Analysis of the implementation of information disclosure ordinances in Japan: the effect on the income of mayors and chief executives in local governments

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Abstract:

This paper attempts to investigate how information transparency affects human behavior. Thus, we empirically examine the influence of information disclosure ordinances on the income of mayors and chief executives in local governments in Japan. For the estimation, we use panel data of local governments covering 1999–2010, during which time many local governments implemented such ordinances. The key finding is that the income of mayors and chief executives in local governments decreased after the implementation of the ordinances. Furthermore, as the years passed, the income declined further. Hence, information disclosure regarding local government reduces the income of top officials and its influence becomes greater over time. Although the income of mayors and chiefs executives is open information without the need for an ordinance, it provided transparency regarding their work performance. Furthermore, the effect of the ordinance did not depend on the mayors or chief executives' income level in 1999. Therefore, the reduction of income is mainly due to the government's accountability rather than citizens' inequality aversion.

Remark: The views expressed herein are those of the authors and do not necessarily reflect the opinions of the organizations to which the authors belong. Any remaining errors are the sole responsibility of the authors.

1. Introduction

It has recently been reported that people's preferences for inequality and redistribution are based on available information that enables them to compare their economic situation with others (e.g., Card et al. 2012; Cruces et al. 2013; Kuziemko et al. 2015; Karadja et al. 2017). That is, transparency regarding the income level of public officials can change people's preferences for redistribution and income level. Such transparency may even influence policy making because people have a tendency of inequality aversion (Fehr and Schmidt 1999). Furthermore, transparency policies surrounding salaries have drawn growing public attention and have been examined in various countries such as the United States (Mas 2017), Canada (e.g., Gomez and Wald 2010; Dobrescu et al., 2014), Norway (Bø et al. 2015), China (Juang et al. 2016), and Japan (Hasegawa et al. 2013). Many studies also report that an increase in transparency is observed to reduce incomes that are subject to disclosure (Juang et al. 2016; Mas 2017).[1] From the classical viewpoint of public choice, an innate lack of incentives to maximize profit might make government organizations less efficient (Buchanan and Wagner,1977). Reducing information asymmetry via information disclosure may incentivize a government to be more efficient. Consistent with this view, it is reported that the public disclosure of politicians' incomes leads to lower perceived corruption and more efficient government (Djankov et al. 2010).[2] It is also known that fiscal transparency reduces public debt and deficit (Alt and Lassen 2006). Although income transparency may provoke serious concerns about privacy (Hasegawa et al. 2013; Bø et al. 2015), it is accepted that transparency has the abovementioned benefits.

Voter initiatives have been found to affect the pay of mayors and chief executives in local governments (Di Tella and Fisman 2004).[3] The development of mass media is expected to increase voter initiatives by reducing the information asymmetry between government and citizens. Yazaki (2017) examined the effects of newspapers on political accountability in local governments in Japan. He found that newspapers contribute to local governments' accountability by drawing citizens' attention to local policy issues. An increase in the market share of local

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[1] In contrast, there have been cases where an increase in transparency resulted in increased disclosed income (Craighead et al. 2004; Gelinas et al. 2009). Other effects such as underreporting one's income (Hasegawa et al. 2013) or deterrence (Bø et al. 2015) are also reported.

[2] In private firms, mandated information disclosure have been reported to increase a firm's stock returns (Greenstone et al. 2006).

[3] Although the salary of regular local government officials moves in tandem to that of regular national government officials, which is in line with regular workers' salaries, the compensation of mayors and chief executives is determined by their local councils and hence it differs from place to place. Thus, it is probable that voters' opinions are reflected in the mayor or chief executive's income via council discussions.

newspapers reduced local public works spending. Local newspapers have a greater accountability effect on public spending 1 year after national newspapers reported on the issue of unnecessary public works. This is consistent with Yamamura and Kondo's (2013) finding that information disclosure ordinances decrease the rate of government construction expenditure where rent-seeking behaviors are generally observed.

In Japan, as pointed out by Doi and Ihori (2009, 181), "larger amounts of tax revenue are spent on public works than in other countries, controlling for size and population." Therefore, it is possible that inefficiency is more clearly observed if there is significant expenditure. Thus, citizens are likely to check the role and effectiveness of government if they can obtain information that reflects government performance. Furthermore, since 1998, local governments in Japan have increasingly implemented information disclosure ordinances, with the rate of ordinance implementation reaching close to 100% in 2007. Such ordinances require the disclosure of official information to ensure accountability (Jiyukokuminsha 2009). Hence, it is of value to investigate how information disclosure ordinances have influenced government efficiency and how their effect changed in Japan during this period.

In Japan, the incomes of mayors and chief executives in local government were revealed before the widely implemented ordinances.[4] However, citizens may not have evaluated the extent to which the income of local government mayors or chief executives reflects their performance because information about their performance may not have been readily available. Thus, this setting differed from Di Tella and Fisman (2004) in their examination of the effect of the transparency of income of government officers. Therefore, we can consider government accountability rather than inequality aversion because inequality aversion causes populists to respond to the visibility of a mayor or chief executive's income. We empirically examine the effect of information disclosure ordinances on the income level local government chief executives. By constructing panel data comprised of local governments in cities, towns, and villages throughout Japan from 1999–2010, we control for the unobservable fixed effects of local governments. The key finding is that the ordinance reduced the income of local government mayors and chief executives and its effect becomes greater as time passed. Furthermore, the effects do not depend on the mayor or chief executive's initial income position. We also found that accountability plays greater role than inequality aversion.

The remainder of this paper is organized as follows. In section 2, we provide an overview of local governments in Japan and briefly review the implementation of the information disclosure ordinances. We then present a theoretical model to derive our testable hypothesis in section 3.

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[4] Since 1955, data on the income of local government mayors and chief executives have been gathered by the Ministry of Internal Affairs and Communications, Local Administration Bureau (http://www.soumu.go.jp/main_sosiki/jichi_gyousei/c-gyousei/kyuuyo/kyuuyo_jc_1.html. Accessed on November 28, 2017).

