on the pros and cons of the multiple-election constraint, and the negative aspects have been mainly discussed, especially the decline in the "amount of effort and performance" in the final term.[3] Therefore, the positive aspect, i.e., the

[1] However, the analysis in this study focuses on regions where term limits have been enforced.

[2] Schlesinger (1975) points out that there are four strategies: (1) a pure strategy of minimizing the vote difference and minimizing the number of votes received from voters as much as possible; (2) a strategy of maximizing the vote difference and also maximizing the number of votes received; (3) a mixed strategy of maximizing the vote difference with fewer votes received and winning the election; (4) a strategy of aiming for a wide turnout of voters, but not aiming for maximization of the vote difference.

increase in a politician's ability with the length of their tenure in office, seems to have been given little consideration. However, it may be possible that politicians' abilities may increase as they gain experience in their positions.[4] Previous studies in the field of political economy can be seen as having discussed on the assumption that the increase in ability associated with the length of a politician's tenure in post is implicitly a constant condition, which presents not a few challenges.

II-2. Trends in Empirical Studies in Japan

Much of the discussion in previous studies focusing on the fiscal management of local governments in Japan has been based on empirical analysis using prefectural data, mainly up to the early 2000s. Looking at previous studies, much attention has been paid to whether the fiscal situation improves when local expenditures are curbed or local bond issuance is restrained, depending on the length of tenure or term of local governors, and a large number of studies have been accumulated.

Table 1 summarizes the status of previous studies in Japan on the impact of differences in the tenure and term of governors on local finances.[5]

There is controversy over whether the length of a governor's tenure has a positive or negative effect on local fiscal discipline, and no unified view has yet been formulated (e.g., Kobayashi and Kondo, 2008; Fujisawa, 2004, Yoneoka, 2022b, etc.). For example, according to Fujisawa (2004), the longer a governor's tenure in post, the more the primary budget deficit tends to be reduced, but it is pointed out that this effect is seen only during the first 10 years of the governor's term in office. On the other hand, Kobayashi and Kondo (2008) found no such relationship between the governor's tenure and the primary budget deficit, but rather pointed out that there are cases where the primary budget deficit increases as the governor's tenure increases.

In addition to examining tenure, empirical analyses have also been conducted focusing on differences of governor's attributes (e.g., partisanship, previous work history, etc.), and the possibility that such factors affect local finances has been discussed (e.g., Kato, 2010; Kobayashi and Kondo, 2008; Sunahara, 2006, 2011; Soga and Machidori, 2007; Fujisawa, 2004; Bessho, 2010, etc.). However, in these previous studies, variables related to the attributes of the governors and variables related to differences in tenure and term of post were only employed as explanatory variables, and none of the previous studies examined the existence or non-existence of the cross effects of tenure and the attributes of the governors.

[3] In fact, since not a small number of local governments or municipalities in Western countries have legal systems that impose multiple-election restrictions on the election of local governors, there is an active debate in those countries, both theoretical and empirical, as to whether this type of problem arises in the final term.

[4] In the fields of labor economics and human capital theory, which are also positioned as social sciences, it is generally assumed that the ability required to perform some position in question will gradually increase with the years of experience of the person involved in those positions.

[5] It should be noted, however, that not all the previous studies discussed here have conducted empirical analyses with a primary focus on differences in tenure in post or term of office of local governors.

Therefore, there has been no study at all on whether the length of tenure has a different effect on local fiscal management for governors with the same length of tenure, depending on their different attributes (e.g., differences in their background, such as previous employment history).

In addition to this state of discussion, looking over the studies discussed in Table 1, it can be pointed out that, except for Yoneoka (2022b), no empirical analysis using long-term data for prefectures after 2000 has been conducted.

In Japan, with the enforcement of the Comprehensive Decentralization Law in 2000, the agency delegated affairs, which had accounted for 70-80% of the affairs handled by prefectures, were abolished and divided into autonomous affairs and legally delegated affairs, resulting in a major change in the relationship between the central government and local governments.[6] This resulted in an increase in the proportion of autonomous affairs that local governments can execute on their own initiative. One possible effect of this change is that the responsibility of the governors for the new self-governing affairs will increase even more. In fact, based on previous studies in the field of public administration, since autonomous affairs are now subject not only to financial and administrative audits, but also to audits based on direct requests from residents and various audits based on the right of local councils to request audits, the governors can no longer shift responsibility to notices and instructions from the central government, as was the case with the agency delegated affairs prior to 2000. Therefore, the number of situations in which the governor is held accountable for the activities of many local governments has increased (Uchikoshi, 2005; Matsushita, 2005; Matsushita, et al., 2002).

In addition, the fact that the Comprehensive Decentralization Law was scheduled to make major changes to the local finance system is thought to have had a not inconsiderable impact on local fiscal management. Specifically, the law strengthened the autonomy of local governments to levy taxes and introduced a new system for the issuance of local bonds. These changes have resulted in some local governments increasing their revenues and have made it necessary to further reduce expenditures within the limited financial resources available.

Furthermore, the effects of the decentralization law, it is also important to note that there is a big difference between the social background before 2000 (the increase in public investment in the 1990s due to the expansion of domestic demand) and the social background after 2000 (the fiscal reconstruction policy after 2000). In the 1990s, the central government's policy of expanding domestic demand encouraged local governments to promote public works projects, and as a result, local expenditures tended to increase. As a result, as of 2001, the total outstanding debt of the central and local governments exceeded 700 trillion yen. As

[6] According to Article 2 of the Act on the Development of Relevant Acts for the Promotion of Decentralization, in cases where affairs to be handled by local governments pursuant to laws or Cabinet orders based on laws are autonomous affairs, the State shall give special consideration to enable local governments to handle such affairs in accordance with local characteristics. The same shall apply to the case where the affairs to be handled by local governments are self-governing affairs. The definition of "autonomous affairs" is as follows: In this Act, 'autonomous affairs' means affairs other than legally delegated affairs that are handled by local public entities.

Table 1. Previous Studies

[Prefectures]

	Data period	Reason for separating data periods	Explained variable	Explanatory variable	Result
Yamashita (2001)	Analysis of 1976-1997 divided into 1976-1993 and 1994-2007	Collapse of the LDP's sole government in 1993	General construction project expenditure/Gross prefectural product	Governor election year dummy variable	No significant results
Fujisawa (2004)	1976-1999	—	Net debt/Gross prefectural product floor difference, Basic fiscal deficit/Gross prefectural product	Governor's tenure in office Squared term of governor's tenure	Governor's tenure in office: Negative and significant Squared term of governor's tenure: Positive and significant
Sunahara (2006)	Analysis of 1975-2002 divided into 1975-1990 and 1991-2002	Collapse of the bubble economy in the 1990s	Infrastructure development expenditure Agriculture expenditure Forestry expenditure Fisheries expenditure Education expenditure Welfare expenditure	Dummy variable for first to third year of governor's tenure in post Dummy variable for last term dummy for governor's last term in office	Positive and significant for first to third year dummies only for education costs (in 1975-1990 data analysis)
Kobayashi and Kondo (2008)	Analysis of 1981-2004 divided into 1981-1991 and 1992-2004	Collapse of the bubble economy in the 1990s	Basic budget deficit/Total expenditures in the prefecture Investment expenditure/Total expenditures in the prefecture Consumption expenditure/Total expenditures in the prefecture	Tenure in post of governor Squared term in post of governor Last term dummy variable Governor election year dummy variable	※1 below.
Bessho (2010)	1998-2006	—	Local government bond balance/Residents Total expenditures/Residents Personnel expenditure/Residents Subsidy expenditure/Residents General construction project expenditure/Residents	Last year in office of governor dummy variable	Not significant
Sunahara (2011)	Analysis of 1975-2002 divided into 1975-1990 and 1991-2002	Collapse of the bubble economy in the 1990s	Infrastructure development expenditure Agriculture expenditure Forestry and fisheries expenditure Education expenditure Welfare expenditure	Dummy variable for the governor's first term Dummy variable for the governor's last term Governor's tenure in post for the governor	Positive and significant for first term dummies only for education expenditures (in data analysis for 1975-1990)
Yoneoka (2022b)	2000-2015	—	Basic budget deficit/Number of residents	Governor's tenure in post Governor's last term dummy variable Governor's age	Positive and significant only for governor's tenure in post

Note: Table prepared by the author.

[Municipalities]

	Data period	Reason for separating data periods	Explained variable	Explanatory variable	Result
Kondo and Miyamoto (2010)	Panel data analysis for 4 time periods: 1985, 1990, 1995, and 2000	—	Basic budget deficit Net debt floor difference Local government bond issuance	Number of times elected governor Age at inauguration of governor	No significant results
Kondo (2011)	Panel data analysis for 4 time periods: 1985, 1990, 1995, and 2000	—	General construction expenditure Agriculture expenditure Forestry expenditure Aid expenditure Education expenditure	Number of times elected governor Age at inauguration	Negative and significant for the number of winners only for expenditure on agriculture, forestry, and fisheries
Sumi (2018, 2021)	Stochastic frontier model analysis of municipal data for the period 2009-2013	—	Infrastructure development expenditure Agriculture expenditure Forestry and fisheries expenditure Education expenditure Welfare expenditure	Number of times elected governor	Positive and significant results
Wasoku (2021)	Nine ordinance-designated city data from 1975 to 2014 analyzed separately for 1975-1999 and 2000-2014	Political situation and implementation of the 2000 decentralization law	Basic budget deficit	Governor's tenure in post	No significant result

Note: Table prepared by the author.

