Do Public Account Financial Statements Matter? Evidence from Japanese Municipalities

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Abstract

Many governments are introducing business-like accounting systems. This paper examines the fiscal effects of compiling business-like financial statements on the expenditures of local governments, exploiting a quasi-experimental environment in Japan. Using the variation in deadlines for compiling new statements given by the central government, we found that business-like financial statements might trigger the local government to reconstruct their expenditures. While the reconstruction differs among localities, the social assistance expenses that are not nationally standardized and subsidized decreased in common.

JEL Classification: H72 H77

Keywords: fiscal rule, financial statement, expenditure, difference-in-differences with instrumental variables

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1 Introduction

Fiscal policy is closely connected to politics, and fiscal deficits tend to be excessively influenced by politics (e.g., Alesina et al. 1998, Persson and Tabellini 2000). Various kinds of mechanisms, rules, and institutional designs have been examined (e.g., Alesina and Passalacqua 2016). Two factors that can discipline governments are transparency and accountability, and one approach to improving fiscal monitoring is the introduction of a private sector-style accounting system. This paper investigates the fiscal effects of introducing a business accounting system by exploiting a quasi-experimental situation among Japanese subnational governments.

Even though public expenditures and fiscal deficits are determined by politics, there are mechanisms to maintain fiscal discipline. Financial markets can discipline governments by raising the interest rates of public debt if sustainability is questioned (e.g., Ardagna 2009). The reelection motive may function if politicians want support from fiscally conservative voters or if a fiscal surplus works as a signal (Konishi 2006). Other promising tools include an independent fiscal agency or council (Debrun et al. 2009) and fiscal rules, such as a balanced budget rule. These raise the political costs of inefficient or excess expenditures. The literature supports the effectiveness of fiscal rules for federal- or state-level governments (e.g., Poterba 1994, Eichengreen and Bayoumi 1994, von Hagen and Harden 1995, Debrun et al. 2008), but the limitations of such rules, such as avoidance behaviors or creative accounting, have also been noted (e.g., Milesi-Ferretti 2004, von Hagen and Wolff 2006, Beetsma et al. 2009). The effects of fiscal rules on local governments have also been studied. Positive effects were found in the studies by Grembi et al. (2016) and Alpino et al. (2018) for Italian municipalities and Chatagny (2015) and in the study by Burret and Feld (2018a) for Swiss cantons, although avoidance behavior was also detected by Balduzzi and Grembi (2011) for Italian municipalities, by Burret and Feld (2018a) for Swiss cantons, and by Hirota and Yunoue (2018) for Japanese municipalities.

A precondition for fiscal rules to function well and increase efficiency is an appropriate

system for reporting on the governments' financial situation that provides transparent and comparable fiscal data. A reform of the public accounting system from a traditional cash-based to a business-like accrual-based system and links from different statements to a balance sheet can help prepare for this condition. Because cash-based accounting statements generally do not report assets and liabilities, while accrual accounting statements do, such reforms can provide more comprehensive and long-term information on the impacts of a policy.

Following this argument, approximately three-quarters (25 out of 34) of the central governments of Organisation for Economic Co-operation and Development (OECD) countries have adopted accrual accounting basis for annual financial reports, and approximately 30% (10 out of 34) have done so for budget preparation in 2016 (Moretti 2016). The financial statements of subnational governments are also becoming to accrual-based statements. The OECD survey shows that two-thirds (21 out of 32) of OECD countries use the accrual basis for accounts of subnational governments (Irwin and Moretti 2020). The Japanese central government, similar to other developed countries, has compiled balance sheets since 2000; however, they are complementary to cash-based fiscal reports (Moretti and Youngberry 2018). It also asks the local governments to compile balance sheets and other related financial statements.

Despite the widespread use of a business-like accounting system, empirical evidence for its effects is not sufficient. The accounting literature is mainly based on case studies or questionnaires to examine the effects of accrual accounting.[1] Some have questioned the usefulness of business-like accounting per se: Carlin (2005) for the State of Victoria, Australia, Paulsson (2006) for the Swedish central government, and Kobayashi et al. (2016) for Japanese local governments[2]. As Christensen (2007) summarizes, one of the challenges to measuring the effects of accrual accounting is that the accounting reforms are often interconnected with organizational and managerial changes.

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[1]As Kobayashi et al. (2016) argues, many studies have focused on the implementation of accrual accounting in public sectors.

[2]The effects can be heterogeneous among public workers depending on their positions or experiences (e.g., Kober et al. 2010, Yamamoto 2008).

To examine the effects of the accounting system, it is not sufficient to compare the local governments with different accounting systems because those local governments that want to improve their fiscal balance or restructure their budget may well choose business-like accounting. To cope with this endogeneity, Christofzik (2019) uses the variation in the timing with which regulation is enacted on accounting among German states, and Dorn et al. (2019) use the variation in the timing of the introduction of accrual-based statements among counties in Bavaria, Germany. Both studies depend on the assumption that the decision on the public accounting system is determined by politics.

The purpose of this paper is to examine the fiscal effect of compiling new business-like financial statements in addition to traditional cash-based settlement documents using good design and data. Our data are from Japanese local governments, which provide us with a quasi-experimental environment to measure the causal effects of this new accounting system[3]. As mentioned above, the Japanese central government asks the local governments to compile new financial statements. For the first time in 2007, when most local governments compiled only cash-based settlement documents, the central government set deadlines for using new financial statements. The deadline depended only on the type of local government and the population size; thus, it was not controllable by or exogenous to the local governments. Our identification strategy exploits the variation in the timing of the deadline. After the new statements were introduced, the traditional settlement documents continued to be published officially as the main documents in our setting. This enabled us to use comparable data before and after the introduction of the new statements. We applied difference-in-differences with instrumental variables (DID-IV), focusing on primary expenditures and each category of expenditure. We focused on the expenditure side because of the inflexibility in the local tax system and the integrated nature of the central-local relationship in Japan.

Our findings are summarized as follows. First, the new financial statements do not

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[3]Kondo and Ogawa (2019) use the same data source but do not use the quasi-experimental environment.

affect the primary expenditures of the ordinary accounts, but affect the compositions of expenditures for some years. The municipalities may reallocate expenditures across categories in different ways. Second, the new statements negatively affect social assistance expenses. This result is robust across specifications and reflects an indirect effect of the new statements, in that these expenses represent a current expenditure, and the new statements do not provide new information on them. Third, the new statements increase the transfers to public enterprises several years later, which may reflect injections of cash to reconstruct the enterprises. We also find that the effects of the coverage of the new financial statements may not differ substantially partly because the accounts for extragovernmental organizations were already using accrual-based systems.

Our results appear to be inconsistent with those by Christofzik (2019) and Dorn et al. (2019), who find only a limited impact on the overall financial balance or expenditures. However, their interpretations may apply for the Japanese case. Christofzik (2019) argues that accrual accounting requires estimations and thus is not necessarily transparent. Dorn et al. (2019) raise the possibility that cash-based accounting already provides sufficient information and that political decision makers lack sufficient skill to use the information from the new financial statements. These may be the reasons for the negative impact on the social assistance expenses in this paper, since the new financial statements do not provide additional information on the current expenditures.

The rest of this paper is organized as follows: Section 2 introduces the institutional background of the study. The econometric specifications are described in Section 3, and Section 4 presents the data and sample statistics. The estimation results for the primary expenditures are reported and discussed in Section 5. Section 6 concludes the paper.

2 Institutional background

2.1 Local administration system in Japan

In this section, we briefly explain the local government system and the rules for the public accounting system in Japan. Japan's administration system has three layers:

central, prefectural, and municipal governments, from top to bottom (see, for example, Bessho 2016 for more detail). There were 1,822 municipalities at the end of FY2007, and these are divided into 783 cities (*shi*), 815 towns (*machi*), 201 villages (*mura*) and 23 Tokyo metropolitan special wards (*ku*).

Cities, in principle, have larger populations than towns, which, in turn, have larger populations than villages. Although some large cities have more authorities transferred from the central government than towns and villages, these three types of municipalities mostly share the same authorities, and the major difference is their population size. Tokyo metropolitan special wards differ from other municipalities concerning their authorities on taxes and expenditures as well as the relations to their upper government, the Tokyo Metropolitan government. For this reason, we exclude these wards from our sample below.

Municipalities play an important role in providing many public services and have major fiscal responsibilities. The local governments' shares of final consumption expenditure and gross fixed capital formation, based on national account statistics, are larger than those of the central government. For example, the local's expenditure to gross domestic expenditure ratio was approximately 11.2 percent in FY2007, while the central government's ratio was approximately 4 percent.

On the other hand, the tax revenues of the central government are larger than those of the local governments. This means that the expenditures of local governments exceed their tax revenues, namely, there is a large vertical fiscal gap. This gap is filled by intergovernmental transfers.

2.2 Before the reform in 2007

The public accounting systems of Japanese local governments are traditionally cash-based systems, as are those for the central government (Kobayashi et al. 2016, Moretti and Youngberry 2018). Some local governments, however, have published tentative versions of their statements of financial position on an accrual basis since the 1980s, such as Hirakata city in 1982 and Kumamoto prefecture in 1987 (Matsumoto 2019).

After the bubble burst in the early 1990s, both the central and local governments began to accumulate public debt more rapidly than before. Some critics, including Shintaro Ishihara, who was at that time the Tokyo metropolitan governor, insisted that an accrual-based, double-entry public accounting system was necessary for a more efficient public sector. In 1999, the Strategic Economic Council, an advisory body to the Prime Minister, proposed the introduction of accrual-based factors to public accounting. In response to this proposal, the Ministry of Internal Affairs and Communications (MIC, hereafter) established a group to research an accrual-based accounting system, and this group published reports in 2000 and 2001. These reports presented a method for compiling a statement of financial position (balance sheet, or *Taishaku Taisho Hyo*) and a statement of financial performance (*Gyousei cost Keisan Sho*). This method is now called the former MIC method. At this point, local governments were not required to compile these fiscal statements, which were supplementary to the settlement documents.