Section 4 explains the data, empirical method, and our estimation results. The final section offers our conclusions.

2. Setting

2.1. Information disclosure ordinances

Japan's first information disclosure ordinance was enacted in 1982 in Kaneyama, a town with some thousands of residents located in northeastern Japan. Based on such ordinances, residents have the right to request the disclosure of information possessed by the local authorities. Hence, in Japan at the municipality level, that is, cities, towns, and villages, local government has played a leading role in disclosing public information to citizens.[5]

As shown in Figure 1, the rate of implementation of information disclosure ordinances was about 20% in 1999, followed by a considerable increase; the rate reached nearly 100% by 2007. The purpose of disclosure under public information ordinances is to ensure the accountability of local government in municipalities such as cities, towns, and villages. Accordingly, this ordinance makes it easier for citizens to evaluate the performance of local governments and their chief executives. For instance, in the 1990s, it was sometimes reported that government officers claimed expenses for business trips that were never actually undertaken (Yoshimi 1997). The chief executive of a local government may be considered responsible for such negligence because the officers' behavior were regarded at least prima facie to be under the control of the chief executive. As reported by Asano (2010), prior to the mid-1990s, however, information disclosure systems were less likely to function properly in the majority of Japan's local authorities. However, as time passed, the effectiveness of these systems has improved. For example, as found by Yamamura and Kondo (2013), the system was eventually able to reduce rent-seeking activity.

A cursory examination of Figure 2(a) reveals that the average monthly income of a local government mayor or chief executive was 860,000 yen (about US$8,600) in 1999 and has declined since then. In 2010, the monthly income totaled approximately 760,000 yen (about US $7,600). That is, the income has reduced by approximately 12% over 10 years. However, this trend is possibly the outcome of a macro-economic shock that has influenced the Japanese economy on the whole. If a macro-economic shock is the major reason, the income of other workers' should have also reduced proportionally to that of mayors or chief executives. Figure 2(b) illustrates the relative income level of chief executives (chief executive average income level/average income level of other government officers[6]). Figure 2(b) demonstrates that the

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[5] The Administrative Information Disclosure Law was enacted by the Japanese central government in 1999, based on the "right to know" (Muroi 1999).

[6] In contrast to a mayor or chief executive's income, the income of a government official moves in tandem with other workers' wages. Thus, the average income level of other government officers directly reflects economic movement.

relative income level of chief executives reduced from 2.65 in 1999 to 2.35 in 2010. This can be interpreted to state that the average income of chief executives was about 2.65 times higher than the average income of government officers in 1999 and was 2.35 times higher in 2010. Figure 2(a) shows that chief executives' incomes declined rapidly after 1999 whereas that of government officers has largely remained the same. Thus, we could interpret Figure 2(a) and (b) to imply that the performance of chief executives was over-evaluated before the implementation of the disclosure ordinance, partly because of a lack of information about local government performance. Furthermore, turning to a comparison of the distribution of the chief executives' monthly income level before and after the implementation of the ordinance, Figure 3(a) clearly demonstrates that the income level after the implementation is lower than beforehand. Regarding the relative income level, a similar observation is illustrated by Figure 3(b). Considering Figures 1–3(b) jointly leads us to expect that the implementation of information disclosure reduced the income of chief executives and its impact has gradually expanded. A more formal model is presented in the following section.

3. Theoretical model and Hypothesis

The gradual decline in compensation for mayors and city council members after the implementation of the information disclosure ordinances can be theoretically explained using a probabilistic voting model (Lindbeck and Weibull 1987). We briefly describe below how this phenomenon is understood.

Let the number of voters at time t at a municipality be n_t. Among the voters, we assume that m_t people, indexed by $1,2,3,\cdots,m_t$, know the disclosed information and $n_t - m_t$ people, indexed by $m_t + 1, m_t + 2, m_t + 3, \cdots, n_t$, do not. We also assume n_t to be constant; that is, $n_t = n \forall t$ and an odd number, just for convenience. We further assume that people gradually become aware of the disclosed information. Therefore, m_t is a weakly increasing function with t when $t \geq t_0$, where an information disclosure ordinance is implemented at time t_0, and m_t is gradually increasing; that is, $\exists \Delta > 0, \forall t > t_0$. Either $m_{t+\Delta} - m_t = 0$ or $m_{t+\Delta} - m_t = 1$ holds. Based on these assumptions, we assume that a voter with knowledge of the disclosed information considers the proper compensation to be $w_{it} = \underline{w} + \varepsilon_i$ and that a voter without that knowledge considers it to be $w_{it} = \overline{w} + \varepsilon_i$, where $\underline{w} < \overline{w}$ is satisfied and ε_i, which reflects voter i's ideology, independently follows a continuous probabilistic density function $f(\cdot)$. In this model, we do not specify how a voter determines what he or she deems to be the proper compensation; proper compensation may be determined by a local government activity (accountability hypothesis) or by one's envy (inequality aversion hypothesis). [7] The only

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[7] However, our model has an affinity for the accountability hypothesis rather than the

assumption here is that $\underline{w} < \overline{w}$, that is, proper compensation after knowing the information is lower than that before knowing it. We assume that the expected value of ε_i is 0, no atom, and that $f(\cdot)$ is non-zero at least in $\left[-\frac{\overline{w}-\underline{w}}{2}, \frac{\overline{w}-\underline{w}}{2}\right]$. We finally assume that compensation is determined by the median voter's opinion (Black 1948), that is, compensation w_t is equal to the $\frac{n+1}{2}$th value of $\{w_{it} | i \in [1,n] \cap N\}$. Under these assumptions, we can show that compensation is gradually decreasing. Formally, we can prove the following proposition.

Proposition: Compensation is gradually decreasing if there are a sufficient number of voters. Formally, $\forall h > 0, \forall \delta \in (0, \Delta], \exists M > 0$ s.t. $w_{t+\delta} - w_t \in [-h, 0]$ almost always holds if both $n - m_t > M$ and $m_t > M$ are satisfied.