※1　Result of Analysis by Kobayashi and Kondo (2008)

	Data period	Explained variable	Explanatory variable	Result
Kobayashi and Kondo (2008)	The overall data (1981-2004)	Basic budget deficit/Total expenditures in the prefecture	Governor's tenure in post Tenure squared term Last term dummy variable Election year dummy variable	Governor's tenure in post: Positive and significant Squared term of tenure in post: Negative and significant
		Investment expenditures/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Governor's tenure in post: Positive and significant Squared term of tenure in post: Negative and significant
		Consumption expenditure/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	No significant results were obtained.
	1981-1991	Basic budget deficit/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	No significant results were obtained.
		Investment expenditure/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Governor's tenure in post: Positive significant
		Consumption expenditure/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Governor's tenure in post: Negative significant
	1992-2004	Basic budget deficit/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Governor's tenure in post: Positive significant Squared term of governor's tenure in post: Negative significant
		Investment expenditure/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Tenure in post: Positive and significant Squared term of tenure in post: Negative and significant
		Consumption expenditure/Total expenditures in the prefecture	Governor's tenure in post Governor's tenure in post squared term Last term dummy variable Election year dummy variable	Squared term of governor's tenure in post: Negatively significant

Note: Table prepared by the author.

a result, various reforms were implemented at both the national and local governments with fiscal reconstruction in mind (Kitamura, 2009).

As described above, even though changes in the environment surrounding local finances will affect the way fiscal management is conducted in each local government, empirical studies that delimit the period around the year 2000 are extremely sparse.[7] With this in mind, the present study will conduct an empirical analysis of the effect of governor's tenure on local expenditures, focusing on the different attributes of governors. This is the novelty of this study. In addition, by separating the data by the year 2000, the analysis can also consider changes in the social context.

III. Empirical Analysis

III-1. Hypothesis

In this section, we conduct a quantitative empirical analysis of the relationship between governor's tenure and local expenditures using prefectural panel data from 1975 to 2017. In doing so, the data will be segmented around the year 2000 to observe whether changes in local expenditures occur. The hypotheses to be tested are as follows.

Hypothesis 1: The longer a governor has been in office, the more local government spending tends to be suppressed.

Hypothesis 2: The extent to which the longer a governor has been in office, the more local government spending is suppressed, is stronger after 2000.

The mechanism that the author assumes lies behind Hypothesis 1 and Hypothesis 2 will be as follows.

Hypothesis 1 assumes that as a governor's tenure increases, their fiscal management performance generally improves. If the governor's fiscal operational performance increases, even gradually, as their tenure increases, then they would be able to achieve their objectives with less spending to achieve the same output. This would contribute to the direction of greater efficiency in local government. In addition, we consider that the arguments of previous studies, which are mainly based on Western cases that have the same system, do not necessarily apply as is to the election of governors in Japan, which does not have a system of multiple-election restrictions.

Hypothesis 2 assumes that what we have shown in Hypothesis 1 will be observed strongly after 2000. As mentioned in the previous section, with the enactment of the Law on Decentralization in 2000, the responsibility of governors for the affairs of local governments, which now comprise many local government affairs in Japan, has become more im-

[7] Except for Yoneoka (2022a) and Wasoku (2021), there are no empirical studies on local government finance that consider these problems and separate the data around the year 2000 to the best of our knowledge.

portant. In addition, after 2000, major changes were also made to the local finance system, such as strengthening the autonomy of local taxation and the way local bonds are issued. These changes are expected to have a significant impact on the way local governors manage their finances. In addition, the environment surrounding local finances has also changed dramatically since around the year 2000, and while local expenditures had been on an expansionary trend until 2000, due in part to the central government's policy of expanding domestic demand, the post-2000 period has brought fiscal discipline and a trend toward fiscal soundness among local governments. If there is a relationship between the length of governor's tenure and the reduction of local expenditures, it is expected to be more pronounced after the year 2000.

The main objective of the analysis in this paper is to examine Hypothesis 2 mainly, but if this hypothesis holds, the following hypotheses will be formulated and discussed further.

Hypothesis 3: The effect of the length of governor's tenure in post on suppressing local expenditures will differ depending on the attributes of the governor.

Hypothesis 4: In the case that the effect of governor's tenure on suppressing local expenditures is positive, it will be particularly strong for governors who have been in office since 2000.

The mechanism that we assume to be behind Hypothesis 3 and Hypothesis 4 is as follows.

In Hypothesis 1 and Hypothesis 2 above, it is implicitly assumed that the effect of a governor's longer tenure on local spending is the same for all types of local governors. However, the actual effect may differ depending on the "different types of politicians" that have been theoretically examined. In other words, if "different types of politicians" also produce differences in the amount of effort and performance, it is possible that the difference of the governor's tenure may produce some effects on the impact on local expenditures. This point has not been examined at all in previous studies. Hypothesis 3 examines this point by focusing on the differences in the attributes of the governor.

Furthermore, even if the test of Hypothesis 3 shows that governors' tenure in office and attributes from which they come have different effects on local expenditures, it is possible that the effects may differ depending on whether the governor took office after 2000, i.e., when he or she came into office. Especially, it is possible that the effect of spending restraint is stronger for governors who took office after the enactment of the Comprehensive Decentralization Law in 2000. Therefore, Hypothesis 4 examines this point by focusing on differences in the timing of the governor's inauguration.

III-2. Data

The empirical analysis in this paper uses prefectural data from 1975 to 2017.

As explained variables, total expenditures, consumptive expenditure, investment expenditure, personnel expenditure, bond expenditure, property expenditure, maintenance and repair expenditure, social assistance expenditure, subsidy expenditure and others, general construction project expenditure, disaster recovery project expenditure, and unemployment measures expenditure are used respectively.[8]

In the empirical analysis in this paper, each explained variable is standardized on a per capita basis, referring to the variable creation methods of Bessho (2010) and Yoneoka (2022a).[9] Furthermore, for 43 years of long-term data will be used, the data will be standardized by the in-prefecture gross expenditure deflator to account for changes in the price level. However, as in Kobayashi and Kondo (2008) and Yoneoka (2022a), we use one period later for each explained variable, considering the time lag for the explanatory variables.[10, 11]

As explanatory variables, we use variables related to the governor's tenure in post and the governor's backgrounds (a dummy variable for the governor originated from the central bureaucracy, a dummy variable for the governor originated from the Diet, a dummy variable for the governor originated from local politicians, a dummy variable for the governor with a long career in its organization, and a dummy variable for the governor originated from other attributes), respectively.[12] In addition, the interaction terms of these explanatory variables will be employed in the analytical model.

Control variables are employed in the analytical model as follows, referring to the methods for inputting variables in previous studies (Kobayashi and Kondo, 2008; Sunahara, 2011; Yoneoka, 2022a, 2022b). A governor's final term dummy variable to identify differences between the final term and the non-final term in terms of the governor's political motives; for local expenditures and revenues, the percentage of seats of opposing forces in prefectural assemblies to account for the need for local assembly voting; to control for differences in labor-management relations in each local government, we use the union organization rate; a dummy variable for organizations that do not receive local tax subsidies to control for differences in fiscal conditions, and population density to control for social and economic factors in each region. In addition, we employ each-year dummies to control for

[8] The definition of each variable will be identical to that defined in local finance terminology.

[9] Previous studies have used the number of residents (Kato, 2010; Kondo, 2011; Soga and Machidori, 2007; Bessho, 2010), nominal prefectural gross expenditures (Kobayashi and Kondo, 2008; Yamashita, 2001), or base fiscal revenue (Sunahara, 2006, 2011) to standardize local expenditure data.

[10] The official series of prefectural gross expenditure deflators in the Cabinet Office's prefectural accounts are available from 1975 to 2018 (as of June 2, 2022); although prefectural gross expenditure deflators prior to 1975 are also published, they are retroactively estimated by the Cabinet Office using the 1968SNA concept. Its position is that it is only a reference series and differs from the official series of post-1975 figures prepared by each prefecture based on the standard method of prefectural accounts. Therefore, in the empirical analysis in this paper, the post-1975 prefectural gross expenditure deflator is used to adjust each explained variable, and to further account for time lags with respect to the explanatory variables, data from one period later are used, resulting in a data set covering 43 years from 1975 to 2017. For the definition of the official series of prefectural accounts, please refer to the "Posting of Historical Coefficients" on the Cabinet Office's website below.
<https://www.esri.cao.go.jp/jp/sna/data/data_list/kenmin/files/files_kenmin.html>

[11] Because of deficiencies in the published prefectural gross expenditure deflator data for Fukushima (1975-1979), Saitama (1975-1976), Okayama (1975-1984), and Okinawa (1975-1980), these prefectures were excluded from the analysis.

[12] However, due to the limitations of the data available in the National File of Governors and Mayors of Municipalities, edited by the Local Administration and Finance Research Institute, we will examine only the II period (2000-2017) regarding difference of attributes.

shocks specific to each fiscal year.

Descriptive statistics of the data are presented in Table 2. The mean value of the governor's tenure in post shows that in the I term (1975-1999), the mean value was 8.319 years, and in the II term (2000-2017), the mean value was 7.407 years, which is shorter than the mean value. In the II period (2000-2017), the mean value of the dummy variable for the governor originated from the central bureaucracy was 0.571 and the mean value of the dummy variable for the governor originated from the Diet was 0.212. This means that more than three-quarters of the governors in all 47 prefectures are either central bureaucrats or Diet members. If different fiscal management practices are found to be influenced by these different attributes, it would have a significant impact on local finances.

The signs of the estimated coefficients of the explanatory variables expected if each hypothesis holds are as follows. If Hypothesis 1 holds, the sign of the estimated coefficient on the governor's tenure in post is expected to be significantly negative in an analysis using the overall data (1975-2017). If Hypothesis 2 holds, the sign of the estimated coefficient of the governor's tenure in post will be significantly more negative (larger in absolute value) in the analysis using the data for the II period (2000-2017). If Hypothesis 3 holds, the sign and significance of the estimated coefficient of the intersection of the governor's attributes and tenure in post will differ in the analysis using the data from the II period (2000-2017). If Hypothesis 4 holds, the analysis of the data for the II term (2000-2017), broken down by whether the governor took office after 2000, will show a difference in the sign and significance of the estimated coefficient of the intersection of the governor's attributes and tenure in post.

In the estimation, standard panel data analysis methods are applied since the data used in the analysis have a panel structure. As for multicollinearity among the variables, the value of the correlation coefficient is 0.711 between the dummy variable for local governments that do not receive local tax subsidies and population density, and since this value is the largest, it can be judged that the level is generally not high enough to be of concern.

