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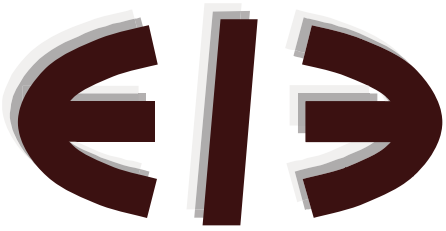

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Government transparency and expenditure in the rent-seeking industry: the case of Japan for 1998–2004

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Abstract. Since the end of the 1990s, local governments in Japan have enacted Information Disclosure Ordinances, which require the disclosure of official government information. This paper uses Japanese prefecture-level data for the period 1998–2004 to examine how this enactment affected the rate of government construction expenditure. The Dynamic Panel model is used to control for unobserved prefecture-specific effects and endogenous bias. The major finding is that disclosure of government information reduces the rate of government construction expenditure. This implies that information disclosure reduces losses from rent-seeking activity, which is consistent with public choice theory.

Keywords: Information disclosure; Special interest group; Construction expenditure; Rent seeking

JEL classification: D73; D78; H79

I INTRODUCTION

It is widely acknowledged that rent-seeking activity decreases economic efficiency (Tullock, 1967; Krueger, 1974). Olson (1982) emphasized that special interest groups have a propensity to lobby for preferential policies, imposing disproportionate costs on the rest of society. This in turn hinders economic growth (Olson, 1982; Heckelman, 2000; Coates et al., 2011). Rent-seeking activities taken by special interest groups lead bureaucrats and politicians to allocate resources to increase the groups' benefits. For instance, construction of local public infrastructure may be lobbied for strongly by contractors, resulting in oversupply because it yields the large profit for contractors. The absence of profit incentives induces government organizations to be less efficient (Buchanan and Wagner, 1977). In Japan, this tendency is more obvious and so "larger amounts are spent on public works than in other countries, controlling for size and population" (Doi and Ihori, 2009, p.181). After World War II, "the business organization … has played a dominant role in economic policy making in Japan" (Olson, 1982, p.76). Firms in the construction industry frequently received orders from local governments as a result of lobbying activity (Asano, 2010). As is widely known, sectors such as the construction industry have strong electoral leverage in Japan; resulting in local governments spending lavishly on public works projects to benefit the industry.

Because of the information asymmetry between government and citizens, politicians, bureaucrats and special interest groups can seek benefits for themselves at the expense of public works needed to increase social welfare. If citizens can obtain sufficient information about the government's activities, they

are then able to criticize the government for inefficient resource allocation to particular sectors. That is, the behavior of politicians and bureaucrats can be monitored by citizens. Accordingly, the likelihood that a politician is reelected is reduced if they cannot determine the causes of and possible solutions to citizen dissatisfaction. To use Hirschman's term, this is the *voice* effect (Hirschman, 1970). As a result, the government is forced to be efficient and to maximize social welfare to satisfy citizens. Kopits and Craig (1998) asserted that "transparency in government operation is widely regarded as an important precondition for macroeconomic fiscal sustainability, good governance, and overall fiscal rectitude." The seminal work of Alt and Lassen (2006a) provided evidence from OECD countries that fiscal transparency, which seems to reduce information asymmetry, reduces public debt and deficit. Benito and Bastida (2009) used information from forty one OECD and less developed countries to show a positive relationship between budget transparency and national government fiscal balance.[1] Recently, local governments in Japan have enacted Information Disclosure Ordinances, which require the disclosure of official information to ensure accountability (Jiyukokuminsha, 2009). These ordinances allow citizens to access information about government activities, reducing the information asymmetry between local governments and citizens. Information Disclosure Ordinances are considered to increase fiscal and budget transparency (Yamashita and Akai, 2005), and are therefore important from the point of view of both democracy and economic efficiency. However, the effectiveness of Information Disclosure Ordinances in

[1] Previous work using cross-country data suggested that political accountability increases government size (Lassen, 2000). Along the same lines, Alt et al. (2001) argued that fiscal transparency results in a larger government, based on results from the United States.

Japan has only been sufficiently explored by Yamashita and Akai (2005).

By using Information Disclosure Ordinances as a proxy for government transparency, the purpose of this paper is to examine empirically the effect of Information Disclosure Ordinances on the rate of government construction expenditure. However, there seems to be a reverse causality between the disclosure of information and government size (or the rate of government construction expenditure). This results in an endogeneity bias, which we aim to avoid in this paper by using the Arellano-Bond type Dynamic Panel model. The key finding is that Information Disclosure Ordinances decrease the rate of government construction expenditure, in line with our hypothesis.

The remainder of this paper is organized as follows. Disclosure of official local government information is briefly reviewed in Section 2. Section 3 explains the data and methods used. Section 4 discusses the results of the estimations. The final section offers concluding observations.

II REVIEW OF DISCLOSURE OF LOCAL GOVERNMENT INFORMATION IN JAPAN

A The Information Disclosure Act

The central government in Japan enacted an information disclosure law in 1999.[2] Information disclosure law is based on the right to know (Muroi, 1999). Prior to this enactment by the central government, local governments in Japan at the level of

[2] The Freedom of Information Act in the United States was enacted in 1967.

towns and villages played a leading role in disclosing public information. In 1982, Japan's first Information Disclosure Ordinance was enacted in Kanayama, a rural town located in northeastern Japan. Information Disclosure Ordinances specify regulations for a particular local government to provide residents the right to request the disclosure of information possessed by the government. As shown in Figure I, the rate of enactment of Information Disclosure Ordinances rose drastically from 1998 to 2004. The rate of enactment was about 0.2 in 1998 and reached 0.9 in 2004[3,4]. Disclosure of public information ordinances aim to ensure local government accountability in towns, villages and municipalities, and allow citizens to identify fraudulent interests on the part of politicians, bureaucrats, or private firms. There are various kinds of corrupt uses of public funds, such as cheating and collusion. Before the mid-1990s, information disclosure systems did not function well in the majority of Japan's local governments. Bureaucrats often claimed expenses for business trips which were not actually undertaken. This dishonest behavior was, however, not disclosed to citizens. In the early 1990s, a number of politicians also held the role of company manager for private firms, even though being prohibited by law from engaging in side businesses, and were in a position to receive orders for construction work from local governments (Asano, 2010).