Proof: Because we assume that m_t is gradually increasing, at the most one person becomes aware of the disclosed information between time t and $t + \delta$. If no one becomes aware of it during this period, $w_{t+\delta} = w_t$ must hold and the proof ends. Hereafter, we consider a case where one person becomes aware of it during that period. Let the person's index be l. Furthermore, let the kth smallest value of $\{w_{it} | i \in [1,n] \cap N\}$ be w_t^k. Because of the median voter's theorem, $w_t = w_t^{\frac{n+1}{2}}$ must hold. If $w_t^{\frac{n+1}{2}} \leq w_{lt+\delta} < w_{lt}$ or $w_{lt+\delta} < w_{lt} \leq w_t^{\frac{n+1}{2}}$, then $w_{t+\delta} = w_t$ holds. If $w_{lt+\delta} \leq w_t^{\frac{n-1}{2}} \leq w_t^{\frac{n+1}{2}} \leq w_{lt}$, then $w_{t+\delta} = w_t^{\frac{n-1}{2}}$ holds. If $w_t^{\frac{n-1}{2}} < w_{lt+\delta} < w_t^{\frac{n+1}{2}} \leq w_{lt}$, then $w_{t+\delta} = w_{lt+\delta}$ holds. In sum, $w_{t+\delta} \in [w_t^{\frac{n-1}{2}}, w_t^{\frac{n+1}{2}} = w_t]$ holds. For any $\forall h > 0$, there exists a sufficiently large M with $n - m_t > M$ and $m_t > M$, such that for any $x \in \left[-\frac{\overline{w}-\underline{w}}{2}, \frac{\overline{w}-\underline{w}}{2}\right]$, $\#\left\{w_{it} \in \left[x - \frac{h}{2}, x + \frac{h}{2}\right] | i \in [1,n] \cap N\right\} \geq 2$ almost always holds. Therefore, $w_t^{\frac{n+1}{2}} - w_t^{\frac{n-1}{2}} < h$ almost always holds and we obtain the proposition.

Here, we derive the following empirical hypothesis:

The implementation of information disclosure ordinances reduces the income of local government chief executives. Then, the income reduces as time passes since the implementation of the

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inequality aversion hypothesis, as the mayor or chief executive's income was available to the public without the information disclosure ordinance. Therefore, the degree of inequality aversion may not change before and after the implementation of the ordinance.

ordinance.

4. Data and Estimation

4.1. Data

Table 1 presents the variables used in this paper along with the means and standard deviations for the data employed. To obtain the detailed data of the year of implementation of the information disclosure ordinances for 1,727 local governments, we made a request to the Autonomous Administrative Office. From these data, we can calculate the years after the implementation to examine its effect on the income of local government chief executives. That is, if the ordinance was implemented in 2000 for a town, 1, 2, 3 years have passed for the town by 2001, 2002 and 2003, respectively. In addition, following Toyokeizai (2014), we obtained income level data for chief executives and local government officers, local government revenue, and population for 1999–2010. Unfortunately, data prior to 1999 were not available. Regarding other available variables, they did not cover the whole period and so the variables used in this paper are limited to capture the basic economic condition of local governments.

There was the boom period in municipal mergers in Japan, collectively known as the Heisei Municipal Mergers. As a consequence, the number of local governments reduced from 3,232 in 1999 to 1,727 in 2010. However, as of 2004, the number of local governments totaled 3,132, meaning that there were very few mergers between 1999 and 2004. Many mergers occurred in 2005–2006, with the merging of approximately 1,300 local governments. However, following Toyokeizai (2014), we were only able to obtain data concerning chef executives in local government that survived during this period and absorbed other local governments. Hence, the dataset consists of approximately 1,700 local governments for 1999–2010. Figure 1 shows a smooth increase in the number of local governments that implemented the ordinance before the 2005. In contrast, Figure 2(b) shows that the income of chief executives declined before 2005. Accordingly, the decline in income is likely to be influenced by the implementation of the ordinance rather than the mergers. Information regarding the implementation of the ordinance is matched with other variables to construct an original dataset.

4.2. Method

As presented in the hypothesis in Section 3, the aim of this paper is to investigate how the implementation of information disclosure ordinances influences citizens' evaluations of local government chief executives. The panel structure of the dataset enables us to control for the unobservable time-invariant factors of the local governments. Therefore, we can control for

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various factors using a fixed effects model even though the number of independent variables is limited. The estimated function takes the following form:

$Ln(Chief's\ income)_{it} = \alpha_1\ Open\ dummy_{i(t-1)} + \alpha_2\ Years\ from\ open_{i(t-1)} + \alpha_3\ Ln(Local\ Revenue)_{i(t-1)} + \alpha_4\ Ln(Population)_{i(t-1)} + k_t + u_i + \varepsilon_{it}$,

where the dependent variable is the log form of the chief executive's monthly income. In an alternative specification, as a robustness check, the dependent variable is the chief executive's relative income (average chief executive's income level/average income level of other government officers). Furthermore, $Ln(Chief's\ income)_{it}$ in prefecture i and year t, and α_1 represents the regression parameters. The unobservable fixed effects in local government 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 macro-level shocks in Japan. Additionally, ε_{it} is the error term. Key independent variables are *Open dummy*$_{i(t-1)}$ and *Years from open*$_{i(t-1)}$: *Open dummy* is 1 if the information disclosure ordinance is enacted for local government i, otherwise , and *Years from open* is the number of years since the ordinance was enacted. If an ordinance was not enacted, *Years from open* is 0.