The Koizumi administration defined the Important Policies for Administrative Reform in 2005. Following these policies, the MIC published another report in 2006 on the public accounting system summarizing the purpose of compiling the new financial statements as follows: (1) asset and debt management, (2) cost management, (3) easily understandable fiscal disclosure, (4) improved policy evaluation, budget preparation and settlement analysis, and (5) improved fiscal discussion in local councils. Asset and debt management are listed first because the depreciation of local governments' public facilities was a critical issue. Japanese local governments manage public facilities, including water supplies and sewerage systems, roads, bridges, and school buildings, most of which are not available for sale. Thus, as these facilities depreciate, local governments must expend funds to maintain or renew them. Under the traditional cash-based accounting system, however, many local governments might not properly recognize the maintenance and renewal costs [4]. Since these costs were projected to increase soon, MIC, as a part of the central government, decided to encourage proper asset evaluation by introducing

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[4]Local governments were assumed to maintain a list of all facilities, but the lists in some local governments did not include information on the value of facilities. Furthermore, the lists were compiled by categories, such as roads or buildings, but did not necessarily comprehend all categories.

an accrual-based accounting system. For this purpose, the new MIC report in 2006 proposed two methods for compiling financial statements. One is "the standard method" that is full accrual-based and closer to corporate accounting and requires double-entry bookkeeping and a registry of fixed assets. The other is called "the revised MIC method" and relies on cash accounting and single-entry bookkeeping. The latter was a minor modification of the former MIC method and was positioned as an intermediate version to the standard method (Kobayashi et al. 2016).

2.3 Reform in 2007

The MIC, a ministry of the central government, issued an official notice on October 27, 2007, asking the local governments to prepare all four financial statements: a statement of financial position (Balance sheet, or *Taishaku Taisho Hyo*), a statement of financial performance (*Gyousei cost Keisan Sho*), a statement of changes in net assets/equity (*Jyunshisan Hendo Keisan Sho*), and a cash flow statement (*Shikin Shushi Keisan Sho*). The method adopted for this task should be the revised MIC method or the standard method. Note that this does not represent the replacement of cash-based fiscal statements by accrual-based ones: MIC asked the local governments to prepare the new financial statements in addition to the existing settlement documents as a supplementary. The statements are for annual financial reports, not for budget preparation.

A point to note here is that two different deadlines were set depending on the category and the population size of the localities. The deadline for prefectures and cities whose population size is larger than 30,000 was FY2010, while that for cities with populations below 30,000 and for towns and villages was FY2012. More specifically, prefectures and cities whose population size is larger than 30,000 were required to compile new financial statements for the FY2008 settlement by the end of FY2010, while others were required to compile them for the FY2010 settlement by the end of FY2012. As explained above, cities generally have a larger population size than towns and villages. Thus, this notice means that small municipalities faced less time pressure than large municipalities.

The notice that MIC issued officially in 2007 did not specify any penalties for local

governments even if they failed to compile all four of the new financial statements by the deadline. One may question whether this notice enforced the compiling of financial statements by local governments. We believe that this notice was effective because of the intertwined nature of the central-local relationship in Japan (Bessho 2016). As presented below, many local governments met the deadline. Thus, this paper focuses on the variation in the deadlines based on the population size to identify the fiscal effects of the introduction of the new financial statements.

2.4   Accounts of local governments

This subsection explains the accounts of Japanese local governments and the coverage of the financial statements. A local government collects taxes and fees, receives intergovernmental transfers, and expends its funds to provide public services and transfers by itself. It can also invest in corporations called local public corporations (*Chiho-Kousha*). When the corporation is jointly funded by the local government and private organizations, it is called a "third-sector" enterprise. Additionally, many local governments, especially municipalities, can jointly establish an extragovernmental organization with other local governments. These are partial administrative associations (*Ichibu-Jimu-Kumiai*) and wide-area local public bodies (*Kouiki-Rengo*). The former provides a single public service, and the latter provides multiple public services. The public services provided by these organizations include fire defense services, waste disposal services, and public long-term care insurance.

To manage the flow of funds, an account of a local government is usually divided into a general account and special accounts. A national law stipulates the local government to separate accounts and set up special accounts for some types of public services. At the same time, the local government has the authority to separate accounts for other administrative works and projects at will. As a result, local governments have different types of special accounts because they provide different public services depending on their environmental or social conditions.

This rule makes it difficult to compare the fiscal situations between local governments.

Thus, the central government created the concept of an ordinary account whose coverage is common to all local governments. This ordinary account includes a general account and some special accounts. We use the statistics for the ordinary accounts in this paper. Note that the ordinary account is basically for statistical information and not for fiscal management by local governments.

When asking the local governments to prepare the new financial statements in 2007, MIC asked them to prepare statements to cover three different sets of accounts to comprehensively disclose the local fiscal situation and to make the accounts comparable.

The first area is covered by "ordinary financial statements", or *Futu Zaimu Shorui*, which are hereafter referred to as "FS". FS cover the ordinary accounts explained above. The second area is covered by "consolidated financial statements", or *Zentai Zaimu Shorui*, which are referred to as "CFS" hereafter. CFS cover both ordinary accounts and selected public enterprise accounts. The third area is covered by "government-wide financial statements " or *Renketsu Zaimu Shorui*, which are hereafter referred to as "GFS". GFS cover ordinary accounts and special accounts for other extragovernmental organizations, such as public corporations and third-sector enterprises.

In summary, local governments were expected to prepare four financial statements (statement of financial position, statement of financial performance, statement of changes in net assets/equity, and cash flow statement) for each area of coverage by the deadline. In other words, they were required to prepare 12 financial statements.

3 Empirical strategy

3.1 Estimation equation

In this section, we describe our empirical strategy of applying difference-in-differences with the instrumental variable approach (DID-IV) to identify the fiscal effects of introducing the new financial statements including balance sheets. Let Y_{ipt} denote an outcome variable, such as the per capita expenditure, of municipality i in prefecture p,

in fiscal year t. Our regression equation is:

$$Y_{ipt} = \beta T_{ip,t-s} + \delta X_{ipt} + \mu_i + \sum_i \gamma_i \text{Trend}_{ip} + \tau_{pt} + \epsilon_{ipt} \quad (1)$$

where T_{ipt} is a treatment indicator for creating financial statements of municipality i in prefecture p for fiscal year t, X_{ipt} is a vector of the time-varying covariates, μ_i is the time-invariant and unobservable fixed effects of the municipality i, Trend_{ip} is municipality-specific time trends, τ_{pt} is prefecture-year specific fixed effects, and ϵ_{ipt} is an error term. β is a parameter of interest, and δ and γs are also parameters to be estimated.

We take lags for T_{ipt}, the variable for compiling the new financial statements because the statements are created often using the information on the settlement documents. For example, the settlement report of fiscal year t is usually prepared four or five months after fiscal year t ends so that the financial statements are prepared in the middle of fiscal year $t + 1$ at the earliest. Thus, the financial statements for the fiscal year t are generally not reflected in the process of developing the budget for the fiscal year t or $t + 1$, though it is still possible that the information on the settlement and financial statements is used informally and internally in the government. Moreover, municipal governments may not be able to fully exploit the new type of financial statements at first and will only gradually learn how to make the best use of them. The lag lengths are set to two through six. When the lag length is two, for example, the information on the financial statements for the fiscal year 2008 is matched to the expenditure data of the fiscal year 2010.

We include prefecture-year specific fixed effects, τ_{pt}, for the following two reasons. The first is to control regional shocks such as business cycles as well as changes in national policies. In 2007, the central government promoted the Second Decentralization Reform on a nationwide basis, including the implementation of the Local Fiscal Consolidation Law. The effects of this reform is controlled by prefecture-year specific fixed effects. Note that the threshold of 30,000 residents is not used in the reform. The second reason is to control the effect of prefectures, which are upper-level local governments. Since the

prefectures and municipalities usually maintain close relationships, a prefectural policy often affects the policies of those municipalities under the prefecture. Furthermore, municipalities under the same prefecture often behave similarly because they routinely consult with their upper government.

3.2 Identification strategy

Our main explanatory variable is $T_{ip,t-s}$, representing whether the municipality i compiles the new, business-like financial statements. This variable may well be endogenous because such municipalities that want to improve their fiscal balance or reconstruct their budget are inclined to create the new financial statements to explain the financial situation to the constituency. Another possibility is that if municipalities want to enhance their accountability and transparency, they may compile the new financial statements. Thus, ordinary least squares (OLS) and fixed-effect estimators of equation (1) are typically inconsistent. To address this issue we adopt the difference-in-differences with the instrumental variable approach (DID-IV).

Our instrumental variable, Z_{it}, is a binary variable representing whether a municipality i was expected to compile the new financial statements for the fiscal year t. This is equal to one after the deadline set by the central government. Namely, Z_{it} takes one for cities with more than 30,000 residents in the fiscal year 2008 and afterward and for other municipalities in the fiscal year 2010 and afterward. This means that our identification strategy uses the variation in deadlines for compiling the accrual-based financial statements.

The DID-IV can identify the local average treatment effect of treatment switchers, those whose treatment status is affected by the instrument. Namely, we estimate the average response of the large cities that compiled the new financial statements but would not have compiled them without the MIC notice. To estimate this effect, we make the following four assumptions (Hudson et al. 2017).

First, the instrument affects the outcome only through the treatment. The second assumption is the monotonicity of the effect of the instrument on the treatment. Third,

the instrument affects only the contemporaneous treatment variable. Fourth is a parallel trend assumption for both outcome and treatment variables.

The first assumption is a standard exogenous restriction in instrumental variable estimation. We can assume Z_{it} to be exogenous because the deadlines were set by the central government. Although it is often the case that Japanese local governments exert their influence on the central government's decision making, we find no evidence or anecdotes that suggest the local government's involvement in the decision regarding the different deadlines. In particular, the threshold of 30 thousand residents seems arbitrary compared to other policies of the central government. For example, when the MIC compares the financial situations of municipalities by population size in the annual White Papers on Local Public Finance, the thresholds are 100 thousand for cities and 10 thousand for towns and villages[5].

The second assumption is on the relevancy of the instruments. Our instrument, Z_{it}, can be assumed relevant because the notice from the MIC did encourage the municipalities to compile the new financial statements despite no penalty for deviation. Figure 1 shows the ratios of municipalities that compiled the new financial statements by population size for the fiscal year 2008 settlement. The solid line is for cities and the dashed line is for towns and villages. The vertical dotted line represents the threshold of 30 thousand residents. Thus, $Z_{i,2008} = 1$ for the solid line to the right of the dotted line. This figure shows that the compilation ratios of cities are higher on the right than on the left of the dotted line. The ratio immediately to the left of the threshold is high and almost the same as those on the right-hand side. This may be because those cities whose population size is slightly less than 30 thousand had a population of more than 30 thousand when the MIC notice was issued. Turning to towns and villages, we cannot observe similar patterns: the ratios stay at the same level around the threshold for cities. These suggest that the deadline set by the central government worked well in 2008; thus,

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[5]One exception is the threshold for the population size needed to change to a "city" from a "town" in 2000s. The central government lowered the threshold to 30 thousand from the original 50 thousand to promote municipal mergers. The municipal-specific trends are included in the estimation equation to control the effect of this provision.

our instrument is not weak. The relevancy of our instruments is also confirmed in the first stage regression below.