Moreover, the cozy relationships among politicians, bureaucrats and industry,

[3] A rate of 1 indicates that all local governments have enacted such ordinances.

[4] Since 2005, the annexation of municipalities, towns and villages has rapidly increased. As a result, the number of municipalities, towns and villages decreased to around 2,300 in 2005, and to approximately 1,800 in 2009. Accordingly, the rate of municipalities enacting ordinances rose from 0.97 in 2005 to 0.99 in 2009. Annexation of municipalities is thought to be positively related to the rate of enacting ordinances. That is, the rate of enacting disclosure ordinances is partly affected by the annexation of municipalities. From 2005 to 2009, the change in the rate of enacting disclosure ordinances was minute. Therefore, we focus on the period of 1998–2004 in this paper.

referred as an “iron triangle”, are often discussed (Sakakibara, 2003). In particular, public works have been considered the focus of such collusion as summarized by Feldhoff (2002). For example, collusion among bidders for public works, which is known as “dango” exists, and is sometimes arranged by public officials[5]. Public officials often restrict competition between bidders and protect the profits of local construction companies[6]. Construction companies gave retired bureaucrats lucrative positions in return (which is called “amakudari” in Japanese). This is an example of collusion between bureaucrats and construction companies. The relationship between local politicians, including governors, and the construction industry operates in a similar fashion. Politicians sometimes increase the proportion of expenditure allocated to public works in the hope that the construction industry would contribute to or support election campaigns. It was pointed out that the political power of the construction industry influenced the amount of local public expenditure on construction work (Kondoh, 2008; Yamashita, 2001). However, existing research has paid little attention to the link between government transparency and political influence on the rent-seeking industry.

Subsidies tend to be provided to sectors with strong electoral leverage, and local governments spend lavishly on public works projects. Information disclosure revealed that public funds were being used illegally and that the total amount of such expenditure amounted to four billion yen in 1998 (Muroi, 1999, p.106). Once an Information Disclosure Ordinance is in place, the process by which, for example,

[5] McMillan (1991) estimated that excess profits earned by the construction industry from collusion amounts to 16% to 33% of the bid price.

[6] As pointed out by Ohashi (2009), the discretionary procurement procedure, for example exclusive territories, provides a breeding ground for collusion and corruption even if public officials or politicians are not involved explicitly.

suppliers of public services are appointed becomes transparent, and inappropriate behavior by politician can be exposed. With Information Disclosure Ordinances, citizens can identify possible collusion between politicians, bureaucrats and rent-seeking firms, which reduces public expenditure on the construction industry. Thus, we regard expenditure on public works by local government as corresponding to the rent-seeking industry.

Municipalities are the lowest level of local government. A cursory examination of Figure I reveals that the rate at which municipalities enacted Information Disclosure Ordinances rose rapidly from 1998 to 2004. In 1998, the rate was about 0.22, but reached 0.92 by 2004. This indicates that this period saw a drastic change as government information became more accessible to citizens. This change is expected to deter politicians and bureaucrats from behaving for self-interest.

B Changes in government construction expenditure

Figure II demonstrates changes in government construction expenditure during the period 1998–2004, which we define as the ratio of expenditure on ordinary construction work to total expenditures by municipalities[7]. We see from Figure II that government construction expenditure declines constantly. Figure III shows the relationship between the rate of enacting Information Disclosure Ordinances and the rate of government construction expenditure. In Figure III, it is evident that the rate of enacting Information Disclosure Ordinances is negatively correlated with government construction expenditure; however, the causality between them is

[7] Expenditure on ordinary construction work includes expenses for constructing roads, schools, and public facilities, which is almost equivalent to expenditure for public works by local governments in Japan.

uncertain. Hence, in the following sections, we examine this causality in greater detail using regression analysis.

C Testable hypothesis

The supply of public goods is determined not in the realized market but through a political process, and therefore differs from the optimum level of supply in economic terms. The classical work of Niskanen (1971) asserts that bureaucrats in the government sector have a strong incentive to expand the organization for the sake of their power and positions, which is why bureaucrats endeavor to maximize their budget. The lack of incentives for maximizing social welfare leads government organizations to become less efficient than a 'benevolent dictator' (Buchanan and Wagner, 1977). Consequently, the government has an inclination to supply unnecessary public goods. However, the cost of supplying public goods is financed through taxation of ordinary citizens. Citizens are thus likely to be dissatisfied and to criticize government policy when the cost of public goods exceeds their benefit. Nevertheless, the government has abundant information about the extent to which budget allocation is efficient, while this information is often difficult for citizens to obtain. Because of this information asymmetry, "government can easily manipulate information to inflate the value of the public goods they want to supply" (Hayami, 2001, p.227).