As mentioned earlier, the Heisei Municipal Mergers occurred during the studied period. As a result of the mergers, the size of local governments drastically increased as local governments merged. Ryan et al. (2002) argued that the scale of government is the key factor to promote information disclosure relating to the government. The economic scale of the local governments is captured by including *Ln(Local Revenue)*$_{i(t-1)}$ and *Ln(Population)*$_{i(t-1)}$. These variables are incorporated to control for the scale of local government and therefore the impact of the merger. Thanks to the scale economy, a larger government can pay a chief executive more. Hence, the coefficients of *Ln(Local Revenue)*$_{i(t-1)}$ and *Ln(Population)*$_{i(t-1)}$ are predicted to be positive. The values of these independent variables are in year *t-1* because they are thought to have an effect on the chief executive's income in the following year. Thus, there is a 1-year lag between the dependent and independent variables. In addition, researchers have found that political factors are related to government disclosure (Giroux 1999; Cheng 1992). In our model, we assume that the fixed effect for each local government is considered to capture the political factors. The data comprised approximately 1,700 local governments and covered 12 years from 1999–2010. Using the sample, we conducted the estimations. Furthermore, to reduce the effect of the Heisei Municipal Mergers, we also conducted the estimations based on the sub-sample (limited to 1999–2004), which is prior to 2005 and 2006 when a large number of mergers occurred.

From the hypothesis raised in the previous section, we predict the value of *Open dummy* and *Years from open* to be negative. In addition, to enable a closer inspection of government

accountability, we incorporate cross terms for a dummy for the top 25% incomes of chief executives in 1999 and the key variables *Open dummy* and *Years from open*. A relatively high income among chief executives might be regarded as excessive and inequality aversion may play a role in reducing their income. If so, the cross terms are expected to have negative coefficients. These are also predicted to be statistically insignificant, suggesting that government accountability plays a reasonably greater role than inequality aversion.

4.3.   Estimation results

  Table 2 shows the estimation results based on the full sample in columns (1) and (2), and those for the sub-sample in columns (3) and (4). We were unable to obtain population data for some local governments and so the inclusion of the population variable reduced the sample size. We see from Table 2 that *Open dummy* and *Years from open* are negative in all columns. With the exception of *Open dummy* in column (4), they are statistically significant. Notably, *Years from open* is significant at the 1% level in columns (1)–(4). This is in line with our prediction. Looking at column (2), we see that the absolute values of coefficients of *Open dummy* and *Years from open* are 0.006. This implies that in comparison with a chief executive's income before the implementation of the ordinance, his or her income was reduced by 0.6%. That is, after the first year of implementation, the income was reduced by 0.6%. Considering both effects together, after the second year following implementation, the income was reduced by 1.2 %. Thus, after 2 years, the income was reduced by 1.8%.

     Consistent with our prediction, control variables such as *Ln(Local Revenue)* and *Ln(Population)* tend to be positive and statistically significant. This implies that larger municipalities can spend more on its chief executive's salary partly because of scale economy. The coefficients can be interpreted as demonstrating elasticity because both the dependent variable and these variables are in log form. As for column (2), the absolute value of *Ln(Local Revenue)* is 0.12, which implies that a 1% increase in local government revenue results in 0.12% increase in its chief executive's income. Furthermore, the absolute value of *Ln(Population)* is 0.14, which implies that a 1% increase in population size results in a 0.14% increase in the income of the chief executive.

  To examine the relative income level of chief executives compared with average income of other local government officers, we turn to Table 3, which presents the results of the alternative specification where the relative chief executive's income (chief executive's income/average income of other officers) is the dependent variable. Similar to the results in Table 2, the coefficients of *Open dummy* and *Years from open* are negative and statistically significant in all columns, which is in line with our prediction. From the sub-sample results in column (4), we see

that the absolute value of *Open dummy* is 0.012. This implies that compared with the relative income level before the implementation of the ordinance, the gap between the chief executive's income and the average income of other local government officers reduced by 1.2%. Furthermore, the absolute value of *Years from open* is 0.008. This can be interpreted as suggesting that the gap was reduced by 0.8% after 1 year. Considering both effects together, in the second year after the implementation of the ordinance, the gap was reduced by 2.0%. Thus, after 2 years from implementation, the gap was reduced by 2.8%. This effect is considered to be reasonable and sizable.

What has been observed thus far reveals that the results of the key variables, *Open dummy* and *Years from open,* are almost the same in the estimations regardless of the samples and specifications. The combined results of Tables 2 and 3 strongly support the hypothesis proposed in section 3.

We made a local government dummy where its chief executive's income was in the top 25% in 1999 among all local government chief executives. We then look at it interaction with the key variables. The results are presented in Table 4. The signs of the interaction terms varied and were not statistically significant. Hence, a reduction of the chief executive's income was mainly considered as a result of greater accountability rather than inequality aversion. This result satisfies Gibrat's law (Gibrat 1931) where the income growth rate is independent of the initial income.

This result differs from Mas's (2017) finding that the wage cuts in public sector following the introduction of a pay disclosure policy in California was mainly due to inequality aversion. However, this difference is plausible because the incomes of Japanese mayors and chief executives were available to the public even before the implementation of the ordinance. In contrast, the salaries of the Californian officials were not available to the public before the implementation of the pay disclosure policy. In the case of Japan, as the mayors and chief executives' incomes had been available to the public before the ordinance implementation, inequality aversion may not come into play even where the ordinance is implemented.

Furthermore, inequality aversion may be a more significant issue in the United States than in Japan. As Giertz (2007) points out, income inequality has grown over the past three decades in the United States.[8] The share of total annual income received by the top 1% has more than doubled from 9% in 1976 to 20% in 2011 (Piketty and Saez 2003; Alvaredo et al. 2013; Piketty 2013). An increase in income concentration in the top income group is thought to increase the likelihood of inequality aversion in the United States. However, in Japan, the top 1% share has remained around 10% since 1970 and is considered relatively stable (Moriguchi and Saez 2008;

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[8] It is for this reason that the city of Portland in the United States has recently implemented a special punitive corporate tax for companies were the chief executive officers' compensation is more than 100 times that of the median workers (Forbes, 2016).

Alvaredo et al. 2013; Piketty 2013). Hence, in comparison with the United States, the Japanese people place a greater importance on government accountability rather than inequality aversion. Over all, the reason why our finding differs from Mas's (2017) can be explained by the differences in the institutional setting and income inequality between Japan and the United States.