Figure 1: Compilation ratio of financial statements for FY2008
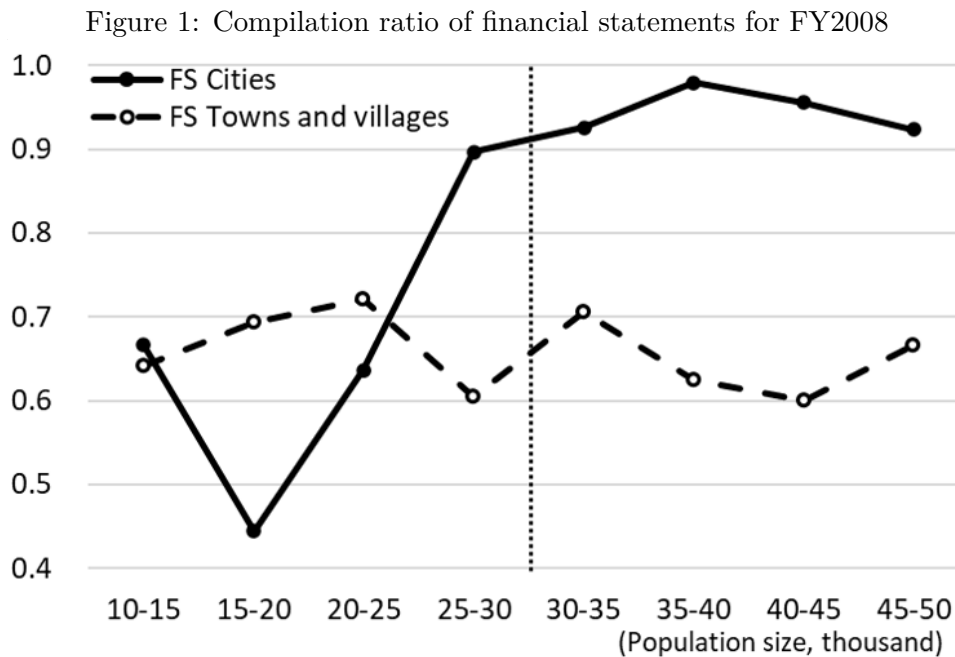
Notes: The solid line is for cities, and the dashed line is for towns and villages. The vertical dotted line shows the threshold of a population size of 30,000.

The third assumption, the contemporaneous effects on the treatment variable, is considered to be satisfied. Figure 2 shows the ratios of municipalities that compiled the new financial statements for each fiscal year. The left-hand side panel is for the cities with equal or more than 30 thousand residents in 2007 ($Z_{i,2008} = 1$), and the right-hand side panel is for small cities, towns and villages with $Z_{i,2008} = 0$. The ratio increased in 2008 more for the large cities than for the small municipalities. Approximately 94 percent of the large cities compiled the four new financial statements for the fiscal year 2008, while 64 percent of the small municipalities did. This jump of the ratios between fiscal years 2007 and 2008 may suggest the assumption holds in our setting.

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Figure 2: Compilation ratio of financial statements
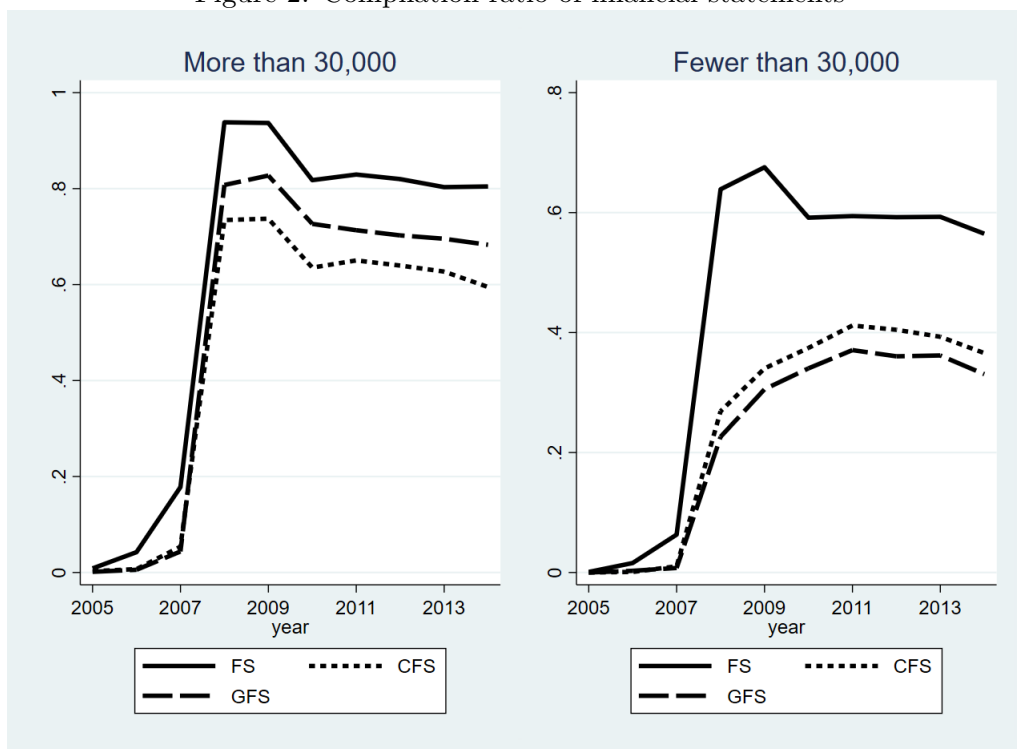
Notes: The left-hand side figure is for cities with equal or more than 30,000 residents in 2007. The right-hand side figure is for cities with fewer than 30,000 residents in 2007, towns, and villages.

The fourth parallel trend assumption is a standard one in DID estimation. We check this assumption by a placebo test in the following section. One may argue that a regression discontinuity design or a difference-in-discontinuity design (Grembi et al. 2016) is suitable for our setting since the deadlines vary according to the population threshold. This is not necessarily the case because the deadlines also depend on the category of municipality. Limiting the sample to cities (excluding towns and villages), our instrument does not work well partly because the number of cities whose population sizes are less than 30 thousand is small. Thus, we do not report the results here[6].

Recent studies call attention to the DID estimation that exploits variation across groups on when they receive treatment (Baker 2019, Sun and Abraham 2020, Goodman-

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[6]The results are available upon request.

Bacon 2021). The coefficient from the two-way fixed-effects estimator, as in our regression (1), is shown to be "a weighted average of all possible two-group/two-period DD estimators in the data" (Goodman-Bacon 2021). The weights depend on the size of each subgroup and the variance of treatment. Considering this point, we limit the sample period before the deadline for towns and villages as a robustness check.

4 Data and summary statistics

4.1 Data

The panel data used in this paper are constructed mainly using the Survey on Local Public Finance Situations (*Chiho Zaisei Jyokyo Chousa*) and the Survey on the Situation of Compiling Financial Statements by Local Governments (*Chiho Kokyo Dantai no Zaimu Shorui Sakusei Jyokyo*). The latter is available since the fiscal year 2005. Both surveys were conducted by the Ministry of Internal Affairs and Communications. The former includes information on the settlements of ordinary accounts of municipalities, and the latter includes information on the introduction of financial statements by municipalities. Other data sources are the Survey on the Basic Register of Residents (*Jyumin Kihon Daichou Chosa*) and the Population Census (*Kokusei Chousa*).

4.1.1 Sample selection

We use the data on the new financial statements for fiscal years from 2005 to 2014. Just before this period was the *Great Heisei Municipal Mergers*.

Many municipalities chose to merge, especially between fiscal years 2004 and 2005, in response to the special municipal merger law, which is a national law that incentivized municipal mergers by stipulating favorable fiscal treatments for merged municipalities. As a result, the number of municipalities rapidly decreased from 3,232 in 1998 to 1,821 in 2006 by the deadline of the special law. The merged municipalities responded to the incentives and increased their public investments and borrowing just before the mergers

(Hirota and Yunoue 2017)[7]. Taking this into account, we exclude municipalities that experienced a merger during our sample period.

Using the threshold of 30 thousand residents, we mainly focus on the municipalities with a population size between 10 and 50 thousand. The resultant data are from 639 municipalities for 10 years.

4.1.2 Fiscal statements

As explained above, municipalities are now expected to prepare 12 financial statements: four types of statements (statement of financial position, statement of financial performance, statement of changes in net assets/equity, and cash flow statement) for three types of coverage, that is, ordinary account (FS), consolidated account (CFS) and government-wide account (GFS). Our basic specification set $T_{i,t}$ equal to one if a municipality i compiles all four statements for FS for fiscal year t. If any one of four statements for FS is still incomplete, $T_{i,t}$ is zero. Many municipalities started to compile the new financial statements and continued compiling them every year afterward, but some municipalities compiled the new financial statements for one or two years but then did not continue compiling and disclosing them. Some other municipalities compiled the new financial statements in one year, but did not for the next year, and then compiled them again for the third year.

We also consider two other variables for other coverage of accounts. One variable takes 1 if a municipality compiles all four statements for CFS, and the other takes 1 if it compiles all statements for GFS. Financial statements with different coverage could have different impacts on municipal governments' behavior.

4.1.3 Instrumental variable

As explained above, our instrumental variable, Z_{it}, is an indicator variable representing whether a municipality i was expected to compile the new financial statements for the

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[7]The merged municipalities became free riders in the sense that they place the repayment of the borrowing to their partners.

fiscal year t. Namely, Z_{it} takes one for cities with more than 30,000 residents in the fiscal year 2008 and afterward, and for other municipalities in the fiscal year 2010 and afterward. The MIC notice did not mention the reference year of population size; thus, we made Z_{it} based on the population size in 2007.

4.1.4 Outcome variables

Our main outcome variable is the primary expenditures of ordinary accounts, which is defined by total expenditures minus repayment of debts. The expenditure variables are constructed from the cash-based settlements and converted to a logarithm of per capita basis.

As explained above, municipalities compile new financial statements in addition to the traditional cash-based settlement documents. Therefore, the data after the introduction of the new statements are consistent with those from before. The reason for focusing on expenditures is that the revenue side is not very flexible in the Japanese local public finance system (Bessho 2016). The municipalities do have the authority to raise tax rates higher than the rate stipulated in the Local Tax Act and to individually levy a new tax, but the revenues from these policies are very small. When municipalities expand their expenditures on, for example, public works, they usually rely on intergovernmental transfers from the central government. Thus, here, we mainly focus on the expenditure side.