Information Disclosure Ordinances reduce the cost of collecting information about government activities, and the enactment of Information Disclosure Ordinances seems to have reduced the information asymmetry between government and citizens. As a result, fiscal transparency is realized, enabling

citizens to see precisely how public spending is used and the extent to which it benefits them. Once citizens can access this information, they are then able to evaluate the benefit of budget allocation and criticize policies as being for the self-interest of politicians and bureaucrats. To borrow the term of Hirschman, this is the *voice* of citizens stemming from their dissatisfaction against government (Hirschman, 1970). The number of ordinary citizen's votes is much greater than the number of votes from special interest groups, and hence citizen dissatisfaction reduces the likelihood that politicians are reelected. That is why the *voice* of citizens has a greater influence on government than rent-seeking activities of special interest groups. As argued by Benito and Bastida (2009), "the more information the budget discloses, the less the politicians can use fiscal deficit to achieve opportunistic goals." Consequently, budget allocations become more efficient, reducing government expenditure in the rent-seeking industry. These considerations lead us to advance the following hypothesis:

Hypothesis: Government information disclosure decreases government construction expenditure.

III DATA AND METHODS

A Determinants of government construction expenditure

Table I presents the definitions of the variables used in this paper along with the means, standard deviations, and maximum and minimum values for the data employed. As proposed in the hypothesis, Information Disclosure Ordinances may deter rent-seeking activity, thereby reducing *Expenditure for Construction*, which

represents the ratio of government construction expenditure. Hence, the effect of *Information Disclosure,* which represents the rate of enacting Information Disclosure Ordinances, has to be included in the estimation.

In addition to *Information Disclosure*, *Population of Construction*, which represents the proportion of the population working in the construction sector, is included to capture the rent-seeking activity adopted by special-interest groups in the construction industry. Therefore, *Population of Construction* is positively related with *Expenditure for Construction*.

As a consequence of the Plaza Accord in 1985, the period from the mid-1980s to the beginning of the 1990s was a prosperous time for Japan—that of the so-called bubble economy. After the bursting of the bubble economy, public works in the 1990s were used as a tool for macroeconomic stabilization in Japan, as pointed out by Doi and Ihori (2009)[8]. Expenditure in the construction industry could be regarded as a kind of public investment. Therefore expenditure in the construction industry increases in the face of regional economic downturns because the government was thought to implement public investment policies as a means of boosting regional economies. Thus, we used the unemployment rate as a proxy for the regional economic situation. Hence, *Unemployment* should be positively associated with *Expenditure for Construction* if the above-mentioned effect does in fact occur.

According to Petty-Clark's law, major economic activities shift from the agricultural sector to the manufacturing sector and then to the service sector with a rising average per capita GDP. In the early stage of economic growth, market

[8] See, for example, Doi and Ihori (2009), p. 41. They point out that the proportion of public works spending to GDP in Japan increased from about 10% in the 1980s to 15% in the 1990s.

adjustment in resource allocation between the agricultural and industrial sectors is enhanced by increases in demand for industrial commodities. In the later stage, a similar market adjustment between the industrial and service sectors is accelerated by increases in demand for services as a consequence of relative saturation in the consumption of industrial commodities. *Expenditure for Construction* is considered to increase as the industrial sector develops because public expenditure for construction supports industrial development. Japan has already experienced the high-growth stage of development, and it has entered the stable stage. Hence, GDP is negatively associated with *Expenditure for Construction*.

Information Disclosure Ordinances for a particular sector allow citizens to determine whether public expenditure is used efficiently. This leads citizens to call for information disclosure by the government. There is a possible opposite causality, whereby the rise in the rate of expenditure for construction increases the demand for construction workers, and so unemployment rates appear to decrease. Thus, we consider *Information Disclosure*, *Population of Construction*, and *Unemployment* to be endogenous variables. Hence, the endogeneity bias caused by them would appear to be controlled for.

B Data

This paper uses panel data at the prefectural level[9]. The data comprise those for Japan's 47 prefectures for the period 1998–2004. The dependent variable in our estimation, *Expenditure for Construction*, is calculated as the ratio of expenditure on ordinary construction work to total expenditure. Both sets of data were collected at

[9] A Japanese prefecture is roughly equivalent to a state in the United States or a province in Canada.

the municipal level, and there were about 2300 observations for each year. We aggregated these figures to construct prefecture-level data, and so the final number of observations for each year was 47. The data were gathered from the Survey on Municipal Accounts issued by the Ministry of Internal Affairs and Communications. The figures for GDP per capita were derived from the *Asahi Shimbun* (2008)[10]. Data with respect to population and the rate of Information Disclosure Ordinance enactment were derived from Index Publishing (2006). Figures for the population working in the construction sector were obtained from the *Asahi Shimbun* (2008). The figures for 1996, 1998, 1999, 2001, and 2003 were generated by interpolation based on the assumption of constantly changing rates; this is because data were available only for 1995, 1997, 2000, 2002, and 2005. We used the population working in the construction sector and the total population to calculate the proportion of the population working in the construction sector. The unemployment rate was obtained from the Web site of the Statistics Bureau of the Ministry of Internal Affairs and Communications[11].

It should be noted that local-level data are more appropriate for examining the hypothesis than the aggregate prefecture-level data used in this paper. If prefectures with a higher proportion of local government Information Disclosure Ordinances have a lower rate of expenditure for construction expenditure, the hypothesis is, to a certain extent, supported. However, based on prefecture-level data, the findings do not amount to direct evidence that in municipalities (towns and villages) that enact an Information Disclosure Ordinance, government

[10] Ashahi Shimbun is the Japanese newspaper.
[11] Available from http://www.stat.go.jp/data/roudou/pref/index.htm (accessed November 1, 2010, Japanese only).

construction expenditure subsequently falls. Although there is an aggregate negative relationship, it is not possible to ascertain whether this derives from local governments that have enacted Information Disclosure Ordinances or other local governments that have not done so. For a closer examination of this issue, it is necessary to construct the dummy variable Information Disclosure Ordinance for each city, town, and village. Hence, *Information Disclosure* becomes a binary variable, which allows us to compare *Expenditure for Construction* before and after enactment of ordinances. Accordingly, it would be much more appropriate for the present study if we could test the hypothesis by using data at the local level.