5. Conclusion

Compared with other countries, a larger amount of tax revenue is spent on public works in Japan (Doi and Ihori 2009). To ensure the smooth running of Japanese society, it is essential that the levels of effectiveness and efficiency in the public sectors be increased. To improve government efficiency, transparency policies are considered necessary to increase accountability. In the United States, the salaries of government officers have recently became available to the public, and this has led to a reduction in the total payroll (Mas 2017). In the case of Japan, the salaries of chief executives in local governments were already available to the public, while their work performance was not sufficiently transparent. In this situation, people were unable to evaluate whether their salaries reasonably reflected their performance. To increase the level of transparency surrounding local government, information disclosure ordinances were widely implemented between 1998 and 2007. As a consequence, citizens were finally able to obtain sufficient information to evaluate the performances of local government chief executives to determine whether their salaries were reasonable and acceptable.

This paper attempts to investigate the influence of information disclosure ordinances on the income of mayors and chief executives in local government, and how it changes as time goes by. We found that the income of chief executives declined after the implementation of information disclosure ordinances. Furthermore, as the years passed, the income fell further. This is in line with the prediction derived from the simple theoretical model suggested in this paper. According to the case of the United States used here to examine transparency policy, the shrinking of public officers' incomes can be explained by societal inequality aversion rather than the effect of making public officials accountable (Mas 2017). In contrast, in Japan, citizens already could obtain information about the salaries of public officials before the ordinance. Furthermore, the value of a chief executive's income in the initial year does not influence the effect of the information disclosure ordinance. If inequality aversion caused citizens to reduce the income of the chief executive, its reduction depends on whether it appears excessive, regardless of whether or not it actually is. This does not hold in Japan. All in all, transparency reduces the chief executive's income because of an increase in accountability.

The data used in this paper may suffer from endogeneity bias because a local government with

greater accountability was more likely to implement the ordinance earlier. Furthermore, income inequality in society seems to provide a different motivation to reduce the income of chief executives even if the outcome of the information disclosure is the same. Unfortunately, we cannot investigate this issue using the survey data. Hence, it is necessary to conduct further experiments to scrutinize this mechanism.

References.

Alt, James E., and David D. Lassen. 2006. "Fiscal Transparency, Political Parties, and Debt in OECD Countries." *European Economic Review* 50:1403-1439.

Alvaredo, Facundo, Anthony B. Atkinson, Thomas Piketty, and Emmanuel Saez. 2013. "The Top 1 Percent in International and Historical Perspective." *Journal of Economic Perspectives* 27(3):320.

Asano, Eiko. 2010. *Johokokai de susumeru jichitai kaikaku: Shuzai noto ga akasu katsuyo-jutsu* [*Local Government Reform Promoted by Information Disclosure*]. Tokyo: Jichitaikenkyu-sha.

Black, Duncan. 1948. "On the Rationale of Group Decision-making." *Journal of Political Economy* 56:23-34.

Bø, Erlend E., Joel Slemrod, and Thor O. Thoresen. 2015. "Taxes on the Internet: Deterrence Effects of Public Disclosure." *American Economic Journal: Economic Policy* 7(1):36-62.

Buchanan, James M. and Richard E. Wagner. 1977. Democracy in Deficit: The Political Legacy of lord Keynes. New York: Academic Press.

Card, David, Alexandre Mas, Enrico Moretti, and Emmanuel Saez. 2012) "Inequality at Work: The Effect of Peer Salaries on Job Satisfaction." *American Economic Review* 102(6):2981-3003.

Cheng, Rita H. 1992. "An Empirical Analysis of Theories on Factors Influencing State Government Accounting Disclosure." *Journal of Accounting and Public Policy* 11(1):1-42.

Craighead, Jane, Michiel Magnan, and Linda Thorne. (2004) "The Impact of Mandated Disclosure on Performance-Based CEO Compensation." *Contemporary Accounting Research* 21(2):369-398.

Cruces, Guillermo, Ricardo Perez-Truglia, and Martin Tetaz. 2013. "Biased Perceptions of Income Distribution and Preferences for Redistribution: Evidence from a Survey Experiment." *Journal of Public Economics* 98:100-112.

Di Tella, Rafael and Raymond Fisman. 2004. "Are Politicians Really Paid Like Bureaucrats?" *Journal of Law and Economics* 47:477-513.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer (2010). "Disclosure by Politicians." *American Economic Journal: Applied Economics*, 2(2), 179-209.

Dobrescu, Vlad, Stefan Mirkovic, Shabnam Mohsenzadeh, and Michael R. Veall. 2014. "Top-end Salaries and the Ontario Public Sector." *Canadian Public Administration* 57(3):459-477.

Doi, Takero, and Toshihiro Ihori. 2009. The Public Sector in Japan: Past Development and Future Prospects. Cheltenham: Edward Elgar.

Fehr, Ernst, and Klaus Schmidt (1999). "A Theory of Fairness, Competition, and Cooperation." *Quarterly Journal of Economics* 114(3):817-868.

Gelinas, Patrice, Michel Magnan, and Sylvie St-Onge. 2009. "Increased Compensation Costs as an Externality of Mandatory Executive Compensation Disclosure: Evidence from Canada." *International Journal of Business Environment* 2(3):376-390.

Gibrat, Robert. 1931. *Les Inégalités Economiques*. Paris, France: Recueil Sirey.

Giertz, Seth H. 2007. "The Elasticity of Taxable Income over the 1980s and 1990s." *National Tax Journal* 60:743-768.

Giroux, Gary. 1989. "Political Interests and Governmental Accounting Disclosure." *Journal of Accounting and Public Policy* 8(3):199-217.

Gomez, Rafael, and Steven Wald. 2010. "When Public-sector Salaries Become Public Knowledge: Academic Salaries and Ontario's Public Sector Salary Disclosure Act." *Canadian Public Administration* 53(1):107-126.