We also examined the effects on the expenditures by type: personnel, supplies and services, maintenance, social assistance, grants, public construction works, loans for other accounts, transfers to public enterprises, and other expenses. The personnel expenses indicate salaries for public officers, councilors, and temporary officers. The supplies and services expenses are the current expenditures other than personnel expenses, maintenance and repair expenses, social assistance expenses, and grant expenses. Thus, the supplies and services expenses include business travel expenses for public officers, equipment purchase costs, and expenses for specially commissioned public projects. The maintenance expenses are for managing or repairing public facilities and roads. Social

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assistance expenses denote the expenses for public assistance programs and child welfare services. The grant expenses are the grants and subsidies to other governments (prefectures, municipalities, extragovernmental organizations) and residents. The construction works expenses are for building public infrastructures such as public parks, roads, and schools. Not only the expenses for new construction but also those for large-scale repairs and the purchase of the large-scale equipment are included in this category. The loans for other accounts are loans for and investments in other accounts within and external to the municipal governments. The transfers to public enterprises includes those for water supply and sewerage systems, hospitals, transportation (buses, streetcars and subways), health insurances and long-term care insurance. In this paper, we compute the other expenses as the primary expenditure minus the sum of the aforementioned expenses and additions to reserve funds.

4.1.5 Control variables

Our estimation equation (1) controls the municipality fixed effects, prefecture-year-specific fixed effects and municipality-specific time trends. The prefecture-year fixed effects control time-varying regional shocks such as business cycles. Taking the close vertical relationship among Japanese local governments into account, prefectural governments may influence the decision making of municipalities under that prefecture through guidance, notices, and other types of communication. The prefecture-year fixed effects can control them.

We also include time-varying control variables, $X_{i,t}$. The variables in $X_{i,t}$ are divided into two categories. The first is the standard demographic variables: the quartic function of population size, the share and its squared term of the population size under the age of 15 years, the share and the squared share of the population size over the age of 65 years, the share and the squared share of the primary industrial workers in total workers, and the share and the squared share of secondary industrial workers.

The second category is the years passed since the municipality's last merger. If the last merger occurred before 1998, then this variable was set to zero. As noted above,

during the period of the *Great Heisei Municipal Mergers*, the merged municipalities were given preferential fiscal treatments for 15 years after the merger during the period of 1999 to 2005 (Hirota and Yunoue 2017). These treatments could affect expenditures during our sample period.

Note that we excluded fiscal covariates from our basic specification due to the intertwined nature of the Japanese local public fiscal system. As mentioned above, when municipalities want to increase expenditures to implement their policies, they often rely on intergovernmental transfers, including central government subsidies (usually matching grants) and local allocation tax grants (general-purpose grants). Therefore, the decision on expenditures is often simultaneous with the receipt of subsidy revenues from the central government. Furthermore, municipal bonds are, in principle, linked to public works or public capital formation. Because the tax revenues are not very flexible, the fiscal deficit and debt accumulation are also simultaneously determined.

4.2 Summary statistics

Table 1 shows the summary statistics for municipalities with a population size between 10 and 50 thousand in 2007. The expenditure variables are converted to a per capita basis. However, by limiting the sample, we still can see a large disparity in terms of financial structures. For example, the sample average of the primary expenditure is 440 thousand JPY (approximately 4,400 USD), while the minimum value is 184 thousand JPY (Kanmaki town, Nara prefecture in 2008). The maximum value is exceptional, which was recorded in 2012 in Onagawa town in Miyagi prefecture, just after the Great East Japan Earthquake in 2011. The 95th percentile is 807 thousand JPY. The demographic structures also differ among municipalities. The ratio of youth aged 15 years or younger ranges from 5.5 to 20 percent, and that of the elderly aged 65 years or older ranges from 13 to 51 percent.

Table 1: Summary statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Treatment					
FS	6,390	0.499	0.500	0	1
CFS	6,390	0.324	0.468	0	1
GFS	6,390	0.319	0.466	0	1
Outcome (thousand yen, per capita)					
Expenditure	6,390	440.276	354.006	183.965	10078.660
Personnel	6,390	82.666	26.173	33.339	342.853
Supplies and Services	6,390	64.600	53.244	19.648	1794.629
Social assistance	6,390	53.510	23.440	10.878	343.509
Grant expenses	6,390	60.579	44.109	6.797	1274.563
Construction works	6,390	77.870	111.104	1.306	4360.972
Loans for other accounts	6,390	6.395	16.247	0	1025.862
Transfers to pub. enterp.	6,390	51.892	31.945	15.184	2071.268
Other expenses	6,390	126.675	100.048	37.250	3477.009
Covariates					
Pop. (thousand)	6,390	24.765	11.134	6.859	55.808
Pop.15 (%)	6,390	12.572	2.209	5.565	20.720
Pop.65 (%)	6,390	27.978	5.872	12.619	51.300
Primary industry (%)	6,390	11.510	8.439	0.5	43.8
Secondary industry (%)	6,390	28.626	8.014	8.9	52.9
Merged trends (years)	6,390	2.309	3.744	0	17

Figure 3: Average expenditures
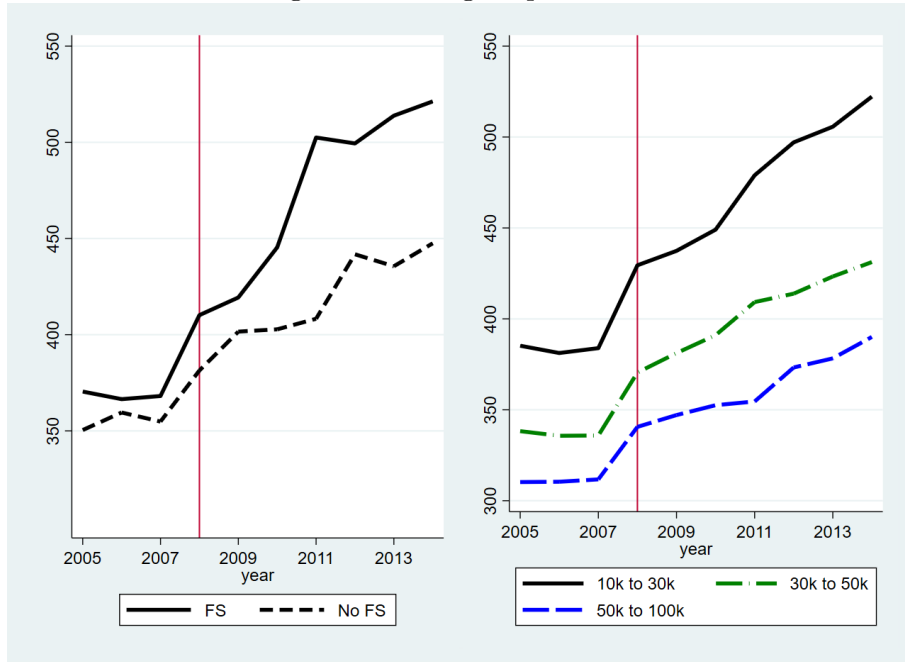
(Notes) "FS" means that municipalities succeed in compiling the financial statements covering the ordinary accounts at least once between FY2007 and FY2014. "No FS" means that municipalities have never succeeded in compiling the financial statements during the period.

Figure 3 shows the average expenditures per capita by fiscal year. The left panel shows the expenditures of the municipalities that compiled the new financial statements of ordinary accounts at least once between for the fiscal years 2007 and 2014 ("FS", solid line) and those that did not ("No FS", dashed line). The vertical line at FY2007 presents the MIC's notice to compile the new financial statements. We observe different trends between these two groups after the notice issuance. The average expenditure of the "FS" group was approximately 370 thousand JPY in the pretreatment period and then increased to approximately 521 thousand JPY in 2014, the last year of our sample period. In contrast, the "No FS" group, which never compiled the new financial statements until the fiscal year 2014, repeatedly increased and decreased their expenditures after the notice from approximately 350 thousand JPY in 2007 to approximately 447 thousand

JPY in 2014.

The right panel of Figure 3 shows the average expenditures of municipalities categorized by population size. The expenditures of the municipalities with fewer than 30,000 residents (solid line) rapidly increased after the issuance of the notice in 2007. In contrast, those of the municipalities with more than 30,000 residents (dashed lines) increased more modestly.

These figures may suggest the new financial statements are correlated with fiscal adjustment, but the covariates are not fully controlled in the figures. Now, we turn to the results of regression analysis in the next section.

5 Empirical results

5.1 Standard DID

Before presenting the DID-IV estimation results, we show the estimation results by the standard DID in Table 2. Panel A present the results where the indicator of the new financial statements for ordinary accounts (FS) is used as the main explanatory variable, Panel B presents the results for consolidated accounts (CFS), and Panel C present the results for government-wide accounts (GFS). Column (1) shows the results with time-varying covariates and year fixed effects, column (2) shows the results when prefecture-year specific fixed effects are added, and column (3) shows the results when municipality-specific trends are added. We take the two-year lag in the sense that the explanatory variable is for the new financial statements for the fiscal year $t - 2$ when the dependent variable is for the fiscal year t. The reason why we select two years as a baseline case is that the financial statements for the fiscal year $t - 2$ are published in fiscal year $t - 1$, when the budget of fiscal year t is being prepared.

The dependent variable is the log of primary expenditures in the ordinary account per capita. The coefficients of the new financial statements variable are estimated to be negative and statistically significant in all cases. The point estimate suggests that compiling new financial statements for the ordinary account is associated with a decrease

Table 2: DID estimation results

	Expenditure		
	(1)	(2)	(3)
Panel A			
FS (2 yrs)	-0.020*	-0.039***	-0.014**
	[0.012]	[0.010]	[0.006]
Panel B			
CFS (2 yrs)	-0.022**	-0.031***	-0.018***
	[0.010]	[0.009]	[0.007]
Panel C			
GFS (2 yrs)	-0.021**	-0.023**	-0.017**
	[0.010]	[0.009]	[0.007]
Covariates	Yes	Yes	Yes
Pref*Year FE	No	Yes	Yes
Municipal trend	No	No	Yes
Observations	6,390	6,390	6,390

Notes: Robust standard errors in brackets. $***$ p$<$0.01, $**$ p$<$0.05, $*$ p$<$0.1.

in the expenditure per capita by 2 to 4 percent. The estimates become smaller with municipality-specific time trends.

The estimation results of simple DID may imply the effects of the new financial statements, but it is possible that the municipalities that are actively engaged in fiscal adjustment or that plan to do so tend to compile the new financial statements. To circumvent this issue, we turn to the results of DID-IV estimation.