III-3. Estimated Results

III-3-1. Basic Analysis

The estimation results are shown in Tables 3 through 12. Tables 3, 4, 5, and 9 show the results of the estimation with the fixed effect model, while Tables 6, 7, 8, and 10 show the results with the random effect model.[13]

In each estimation, there are generally no significant differences in trends between the fixed and random effect models. Therefore, when interpreting the results of the following analysis, we will focus on the fixed effect model. The variable that we will focus on will be the results related to the governor's tenure in post.

[13] The reason for listing the fixed and random effect models together is to allow the robustness of the analytical results to be confirmed. However, due to paper constraints, for Tables 11 and 12, only the results of the interaction terms are indicated, and the results of both fixed and random effect models are shown.

Table 2. Descriptive Statistics of Data

	Variable	The overall data (1975-2017)					I Period (1975-1999)					II Period (2000-2017)					Source
		Number of data	Mean	Std.	Min	Max	Number of data	Mean	Std.	Min	Max	Number of data	Mean	Std.	Min	Max	
1	Total expenditures (thousand yen)	2002	397.389	129.741	124.505	1122.816	1156	372.069	124.995	124.505	890.557	846	431.987	128.179	174.654	1122.816	(1)(2)
2	Consumption Expenditure (thousand yen)	2002	112.309	58.467	13.470	397.930	1156	129.802	60.132	21.889	397.930	846	88.406	46.497	13.470	328.769	(1)(2)
3	Investment expenditure (thousand yen)	2002	285.080	95.433	98.956	998.300	1156	242.268	70.943	98.956	504.571	846	343.580	93.561	152.526	998.300	(1)(2)
4	Personnel expenditure (thousand yen)	2002	117.472	21.610	53.989	176.041	1156	115.273	22.099	62.189	176.041	846	120.477	20.559	53.989	172.352	(1)(2)
5	Bond expenditure (thousand yen)	2002	45.880	26.664	4.233	209.712	1156	31.976	18.250	4.233	121.343	846	64.878	24.546	15.656	209.712	(1)(2)
6	Property expenditure (thousand yen)	2002	13.019	5.852	4.421	93.837	1156	11.521	4.130	4.421	29.967	846	15.065	7.108	5.310	93.837	(1)(2)
7	Maintenance and repair expenditure (thousand yen)	2002	3.201	2.046	0.165	15.111	1156	2.735	1.358	0.165	8.848	846	3.839	2.586	0.172	15.111	(1)(2)
8	Social assistance expenditure (thousand yen)	2002	10.276	4.751	2.613	30.493	1156	11.141	5.103	2.613	30.493	846	9.094	3.930	3.111	23.272	(1)(2)
9	Subsidy expenditure and others (thousand yen)	2002	51.274	33.905	10.681	300.942	1156	29.946	15.601	10.681	165.174	846	80.416	30.280	35.943	300.942	(1)(2)
10	General construction expenditure (thousand yen)	2002	106.605	55.467	13.462	390.243	1156	123.218	57.831	21.218	390.243	846	83.904	42.668	13.462	323.511	(1)(2)
11	Disaster recovery project expenditure (thousand yen)	2002	5.498	9.005	0.002	153.936	1156	6.230	6.560	0.002	78.279	846	4.497	11.465	0.002	153.936	(1)(2)
12	Unemployment expenditure (thousand yen)	2002	0.207	0.556	0.000	5.924	1156	0.354	0.693	0.000	5.924	846	0.005	0.080	0.000	2.063	(1)(2)
13	Governor's tenure in post (years)	2002	7.934	5.409	1.000	31.000	1156	8.319	5.713	1.000	31.000	846	7.407	4.917	1.000	24.000	(3)
14	Governor's last term dummy variable (last term = 1, other = 0)	2002	0.278	0.448	0.000	1.000	1156	0.264	0.441	0.000	1.000	846	0.298	0.458	0.000	1.000	(3)
15	Dummy variable for the governor originated from central bureaucracy (yes=1, no=0)	-	-	-	-	-	-	-	-	-	-	846	0.571	0.495	0.000	1.000	(3)
16	Dummy variable for the governor originated from the Diet (yes=1, no=0)	-	-	-	-	-	-	-	-	-	-	846	0.212	0.409	0.000	1.000	(3)
17	Dummy variable for governor originated from local politics (yes=1, no=0)	-	-	-	-	-	-	-	-	-	-	846	0.156	0.363	0.000	1.000	(3)
18	Dummy variable for governors with a long career in its organization (yes=1, no=0)	-	-	-	-	-	-	-	-	-	-	846	0.052	0.222	0.000	1.000	(3)
19	Dummy variable for governor originated from other attributes (yes=1, no=0)	-	-	-	-	-	-	-	-	-	-	846	0.119	0.324	0.000	1.000	(3)
20	Percentage of seats held by opposing forces in prefectural legislatures (%)	2002	48.727	30.139	0.000	100.000	1156	38.923	25.047	0.000	100.000	846	62.124	31.343	0.000	100.000	(4)
21	Union organization rate (%)	2002	62.535	18.510	0.000	88.100	1156	67.810	15.085	12.300	88.100	846	55.327	20.255	0.000	85.400	(5)
22	Dummy variable for local governments that do not receive local tax subsidies	2002	0.040	0.197	0.000	1.000	1156	0.052	0.222	0.000	1.000	846	0.025	0.156	0.000	1.000	(6)
23	Population density (thousands/km2)	2002	0.630	1.104	0.068	6.255	1156	0.615	1.070	0.068	5.623	846	0.651	1.150	0.068	6.255	(6)

Note: Regarding the source of the data, the names of the documents from (1) to (6) are as follows.

Source: (1) Ministry of Internal Affairs and Communications, “Prefectural Accounts” [Translated from Japanese]

(2) Cabinet Office, “Prefectural Accounts” [Translated from Japanese]

(3) The Local Administrative and Financial Research Institute, “National File of Governors and Mayors of Municipalities” [Translated from Japanese]

(4) Ministry of Internal Affairs and Communications, “Japan Statistical Yearbook” [Translated from Japanese]

(5) Ministry of Internal Affairs and Communications, “Chart on Unions” [Translated from Japanese]

(6) Ministry of Internal Affairs and Communications, “Statistics on Prefectures” [Translated from Japanese]

Table 3. Estimation Results (Fixed Effect Model)

Period	Full set of data (1975-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 3-1	Model 3-2	Model 3-3	Model 3-4	Model 3-5	Model 3-6	Model 3-7	Model 3-8	Model 3-9	Model 3-10	Model 3-11	Model 3-12
Governor's tenure in post	-0.150	-0.252	0.102	-0.034	0.063	-0.023	0.004	-0.016 **	-0.078	0.071	0.028	0.003
	(0.239)	(0.183)	(0.105)	(0.027)	(0.048)	(0.018)	(0.005)	(0.008)	(0.060)	(0.092)	(0.041)	(0.002)
Governor's last term in office dummy variable	-0.148	2.823	-2.971 **	0.200	-1.357 **	0.255	-0.081	0.143 *	1.294 *	-2.467 **	-0.530	0.026
	(2.701)	(2.072)	(1.193)	(0.304)	(0.546)	(0.203)	(0.061)	(0.086)	(0.676)	(1.045)	(0.463)	(0.021)
Percentage of seats held by opposing forces in prefectural assemblies	0.026	0.037	-0.012	0.005	-0.004	0.000	-0.005 ***	0.001	0.009	-0.015	0.002	0.002 ***
	(0.045)	(0.035)	(0.020)	(0.005)	(0.009)	(0.003)	(0.001)	(0.001)	(0.011)	(0.017)	(0.008)	(0.000)
Union organization rate	0.158	-0.155	0.314 ***	-0.005	0.018	-0.046 ***	-0.026 ***	-0.002	-0.159 ***	0.240 ***	0.071 ***	0.002 **
	(0.145)	(0.111)	(0.064)	(0.016)	(0.029)	(0.011)	(0.003)	(0.005)	(0.036)	(0.056)	(0.025)	(0.001)
Non-granting organization dummy variable	16.333 *	13.726 *	2.607	1.529	3.155 *	2.151 ***	0.534 **	-0.612 **	8.442 ***	3.894	-1.152	-0.135 *
	(9.208)	(7.063)	(4.067)	(1.035)	(1.861)	(0.692)	(0.209)	(0.294)	(2.304)	(3.563)	(1.577)	(0.072)
Population density	-123.790 ***	-142.757 ***	18.968 ***	-21.183 ***	-55.030 ***	-10.901 ***	-3.438 ***	5.970 ***	-12.630 ***	12.485 **	6.142 **	0.341 ***
	(15.189)	(11.650)	(6.708)	(1.708)	(3.070)	(1.142)	(0.344)	(0.486)	(3.801)	(5.878)	(2.601)	(0.119)
Constant term	304.729 ***	255.865 ***	48.864 ***	110.461 ***	38.760 ***	17.351 ***	5.637 ***	7.451 ***	33.434 ***	46.612 ***	2.010	0.242 *
	(16.408)	(12.585)	(7.247)	(1.845)	(3.317)	(1.234)	(0.372)	(0.525)	(4.106)	(6.350)	(2.810)	(0.128)
sigma_u	138.869	154.698	58.536	24.566	56.004	11.670	3.926	8.891	22.054	50.584	9.296	0.492
sigma_e	45.223	34.687	19.973	5.086	9.142	3.401	1.025	1.446	11.317	17.501	7.745	0.353
rho	0.904	0.952	0.896	0.959	0.974	0.922	0.936	0.974	0.792	0.893	0.590	0.659
R-sq: within	0.673	0.782	0.716	0.719	0.828	0.400	0.398	0.499	0.872	0.770	0.085	0.372
between	0.129	0.047	0.229	0.126	0.180	0.025	0.003	0.088	0.139	0.207	0.220	0.001
overall	0.219	0.150	0.057	0.178	0.216	0.045	0.016	0.041	0.518	0.142	0.016	0.091
Number of observations	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 4. Estimation Results (Fixed Effect Model)