Greenstone, Michael, Paul Oyer, and Annette Vissing-Jorgensen. 2006. "Mandated Disclosure, Stock Returns, and the 1964 Securities Acts Amendments." *The Quarterly Journal of Economics* 121(2):399-460.

Hasegawa, Makoto, Jeffrey Hoopes, Ryo Ishida, and Joel Slemrod. 2013. "The Effect of Public Disclosure on Reported Taxable Income: Evidence from Individuals And Corporations in Japan." *National Tax Journal* 66(3):571-608.

Jiyukokuminsha. 2009. *Gendaiyogo no Kiso Chishiki*. Tokyo: Jiyukokuminsha.

Juang, Wei, Xinxin Liao, Bingxuan Lin, and Yunguo Liu (2016). "The Effect of Compensation Disclosure on Compensation Benchmarking Evidence From China." *Journal of Accounting, Auditing & Finance*.

Karadja, Mounir, Johanna Mollerstrom, and David Seim. 2017. "Richer (and Holier) than Thou? The Effect of Relative Income Improvements on Demand for Redistribution." *Review of*

Economics & Statistics 99(2):201-212.

Kuzimeko, Ilyana, Michael I. Norton, Emmanuel Saez, and Stefanie Stantcheva. 2015. "How Elastic are Preferences for Redistribution? Evidence from Randomized Survey Experiments." *American Economic Review* 105(4):1478-1508.

Lindbeck, Assar, and Jörgen W. Weibull. 1987. "Balanced-budget Redistribution as the Outcome of Political Competition." *Public Choice* 52(3):273-297.

Mas, Alexandre. 2017. "Does Transparency Lead to Pay Compression? *Journal of Political Economy* 125(5):1683-1721.

Moriguchi, Chiaki, and Emmanuel Saez. 2008. "The Evolution of Income Concentration in Japan, 1886–2005: Evidence from Income Tax Statistics." *Review of Economics and Statistics* 90:713-34.

Phillips, Kelly. 2016. "Portland Plans To Tax Companies Who Pay CEOs 100 Times More Than Workers." *Forbes*, December 19.

Piketty, Thomas. 2013. *Capital in the Twenty First Century*. New York: Belknap Press.

Piketty, Thomas, and Emmanuel Saez. 2003. "Income Inequality in the United States, 1913–1998." *Quarterly Journal of Economics* 118(1):1-39.

Ryan, Christine, Trevor Stanley, and Morton Nelson. 2002. "Accountability Disclosures by Queensland Local Government Councils: 1997–1999." *Financial Accountability & Management* 18(3):261-289.

Yamamura, Eiji, and Haruo Kondoh. 2013. "Government Transparency and Expenditure in the Rent-seeking Industry: The Case of Japan for 1998–2004." *Contemporary Economic Policy* 31:635-647.

Yazaki, Yukihiro. 2017. "Newspapers and Political Accountability: Evidence from Japan." *Public Choice* 172(3-4):311-331.

Yoshimi, Hiroshi. 1997. "Chiho-jichitai ni okeru husei to kansa: Hokkaido-Kansaiin-Jimukyoku no jirei o chushin ni" [Irregularities and Auditing in Japanese Local Governments: A Case Study of the Auditing Office of Hokkaido Prefectural Government in 1995-97]. *Keizaigaku Kenkyu (Hokkaido University)* [*Economic Studies*] 47(1):96-112.