However, it is difficult for us to construct the data about the years in which Information Disclosure Ordinances were enacted in each municipality, town, and village[12]. Furthermore, some data, such as annual unemployment data and per capita GDP data, cannot be obtained at the local municipal level. Because of limitations with respect to data availability, we were unable to construct local-level data; thus, we used aggregated prefecture-level data for the estimations.

It is evident from Table II that the correlation coefficient between *Expenditure for Construction* and *Information Disclosure* is –0.70, which is consistent with the findings in Figure III.

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[12] As stated in footnote 4, since 2005, the annexation of municipalities, towns, and villages has rapidly increased. Consequently, many of them have disappeared. Hence, it was difficult for us to identify all municipalities, towns, and villages in 2012, when this paper has been written.

Nikkei Industrial Research Center (various years) contains data relating to the enactment of Information Disclosure Ordinances at the local level. However, Nikkei Industrial Research Center contains data relating only to municipalities—not to towns and villages. In addition, Nikkei Industrial Research Center has been published every two years; its first study was conducted in 2000. Therefore, data for 1998 and 1999 cannot be obtained from this source. Thus, many observations were not included in the Nikkei data, and we were unable to use this to conduct the Dynamic Panel analysis. Furthermore, if other econometric models were used, estimation results might inevitably suffer from selection bias.

C Methods

As presented in the hypothesis in Section II, the aim of this paper is to investigate how enactment of Information Disclosure Ordinances changes opportunistic behavior as captured by government construction expenditure. To this end, it is necessary to examine the effect of such disclosures on changes in government construction expenditure, rather than at the level of government construction expenditure. The level of dependent variables (government construction expenditure) in the period t-1 is included as an independent variable, thereby enabling us to explore the effect of disclosures on changes in government construction expenditure—rather than levels of government construction expenditure. However, the results of OLS (or the fixed effects model) estimation suffer from bias if the lagged dependent variable is included as an independent variable. To control for the bias in such specifications, the Arellano-Bond-type Dynamic Panel model (Arellano, 2003) has been demonstrated as appropriate. Hence, that model was adopted in the present study. The estimated function takes the following form:

$$Expenditure\ for\ Construction_{it} = \alpha_1\ Expenditure\ for\ Construction_{i(t-1)} + \alpha_2\ Information\ Disclosure_{i(t-1)} + \alpha_3\ Population\ of\ Construction_{i(t-1)} + \alpha_4\ Unemployment_{i(t-1)} + \alpha_5 Ln(GDP)_{it} + k_t + u_i + \square_{it},$$

where the dependent variable is $Expenditure\ for\ Construction_{it}$ in prefecture i and year t, and $\alpha 1$ represents the regression parameters. The lag in the dependent variable is included as an independent variable. The unobservable fixed effects in

prefecture *i* are represented by u_i. The variable k_t represents the specific effects for year *t*, which is captured by dummy variables that control for macrolevel shocks in Japan. Furthermore, ε_{it} is the error term. The data cover 6 years for Japan's 47 prefectures. However, the Dynamic Panel model takes the first difference, and *Expenditure for Construction* with a lag of two periods was used as the instrument, so 47 observations for 2 years were discarded. To eliminate u_i from the model, we take the first-difference form (Arellano, 2003). It is important to consider causality between a dependent variable and independent variables. An increase in information disclosure in the previous period leads to a decrease in expenditure for construction in the current period. This also applies to *Population of Construction* and *Unemployment*, i.e., these variables in the previous period influence the dependent variable. Thus, instead of period t, values, *Information Disclosure, Population of Construction,* and *Unemployment* are in period t-1. Consequently, the reverse causality whereby *Expenditure for Construction* in the previous period influences *Information Disclosure, Population of Construction*, and *Unemployment* can be controlled for.

The parameter α_2 can be interpreted as the effect of *Information Disclosure* change on *Expenditure for Construction*. From the hypothesis proposed earlier, we anticipate that α_2 should be negative. This argument leads us to predict that the sign of α_3 for the *Population of Construction* is positive and that the sign of α_4 for *Unemployment* is also positive. Furthermore, the sign of α_4 for *Ln(GDP)* is thought to be negative.

Information Disclosure, Population of Construction, and *Unemployment* are

considered endogenous variable. Even if reverse causality is controlled for, they seem to cause endogeneity bias because there is correlation between these variables and the error term and there is serial correlation. Hence, *Information Disclosure*, *Population of Construction*, and *Unemployment* are treated as endogenous variables in the Dynamic Panel model for the purpose of controlling for estimation bias[13]. We use endogenous variables with a lag of two periods or more as additional instrumental variables (Arellano, 2003, p.168). The advantage of this method is that it is possible to control for endogeneity bias even when exogenous instrumental variables are not used.

In the Dynamic Panel model, there naturally tend to be many instruments. As pointed out by Roodman (2009), because of the many instruments, the endogenous component fails to be expunged, thereby defeating the purpose. It is therefore necessary to remedy this bias by using "only certain lags instead of all available lags for instruments" (Roodman 2009, 148)[14].