Period	I Period (1975-1999)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 4-1	Model 4-2	Model 4-3	Model 4-4	Model 4-5	Model 4-6	Model 4-7	Model 4-8	Model 4-9	Model 4-10	Model 4-11	Model 4-12
Governor's tenure in post	0.241	0.135	0.106	0.021	0.056	0.006	0.002	-0.013	0.000	0.167	-0.067 **	0.006 ***
	(0.172)	(0.102)	(0.105)	(0.027)	(0.043)	(0.010)	(0.004)	(0.008)	(0.028)	(0.102)	(0.034)	(0.002)
Governor's last term in office dummy variable	-2.902	-1.074	-1.829	-0.196	-1.288 **	0.015	-0.037	0.158	-0.323	-2.714 **	0.874 **	0.011
	(2.045)	(1.216)	(1.245)	(0.319)	(0.510)	(0.114)	(0.044)	(0.101)	(0.332)	(1.212)	(0.399)	(0.025)
Percentage of seats held by opposing forces in prefectural assemblies	-0.047	0.002	-0.049 **	-0.002	0.007	0.003	0.000	0.000	-0.008	-0.040 *	-0.010	0.001 **
	(0.037)	(0.022)	(0.023)	(0.006)	(0.009)	(0.002)	(0.001)	(0.002)	(0.006)	(0.022)	(0.007)	(0.000)
Union organization rate	0.854 ***	0.209 *	0.645 ***	0.008	0.198 ***	0.009	0.018 ***	-0.024 ***	-0.010	0.641 ***	0.006	-0.002
	(0.182)	(0.108)	(0.111)	(0.028)	(0.045)	(0.010)	(0.004)	(0.009)	(0.030)	(0.108)	(0.036)	(0.002)
Non-granting organization dummy variable	23.099 ***	9.439 ***	13.659 ***	1.210	2.557 *	1.463 ***	0.321 ***	-0.526 *	3.007 ***	14.966 ***	-1.254	-0.053
	(5.794)	(3.444)	(3.528)	(0.904)	(1.444)	(0.324)	(0.123)	(0.286)	(0.941)	(3.433)	(1.130)	(0.070)
Population density	-243.573 ***	-119.228 ***	-124.345 ***	-5.508 **	-51.651 ***	-7.152 ***	-1.593 ***	4.849 ***	-20.458 ***	-132.830 ***	7.814 **	0.672 ***
	(16.354)	(9.722)	(9.958)	(2.552)	(4.075)	(0.913)	(0.348)	(0.807)	(2.657)	(9.690)	(3.190)	(0.197)
Constant term	325.191 ***	216.700 ***	108.492 ***	100.673 ***	24.580 ***	11.120 ***	1.379 ***	9.529 ***	28.560 ***	101.904 ***	6.257 *	0.330
	(17.951)	(10.672)	(10.931)	(2.801)	(4.473)	(1.003)	(0.382)	(0.886)	(2.917)	(10.637)	(3.502)	(0.216)
sigma_u	245.102	130.541	115.677	19.051	52.703	8.092	2.089	8.282	28.243	125.029	10.965	0.923
sigma_e	24.618	14.635	14.990	3.841	6.135	1.375	0.524	1.215	4.000	14.587	4.802	0.296
rho	0.990	0.988	0.983	0.961	0.987	0.972	0.941	0.979	0.980	0.987	0.839	0.906
R-sq: within	0.899	0.910	0.793	0.862	0.828	0.738	0.517	0.216	0.891	0.819	0.145	0.453
between	0.121	0.023	0.273	0.087	0.133	0.001	0.000	0.105	0.256	0.266	0.253	0.000
overall	0.175	0.100	0.283	0.244	0.146	0.029	0.011	0.090	0.001	0.272	0.063	0.017
Number of observations	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 5. Estimation Results (Fixed Effect Model)

Period	II Period (2000-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 5-1	Model 5-2	Model 5-3	Model 5-4	Model 5-5	Model 5-6	Model 5-7	Model 5-8	Model 5-9	Model 5-10	Model 5-11	Model 5-12
Governor's tenure in post	-1.869 ***	-1.668 ***	-0.201	-0.159 ***	0.110	-0.098 **	-0.004	-0.016	-0.530 ***	-0.182	-0.019	0.000
	(0.533)	(0.420)	(0.191)	(0.044)	(0.089)	(0.043)	(0.010)	(0.011)	(0.135)	(0.144)	(0.089)	(0.001)
Governor's last term in office dummy variable	10.725 **	10.959 ***	-0.234	0.266	-2.200 **	0.568	-0.056	0.116	6.329 ***	0.003	-0.226	-0.011
	(5.268)	(4.147)	(1.888)	(0.438)	(0.878)	(0.427)	(0.095)	(0.105)	(1.334)	(1.421)	(0.880)	(0.007)
Percentage of seats held by opposing forces in prefectural assemblies	0.052	0.064	-0.011	0.014 **	0.009	-0.008	-0.006 ***	0.001	0.017	-0.001	-0.010	0.000
	(0.083)	(0.065)	(0.030)	(0.007)	(0.014)	(0.007)	(0.001)	(0.002)	(0.021)	(0.022)	(0.014)	(0.000)
Union organization rate	0.405	0.123	0.282 **	0.072 ***	0.041	-0.014	-0.032 ***	-0.023 ***	-0.098	0.118	0.165 ***	-0.001 *
	(0.334)	(0.263)	(0.120)	(0.028)	(0.056)	(0.027)	(0.006)	(0.007)	(0.085)	(0.090)	(0.056)	(0.000)
Non-granting organization dummy variable	42.886	26.026	16.859	5.026 *	-0.462	1.891	0.399	1.095	7.709	13.833	3.019	0.007
	(34.804)	(27.397)	(12.471)	(2.896)	(5.804)	(2.821)	(0.629)	(0.696)	(8.816)	(9.388)	(5.816)	(0.047)
Population density	-24.579	-126.952 ***	102.373 ***	-23.395 ***	-32.036 ***	-4.329	-1.206	-0.670	-43.694 ***	108.551 ***	-6.180	0.001
	(53.329)	(41.979)	(19.109)	(4.438)	(8.893)	(4.322)	(0.964)	(1.066)	(13.508)	(14.385)	(8.911)	(0.072)
Constant term	451.677 ***	449.222 ***	2.455	130.102 ***	84.461 ***	20.793 ***	7.302 ***	11.208 ***	139.955 ***	-0.462	2.871	0.046
	(42.026)	(33.082)	(15.059)	(3.497)	(7.008)	(3.406)	(0.759)	(0.840)	(10.645)	(11.336)	(7.022)	(0.057)
sigma_u	107.575	143.549	143.056	25.277	33.721	6.230	2.530	3.506	58.389	148.573	10.332	0.041
sigma_e	54.160	42.634	19.407	4.507	9.031	4.389	0.979	1.083	13.719	14.609	9.050	0.074
rho	0.798	0.919	0.982	0.969	0.933	0.668	0.870	0.913	0.948	0.990	0.566	0.236
R-sq: within	0.175	0.358	0.425	0.354	0.210	0.117	0.291	0.573	0.661	0.585	0.078	0.029
between	0.171	0.080	0.245	0.206	0.216	0.077	0.019	0.078	0.092	0.239	0.019	0.011
overall	0.160	0.090	0.137	0.206	0.198	0.074	0.044	0.153	0.001	0.134	0.021	0.003
Number of observations	846	846	846	846	846	846	846	846	846	846	846	846

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 6. Estimation Results (Random Effect Model)

Period	Full set of data (1975-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 6-1	Model 6-2	Model 6-3	Model 6-4	Model 6-5	Model 6-6	Model 6-7	Model 6-8	Model 6-9	Model 6-10	Model 6-11	Model 6-12
Governor's tenure in post	-0.143	-0.236	0.094	-0.034	0.071	-0.021	0.004	-0.017 **	-0.078	0.065	0.025	0.003
	(0.240)	(0.187)	(0.106)	(0.027)	(0.050)	(0.018)	(0.005)	(0.008)	(0.060)	(0.093)	(0.040)	(0.002)
Governor's last term in office dummy variable	-0.561	2.057	-2.710 **	0.161	-1.667 ***	0.187	-0.101	0.175 **	1.205 *	-2.265 **	-0.450	0.029
	(2.711)	(2.113)	(1.197)	(0.305)	(0.569)	(0.206)	(0.062)	(0.088)	(0.681)	(1.048)	(0.460)	(0.021)
Percentage of seats held by opposing forces in prefectural assemblies	0.035	0.052	-0.014	0.006	0.001	0.002	-0.004 ***	0.000	0.012	-0.017	0.003	0.002 ***
	(0.045)	(0.035)	(0.020)	(0.005)	(0.009)	(0.003)	(0.001)	(0.001)	(0.011)	(0.017)	(0.008)	(0.000)
Union organization rate	0.250 *	-0.003	0.278 ***	0.004	0.073 **	-0.030 ***	-0.021 ***	-0.007	-0.106 ***	0.216 ***	0.029	0.002 **
	(0.143)	(0.110)	(0.063)	(0.016)	(0.030)	(0.010)	(0.003)	(0.005)	(0.034)	(0.055)	(0.021)	(0.001)
Non-granting organization dummy variable	25.802 ***	29.180 ***	-0.836	2.388 **	8.898 ***	3.651 ***	0.935 ***	-1.085 ***	12.223 ***	1.297	-1.656	-0.183 ***
	(9.049)	(7.019)	(3.990)	(1.029)	(1.888)	(0.680)	(0.206)	(0.296)	(2.238)	(3.497)	(1.489)	(0.069)
Population density	-71.967 ***	-54.364 ***	-4.891	-16.259 ***	-20.568 ***	-2.536 ***	-1.117 ***	2.962 ***	1.738	-5.602	-1.193 **	0.070
	(9.856)	(6.601)	(4.188)	(1.403)	(1.724)	(0.450)	(0.183)	(0.376)	(1.252)	(3.814)	(0.526)	(0.045)
Constant term	266.945 ***	192.039 ***	65.430 ***	106.886 ***	14.203 ***	11.207 ***	3.901 ***	9.562 ***	20.986 ***	59.001 ***	9.150 ***	0.418 ***
	(20.065)	(13.768)	(8.542)	(3.178)	(3.630)	(1.110)	(0.389)	(0.796)	(3.449)	(7.765)	(4.520)	(0.113)
sigma_u	96.530	58.121	39.949	18.223	14.657	3.519	1.576	4.239	9.459	37.448	3.541	0.361
sigma_e	45.223	34.687	19.973	5.086	9.142	3.401	1.025	1.446	11.317	17.501	7.745	0.353
rho	0.820	0.737	0.800	0.928	0.720	0.517	0.703	0.896	0.411	0.821	0.173	0.511
R-sq: within	0.671	0.775	0.714	0.717	0.817	0.383	0.384	0.489	0.871	0.768	0.080	0.370
between	0.136	0.057	0.224	0.128	0.190	0.043	0.002	0.088	0.234	0.246	0.153	0.033
overall	0.289	0.364	0.367	0.198	0.455	0.191	0.066	0.018	0.758	0.408	0.097	0.239
Number of observations	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 7. Estimation Results (Random Effect Model)