Figure 1. Rate of municipalities enacting information disclosure ordinances
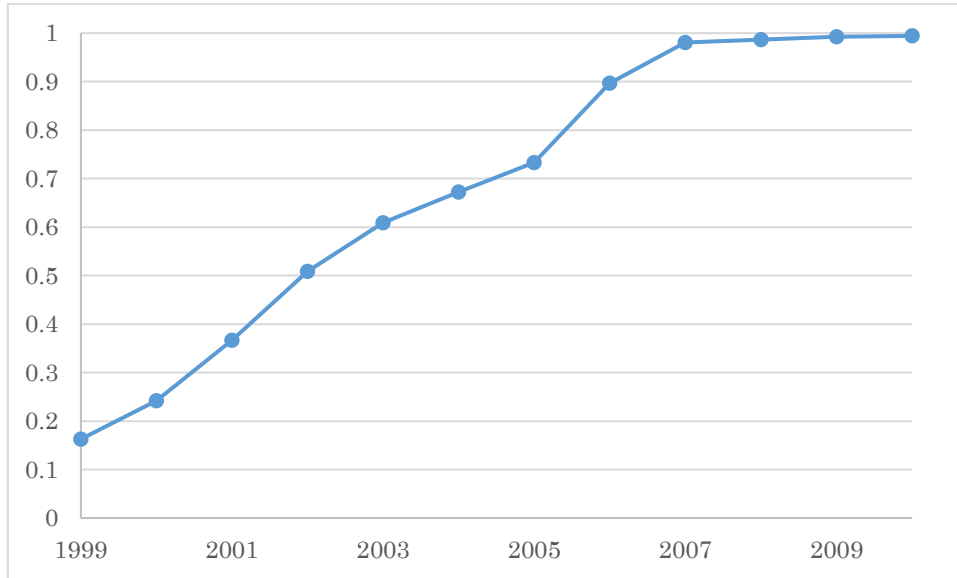
Figure 2(a). Average monthly income of chief executives in local government
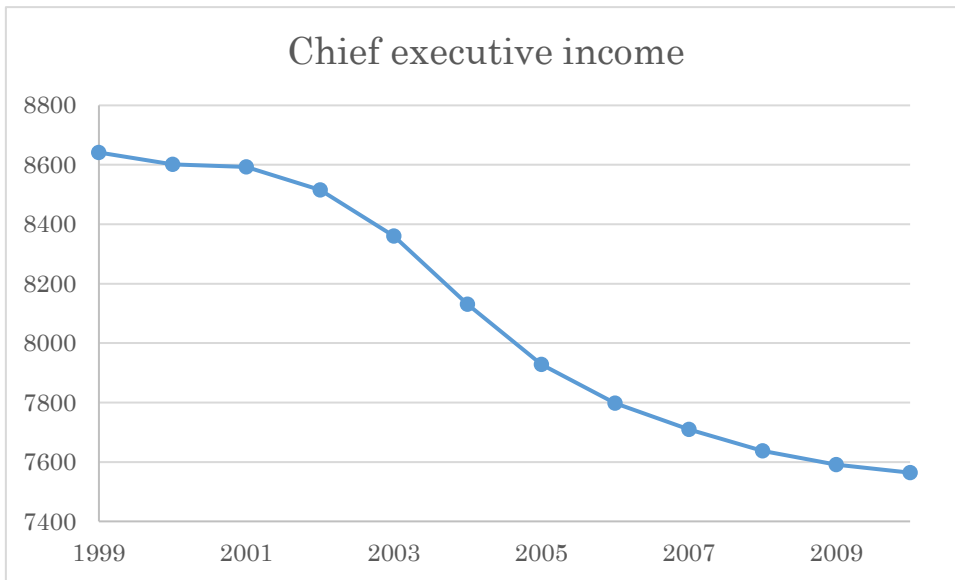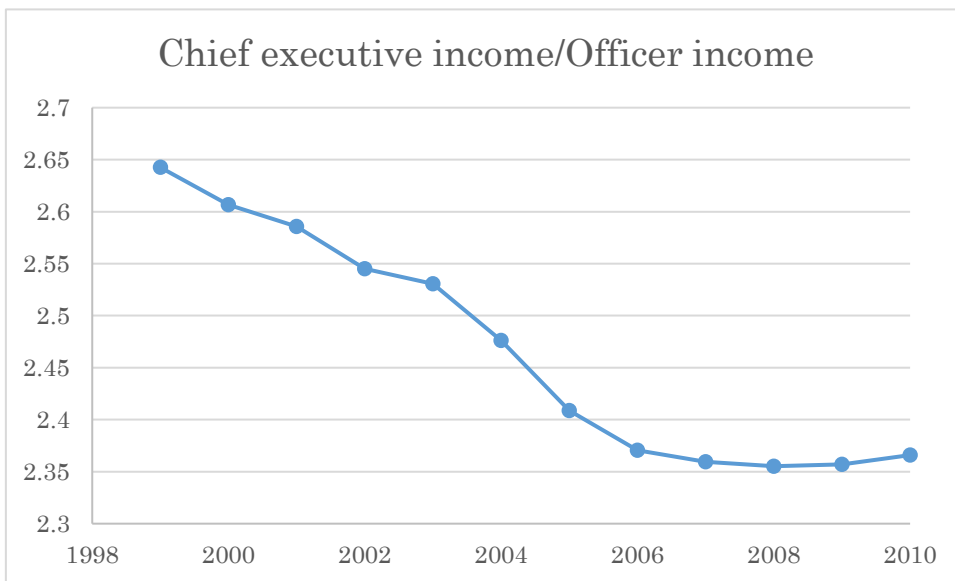

Figure 2(b). Relative income of chief executives in local government

Note: Chief executives' average income/average income of other government officers

Figure 3(a). Distribution of average income of chief executives in local government
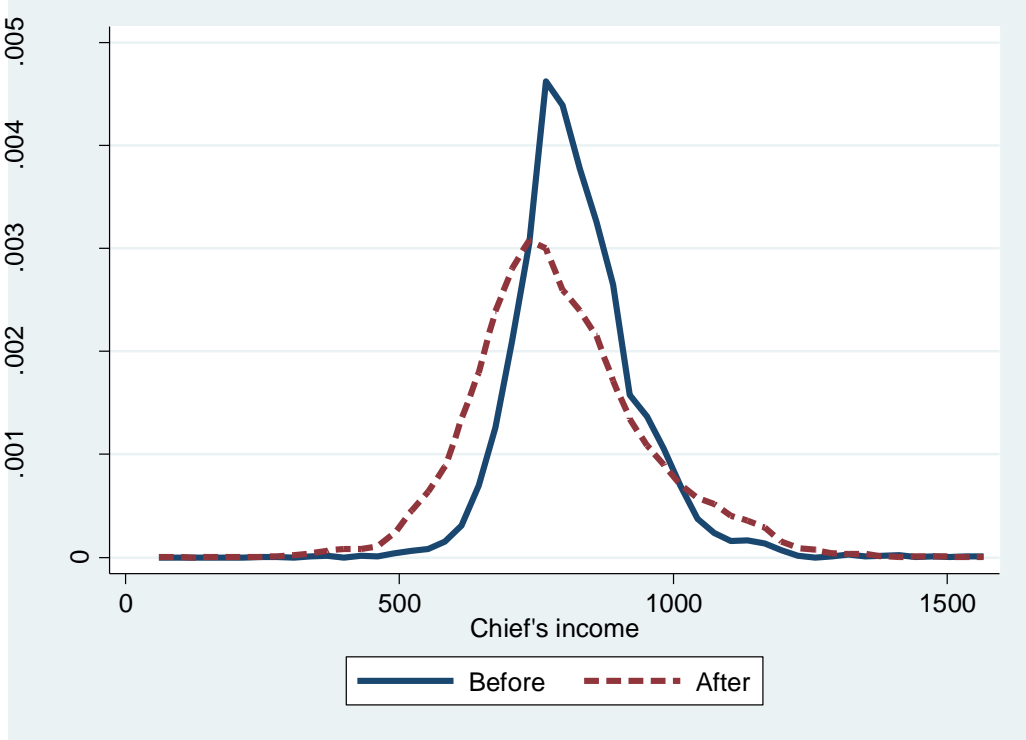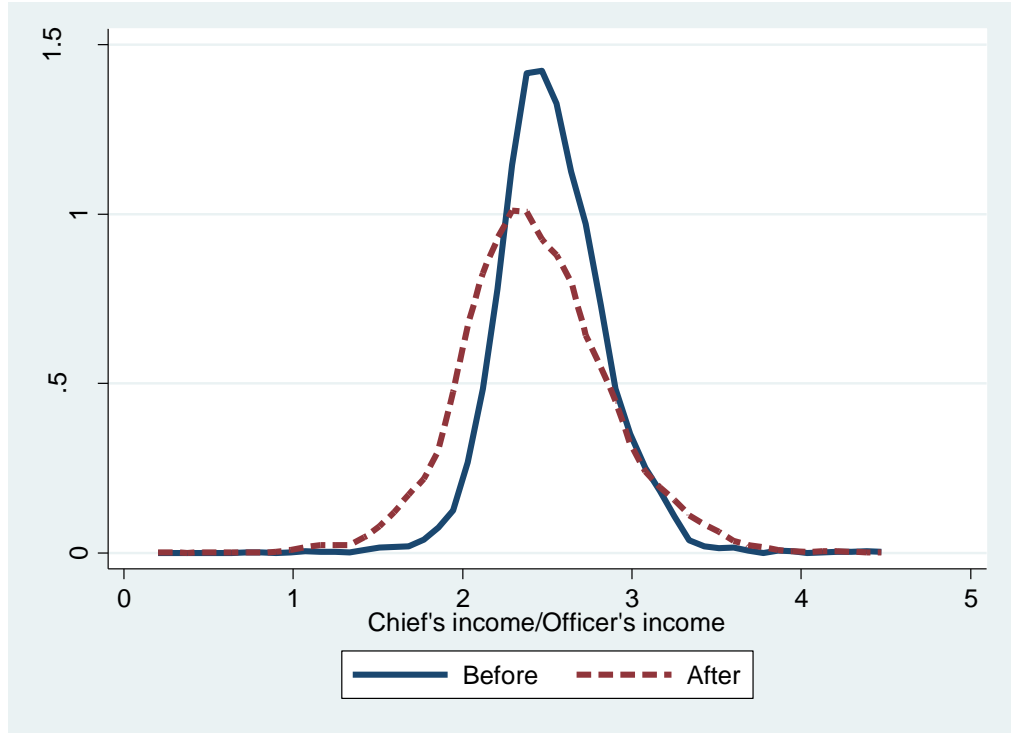