IV RESULTS

Table III presents the results of the baseline specification based on the Dynamic Panel model. In Table III, we did not control for endogeneity bias. In columns (1) and (2), year dummies are not included, but year dummies are included in columns (3)

[13] As in previous studies (Baliamoune-Lutz, 2009; Swaleheen, 2011), the Dynamic Panel model is used to control for endogenous bias by treating several independent variables as endogenous.

[14] In addition to using fewer lags, the "approach has been to combine instruments through addition into smaller sets" (Roodman 2009, 148). That is, "collapsing" the set of instrumental variables is also useful to remedy the problem of "too many instruments" (Roodman 2009).

and (4). In columns (1) and (3), full instruments are used; in columns (2) and (4), the maximum number of lags used for the instruments is two. Hence, the number of instruments in column (1) is 20, which is greater than the 14 in column (2). When year dummies are included for instruments, the number of instruments in column (3) is 25, which is greater than the 19 in column (4).

Before discussing the results in Table III, it is necessary to check the validity of the Dynamic Panel estimation. Two important tests here are the Sargan overidentification test and the second-order serial correlation test (Arellano, 2003). We used the Sargan test to check the validity of the instrumental variables. The null hypothesis is that the instrumental variables are uncorrelated to the residual. If this hypothesis is not rejected, the instruments are considered valid. Furthermore, it is important to confirm the null hypothesis that there is no second-order serial correlation for the disturbance of the first-difference equation; this is because the consistency of the estimator relies on the absence of a second-order serial correlation. Table III indicates that for all columns, the hypothesis of the second-order serial correlation test is not rejected. Conversely, the hypothesis of the Sargan test is rejected at the 1% level in columns (1) and (2), although the hypothesis is not rejected in columns (3) and (4). The inclusion of year dummies is thought to remove the correlation between instrumental variables and the residual. Consideration of the results of the two tests suggests that the estimation results are valid in columns (3) and (4), though they are not valid in columns (1) and (2).

In Table III, the lagged dependent variable, *Expenditure for Construction,* yields a positive sign and is statistically significant at the 1% level in all columns. Furthermore, its absolute values are less than 1, which suggests that *Expenditure for*

Construction tends to converge. As predicted, the sign of the coefficient for *Information Disclosure* is negative and statistically significant in all columns. Furthermore, in the valid results of columns (3) and (4), the absolute value for *Information Disclosure* is 0.01; this signifies that a 1% increase in enacting Information Disclosure Ordinances leads to a decrease in government construction expenditure as a ratio of total expenditure by 0.01%. Although the sign of *Population of Construction* is positive, which is consistent with the prediction in all columns, it is not statistically significant. The coefficient of *Unemployment* takes the positive sign, as expected, and it is statistically significant at the 5% level in columns (1) and (2), which is also congruent with expectations. By contrast, the coefficient of *Unemployment* takes the negative sign despite being statistically insignificant in columns (3) and (4).

Year dummies are used to capture the economic conditions that apply to all parts of Japan. Economic stagnation in Japan inevitably affects unemployment at the local level. Thus, the local-level unemployment rate depends on the macroeconomic conditions of the country. The effect of *Unemployment* is captured by year dummies, and it is reduced when year dummies are included. *Ln (GDP)* results in a positive sign and is statistically significant at the 1% level in all columns. This is not in line with expectations. One plausible interpretation for this is that expenditure in the construction industry is viewed as a means of income redistribution from high earners to low-skilled physical laborers. Hence, an increase in GDP allows high earners to support income redistribution through increased expenditure in the construction industry. The absolute values for the coefficient of *Ln (GDP)* are 0.19 and 0.18 in columns (1) and (2), respectively, which are about

twofold greater than the 0.09 and 0.10 in columns (3) and (4). This indicates that the effect of *Ln (GDP)* is overestimated when macroeconomic conditions are not taken into account by excluding year dummies.

Tables IV and V present the results of the Dynamic Panel estimation when the endogeneity bias is controlled for by treating some dependent variables as endogenous variables. Table IV shows the results when year dummies are not included as independent variables; Table V shows the results when year dummies are included. The following applies to Tables IV and V: in column (1), *Information Disclosure* is treated as an endogenous variable; in column (2), *Information Disclosure* and *Population of Construction* are treated as endogenous variables; in column (3), *Information Disclosure* and *Unemployment* are treated as endogenous variables; in column (4), *Information Disclosure*, *Population of Construction*, and *Unemployment* are treated as endogenous variables. To remedy the problem of an excessive number of instruments, the maximum number of lags used for the instruments is two in all columns.

With regard to Table IV, the number of instruments is 17, 20, 20, and 23, respectively, in columns (1), (2), (3), and (4). An increase in the number of independent variables treated as endogenous variables leads to an increase in the number of instruments. Concerning the validity of the estimation results, the hypothesis of the second-order serial correlation test is not rejected in all columns, though the hypothesis of the Sargan test is rejected in all columns. Therefore, the instrumental variables are correlated to the residual, even though there is no second-order serial correlation. Hence, it should be noted that the results of Table IV are not valid. The results in Table IV are very similar to those in columns (1) and

(2) of Table III. Consistent with expectations, the sign of the coefficient for *Information Disclosure* is negative, and it is statistically significant in all columns. Compared with the absolute value for *Information Disclosure* in columns (1) and (2) of Table III, its absolute value in Table IV is greater. Furthermore, the absolute value of *Information Disclosure* is 0.03 in columns (1) and (2) of Table IV, which is less than the 0.05 in columns (3) and (4) of that table. This implies that the magnitude of *Information Disclosure* suffered a downward bias caused by endogeneity of the independent variables. A similar tendency is observed for absolute values of *Unemployment*. The coefficient sign of *Ln (GDP)* continued to be the positive and statistically significant at the 1% level in all columns.