5.2 DID-IV: Primary expenditures

Table 3 shows the baseline results of the DID-IV estimation. Panel A shows the results about the new financial statements for ordinary accounts (FS), Panel B shows the results about those for consolidated accounts (CFS), Panel C shows the results for government-wide accounts (GFS). The covariates, prefecture-year specific fixed effects, and municipality-specific trends are controlled in all specifications. The columns correspond to the lag years from two to six years. The first column is for the results with a two-year lag, which is the same for Table 2.

To check the relevancy of our instruments, we compute the Gragg-Donald F-statistics

on weak instruments, shown in the bottom row of each panel. They are sufficiently large, suggesting that our instrument is relevant.

Comparing the results of the standard DID estimation in Table 2, the results in the first column of Table 3 show that the coefficients of the new financial statements variable are estimated to be negative but not statistically significant and smaller in absolute value than the standard DID estimation. This may support our concern that such municipalities that are willing to engage in fiscal adjustments are inclined to compile the new financial statements.

Table 3: DID-IV estimation results

| | Expenditure | | | | |
| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Panel A					
FS	-0.024	0.074	0.063	0.028	-0.110
	[0.046]	[0.046]	[0.055]	[0.049]	[0.100]
Weak IV	46.05	39.01	41.47	36.11	13.17
Panel B					
CFS	-0.017	0.050	0.043	0.020	-0.058
	[0.032]	[0.031]	[0.037]	[0.035]	[0.051]
Weak IV	65.31	61.71	63.64	58.59	55.11
Panel C					
GFS	-0.018	0.056	0.049	0.022	-0.056
	[0.034]	[0.035]	[0.043]	[0.040]	[0.049]
Weak IV	66.15	61.07	60.69	56.65	69.77
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Observations	6,390	5,751	5,112	4,473	3,834

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

The results presented in the second to fourth columns of Table 3 show that the estimated coefficients of the new financial statements are not statistically significantly different from zero regardless of the coverage of the financial statements. This implies that the effects of the new financial statements detected in Table 2 could be downward

biased, possibly because those municipalities that want to improve their fiscal balance tend to create the new financial statements, as discussed above. These results are in line with Christofzik (2019) and Dorn et al. (2019), who find no evidence of an impact on the overall financial balance of the municipal core budget. The new statements, however, may have different effects based on expenditure categories. We examine this possibility in the following.

5.3 DID-IV: Categories of expenditures

The estimation results above suggest that the new financial statements do not impact the total municipal expenditures in ordinary accounts. This subsection examines whether the effects differ among the expenditure categories listed in the Data section. We convert all of these variables to a logarithm of the per capita basis and apply the same DID-IV estimation model as above.

Table 4 shows the estimation results for the new financial statements for ordinary accounts (FS). Here, we note three points. First, all the estimated coefficients are negative in the case of two-year lag and statistically significant for some categories. This seems inconsistent with the results in Table 3, which suggest statistically nonsignificant effects on primary expenditures, the sum of expenditure components. It may possible, however, that the municipalities reallocated expenditures in their own way, keeping the total expenditures unchanged. Second, in the case of the two-year lag, the estimated coefficients are statistically significantly negative for social assistance expenses, maintenance expenses, and transfers to public enterprises. This may imply that the municipalities generally reduced these expenditure components just after the compilation of the new financial statements. Third, the estimated coefficients are statistically significantly different from zero in all cases for social assistance expenses. This is not the case for maintenance expenses and transfers to public enterprises; indeed, these two components even increased two or three years later. The coefficients for grant expenses are also negative in the case of a three-year lag and turn positive in the case of five-year lag.

Table 4: Fiscal outcomes for financial statements

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Personnel					
FS	-0.015	-0.022	-0.017	0.023	0.009
	[0.018]	[0.017]	[0.015]	[0.015]	[0.028]
Supplies and Services					
FS	-0.013	0.077	0.097	0.075	-0.193
	[0.056]	[0.056]	[0.066]	[0.070]	[0.132]
Social assistance					
FS	-0.179***	-0.087***	-0.050*	-0.059**	-0.079*
	[0.035]	[0.032]	[0.030]	[0.029]	[0.047]
Grant expenses					
FS	-0.029	-0.127*	-0.010	0.176*	0.092
	[0.071]	[0.077]	[0.092]	[0.099]	[0.179]
Maintenance					
FS	-0.221**	-0.063	0.154	0.239**	-0.348*
	[0.103]	[0.100]	[0.096]	[0.105]	[0.187]
Construction works					
FS	-0.111	0.156	0.141	0.072	-0.134
	[0.164]	[0.165]	[0.163]	[0.166]	[0.299]
Loans for other accounts					
FS	-0.332	-0.390	-0.444	0.118	0.692
	[0.332]	[0.343]	[0.307]	[0.309]	[0.523]
Transfers to pub. enterp.					
FS	-0.084*	0.005	0.086**	0.026	-0.201**
	[0.044]	[0.039]	[0.041]	[0.041]	[0.086]
Other expenses					
FS	-0.047	0.012	-0.046	-0.053	0.070
	[0.038]	[0.039]	[0.045]	[0.044]	[0.082]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	46.05	39.01	41.47	36.11	13.17
Observations	6,390	5,751	5,112	4,473	3,834

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

When the explanatory variable for consolidated accounts (CFS) or government-wide accounts (GFS) is used, the same pattern is observed as in Table A.1 and A.2.

5.4 Robustness checks

The results above may depend on the sample selection or outlier. We evaluate this possibility by changing the sample selection. The estimation results are robust across the coverage (FS, CFS, or GFS), and we report the results for the ordinary accounts (FS) here. The results for primary expenditures, social assistance expenses, grant expenses, maintenance expenses and transfers to public enterprises are reported to save space.

5.4.1 Another window of population

We use the sample municipalities with a population size between 10 and 50 thousand, considering the threshold of 30 thousand residents. Table 5 shows the results based on the municipalities with a population size between 5 and 100 thousand in 2010. The estimated coefficients are statistically significant in more cases than in our baseline case, perhaps due to the increase in the sample size. The results in our baseline case mostly hold quantitatively; in particular, social assistance expenses decrease statistically significantly in most cases.

When we use a narrower window of population and limit the sample with a population between 20 and 40 thousand, the estimated coefficients become smaller in absolute value, and the statistical significance disappears in some cases. This could be because of the smaller sample size compared with our baseline case, with the number of the sample municipalities of 289. The point estimates are, however, similar to our baseline case, and the negative effects on the social assistance expenses are detected statistically significantly for the two- and three-year lag cases.

5.4.2 Excluding disaster-affected regions

Although the summary statistics in Table 1 suggest a large disparity in terms of financial structure across municipalities, the municipalities that were severely hit by the Great

Table 5: DID-IV estimation results with the municipalities between 50 and 100 thousand residents

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	0.024	0.078***	0.058	0.019	-0.087
	[0.031]	[0.029]	[0.041]	[0.037]	[0.060]
Social assistance					
FS	-0.163***	-0.093***	-0.081***	-0.099***	-0.048
	[0.026]	[0.024]	[0.030]	[0.027]	[0.037]
Grant expenses					
FS	0.010	-0.094*	0.107	0.202**	-0.196
	[0.056]	[0.056]	[0.076]	[0.079]	[0.119]
Maintenance					
FS	-0.154**	0.002	0.246***	0.268***	-0.338***
	[0.078]	[0.072]	[0.085]	[0.088]	[0.129]
Transfers to pub. enterp.					
FS	-0.057**	0.015	0.064**	-0.015	-0.132***
	[0.029]	[0.026]	[0.031]	[0.031]	[0.048]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	87.12	82.38	65.37	55.71	31.45
Observations	11,150	10,035	8,920	7,805	6,690

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

East Japan Earthquake in 2011 (fiscal year 2010) are exceptional in our sample. For example, the primary expenditures per capita of Onagawa town in Miyagi prefecture was 575 thousand JPY in 2009 and became 10,078 thousand JPY in 2011, which is the maximum value in our baseline sample. The municipalities severely hit by the earthquake are concentrated in Iwate, Miyagi, and Fukushima prefectures. Although the prefecture-year specific fixed effects are included in our baseline case, it is still possible that the effects of the earthquake are not perfectly controlled. According to MIC's survey of compilation situations of financial statements, many municipalities in these three prefectures responded that they could not undertake compiling new financial statements due to a shortage of public officers caused by the damage of the big earthquake.

Table 6: DID-IV estimation results excluding disaster-affected regions

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.014	0.034	0.043	0.023	-0.056
	[0.032]	[0.034]	[0.036]	[0.037]	[0.069]
Social assistance					
FS	-0.190***	-0.072***	0.006	-0.021	-0.153***
	[0.030]	[0.020]	[0.015]	[0.017]	[0.042]
Grant expenses					
FS	-0.048	-0.125	0.025	0.159*	0.018
	[0.067]	[0.078]	[0.090]	[0.095]	[0.174]
Maintenance					
FS	-0.190*	-0.013	0.148	0.217**	-0.309*
	[0.102]	[0.104]	[0.096]	[0.105]	[0.180]
Transfers to pub. enterp.					
FS	-0.061	0.026	0.093***	0.017	-0.181**
	[0.040]	[0.037]	[0.035]	[0.035]	[0.075]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	46.20	36.99	40.82	35.03	13.50
Observations	5,820	5,238	4,656	4,074	3,492

Notes: Robust standard errors in brackets. $*** $ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table 6 shows the results with the municipalities within the prefectures of Iwate, Miyagi, and Fukushima are excluded from the sample. The results do not differ dramatically from our baseline case, but some estimated coefficients become statistically nonsignificant.

We also estimate the equations excluding the observations after 2010. This estimation is "two-group/two-period DD estimation" (Goodman-Bacon 2021) because the small municipalities are early for the deadline. The results are presented in Table 7. Because the data are a short panel, the lag lengths are taken only for two and three years. The estimated signs are mostly the same as and consistent with our baseline case.

Table 7: DID-IV estimation results before 2011

| | Lag years | |
	2 yrs	3 yrs
Expenditure		
FS	0.048	0.072
	[0.063]	[0.062]
Social assistance		
FS	-0.297***	0.047
	[0.075]	[0.033]
Grant expenses		
FS	-0.295**	-0.350***
	[0.148]	[0.131]
Maintenance		
FS	-0.077	0.222
	[0.183]	[0.144]
Transfers to pub. enterp.		
FS	-0.031	0.031
	[0.068]	[0.057]
Covariates	Yes	Yes
Pref*Year	Yes	Yes
Municipal trend	Yes	Yes
Weak IV	13.74	16.80
Observations	3,834	3,195

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

5.4.3 Excluding the early compilation group and disaster-affected regions

Our baseline case uses all municipalities that satisfy the condition of population size and nonmerger. Some municipalities among our sample compiled the new financial statements before the threshold, which could affect the estimates. We re-estimate the equation excluding such municipalities that had compiled the new financial statements before 2008 as well as those in disaster-hit prefectures.