Figure 3(b). Distribution of relative income of chief executives in local government

Note: Chief executives' average income/average income level of other government officers

Table 1. Definition and basic statistics of variables used

	Mean	Standard Deviation
Chief executive's income (thousand yen)	798	147
Rate of chief executive's income (Chief's income/Officer's income)	2.45	0.41
Open dummy	0.72	0.44
Years from Open	5.00	5.11
Local Revenue (value in the previous year: million yen)	296	816
Population (thousand)	73.3	18.3

Note: values are based on the full sample, 1999–2010.

Table 2. Regression results of fixed effects model

Dependent variable is Ln(Chief's Income)

	(1)	(2)	(3)	(4)
	1999–2010	1999–2010	1999–2004	1999–2004
Open dummy	−0.008***	−0.006**	−0.004**	−0.003
	(−3.02)	(−2.36)	(−2.00)	(−1.56)
Years from Open	−0.005***	−0.006***	−0.003***	−0.004***
	(−4.89)	(−5.26)	(−3.27)	(−4.37)
Ln(Local Revenue)	0.15***	0.12***	0.006	−0.003
	(15.2)	(11.5)	(0.71)	(-0.32)
Ln(Population)		0.14***		0.19***
		(7.32)		(6.47)
Year dummy	Yes	Yes	Yes	Yes
Within R-square	0.35	0.38	0.10	0.11
Observations	18,865	17,096	7,229	7,224

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Values in parentheses are t-values based on robust standard errors.

Table 3. Regression results of fixed effects model

Dependent variable is Rate of Chief Executive's Income

	(1)	(2)	(3)	(4)
	1999–2010	1999–2010	1999–2004	1999–2004
Open dummy	−0.029***	−0.023***	−0.014**	−0.012**
	(−4.64)	(−3.80)	(−2.50)	(−2.13)
Years from Open	−0.012***	−0.014***	−0.006*	−0.008***
	(−4.61)	(−5.21)	(−1.94)	(−2.71)
Ln(Local Revenue)	0.398***	0.338***	0.028	0.010
	(16.8)	(14.3)	(1.47)	(0.54)
Ln(Population)		0.289***		0.409***
		(7.24)		(5.34)
Year dummy	Yes	Yes	Yes	Yes
Within R-square	0.31	0.35	0.18	0.18
Observations	18,856	17,088	7,227	7,222

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Values in parentheses are t-values based on robust standard errors.

Table 4. Regression results of fixed effects model, 1999–2004

Examining the effects of top 25% income group in 1999 (the initial year)

	(1) Ln(Chief's Income)	(2) Ln(Chief's Income)	(3) Rate of Chief executive's Income	(4) Rate of Chief's executive's Income
Open dummy	−0.002 (−0.73)	−0.002 (−0.59)	−0.009 (−1.42)	−0.008 (−1.31)
Open dummy *top 25% dummy	−0.008 (−1.48)	−0.008 (−1.62)	−0.01 (0.72)	−0.01 (0.82)
Years from Open	−0.004*** (−3.45)	−0.005*** (−3.71)	−0.009** (−2.57)	−0.009*** (−2.76)
Years from Open *top 25% dummy	0.002 (1.54)	0.001 (0.45)	0.007 (1.45)	0.003 (0.71)
Ln(Local Revenue) Ln(Population) Within R-square	Yes No 0.10	Yes Yes 0.11	Yes No 0.18	Yes Yes 0.19
Observations	7,324	7,229	7,227	7,222

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Values in parentheses are t-values based on robust standard errors. Dependent variable are Ln(Chief's Income) in columns (1)–(2) and Rate of Chief Executive's Income in columns (3)–(4). Sample covers the period 1999–2004. Year dummies are included in all columns.