In Table V, the number of instruments is 22, 25, 25, and 28, respectively, in columns (1), (2), (3), and (4); compared with Table IV, the inclusion of year dummies increased the number of instruments. The hypotheses of the second-order serial correlation test and the Sargan test are not rejected in all columns, which means that the estimation results are valid. As expected, the sign of the coefficient for *Information Disclosure* is negative and statistically significant in all columns. In addition, the absolute value of *Information Disclosure* is 0.02 in all columns, and it is smaller than the values in Table IV. Hence, the estimation results are robust according to alternative specifications. We can interpret the value of the coefficient as suggesting that a 1% increase in enacting Information Disclosure Ordinances leads to a decrease in government construction expenditure as a ratio of total expenditure by 0.02%. This magnitude is reduced because the time trend was captured by including year dummies. The sign of *Unemployment* is negative in columns (1) and (2), though it is positive in columns (3) and (4). Furthermore,

Unemployment is not statistically significant in any of the columns. This result is distinctly different from that for *Unemployment* in Table IV. Including year dummies that captured the macroeconomic conditions in Japan was thought to reduce the effect of *Unemployment*. *Ln (GDP)* continued to yield a positive sign and was statistically significant at the 1% level in all columns. Its absolute values were 0.08 or 0.09, which are smaller than the values in Table IV. Including year dummies reduced the effect of *Ln (GDP)*.

Considered together, Tables III–V strongly support the hypothesis that information disclosure by the government decreases government construction expenditure.

V CONCLUSION

Asymmetric information is a cause of both market and government failures, resulting in decreased social welfare. From an economic viewpoint, politicians and bureaucrats are seen as agents, whereas citizens are considered to be principals. Information asymmetry between agent and principal enables the agent to use opportunistic behavior and act inappropriately, causing a principal-agent problem in the political process. Rent-seeking activity in a particular industry leads politicians and bureaucrats to act in a way that benefits the industry at the expense of the greater society. Such activity cannot be criticized by citizens because the cost of accessing information is large. As a consequence, information asymmetry increases the likelihood that moral hazards occur. However, if government information is open to citizens, inappropriate activity by the government can then

be criticized, decreasing the likelihood that a politician is reelected. Therefore, it is important for policy makers to reduce information asymmetry. Information Disclosure Ordinances are thus expected to play a critical role in improving government efficiency and were therefore increasingly enacted in Japan throughout the 1990s.

This paper has attempted to ascertain the association between Information Disclosure Ordinance enactment and government construction expenditure. Since the end of the 1990s, local governments in Japan have enacted Information Disclosure Ordinances. This paper used Japanese prefecture-level data for the period 1998–2004 to examine how the enactment of Information Disclosure Ordinances affects government construction expenditure. A Dynamic Panel model was used to control for unobserved prefecture-specific effects and endogenous bias of Information Disclosure Ordinances. The major findings are as follows. Rent-seeking behavior in the construction industry has a large positive effect on government expenditure on construction. Further, Information Disclosure Ordinances decrease the rate of government construction expenditure. This implies that Information Disclosure Ordinances improve the efficiency of government resource allocation, although the effect of rent-seeking behavior is still observed. We postulate that Information Disclosure Ordinances reduce the return from the rent-seeking activity thereby reducing the incentives for special interest groups to seek rent; as a consequence, rent-seeking activity seems to decline in the long run, increasing overall societal welfare.

Information Disclosure Ordinances appear to have a critical role not only in the distribution of government expenditure but also in total government expenditure

and deficit (Lassen, 2000; Alt et al., 2001; Alt and Lassen, 2006a). As few studies have investigated the factors determining government transparency (Alt and Lassen, 2006b), these issues should be investigated in future research. In addition, although the results of this paper are suggestive, the aggregate-level data used in this paper do not exactly capture the impact of the enactment of Information Disclosure Ordinances on rent-seeking activity at the local level. Hence, it is necessary to construct a binary variable to capture enactment of the ordinance at the local level to disclose direct evidence about the effect of Information Disclosure Ordinance.

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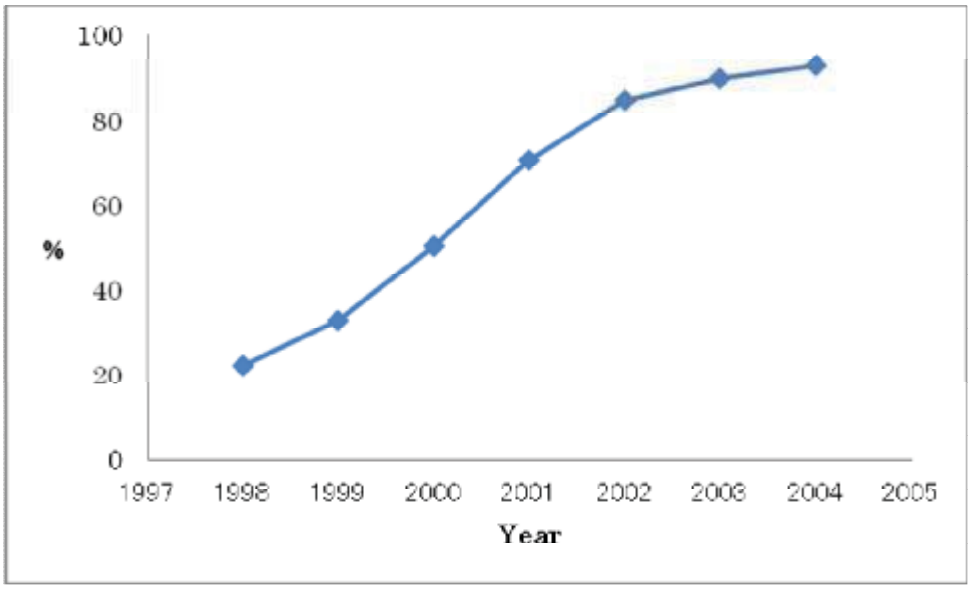

FIGURE I. Rate of municipalities enacting Information Disclosure Ordinances (%).