Period	I Period (1975-1999)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 7-1	Model 7-2	Model 7-3	Model 7-4	Model 7-5	Model 7-6	Model 7-7	Model 7-8	Model 7-9	Model 7-10	Model 7-11	Model 7-12
Governor's tenure in post	0.180	0.100	0.072	0.021	0.037	0.004	0.001	-0.012	-0.011	0.129	-0.060 *	0.006 ***
	(0.179)	(0.106)	(0.107)	(0.027)	(0.045)	(0.010)	(0.004)	(0.009)	(0.029)	(0.106)	(0.033)	(0.002)
Governor's last term in office dummy variable	-3.363	-1.331	-2.077	-0.191	-1.444 ***	-0.006	-0.041	0.180 *	-0.398	-2.995 **	0.888 **	0.013
	(2.131)	(1.260)	(1.280)	(0.319)	(0.535)	(0.117)	(0.044)	(0.103)	(0.343)	(1.257)	(0.397)	(0.025)
Percentage of seats held by opposing forces in prefectural assemblies	-0.010	0.023	-0.029	-0.002	0.019 *	0.005 **	0.000	-0.001	-0.002	-0.017	-0.012	0.001 **
	(0.039)	(0.023)	(0.023)	(0.006)	(0.010)	(0.002)	(0.001)	(0.002)	(0.006)	(0.023)	(0.007)	(0.000)
Union organization rate	1.165 ***	0.402 ***	0.798 ***	0.015	0.285 ***	0.024 **	0.022 ***	-0.032 ***	0.050 *	0.811 ***	0.005	-0.002
	(0.184)	(0.109)	(0.110)	(0.028)	(0.044)	(0.010)	(0.004)	(0.009)	(0.028)	(0.107)	(0.026)	(0.002)
Non-granting organization dummy variable	27.343 ***	11.905 ***	16.011 ***	1.244	4.007 ***	1.674 ***	0.378 ***	-0.646 **	3.823 ***	17.616 ***	-1.451	-0.078
	(6.022)	(3.561)	(3.616)	(0.903)	(1.508)	(0.330)	(0.124)	(0.290)	(0.968)	(3.552)	(1.113)	(0.070)
Population density	-115.846 ***	-46.495 ***	-53.885 ***	-5.267 ***	-9.329 ***	-1.361 ***	-0.210	0.923 *	0.608	-53.177 ***	-1.513 ***	0.098
	(10.781)	(5.997)	(5.587)	(1.815)	(1.513)	(0.385)	(0.144)	(0.508)	(1.112)	(5.324)	(0.558)	(0.074)
Constant term	228.104 ***	160.441 ***	56.280 ***	100.169 ***	-6.281 *	6.736 ***	0.342	12.346 ***	12.025 ***	43.132 ***	11.676 ***	0.672 ***
	(21.453)	(12.021)	(11.433)	(3.651)	(3.803)	(0.889)	(0.333)	(1.012)	(2.589)	(11.000)	(2.126)	(0.180)
sigma_u	96.242	51.800	46.599	18.609	10.920	2.949	1.120	4.571	8.393	43.416	3.744	0.563
sigma_e	24.618	14.635	14.990	3.841	6.135	1.375	0.524	1.215	4.000	14.587	4.802	0.296
rho	0.939	0.926	0.906	0.959	0.760	0.821	0.821	0.934	0.815	0.899	0.378	0.783
R-sq: within	0.894	0.905	0.783	0.862	0.811	0.728	0.510	0.198	0.884	0.807	0.138	0.449
between	0.134	0.032	0.284	0.090	0.183	0.017	0.054	0.090	0.272	0.279	0.250	0.000
overall	0.285	0.270	0.372	0.246	0.499	0.258	0.176	0.042	0.558	0.384	0.184	0.123
Number of observations	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156	1156

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 8. Estimation Results (Random Effect Model)

Period	II Period (2000-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 8-1	Model 8-2	Model 8-3	Model 8-4	Model 8-5	Model 8-6	Model 8-7	Model 8-8	Model 8-9	Model 8-10	Model 8-11	Model 8-12
Governor's tenure in post	-1.868 ***	-1.609 ***	-0.257	-0.154 ***	0.117	-0.096 **	-0.005	-0.017	-0.503 ***	-0.245 *	0.015	0.000
	(0.530)	(0.418)	(0.194)	(0.045)	(0.089)	(0.043)	(0.010)	(0.011)	(0.135)	(0.149)	(0.086)	(0.001)
Governor's last term in office dummy variable	10.719 **	9.481 **	1.190	0.118	-2.450 ***	0.525	-0.061	0.120	5.556 ***	1.515	-0.610	-0.010
	(5.209)	(4.112)	(1.904)	(0.438)	(0.871)	(0.419)	(0.094)	(0.104)	(1.336)	(1.464)	(0.856)	(0.007)
Percentage of seats held by opposing forces in prefectural assemblies	0.059	0.076	-0.016	0.015 **	0.011	-0.006	-0.006 ***	0.001	0.027	-0.009	-0.002	0.000
	(0.083)	(0.065)	(0.030)	(0.007)	(0.014)	(0.007)	(0.001)	(0.002)	(0.021)	(0.023)	(0.014)	(0.000)
Union organization rate	0.375	0.181	0.189 *	0.078 ***	0.059	-0.017	-0.029 ***	-0.023 ***	-0.027	0.057	0.040	0.000
	(0.311)	(0.241)	(0.112)	(0.027)	(0.053)	(0.023)	(0.006)	(0.006)	(0.070)	(0.088)	(0.041)	(0.000)
Non-granting organization dummy variable	62.520 *	49.436 *	17.893	6.238 **	2.328	4.174	0.694	1.218 *	29.758 ***	13.075	3.642	-0.008
	(33.802)	(26.518)	(12.307)	(2.889)	(5.691)	(2.625)	(0.617)	(0.687)	(8.233)	(9.548)	(5.006)	(0.035)
Population density	-39.793 ***	-28.122 ***	-11.850 ***	-11.098 ***	-10.739 ***	-1.812 ***	-0.553 *	-0.924 **	1.480	-7.405 *	-1.586	0.002
	(13.345)	(9.466)	(4.539)	(2.033)	(2.579)	(0.706)	(0.291)	(0.427)	(2.023)	(4.188)	(1.020)	(0.006)
Constant term	453.561 ***	367.645 ***	86.034 ***	117.788 ***	68.569 ***	19.067 ***	7.056 ***	11.576 ***	100.975 ***	81.129 ***	6.999 **	0.010
	(25.998)	(19.376)	(9.138)	(3.371)	(4.738)	(1.705)	(0.527)	(0.718)	(5.193)	(7.794)	(3.011)	(0.021)
sigma_u	103.868	72.179	34.218	17.621	20.475	5.105	2.327	3.608	13.963	31.842	6.659	0.033
sigma_e	54.160	42.634	19.407	4.507	9.031	4.389	0.979	1.083	13.719	14.609	9.050	0.074
rho	0.786	0.741	0.757	0.939	0.837	0.575	0.850	0.917	0.509	0.826	0.351	0.169
R-sq: within	0.174	0.353	0.399	0.348	0.204	0.116	0.290	0.573	0.653	0.550	0.071	0.026
between	0.174	0.122	0.276	0.217	0.223	0.122	0.015	0.079	0.349	0.295	0.020	0.001
overall	0.174	0.190	0.296	0.224	0.219	0.119	0.057	0.159	0.489	0.293	0.046	0.020
Number of observations	846	846	846	846	846	846	846	846	846	846	846	846

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 9. Estimation Results (Fixed Effect Model)