The results are shown in Table 8. The estimates are similar to those in Table 6: the estimates are statistically significantly negative for social assistance expenses in most cases.

Table 8: Excluding the early compilation group and disaster-affected regions

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.024	0.021	0.033	0.027	-0.027
	[0.032]	[0.033]	[0.035]	[0.035]	[0.063]
Social assistance					
FS	-0.173***	-0.065***	0.003	-0.015	-0.126***
	[0.027]	[0.020]	[0.015]	[0.016]	[0.031]
Grant expenses					
FS	-0.003	-0.097	0.029	0.138	0.007
	[0.064]	[0.070]	[0.083]	[0.088]	[0.159]
Maintenance					
FS	-0.234**	-0.105	0.087	0.168*	-0.251
	[0.101]	[0.103]	[0.092]	[0.097]	[0.160]
Transfers to pub. enterp.					
FS	-0.065	0.013	0.078**	0.018	-0.154***
	[0.040]	[0.037]	[0.033]	[0.032]	[0.059]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	47.59	36.56	41.53	40.07	22.05
Observations	5,370	4,833	4,296	3,759	3,222

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

5.4.4 Excluding droppers and disaster-affected regions

As mentioned above, some municipalities that had compiled the new financial statements for one year did not continue compiling and disclosing them. Such municipalities might have thought that the new financial statements were useless and were not be willing to utilize them from the beginning, or they might have thought that compiling them once every few years was enough for some reason. In any case, these municipalities could affect the estimation results. Considering this possibility, we exclude these municipalities ("droppers") from the sample.

The results, presented in Table 9, are not very different from those in Table 6. Again, the coefficients are statistically significantly negative in the case of social assistance expenses in some cases.

5.5 Placebo checks

A placebo check here uses the data of the pretreatment period (before 2007) and a fake deadline. In case of the fake deadline of the fiscal year 2006, we estimate the equation 1 setting $T_{i,p,2006}$ equals one if the municipality i compiled the new financial statements for ordinary accounts ("FS") at least once after 2008. The fake instrument is equal to one for cities with more than 30,000 residents in the fiscal year 2006 and afterward. Because of *Great Heisei Municipal Mergers* in the early 2000s, we cannot use long panel data for this placebo check. The data for $T_{i,p,t}$ are for three years between 2005 and 2007, and the sample municipalities are same as our baseline case.

The estimation results are shown in Table 10. For all cases except one, the coefficients of the new financial statements are not statistically significant, and no clear pattern is found for the point estimates. Furthermore, the statistics to test the weak instruments are small, suggesting a weak instrument. This is consistent with our assumption of the parallel trend for the treatment variable, $T_{i,p,t}$.

We also set a fake deadline for the fiscal year 2007, and the estimated coefficients of $T_{i,p,t}$ are also statistically insignificant.

Table 9: Excluding droppers and disaster-affected regions

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.010	0.016	0.058	0.041	-0.086
	[0.033]	[0.033]	[0.036]	[0.038]	[0.081]
Social assistance					
FS	-0.176***	-0.076***	0.018	0.002	-0.158***
	[0.027]	[0.019]	[0.015]	[0.016]	[0.050]
Grant expenses					
FS	-0.023	-0.109*	-0.007	0.189**	0.055
	[0.057]	[0.059]	[0.062]	[0.074]	[0.137]
Maintenance					
FS	-0.146	0.060	-0.020	0.020	-0.047
	[0.113]	[0.109]	[0.106]	[0.107]	[0.214]
Transfers to pub. enterp.					
FS	-0.024	-0.003	0.067*	0.038	-0.139
	[0.046]	[0.041]	[0.039]	[0.040]	[0.091]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	44.53	38.99	42.34	33.97	8.556
Observations	3,500	3,150	2,800	2,450	2,100

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table 10: Placebo tests fake treatment 2006

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
Placebo FS	0.381	-0.818	-0.035	-0.931	1.678
	[0.439]	[0.659]	[0.792]	[1.070]	[1.677]
Social assistance					
Placebo FS	0.19	2.227*	-3.316	1.914	0.693
	[0.215]	[1.267]	[2.164]	[1.740]	[0.957]
Grant expenses					
Placebo FS	-1.238	1.341	1.247	-3.039	0.038
	[1.208]	[1.424]	[1.735]	[3.023]	[2.151]
Maintenance					
Placebo FS	-1.565	2.038	-3.052	-0.256	-0.323
	[1.572]	[2.169]	[2.769]	[2.369]	[2.129]
Transfers to pub. enterp.					
Placebo FS	-0.302	0.15	-0.737	0.041	0.412
	[0.567]	[0.572]	[0.888]	[0.847]	[0.936]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	1.928	1.481	1.089	0.706	0.798
Observations	1,917	1,917	1,917	1,917	1,917

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

5.6 Heterogeneity

The effects of the new financial statements may well vary across municipalities depending on observable or unobservable characteristics. We tried various kinds of observable characteristics, but faced the issue of a weak instrumental variable in many cases. Here, we report the results based on the financial capability indicator (FI). This indicator is computed by the MIC by dividing basic financial revenues by basic financial needs and taking the three-year average. The larger the FI is, the more financial capacity the municipality has and the richer it is[8]. We calculate the median of the FI in 2005 (before our sample period) in our sample municipalities to make a time-invariant indicator variable that takes one if a municipality's FI is larger than the median. Then, we add a cross term between the indicators of the financial statements and the FI as an explanatory variable[9].

Table 11 shows the results with the municipalities in disaster-hit prefectures are excluded from the sample. We focus on the primary expenditures, social assistance, and "other" expenses. A few coefficients of the cross term are statistically significant, suggesting heterogeneity in the effects. They are estimated to be negative for social assistance expenses under two- and three-year lags. This result may be due to a decrease in independent and unsubsidized projects, since wealthy municipalities provided independent projects, which have room for cuts. There seems to be no critical heterogeneity for the effects on total expenditures or expenditure items.

5.7 Discussion

Our estimation results shown above suggest the following. First, aggregating the effects on each expenditure category, the new financial statements do not affect the primary expenditures of the ordinary accounts but do affect the composition of expenditures in

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[8]If the FI of a municipality is equal or larger than one, the MIC considers the municipality to have a sufficient own revenues and does not distribute the general-purpose equalization transfers named the local allocation tax grants.

[9]We estimated the equations splitting the sample based on the FI but encountered a weak instrument problem. Thus, we do not report these results here.

Table 11: Heterogeneous effects: Financial Capability Indicator

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.028	0.008	-0.047	0.026	-0.040
	[0.095]	[0.131]	[0.151]	[0.091]	[0.070]
FS x high FI	0.027	0.055	0.171	0.037	0.025
	[0.105]	[0.166]	[0.202]	[0.108]	[0.043]
Social assistance					
FS	-0.080	0.231	0.236	-0.166**	-0.223***
	[0.078]	[0.181]	[0.176]	[0.073]	[0.062]
FS x high FI	-0.111	-0.440*	-0.417*	0.096	0.105***
	[0.092]	[0.229]	[0.230]	[0.089]	[0.038]
Grant expenses					
FS	0.031	-0.283	0.055	0.066	-0.058
	[0.152]	[0.290]	[0.274]	[0.178]	[0.156]
FS x high FI	-0.100	0.236	-0.049	0.030	0.019
	[0.171]	[0.355]	[0.364]	[0.208]	[0.095]
Maintenance					
FS	-0.043	0.235	-0.040	-0.127	-0.367
	[0.320]	[0.456]	[0.463]	[0.305]	[0.267]
FS x high FI	-0.197	-0.376	0.136	0.231	0.101
	[0.356]	[0.575]	[0.608]	[0.351]	[0.165]
Transfers to pub. enterp.					
FS	-0.233*	-0.085	0.138	-0.060	-0.134*
	[0.136]	[0.147]	[0.168]	[0.098]	[0.078]
FS x high FI	0.292**	0.149	-0.122	0.072	0.037
	[0.148]	[0.192]	[0.225]	[0.122]	[0.049]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	3.205	1.630	1.521	4.203	9.826
Observations	5,820	5,238	4,656	4,074	3,492

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

a few years. Second, the new statements negatively affect for social assistance expenses. This result is robust across specifications. Third, the new statements increase grant expenses, maintenance expenses and transfers to public enterprises several years later. Fourth, the effects of the coverage of the new financial statements may not differ substantially. In what follows we discuss these findings in detail. First, the effects on the primary expenditures of ordinary accounts cannot be detected on average. One of the aims of the new financial statements is to reduce public expenditures as well as deficits, although this is not explicitly stated in the official documents. Although our estimation results suggest that this aim was not necessarily achieved in ordinary accounts, our results might reflect fiscal reconstruction among expenditure items, as discussed below. If this is the case, the estimated effects are consistent with the intended aim in the sense that the new financial statements encourage local governments to engage in reconstruction of their budget structures.

The municipalities reallocate their expenditures among categories in different ways, as seen in the cases of the two- and three-year lag, where most estimated coefficients for expenditure categories are negative, but that for primary expenditure is not different from zero. These cases show the situation just after the compilation of the new financial statements, considering that the financial statements for fiscal year t are usually prepared in the middle of fiscal year $t + 1$ at the earliest. Taking into account the widespread incrementalism in the Japanese public sector and adjustment costs for this reconstruction, the social assistance, grant, and maintenance expenses and transfers to public enterprises may be the type of expenses that can be reduced instantly without short-run adjustment costs. The construction works expenses are often based on long-term plans, and the personnel expenses are mandatory in the short-run.

Second, the new financial statements decrease social assistance expenses, a component of current expenses, for several years. This decrease is not considered to be a direct effect of the improvement in transparency that the new financial statements are expected to provide because the traditional financial statements contain the same information as the new ones. The decrease in social assistance expenses may be due to

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the improvement of expenditure management triggered by the new fiscal statements. Although the redisributional policies are mostly designed by the central government in Japan, municipalities often have their own independent and unsubsidized projects for social assistance. The municipalities might cut down the expenses of such unsubsidized projects, especially when the projects do not directly target the poor. The heterogeneity of effects may support our hypothesis. Wealthy municipalities decreased social assistance expenses more, as in Table 11, because they had spent more on the independent projects that had room for cuts.

Third, the new statements increase the grant expenses, maintenance expenses and transfers to public enterprises several years later. These increases may be partly due to a rebound against the decrease just after the compilation of the new financial statements, as discussed above. In particular, public enterprises, which aim to promote the welfare of residents or industrial development, often depend financially on municipal governments. Since the new financial statements reveal their financial position, which was not necessarily clear under the traditional cash-based statements, municipal governments may want to reconstruct these organizations by injecting more funds into them[10].