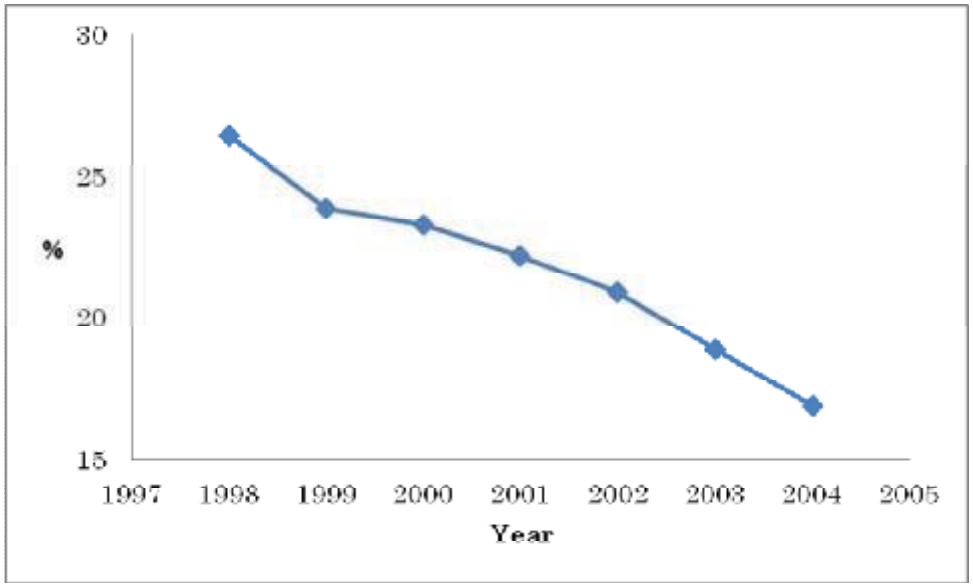

FIGURE II. Rate of government construction expenditure (Expenditure on ordinary construction work/Total expenditure)

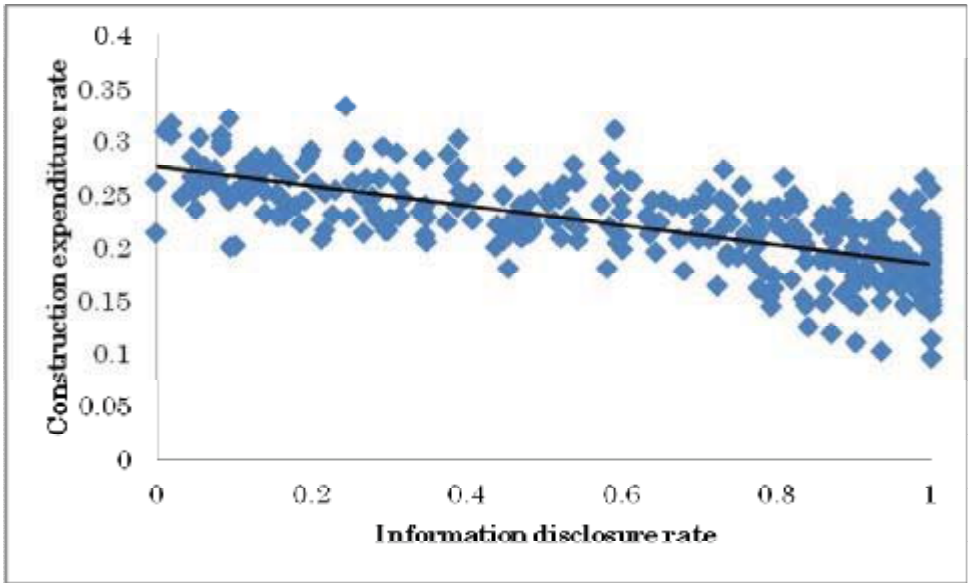

FIGURE III. Correlation between the rate of enactment of Information Disclosure Ordinances and the rate of government construction expenditure.

TABLE I.

Variable definitions and basic statistics.

Variable	Definition	Mean	Standard deviation	Max	Min
Expenditure for Construction	Rate of government construction expenditure (expenditure on construction work/total expenditure)	0.21	0.04	0.33	0.09
Information Disclosure	Rate of enacting Information Disclosure Ordinances by municipalities (no. of municipalities enacting Information Disclosure Ordinances/total no. of municipalities)	0.63	0.32	1	0
Population of Construction	Proportion of population working in construction sector	$0.15*10^{-3}$	$0.55*10^{-3}$	$5.1*10^{-3}$	$0.005*10^{-3}$
Unemployment	Unemployment rate	0.04	0.01	0.08	0.02
GDP	Per capita GDP (millions yen)	3.57	0.70	7.41	2.52

Notes: The values are simple averages. Data sources are the *Asahi Shimbun* (2008), Index Publishing (2006), and the Statistics Bureau of the Ministry of Internal Affairs and Communications (various years).

TABLE II.