Period	II Period (2000-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 9-1	Model 9-2	Model 9-3	Model 9-4	Model 9-5	Model 9-6	Model 9-7	Model 9-8	Model 9-9	Model 9-10	Model 9-11	Model 9-12
Governors' tenure in post x Dummy variable for the governor originated from the central bureaucracy	-1.204 *	-1.060 **	-0.144	-0.153 ***	0.014	-0.039	-0.021 *	-0.011	-0.355 **	-0.054	-0.090	0.000
	(0.639)	(0.503)	(0.226)	(0.053)	(0.107)	(0.052)	(0.011)	(0.012)	(0.161)	(0.171)	(0.105)	(0.001)
Governors' tenure in post x Dummy variable for the governor originated from the Diet	-4.717 ***	-4.402 ***	-0.315	-0.239 **	0.281	-0.265 ***	0.047 **	-0.028	-1.335 ***	-0.210	-0.105	0.000
	(1.207)	(0.951)	(0.427)	(0.100)	(0.201)	(0.098)	(0.021)	(0.023)	(0.305)	(0.323)	(0.198)	(0.002)
Governor's tenure in post x Dummy variable for the governor originated from local politics	2.078	0.786	1.292 **	-0.029	-0.111	0.068	0.116 ***	0.008	0.111	0.392	0.899 ***	0.001
	(1.567)	(1.235)	(0.554)	(0.130)	(0.262)	(0.127)	(0.028)	(0.030)	(0.396)	(0.420)	(0.258)	(0.002)
Governor's tenure in post x Dummy variable for governor with a long career in its organization	-1.658	0.031	-1.689 **	-0.415 **	0.680 *	-0.135	-0.029	-0.031	-0.287	-1.379 **	-0.309	-0.001
	(2.205)	(1.737)	(0.780)	(0.183)	(0.368)	(0.179)	(0.039)	(0.042)	(0.557)	(0.591)	(0.362)	(0.003)
Governor's tenure in post x Dummy variable for the governor originated from other attributes	0.673	-0.107	0.779	0.108	0.153	-0.022	-0.014	0.057 *	-0.274	0.340	0.438	0.001
	(1.627)	(1.282)	(0.575)	(0.135)	(0.271)	(0.132)	(0.029)	(0.031)	(0.411)	(0.436)	(0.267)	(0.002)
Dummy variable for governors originated from the central bureaucracy	-2.772	-2.473	-0.299	-1.014	1.296	0.253	0.519 ***	-0.400 **	2.929	0.768	-1.060	-0.006
	(8.672)	(6.833)	(3.068)	(0.722)	(1.447)	(0.703)	(0.153)	(0.164)	(2.190)	(2.324)	(1.425)	(0.012)
Dummy variable for the governor originated from the Diet	-2.808	-5.507	2.700	-0.887	2.066	-0.651	0.538 ***	0.696 ***	-6.713 ***	-1.790	4.490 ***	0.000
	(9.146)	(7.206)	(3.235)	(0.761)	(1.526)	(0.741)	(0.161)	(0.173)	(2.310)	(2.451)	(1.503)	(0.013)
Dummy variable for the governor originated from local politics	19.340 *	4.517	14.823 ***	-1.699	-3.257 *	2.540 ***	0.566 ***	0.811 ***	5.783 **	11.107 ***	3.716 **	-0.001
	(11.341)	(8.935)	(4.012)	(0.944)	(1.892)	(0.919)	(0.200)	(0.214)	(2.864)	(3.039)	(1.864)	(0.016)
Dummy variable for the governor with a long career in its organization	4.503	-4.356	8.859 *	-3.157 *	-0.805	0.895	0.739 ***	0.244	0.907	5.338	3.533	-0.012
	(13.591)	(10.708)	(4.808)	(1.131)	(2.268)	(1.101)	(0.239)	(0.257)	(3.432)	(3.641)	(2.234)	(0.019)
Dummy variable for governor's last term	7.654	9.308 **	-1.655	0.414 ***	-1.799 **	0.325	-0.072	0.029	6.029 ***	-1.029	-0.615	-0.011
	(5.403)	(4.257)	(1.911)	(0.450)	(0.902)	(0.438)	(0.095)	(0.102)	(1.364)	(1.448)	(0.888)	(0.007)
Percentage of seats held by opposing forces in prefectural assemblies	0.036	0.036	-0.001	0.010	0.012	-0.009	-0.003 *	-0.001	0.020	0.005	-0.005	0.000
	(0.087)	(0.069)	(0.031)	(0.007)	(0.015)	(0.007)	(0.002)	(0.002)	(0.022)	(0.023)	(0.014)	(0.000)
Union organization rate	0.264	0.032	0.231 *	0.059 **	0.065	-0.023	-0.029 ***	-0.025 ***	-0.130	0.071	0.161 ***	-0.001 *
	(0.340)	(0.268)	(0.120)	(0.028)	(0.057)	(0.028)	(0.006)	(0.006)	(0.086)	(0.091)	(0.056)	(0.000)
Dummy variable for local governments that do not receive local tax subsidies	42.666	25.284	17.381	4.143	0.183	1.787	0.695	1.318 **	5.563	12.503	4.873	0.005
	(35.160)	(27.703)	(12.437)	(2.926)	(5.867)	(2.849)	(0.619)	(0.665)	(8.879)	(9.421)	(5.779)	(0.048)
Population density	-7.543	-116.088 ***	108.545 ***	-23.876 ***	-32.334 ***	-3.017	-0.799	-0.404	-39.336 ***	112.300 ***	-3.756	0.000
	(53.633)	(42.258)	(18.972)	(4.463)	(8.950)	(4.347)	(0.945)	(1.014)	(13.543)	(14.370)	(8.816)	(0.073)
Constant term	432.868 ***	436.963 ***	-4.095	131.217 ***	83.572 ***	19.173 ***	6.128 ***	11.087 ***	132.922 ***	-4.395	0.243	0.057
	(44.302)	(34.906)	(15.671)	(3.687)	(7.393)	(3.590)	(0.780)	(0.838)	(11.187)	(11.870)	(7.282)	(0.061)
sigma_u	112.972	133.089	150.352	25.694	33.939	5.669	2.392	3.615	54.879	152.517	8.555	0.042
sigma_e	53.981	42.532	19.095	4.492	9.008	4.375	0.951	1.021	13.631	14.463	8.873	0.074
rho	0.814	0.907	0.984	0.970	0.934	0.627	0.864	0.926	0.942	0.991	0.482	0.240
R-sq: within	0.189	0.367	0.449	0.365	0.223	0.132	0.338	0.625	0.669	0.597	0.123	0.031
between	0.099	0.078	0.245	0.205	0.219	0.074	0.024	0.016	0.100	0.239	0.010	0.015
overall	0.084	0.093	0.137	0.205	0.202	0.085	0.067	0.111	0.002	0.135	0.037	0.002
Number of observations	846	846	846	846	846	846	846	846	846	846	846	846

Note 1) Figures in parentheses indicate standard errors.
Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.
Note 3) Results for dummies for each year are omitted.

Table 10. Estimation Results (Random Effect Model)

Period	II Period (2000-2017)											
Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
	Model 10-1	Model 10-2	Model 10-3	Model 10-4	Model 10-5	Model 10-6	Model 10-7	Model 10-8	Model 10-9	Model 10-10	Model 10-11	Model 10-12
Governors' tenure in post x Dummy variable for the governor originated from the central bureaucracy	-1.272 **	-1.017 **	-0.263	-0.145 ***	0.028	-0.045	-0.022 **	-0.012	-0.355 **	-0.170	-0.077	0.000
	(0.635)	(0.501)	(0.230)	(0.053)	(0.106)	(0.051)	(0.011)	(0.012)	(0.163)	(0.178)	(0.102)	(0.001)
Governors' tenure in post x Dummy variable for the governor originated from the Diet	-4.593 ***	-4.370 ***	-0.197	-0.250 **	0.258	-0.255 ***	0.048 **	-0.026	-1.207 ***	-0.099	-0.087	0.000
	(1.207)	(0.954)	(0.436)	(0.101)	(0.201)	(0.097)	(0.021)	(0.023)	(0.314)	(0.337)	(0.197)	(0.002)
Governor's tenure in post x Dummy variable for the governor originated from local politics	2.004	0.937	1.064 *	-0.005	-0.066	0.067	0.115 ***	0.006	0.187	0.169	0.888 ***	0.000
	(1.565)	(1.237)	(0.566)	(0.131)	(0.261)	(0.126)	(0.028)	(0.030)	(0.407)	(0.437)	(0.255)	(0.002)
Governor's tenure in post x Dummy variable for governor with a long career in its organization	-1.658	0.041	-1.700 **	-0.416 **	0.675 *	-0.122	-0.027	-0.032	-0.270	-1.399 **	-0.258	-0.001
	(2.204)	(1.742)	(0.797)	(0.185)	(0.368)	(0.178)	(0.039)	(0.042)	(0.573)	(0.616)	(0.359)	(0.003)
Governor's tenure in post x Dummy variable for the governor originated from other attributes	0.660	-0.128	0.788	0.106	0.146	-0.017	-0.017	0.055 *	-0.313	0.329	0.524 **	0.001
	(1.621)	(1.280)	(0.586)	(0.136)	(0.271)	(0.130)	(0.029)	(0.031)	(0.418)	(0.453)	(0.262)	(0.002)
Dummy variable for governors originated from the central bureaucracy	-1.513	0.039	-1.189	-0.766	1.791	0.376	0.534 ***	-0.389 **	3.612 *	-0.287	-1.089	0.001
	(8.564)	(6.750)	(3.095)	(0.724)	(1.434)	(0.682)	(0.151)	(0.163)	(2.168)	(2.398)	(1.350)	(0.011)
Dummy variable for the governor originated from the Diet	-2.480 *	-4.218	1.866	-0.797	2.156	-0.613	0.561 ***	0.694 ***	-4.136 *	-2.519	3.962 ***	-0.001
	(9.038)	(7.120)	(3.265)	(0.765)	(1.514)	(0.718)	(0.160)	(0.172)	(2.273)	(2.532)	(1.412)	(0.011)
Dummy variable for the governor originated from local politics	19.094	6.297	12.881 ***	-1.434	-2.720	2.479 ***	0.542 ***	0.806 ***	5.054 *	9.224 ***	3.311 *	0.000
	(11.185)	(8.812)	(4.041)	(0.947)	(1.873)	(0.888)	(0.198)	(0.213)	(2.812)	(3.134)	(1.747)	(0.014)
Dummy variable for the governor with a long career in its organization	4.246	-3.136	7.413	-2.940 ***	-0.452	0.790	0.723 ***	0.251	1.454	4.030	2.830	-0.011
	(13.522)	(10.674)	(4.889)	(1.139)	(2.260)	(1.085)	(0.238)	(0.256)	(3.470)	(3.782)	(2.167)	(0.017)
Dummy variable for governor's last term	8.174	8.131 *	0.053	0.256	-2.053 **	0.333	-0.069	0.039	5.345 ***	0.667	-0.811	-0.009
	(5.345)	(4.221)	(1.933)	(0.450)	(0.893)	(0.430)	(0.094)	(0.101)	(1.380)	(1.494)	(0.863)	(0.007)
Percentage of seats held by opposing forces in prefectural assemblies	0.043	0.052	-0.007	0.012	0.015	-0.006	-0.003 *	-0.001	0.032	-0.003	0.000	0.000
	(0.087)	(0.069)	(0.031)	(0.007)	(0.014)	(0.007)	(0.002)	(0.002)	(0.022)	(0.024)	(0.014)	(0.000)
Union organization rate	0.258	0.114	0.147	0.068 **	0.082	-0.023	-0.026 ***	-0.025 ***	-0.043	0.010	0.065	0.000
	(0.315)	(0.245)	(0.113)	(0.028)	(0.054)	(0.023)	(0.006)	(0.006)	(0.069)	(0.090)	(0.042)	(0.000)
Dummy variable for local governments that do not receive local tax subsidies	62.429 *	50.058 *	17.303	5.539 *	2.959	4.233	0.947	1.400 **	34.642 ***	11.063	3.681	-0.006
	(34.084)	(26.721)	(12.293)	(2.923)	(5.740)	(2.639)	(0.606)	(0.656)	(8.168)	(9.593)	(5.017)	(0.037)
Population density	-39.015 ***	-27.348 ***	-11.545 **	-10.928 ***	-10.732 ***	-1.716 **	-0.506 *	-0.964 **	1.940	-6.710	-1.771 *	0.002
	(13.195)	(9.312)	(4.568)	(1.974)	(2.606)	(0.703)	(0.294)	(0.429)	(1.841)	(4.227)	(1.066)	(0.006)
Constant term	443.029 ***	358.788 ***	83.540 ***	118.139 ***	67.193 ***	18.049 ***	6.119 ***	11.617 ***	94.923 ***	79.992 ***	5.218	0.015
	(27.805)	(20.808)	(9.842)	(3.407)	(5.081)	(1.865)	(0.558)	(0.744)	(5.512)	(8.352)	(3.341)	(0.024)
sigma_u	101.899	70.371	34.253	16.854	20.667	5.033	2.364	3.673	12.045	31.996	7.046	0.037
sigma_e	53.981	42.532	19.095	4.492	9.008	4.375	0.951	1.021	13.631	14.463	8.873	0.074
rho	0.781	0.732	0.763	0.934	0.840	0.570	0.861	0.928	0.438	0.830	0.387	0.201
R-sq: within	0.188	0.363	0.421	0.358	0.216	0.131	0.337	0.624	0.660	0.561	0.119	0.027
between	0.168	0.116	0.260	0.217	0.231	0.107	0.027	0.058	0.324	0.265	0.013	0.001
overall	0.171	0.189	0.292	0.225	0.228	0.116	0.080	0.150	0.489	0.283	0.061	0.020
Number of observations	846	846	846	846	846	846	846	846	846	846	846	846