Fourth, the effects of the new financial statements are not estimated as substantially depending on their coverage. This is not surprising in our setting. One reason is that when a municipality compiles the new statements for one coverage, approximately 60% compile the other two statements at the same time. Thus, it is not easy to estimate the different effects of coverage. Another related reason is that while the ordinary account is traditionally cash-based, extragovernmental organizations, such as public corporations and tertiary-sector enterprises, have had to compile accrual-based, business-like financial statements since before our sample period. Thus, the "new" or additional information may come mainly from the ordinary account, which is included in all coverage.

Christofzik (2019) and Dorn et al. (2019) examine the effects of the introduction of accrual-based accounts to find only a limited impact on the overall financial balance or

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[10]According to Hirota and Yunoue (2018), some municipalities that suffered from higher debt service expenses clearly increased their transfers from ordinary accounts to extragovernmental organizations after 2007.

expenditures. Although their results seem inconsistent with ours, their interpretations may apply for the Japanese case. First is the information and transparency provided by the new financial statements. Christofzik (2019) argues that accrual accounting requires estimations and thus is not necessarily more transparent than cash-based accounting. Dorn et al. (2019) raise the possibility that cash-based accounting already provides sufficient information. These arguments may be true for our setting, considering that our results imply negative impact on social assistance expenses, for which the new financial statements do not provide additional information. Furthermore, the capital expenses are not affected, although the new statements should contain more information for these than the cash-based ones. The lack of impact on capital expenses could be due to the lack of a fixed asset register. The second interpretation is the public management skill. Dorn et al. (2019) point out the possibility that the public managers and political decision makers cannot make use of the information of financial statements and lack management capabilities. This may be the case for Japan. Kobayashi et al. (2016) find that the majority of local governments in Japan did not use the information from the new financial statements in the budgeting process, asset management or debt management, although financial officials admit the usefulness of the information.

6 Concluding remarks

A reform of the public accounting system from a traditional cash-based to a business-like accrual-based system and links from different statements to a balance sheet can help improve transparency and accountability, providing more comprehensive and long-term information on the impacts of a policy. Following this argument, many central governments of OECD countries have adopted an accrual accounting basis for annual financial reports. The financial statements of subnational governments are also becoming to accrual-based statements. Despite the widespread use of business-like accounting systems, empirical evidence for their effects is not necessarily sufficient.

To fill this gap, this paper investigates the fiscal effects of the introduction of business-

like financial statements, exploiting a quasi-experimental environment of Japanese local governments. The Japanese central government asked the local governments to compile balance sheets and other related financial statements, setting two different deadlines depending on the type and population size of the local governments. These conditions were exogenous to the local government. Since the deadlines were not very strict, we applied DID-IV. Our data are comparable before and after the introduction of the new statements because the traditional cash-based statements are continuously published as the main settlement documents.

Our findings are summarized as follows. First, aggregating the effects on each expenditure category, the new financial statements do not affect the primary expenditures of the ordinary accounts but do affect the compositions of expenditures in a few years. The municipalities may reallocate expenditures across categories in different ways. Second, the new statements negatively affect the social assistance expenses. This result is robust across specifications. These are indirect effects of the new statements, in that this item is a current expenditure, and the new statements do not provide new information on them. Third, the new statements increase grant expenses, maintenance expenses and transfers to public enterprises several years later. These increases may partly represent a rebound against the reduction just after the introduction of the new financial statements, and the transfers to public enterprises may reflect injections of cash to reconstruct the enterprises. We also find that the effects of the coverage of the new financial statements may not differ substantially partly because the accounts for extragovernmental organizations have already been using accrual-based systems.

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A Consolidated and government-wide financial statements

Table A.1: Fiscal outcomes for consolidated financial statements

	Lag years				
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Personnel					
CFS	-0.010	-0.015	-0.012	0.016	0.005
	[0.012]	[0.011]	[0.010]	[0.010]	[0.014]
Supplies and Services					
CFS	-0.009	0.053	0.067	0.053	-0.102
	[0.039]	[0.038]	[0.045]	[0.049]	[0.066]
Social assistance					
CFS	-0.125***	-0.060***	-0.034*	-0.042**	-0.042*
	[0.024]	[0.021]	[0.020]	[0.020]	[0.024]
Grant expenses					
CFS	-0.020	-0.087*	-0.007	0.126*	0.049
	[0.049]	[0.053]	[0.063]	[0.071]	[0.095]
Maintenance					
CFS	-0.154**	-0.043	0.106	0.170**	-0.184*
	[0.072]	[0.068]	[0.066]	[0.073]	[0.094]
Construction works					
CFS	-0.077	0.106	0.097	0.051	-0.071
	[0.114]	[0.112]	[0.112]	[0.119]	[0.158]
Loans for other accounts					
CFS	-0.247	-0.293	-0.324	0.093	0.427
	[0.248]	[0.258]	[0.226]	[0.244]	[0.309]
Transfers to pub. enterp.					
CFS	-0.059*	0.004	0.059**	0.018	-0.106***
	[0.030]	[0.027]	[0.027]	[0.029]	[0.040]
Other expenses					
CFS	-0.033	0.008	-0.032	-0.038	0.037
	[0.026]	[0.027]	[0.031]	[0.031]	[0.043]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	65.31	61.71	63.64	58.59	55.11
Observations	6,390	5,751	5,112	4,473	3,834

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table A.2: Fiscal outcomes for government-wide financial statements

	Lag years				
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Personnel					
GFS	-0.011	-0.017	-0.014	0.018	0.004
	[0.013]	[0.013]	[0.012]	[0.012]	[0.014]
Supplies and Services					
GFS	-0.010	0.059	0.076	0.060	-0.098
	[0.042]	[0.042]	[0.051]	[0.056]	[0.062]
Social assistance					
GFS	-0.135***	-0.066***	-0.039*	-0.047**	-0.040*
	[0.026]	[0.024]	[0.023]	[0.023]	[0.022]
Grant expenses					
GFS	-0.022	-0.097*	-0.008	0.141*	0.046
	[0.054]	[0.059]	[0.072]	[0.080]	[0.090]
Maintenance					
GFS	-0.167**	-0.048	0.120	0.191**	-0.175**
	[0.079]	[0.076]	[0.075]	[0.083]	[0.089]
Construction works					
GFS	-0.084	0.118	0.110	0.058	-0.068
	[0.124]	[0.124]	[0.128]	[0.134]	[0.150]
Loans for other accounts					
GFS	-0.27	-0.32	-0.373	0.107	0.399
	[0.271]	[0.282]	[0.258]	[0.282]	[0.289]
Transfers to pub. enterp.					
GFS	-0.064*	0.004	0.068**	0.021	-0.101***
	[0.033]	[0.030]	[0.031]	[0.033]	[0.038]
Other expenses					
GFS	-0.035	0.009	-0.036	-0.043	0.036
	[0.028]	[0.030]	[0.035]	[0.035]	[0.040]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	66.15	61.07	60.69	56.65	69.77
Observations	6,390	5,751	5,112	4,473	3,834

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

B   Robustness checks

Table B.1: DID-IV estimation results with the municipalities between 50 and 100 thousand residents

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	0.024	0.078***	0.058	0.019	-0.087
	[0.031]	[0.029]	[0.041]	[0.037]	[0.060]
Personnel					
FS	-0.003	-0.023**	-0.024*	0.005	0.007
	[0.012]	[0.011]	[0.012]	[0.012]	[0.018]
Supplies and Services					
FS	0.032	0.083**	0.063	0.010	-0.078
	[0.036]	[0.036]	[0.052]	[0.049]	[0.076]
Social assistance					
FS	-0.163***	-0.093***	-0.081***	-0.099***	-0.048
	[0.026]	[0.024]	[0.030]	[0.027]	[0.037]
Grant expenses					
FS	0.010	-0.094*	0.107	0.202**	-0.196
	[0.056]	[0.056]	[0.076]	[0.079]	[0.119]
Maintenance					
FS	-0.154**	0.002	0.246***	0.268***	-0.338***
	[0.078]	[0.072]	[0.085]	[0.088]	[0.129]
Construction works					
FS	-0.184	0.139	0.183	0.093	-0.241
	[0.118]	[0.115]	[0.134]	[0.139]	[0.202]
Loans for other accounts					
FS	0.12	-0.198	-0.219	0.247	0.216
	[0.232]	[0.228]	[0.250]	[0.237]	[0.365]
Transfers to pub. enterp.					
FS	-0.057**	0.015	0.064**	-0.015	-0.132***
	[0.029]	[0.026]	[0.031]	[0.031]	[0.048]
Other expenses					
FS	0.016	0.029	-0.007	-0.027	0.014
	[0.028]	[0.028]	[0.034]	[0.033]	[0.049]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	87.12	82.38	65.37	55.71	31.45
Observations	11,150	10,035	8,920	7,805	6,690

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.2: DID-IV estimation results excluding disaster-affected regions

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.014	0.034	0.043	0.023	-0.056
	[0.032]	[0.034]	[0.036]	[0.037]	[0.069]
Personnel					
FS	-0.015	-0.027	-0.021	0.017	0.019
	[0.017]	[0.017]	[0.015]	[0.015]	[0.027]
Supplies and Services					
FS	-0.026	0.002	-0.001	0.006	-0.016
	[0.028]	[0.030]	[0.025]	[0.027]	[0.045]
Social assistance					
FS	-0.190***	-0.072***	0.006	-0.021	-0.153***
	[0.030]	[0.020]	[0.015]	[0.017]	[0.042]
Grant expenses					
FS	-0.048	-0.125	0.025	0.159*	0.018
	[0.067]	[0.078]	[0.090]	[0.095]	[0.174]
Maintenance					
FS	-0.190*	-0.013	0.148	0.217**	-0.309*
	[0.102]	[0.104]	[0.096]	[0.105]	[0.180]
Construction works					
FS	0.064	0.184	0.030	0.023	0.074
	[0.157]	[0.164]	[0.155]	[0.167]	[0.287]
Loans for other accounts					
FS	-0.4	-0.37	-0.374	0.218	0.561
	[0.346]	[0.364]	[0.320]	[0.328]	[0.528]
Transfers to pub. enterp.					
FS	-0.061	0.026	0.093***	0.017	-0.181**
	[0.040]	[0.037]	[0.035]	[0.035]	[0.075]
Other expenses					
FS	-0.04	-0.004	-0.006	0.012	0.028
	[0.033]	[0.037]	[0.034]	[0.035]	[0.061]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	46.20	36.99	40.82	35.03	13.50
Observations	5,820	5,238	4,656	4,074	3,492