Correlation matrix of variables used for the estimation

	Expenditure for Construction	*Information Disclosure*	*Population of Construction*	*Unemployment*	*GDP*
Expenditure for Construction	1.00				
Information Disclosure	-0.70	1.00			
Population of Construction	-0.01	0.05	1.00		
Unemployment	-0.27	0.22	-0.001	1.00	
GDP	-0.36	0.20	-0.06	-0.15	1.00

TABLE III.
The dependent variable is *Expenditure for Construction*$_t$: (Dynamic Panel model)

	(1)	(2)	(3)	(4)
Expenditure for Construction$_{t-1}$	0.90***	0.92***	0.46***	0.56***
	(18.2)	(14.9)	(4.03)	(4.25)
Information Disclosure$_{t-1}$	-0.02***	-0.02***	-0.01***	-0.01***
	(-4.20)	(-4.21)	(-3.21)	(-3.02)
Population of Construction$_{t-1}$	1.40	0.49	0.34	0.86
	(1.48)	(0.44)	(0.52)	(0.95)
Unemployment$_{t-1}$	0.49**	0.63**	-0.09	-0.12
	(2.16)	(2.01)	(-0.35)	(-0.41)
Ln(GDP)$_t$	0.19***	0.18***	0.09***	0.10***
	(5.59)	(4.42)	(3.04)	(2.90)
Year dummies	Not included	Not included	Included	Included
Number of instruments	20	14	25	19
Set of instruments	Full instruments	Maximum number of lags for the dependent variable is 2	Full instruments	Maximum number of lags for the dependent variable is 2
Sargan test	32.4	27.3	11.6	8.43
(p value)	(0.003)	(0.0006)	(0.63)	(0.39)
Serial correlation	1.01	0.98	1.14	1.22
second order (p value)	(0.31)	(0.32)	(0.25)	(0.22)
Wald chi-square	1454	1237	1955	1633
Observations	233	233	233	233

Notes: The numbers in parentheses are Z statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE IV.

The dependent variable is *Expenditure for Construction* $_{t,}$: control variables treated as endogenous variables

(Dynamic Panel model without year dummies)

	(1)	(2)	(3)	(4)
Expenditure for Construction $_{t-1}$	0.73*** (7.79)	0.75*** (8.33)	0.87*** (9.25)	0.86*** (9.56)
Information Disclosure $_{t-1}$	-0.03*** (-4.62)	-0.03*** (-4.57)	-0.05*** (-5.41)	-0.05*** (-5.90)
Population of Construction $_{t-1}$	0.36 (0.37)	-3.73 (-0.73)	0.10 (0.09)	0.43 (0.16)
Unemployment $_{t-1}$	0.70*** (2.60)	0.80*** (2.88)	2.23*** (5.59)	2.22*** (5.87)
Ln(GDP) $_{t}$	0.13*** (2.95)	0.14*** (3.16)	0.16*** (3.98)	0.16*** (4.04)
Year dummies	Not included	Not included	Not included	Not included
Endogenous variables	*Information Disclosure*	*Information Disclosure, Population of Construction*	*Information Disclosure, Unemployment*	*Information Disclosure, Population of Construction Unemployment*
Number of instruments	17	20	20	23
Set of instruments. Lags for the dependent variable (endogenous variables)	2 (2)	2 (2)	2 (2)	2 (2)
Sargan test (*p* value)	29.7 (0.001)	31.4 (0.004)	25.9 (0.02)	26.0 (0.07)
Serial correlation second order (*p* value)	0.86 (0.38)	0.65 (0.51)	0.14 (0.88)	0.14 (0.88)
Wald chi-square	1310	1378	1563	1657
Observations	233	233	233	233

Notes: The numbers in parentheses are Z statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The set of instruments shows the maximum number of lags for the dependent and endogenous variables.

TABLE V.

The dependent variable is *Expenditure for Construction* $_{t,}$: control variables are treated as endogenous variables (Dynamic Panel model with year dummies)

	(1)	(2)	(3)	(4)
Expenditure for Construction $_{t-1}$	0.49*** (3.80)	0.48*** (3.81)	0.43*** (5.82)	0.39*** (6/25)
Information Disclosure $_{t-1}$	-0.02*** (-2.89)	-0.02*** (-2.82)	-0.02*** (-2.67)	-0.02** (-2.48)
Population of Construction $_{t-1}$	1.09 (1.31)	1.58 (0.47)	0.85 (1.06)	-0.87 (-0.43)
Unemployment $_{t-1}$	-0.21 (-0.73)	-0.34 (-1.31)	0.11 (0.19)	0.26 (0.48)
Ln(GDP) $_{t}$	0.09*** (2.87)	0.09*** (2.92)	0.08*** (3.05)	0.08*** (3.11)
Year dummies	Included	Included	Included	Included
Endogenous variables	*Information Disclosure*	*Information Disclosure*, *Population of Construction*	*Information Disclosure*, *Unemployment*	*Information Disclosure*, *Population of Construction*, *Unemployment*
Number of instruments	22	25	25	28
Set of instruments, lags of the dependent variable (endogenous variables)	2 (2)	2 (2)	2 (2)	2 (2)
Sargan test (*p* value)	7.29 (0.77)	10.3 (0.73)	11.9 (0.61)	1.02 (0.30)
Serial correlation second order (*p* value)	1.18 (0.23)	1.19 (0.23)	1.15 (0.24)	0.14 (0.88)
Wald chi-square	1310	1378	1563	1657
Observations	233	233	233	233

Notes: Numbers in parentheses are Z statistics. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The set of instruments shows the maximum number of lags for the dependent and endogenous variables.