Note 1) Figures in parentheses indicate standard errors.
Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.
Note 3) Results for dummies for each year are omitted.

The results of the analysis using the overall data (1975-2017) are presented in Table 3. In Model 3-1 (total expenditures), Model 3-2 (consumption expenditure), and Model 3-3 (investment expenditures), the estimated coefficient of the governor's tenure in post is not significant. In Model 3-8 (social assistance expenditure), the sign of the estimated coefficient on the governor's tenure in post is significantly negative at the 5% level. This analysis shows that even if the governor's tenure in post is long, it does not lead to a reduction in total expenditures.

The results of the analysis for Period I (1975-1999) are presented in Table 4. In Model 4-11 (disaster recovery expenditure), the sign of the estimated coefficient of the governor's tenure in post is significantly negative at the 5% level. In Model 4-12 (unemployment expenditure), the sign of the estimated coefficient of the governor's tenure in post is significantly positive at the 1% level. In Period I (1975-1999), the longer the governor's tenure in post, the more negative the effect on disaster recovery expenditure among investment expenditure, and conversely, the more positive the effect on unemployment countermeasure expenditure.

The results of the analysis for Period II (2000-2017) are presented in Table 5. While Model 5-1 (total expenditures) and Model 5-2 (consumptive expenditure) yield results where the sign of the estimated coefficient of the governor's tenure in post is significantly negative at the 1% level, Model 5-3 (investment expenditure) does not yield significant results. In Period II (2000-2017), the longer the governor's tenure in post, the smaller the total expenditures, and among them, the more consumptive expenditure are suppressed, which is more negative (larger in absolute value) than the results in Tables 3 and 4. The sign of the estimated coefficient of the governor's tenure in post is significantly negative at the 1% level in Model 5-4 (personnel expenditure) and Model 5-9 (subsidy expenditure and others), respectively, while it is significantly negative at the 5% level in Model 5-6 (property expenditure). It can be confirmed that the length of the governor's tenure in post restrains consumptive expenditure, especially personnel, property, and subsidy expenditure and others.

In summary, the results of the analysis using the overall data (1975-2017) do not necessarily indicate that the longer a governor has been in office, the stronger the tendency to restrain local expenditure after 2000. However, we can find that the longer a governor has been in office, the stronger the tendency to restrain local expenditure. This result supports Hypothesis 2. This supports Hypothesis 2 and does not support Hypothesis 1.

The analysis so far confirms that the length of a governor's tenure in post, especially after 2000, influences local expenditure, but does not adequately consider "differences in the type of politician." In the following, we will focus on the II period (2000-2017), when the length of the governor's tenure in post influenced local expenditure, and further examine what effect would occur after considering differences in the attributes of the governor.

III-3-2. Analysis Considering Governor Attributes

The results of the analysis are presented in Table 9. The major difference from Table 5 is that a set of variables related to the governor's attributes are employed as explanatory vari-

ables, and the interaction effects between these variables and the governor's tenure in post are examined.

In Model 9-1 (total expenditures), the sign of the estimated coefficient on the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the central bureaucracy is negative, but only at the 10% level and not significant at the 5% level. The sign of the estimated coefficient of the interaction term between the governor's tenure in post and the governor originated from the legislature dummy variable is significantly negative at the 1% level. In Model 9-2 (consumptive expenditure), the sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the central bureaucracy is significantly negative at the 5% level. The sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the Diet is significantly negative at the 1% level. In Model 9-3 (investment expenditure), the sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from local politics is significantly positive at the 5% level. The sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor with a long career in its organization is significantly negative at the 5% level.

These results show that the effect of a governor's tenure in post on local spending varies depending on the attributes from which they come. In total expenditures and consumptive expenditures, the longer a governor's tenure in post, the more they tend to suppress them, both in the case of the governor originated from the central bureaucracy and in the case of the governor originated from the Diet.

We now examine Models 9-4 through 9-9 for the content of consumptive expenditure. In Model 9-4 (personnel expenditure), the sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the central bureaucracy is significantly negative at the 1% level. The sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the Diet is significantly negative at the 5% level. In Model 9-6 (property expenditure), the sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the Diet is significantly negative at the 1% level. In Model 9-9 (subsidy expenditure and others), the sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor from the central bureaucracy is significantly negative at the 5% level. The sign of the estimated coefficient of the interaction term between the governor's tenure in post and the dummy variable for the governor originated from the Diet is significantly negative at the 1% level. Model 9-1 (total expenditures) and Model 9-2 (consumptive expenditure) confirm that, in the case of the governor originated from the central bureaucracy and the governor originated from the Diet, longer tenure in post leads to a reduction in total expenditures, especially consumptive expenditures. Reductions in items such as personnel expenditure, property expenditure, and

subsidy expenditure and others lead to a reduction in total expenditures especially.

Next, we examine the breakdown of investment expenditure. In Models 9-10 (general construction project expenditure), the sign of the estimated coefficient of the intersection term between the governor's tenure in post and the governor with a long career in its organization is significantly negative at the 5% level. The longer a governor is in post, the more their tenure in office tends to decrease general construction projects expenditure. However, in conjunction with the results of Model 9-1 (total expenditures), it cannot be said that such reductions in investment expenditure have an effect of reducing total expenditures.

The results of the above analysis indicate that the negative effect of the length of a governor's tenure in post on local spending varies depending on the attributes from which they come. This supports Hypothesis 3.

Finally, Tables 11 and 12 show the results of the estimation performed to check the interaction effects of tenure in post and attributes from which they come observed above for differences in the time of taking office (i.e., the difference between governors who took office before 2000 and those who took office after 2000), respectively. Table 11 presents the results of the analysis using only prefectural data for governors who took office before 2000, while Table 12 presents the results of the analysis using only prefectural data for governors who took office after 2000. However, we were unable to estimate Model 12-12 and Model 12-24 because there was no unemployment expenditure in either group to serve as the explained variable.

The negative effect of the governor's tenure in post on local spending can be confirmed in the case of the governor originated from the central bureaucracy and the governor originated from local politics, respectively, for governors created after 2000, but not for the other two attributes. These results suggest that even if a negative effect of governor tenure on local expenditure exists, it does not necessarily appear to be an additional effect of this attribute for governors who have been in office since 2000. Thus, while Hypothesis 4 is supported for some specific attributes, it is not necessarily supported for all attributes.

IV. Conclusion

Using prefectural panel data from 1975 to 2017, this paper focuses on changes in local expenditures around the year 2000 and conducts an empirical analysis of the local fiscal impact of differences in tenure in post of the governor, as well as attributes from which they come.