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.3: DID-IV estimation results before 2011

| | Lag years | |
	2 yrs	3 yrs
Expenditure		
FS	0.048	0.072
	[0.063]	[0.062]
Personnel		
FS	-0.117***	-0.016
	[0.041]	[0.026]
Supplies and Services		
FS	0.039	0.140*
	[0.069]	[0.072]
Social assistance		
FS	-0.297***	0.047
	[0.075]	[0.033]
Grant expenses		
FS	-0.295**	-0.350***
	[0.148]	[0.131]
Maintenance		
FS	-0.077	0.222
	[0.183]	[0.144]
Construction works		
FS	0.654**	0.398
	[0.299]	[0.255]
Loans for other accounts		
FS	0.176	0.424
	[0.480]	[0.463]
Transfers to pub. enterp.		
FS	-0.031	0.031
	[0.068]	[0.057]
Other expenses		
FS	0.065	0.014
	[0.059]	[0.049]
Covariates	Yes	Yes
Pref*Year	Yes	Yes
Municipal trend	Yes	Yes
Weak IV	13.74	16.80
Observations	3,834	3,195

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.4: Excluding the early compilation group and disaster-affected regions

	Lag years				
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.024	0.021	0.033	0.027	-0.027
	[0.032]	[0.033]	[0.035]	[0.035]	[0.063]
Personnel					
FS	-0.010	-0.029*	-0.021	0.015	0.026
	[0.017]	[0.017]	[0.014]	[0.014]	[0.024]
Supplies and Services					
FS	-0.029	-0.003	-0.004	0.019	-0.003
	[0.028]	[0.030]	[0.024]	[0.025]	[0.041]
Social assistance					
FS	-0.173***	-0.065***	0.003	-0.015	-0.126***
	[0.027]	[0.020]	[0.015]	[0.016]	[0.031]
Grant expenses					
FS	-0.003	-0.097	0.029	0.138	0.007
	[0.064]	[0.070]	[0.083]	[0.088]	[0.159]
Maintenance					
FS	-0.234**	-0.105	0.087	0.168*	-0.251
	[0.101]	[0.103]	[0.092]	[0.097]	[0.160]
Construction works					
FS	-0.007	0.151	-0.000	0.002	0.132
	[0.153]	[0.159]	[0.152]	[0.160]	[0.271]
Loans for other accounts					
FS	-0.217	-0.309	-0.461	0.121	0.550
	[0.311]	[0.336]	[0.304]	[0.306]	[0.500]
Transfers to pub. enterp.					
FS	-0.065	0.013	0.078**	0.018	-0.154***
	[0.040]	[0.037]	[0.033]	[0.032]	[0.059]
Other expenses					
FS	-0.048	-0.012	0.005	0.029	0.006
	[0.033]	[0.036]	[0.033]	[0.033]	[0.055]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	47.59	36.56	41.53	40.07	22.05
Observations	5,370	4,833	4,296	3,759	3,222

Notes: Robust standard errors in brackets. $* * *$ p<0.01, $* *$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.5: Excluding droppers and disaster-affected regions

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.010	0.016	0.058	0.041	-0.086
	[0.033]	[0.033]	[0.036]	[0.038]	[0.081]
Personnel					
FS	0.019	0.013	0.000	-0.006	0.023
	[0.017]	[0.016]	[0.015]	[0.015]	[0.032]
Supplies and Services					
FS	-0.029	-0.037	-0.012	0.017	-0.021
	[0.027]	[0.027]	[0.025]	[0.028]	[0.052]
Social assistance					
FS	-0.176***	-0.076***	0.018	0.002	-0.158***
	[0.027]	[0.019]	[0.015]	[0.016]	[0.050]
Grant expenses					
FS	-0.023	-0.109*	-0.007	0.189**	0.055
	[0.057]	[0.059]	[0.062]	[0.074]	[0.137]
Maintenance					
FS	-0.146	0.060	-0.020	0.020	-0.047
	[0.113]	[0.109]	[0.106]	[0.107]	[0.214]
Construction works					
FS	-0.035	0.140	0.186	0.091	-0.162
	[0.164]	[0.167]	[0.169]	[0.182]	[0.359]
Loans for other accounts					
FS	-0.226	0.079	0.170	0.232	-0.384
	[0.325]	[0.344]	[0.309]	[0.319]	[0.584]
Transfers to pub. enterp.					
FS	-0.024	-0.003	0.067*	0.038	-0.139
	[0.046]	[0.041]	[0.039]	[0.040]	[0.091]
Other expenses					
FS	-0.015	0.010	0.021	0.047	-0.016
	[0.034]	[0.034]	[0.035]	[0.037]	[0.072]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	44.53	38.99	42.34	33.97	8.556
Observations	3,500	3,150	2,800	2,450	2,100

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.6: Placebo tests fake treatment 2006

	Lag years				
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
Placebo FS	0.381	-0.818	-0.035	-0.931	1.678
	[0.439]	[0.659]	[0.792]	[1.070]	[1.677]
Personnel					
Placebo FS	0.55	0.139	-0.21	0.145	-0.337
	[0.339]	[0.257]	[0.343]	[0.398]	[0.417]
Supplies and Services					
Placebo FS	0.153	-0.94	-0.852	2.811	-1.026
	[0.333]	[0.659]	[0.944]	[2.604]	[1.058]
Social assistance					
Placebo FS	0.19	2.227*	-3.316	1.914	0.693
	[0.215]	[1.267]	[2.164]	[1.740]	[0.957]
Grant expenses					
Placebo FS	-1.238	1.341	1.247	-3.039	0.038
	[1.208]	[1.424]	[1.735]	[3.023]	[2.151]
Maintenance					
Placebo FS	-1.565	2.038	-3.052	-0.256	-0.323
	[1.572]	[2.169]	[2.769]	[2.369]	[2.129]
Construction works					
Placebo FS	2.469	-6.661	3.12	-2.892	6.792
	[2.445]	[4.362]	[3.566]	[4.447]	[6.131]
Loans for other accounts					
Placebo FS	-12.006	9.095	-4.658	-0.247	-11.418
	[8.154]	[7.503]	[7.177]	[11.703]	[11.737]
Transfers to pub. enterp.					
Placebo FS	-0.302	0.15	-0.737	0.041	0.412
	[0.567]	[0.572]	[0.888]	[0.847]	[0.936]
Other expenses					
Placebo FS	-0.797	0.653	-0.531	-0.057	0.508
	[0.591]	[0.597]	[0.718]	[0.736]	[1.049]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	1.928	1.481	1.089	0.706	0.798
Observations	1,917	1,917	1,917	1,917	1,917

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.7: Heterogeneous effects: Financial Capability Indicator

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Expenditure					
FS	-0.028	0.008	-0.047	0.026	-0.040
	[0.095]	[0.131]	[0.151]	[0.091]	[0.070]
FS x high FI	0.027	0.055	0.171	0.037	0.025
	[0.105]	[0.166]	[0.202]	[0.108]	[0.043]
Personnel					
FS	0.057	-0.040	-0.163	-0.049	-0.054
	[0.054]	[0.072]	[0.113]	[0.049]	[0.039]
FS x high FI	-0.072	-0.001	0.155	0.016	0.004
	[0.058]	[0.093]	[0.144]	[0.059]	[0.024]
Supplies and Services					
FS	-0.133	0.023	-0.026	-0.009	-0.115*
	[0.098]	[0.115]	[0.116]	[0.081]	[0.066]
FS x high FI	0.137	-0.049	0.033	0.004	0.039
	[0.105]	[0.145]	[0.152]	[0.094]	[0.043]
Social assistance					
FS	-0.080	0.231	0.236	-0.166**	-0.223***
	[0.078]	[0.181]	[0.176]	[0.073]	[0.062]
FS x high FI	-0.111	-0.440*	-0.417*	0.096	0.105***
	[0.092]	[0.229]	[0.230]	[0.089]	[0.038]
Grant expenses					
FS	0.031	-0.283	0.055	0.066	-0.058
	[0.152]	[0.290]	[0.274]	[0.178]	[0.156]
FS x high FI	-0.100	0.236	-0.049	0.030	0.019
	[0.171]	[0.355]	[0.364]	[0.208]	[0.095]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	3.205	1.630	1.521	4.203	9.826
Observations	5,820	5,238	4,656	4,074	3,492

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.

Table B.8: Heterogeneous effects: Financial Capability Indicator (continued)

| | Lag years | | | | |
	2 yrs	3 yrs	4 yrs	5 yrs	6 yrs
Maintenance					
FS	-0.043	0.235	-0.040	-0.127	-0.367
	[0.320]	[0.456]	[0.463]	[0.305]	[0.267]
FS x high FI	-0.197	-0.376	0.136	0.231	0.101
	[0.356]	[0.575]	[0.608]	[0.351]	[0.165]
Construction works					
FS	-0.613	0.085	-0.288	0.001	0.149
	[0.497]	[0.574]	[0.673]	[0.402]	[0.340]
FS x high FI	0.753	0.106	0.696	0.362	0.096
	[0.549]	[0.748]	[0.894]	[0.481]	[0.204]
Loans for other accounts					
FS	-1.296	-1.438	-1.357	1.026	1.478
	[1.235]	[1.564]	[2.153]	[1.144]	[0.907]
FS x high FI	1.096	1.500	1.455	-0.744	-0.225
	[1.277]	[1.816]	[2.533]	[1.226]	[0.566]
Transfers to pub. enterp.					
FS	-0.233*	-0.085	0.138	-0.060	-0.134*
	[0.136]	[0.147]	[0.168]	[0.098]	[0.078]
FS x high FI	0.292**	0.149	-0.122	0.072	0.037
	[0.148]	[0.192]	[0.225]	[0.122]	[0.049]
Other expenses					
FS	0.062	0.071	-0.019	-0.040	0.024
	[0.107]	[0.153]	[0.153]	[0.097]	[0.074]
FS x high FI	-0.078	-0.074	0.021	0.054	-0.017
	[0.119]	[0.195]	[0.203]	[0.117]	[0.045]
Covariates	Yes	Yes	Yes	Yes	Yes
Pref*Year	Yes	Yes	Yes	Yes	Yes
Municipal trend	Yes	Yes	Yes	Yes	Yes
Weak IV	3.205	1.630	1.521	4.203	9.826
Observations	5,820	5,238	4,656	4,074	3,492

Notes: Robust standard errors in brackets. $***$ p<0.01, $**$ p<0.05, $*$ p<0.1. Weak IV is Cragg-Donald Wald F statistics. All models control for time-varying covariates, municipality fixed effects, prefecture year specific fixed effects, and municipal trends.