The empirical analysis reveals the following three points. First, while the analysis using the overall data (1975-2017) did not find a trend toward lower local expenditures as the governor's tenure in post increased, this trend was confirmed especially after the year 2000. The post-2000 period corresponds to the period, when the number of governors who have been affected by the decentralization law has been increasing. Second, there exists the interaction effect on restraining local expenditures between the governor's tenure in post and differences of attributes from which they come. Third, the interaction effects also differ depending on

Table 11. Estimated Results (Using data only for governors appointed before 2000)

Period		II Period (2000-2017)											
	Explained variables	Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
Fixed effect model		Model 11-1	Model 11-2	Model 11-3	Model 11-4	Model 11-5	Model 11-6	Model 11-7	Model 11-8	Model 11-9	Model 11-10	Model 11-11	Model 11-12
	Governor's tenure in post x Dummy variable for governor originated from central bureaucracy	-1.469 (4.114)	-4.710 (2.978)	3.241 (2.579)	0.338 (0.458)	-2.296 * (1.189)	0.056 (0.143)	0.117 (0.081)	-0.256 * (0.150)	-0.816 (0.675)	3.446 (2.579)	-0.189 (0.537)	-0.016 (0.024)
	Governor's tenure in post x Dummy variable for governor originated from the Diet	-3.280 (3.504)	-6.841 *** (2.536)	3.561 (2.196)	0.100 (0.390)	-2.736 *** (1.012)	-0.071 (0.122)	0.185 *** (0.069)	-0.401 *** (0.128)	-0.575 (0.575)	3.736 * (2.197)	-0.174 (0.457)	-0.001 (0.020)
	Governor's tenure in post x Dummy variable for governor originated from local politics	0.591 (3.043)	0.180 (2.202)	0.411 (1.907)	1.181 *** (0.339)	-3.262 *** (0.879)	0.141 (0.106)	0.087 (0.060)	-0.353 *** (0.111)	0.882 * (0.499)	0.409 (1.908)	0.004 (0.397)	-0.002 (0.017)
	Governor's tenure in post x Dummy variable for govemors with a long career in its organization	-3.781 (5.026)	-6.450 * (3.637)	2.669 (3.150)	1.029 * (0.559)	-2.129 (1.452)	-0.141 (0.175)	0.140 (0.099)	-0.254 (0.183)	-0.492 (0.824)	2.592 (3.151)	0.078 (0.656)	-0.002 (0.029)
	Governor's tenure in post x Dummy variable for governors from other attributes	-3.103 (4.322)	-6.156 ** (3.128)	3.053 (2.709)	-0.018 (0.481)	-1.588 (1.249)	-0.157 (0.150)	0.186 ** (0.085)	-0.278 * (0.157)	-0.773 (0.709)	2.928 (2.709)	0.131 (0.564)	-0.006 (0.025)
Random effect model		Model 11-13	Model 11-14	Model 11-15	Model 11-16	Model 11-17	Model 11-18	Model 11-19	Model 11-20	Model 11-21	Model 11-22	Model 11-23	Model 11-24
	Governor's tenure in post x Dummy variable for governor originated from central bureaucracy	-1.515 (2.496)	-1.368 (1.636)	0.055 (1.213)	0.150 (0.352)	-0.028 (0.546)	-0.042 (0.096)	0.008 (0.041)	-0.275 *** (0.094)	-0.158 (0.292)	0.053 (1.198)	0.077 (0.059)	-0.003 (0.003)
	Governor's tenure in post x Dummy variable for governor originated from the Diet	-1.845 (2.440)	-5.193 *** (1.649)	3.612 *** (1.291)	-0.300 (0.326)	-1.361 ** (0.583)	-0.063 (0.091)	0.104 ** (0.042)	-0.354 *** (0.091)	-0.577 * (0.340)	3.635 *** (1.281)	0.055 (0.155)	0.003 (0.007)
	Governor's tenure in post x Dummy variable for governor originated from local politics	-0.387 (2.294)	2.449 (1.622)	-2.859 ** (1.358)	1.218 *** (0.280)	-1.822 *** (0.616)	0.041 (0.082)	0.026 (0.043)	-0.403 *** (0.083)	1.505 *** (0.388)	-2.992 ** (1.354)	0.275 (0.257)	0.003 (0.011)
	Governor's tenure in post x Dummy variable for governors with a long career in its organization	-4.217 (3.470)	-3.354 (2.346)	-1.169 (1.826)	0.628 (0.461)	-0.097 (0.824)	-0.225 * (0.129)	0.019 (0.060)	-0.275 ** (0.129)	-0.219 (0.470)	-1.443 (1.810)	0.123 (0.151)	0.000 (0.006)
	Governor's tenure in post x Dummy variable for governors from other attributes	-2.659 (2.998)	-2.836 (2.043)	0.557 (1.619)	-0.218 (0.395)	0.636 (0.732)	-0.239 ** (0.111)	0.097 * (0.053)	-0.283 ** (0.111)	-0.154 (0.432)	0.250 (1.607)	0.968 *** (0.162)	0.005 (0.007)

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

Table 12. Estimated Results (Using data only for governors appointed after 2000)

Period		II Period (2000-2017)											
Explained variables		Total expenditures	Consumption expenditure	Investment expenditure	Personnel expenditure	Bond expenditure	Property expenditure	Maintenance and repair expenditure	Social assistance expenditure	Subsidy expenditure and others	General construction expenditure	Disaster recovery project expenditure	Unemployment expenditure
Fixed effect model		Model 12-1	Model 12-2	Model 12-3	Model 12-4	Model 12-5	Model 12-6	Model 12-7	Model 12-8	Model 12-9	Model 12-10	Model 12-11	Model 12-12
	Governor's tenure in post x Dummy variable for governor originated from central bureaucracy	-3.998 *** (1.383)	-2.877 ** (1.142)	-1.121 ** (0.450)	-0.389 *** (0.117)	-0.158 (0.264)	-0.110 (0.136)	-0.008 (0.024)	-0.021 (0.021)	-0.968 *** (0.372)	-0.924 *** (0.303)	-0.198 (0.245)	-
	Governor's tenure in post x Dummy variable for governor originated from the Diet	6.481 *** (1.856)	4.850 *** (1.532)	1.631 *** (0.604)	0.065 (0.157)	0.459 (0.354)	0.128 (0.182)	0.153 *** (0.032)	0.021 (0.028)	1.087 ** (0.499)	0.984 ** (0.407)	0.647 ** (0.328)	-
	Governor's tenure in post x Dummy variable for governor originated from local politics	-4.043 ** (2.025)	-4.509 *** (1.672)	0.466 (0.659)	-0.343 ** (0.171)	-0.003 (0.387)	-0.135 (0.199)	0.142 *** (0.034)	0.033 (0.031)	-1.411 *** (0.545)	-0.261 (0.444)	0.727 ** (0.358)	-
	Governor's tenure in post x Dummy variable for governors with a long career in its organization	-2.289 (5.596)	-1.099 (4.621)	-1.191 (1.823)	0.248 (0.473)	0.160 (1.069)	-0.176 (0.549)	-0.128 (0.095)	-0.117 (0.086)	-2.099 (1.505)	-0.759 (1.228)	-0.432 (0.990)	-
	Governor's tenure in post x Dummy variable for governors from other attributes	1.363 (2.272)	0.923 (1.876)	0.440 (0.740)	-0.065 (0.192)	0.502 (0.434)	0.060 (0.223)	0.030 (0.039)	0.036 (0.035)	-0.103 (0.611)	-0.397 (0.498)	0.837 ** (0.402)	-
Random effect model		Model 12-13	Model 12-14	Model 12-15	Model 12-16	Model 12-17	Model 12-18	Model 12-19	Model 12-20	Model 12-21	Model 12-22	Model 12-23	Model 12-24
	Governor's tenure in post x Dummy variable for governor originated from central bureaucracy	-3.678 *** (1.321)	-2.406 ** (1.089)	-1.280 *** (0.431)	-0.360 *** (0.114)	-0.134 (0.250)	-0.130 (0.126)	0.005 (0.023)	-0.019 (0.021)	-0.841 ** (0.350)	-1.104 *** (0.293)	-0.190 (0.228)	-
	Governor's tenure in post x Dummy variable for governor originated from the Diet	5.682 *** (1.798)	3.934 *** (1.485)	1.686 *** (0.588)	-0.016 (0.154)	0.483 (0.341)	0.025 (0.176)	0.142 *** (0.031)	0.009 (0.028)	0.738 (0.482)	1.150 *** (0.398)	0.534 * (0.317)	-
	Governor's tenure in post x Dummy variable for governor originated from local politics	-3.631 * (1.972)	-3.909 ** (1.628)	0.276 (0.645)	-0.307 * (0.169)	0.003 (0.374)	-0.118 (0.194)	0.154 *** (0.034)	0.037 (0.031)	-1.222 ** (0.529)	-0.473 (0.437)	0.751 ** (0.348)	-
	Governor's tenure in post x Dummy variable for governors with a long career in its organization	-2.937 (5.509)	-1.381 (4.551)	-1.767 (1.803)	0.216 (0.473)	0.186 (1.044)	-0.445 (0.544)	-0.114 (0.094)	-0.122 (0.086)	-2.211 (1.482)	-1.080 (1.219)	-0.858 (0.977)	-
	Governor's tenure in post x Dummy variable for governors from other attributes	1.129 (2.236)	0.613 (1.847)	0.501 (0.732)	-0.091 (0.192)	0.464 (0.424)	0.063 (0.219)	0.022 (0.038)	0.031 (0.035)	-0.158 (0.600)	-0.307 (0.495)	0.768 * (0.394)	-

Note 1) Figures in parentheses indicate standard errors.

Note 2) In the table, *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Note 3) Results for dummies for each year are omitted.

whether a new governor took office after 2000 or not.

In previous research discussions, there have been many previous studies on the relationship between politicians' tenure in post and fiscal management, but there has been controversy as to whether the relationship has a positive or negative effect. While there has been much discussion of the "output of politicians" and the "amount of effort or performance of the politician", there has not been a rigorous examination of the "differences in the types of politicians". In particular, the impact of the length of a governor's tenure in post on local expenditures has been focused simply on the length of their tenure in post, and there has been no analysis from the perspective of the attributes from which they came or whether they were newly appointed governors after 2000. Furthermore, most of the previous studies that have analyzed the fiscal management of local governments have examined data up to the early 2000s, so the environmental changes surrounding local finances before and after the year 2000 have not been fully considered in the discussion.

The conclusions of this empirical analysis include several points that have not been clarified in previous studies or that differ from the views of them, overcoming to some extent issues that have been overlooked by them, and contain no small number of implications.

Finally, the remaining issues for this study include the following.

Since the empirical analysis in this paper focused primarily on whether there is an interaction term effect between a governor's tenure in post and attributes from which they come, it was not possible to examine the interaction effects with other attributes (e.g., the governor's age or gender). In fact, since there are a variety of governor attributes, there may be room for further empirical analysis based on the background of the theoretical study.

In the empirical analysis in this paper, the data period was divided into the years before and after 2000 to consider the most significant changes to local finances in Japan. However, there may be room to consider other events as delimiters considering the social and economic backgrounds, such as the collapse of the bubble economy in the 1990s or the Lehman Shock in 2008. There may be room to consider other events as delimiters.

Furthermore, it will be necessary to conduct additional studies to determine whether the results obtained in this paper are valid when targeting municipalities rather than prefectures. Based on the conclusions reached by this study, further analysis is needed on the direction of the relationship between the governor's tenure and the related institutional arrangements.

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