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CASE STUDY OF CENTRAL AND LOCAL GOVERNMENT FINANCE IN JAPAN

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Abstract

This paper aims to provide an overview of the basics of Japan's local public administration and finance system and to analyze how Japan's municipalities restore their fiscal balance after a fiscal shock. In Japan, local governments play a major role in redistribution. Combined with regional disparities in tax capacities and an inflexible local tax system, there is a large vertical fiscal gap in Japan between the central and local governments—a gap that necessitates the transfer of funds from central to local governments. Under this system, the fiscal adjustments in Japan's municipalities occur mainly via changes in government investment, and they account for 63%–95% of adjustments in permanent unit innovations in grants and own-source revenue. In contrast to the role of expenditure, the municipalities' own-source revenue plays a limited role in balancing the local budget. The results of this study also reveal that 40% of the increase in own-source revenue is offset by a reduction in grants. Furthermore, municipalities can induce grants by expanding government current expenditure. Finally, this study offers and discusses some policy implications.

JEL Classification: H70, H72, H77

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1. INTRODUCTION

Japan's balanced growth has been one of the main policy goals of the Government of Japan since the country's period of rapid economic growth in the 1960s. Japan's local public finance system has developed to support this goal as well. Facing low economic growth and regional disparities in economic situation, a number of decentralization reforms has been implemented.

One method of evaluating how the local public finance system works is to examine how local governments cope with various fiscal shocks such as economic downturns, national fiscal reforms, and reductions in tax bases owing to natural disasters. Buettner and Wildasin (2002, 2006) proposed a method of quantifying the dynamics of regional fiscal adjustments, based on a vector error-correction model (VECM). The current study adopts the same VECM approach to estimate municipal fiscal adjustments in Japan, in line with Bessho and Ogawa (2015). The sample used in the current study is all 3,210 municipalities in Japan, over the 1977–2010 period—more than one-quarter of a century.

Before investigating municipal fiscal adjustments in Japan through the use of VECM, this study provides an overview of the basics of Japan's local public administration and finance system, and focuses on the close relationship between central and local governments. The first half of this paper demonstrates that a combination of regional disparity in tax capacity, an inflexible local tax system, and the important role of local governments in redistribution necessitates large fiscal transfers from the central to local governments, if public services are to be provided uniformly countrywide and according to national standards.

The second half of this paper analyzes municipal fiscal adjustments in Japan, as in Bessho and Ogawa (2015). The main findings are as follows. First, government investment plays the most important role in the adjustment process, with 39%–55% of the budget shocks affecting own-source revenue; grants are adjusted through government investment in the following year. The figures explain 63%–95% of adjustments in permanent unit innovations in grants and own-source revenue. This contrasts starkly with government current expenditure, which shows no statistically significant response to adjust fiscal imbalances. Second, government investment is highly volatile. A 1 yen increase in government investment accompanies a 0.957 yen reduction in government investment in the following year—a figure that is quite high, compared with the figures of other countries. In contrast, the magnitude of the volatility in own-source revenue and grants is small; this implies that municipalities face restrictions in adjusting their fiscal balance through the use of their own-source revenue, and that higher-level government is rigid in providing grants. Third, in contrast to the role played by the expenditure side, the municipalities' own-source revenue plays a limited role in balancing the local budget. Own-source revenue offsets only 0.1%–2.3% of the shocks—a figure that is not even statistically significant. This number is quite small, compared with those of other countries: in the United States, for example, own-source revenue offsets 14.4%–16.2% of the fiscal shocks. Fourth, grants from the central government play a certain role in restoring the fiscal balance in Japan's municipalities. The results also reveal that 40% of the increase in own-source revenue is offset by a reduction in grants, and this suggests that the current grants system discourages municipalities from increasing their own-source revenue. Finally, Japan's municipalities can induce grants by expanding the government's current expenditure, as a 1 yen increase in current expenditure is followed by a 0.65 yen increase in grants in subsequent years.

The remainder of this paper is organized as follows. Section 2 provides an overview of the basics of Japan's local public finance system, including those pertaining to taxation, expenditure, transfers, and borrowing. In Section 3, the framework and data used in the VECM analysis, as well as the results thereof, are presented. Section 4 concludes with some policy implications.

2. JAPAN'S LOCAL PUBLIC FINANCE SYSTEM

2.1 Administrative System

Japan is a unitary country and has a constitution that defines the basic organizations and authorities of its governments. The Constitution places local governments within the national government structure and guarantees "local autonomy." Thus, the central government cannot abolish and create local governments at will.

Several national laws were enacted based on Article 92, Chapter 8 of the Constitution, which states that "regulations concerning the organization and operation of local public entities shall be fixed by law in accordance with the principle of local autonomy." One of the most important laws is the Local Autonomy (*chiho jichi*) Law, which stipulates the basic framework for the organization and operation of local governments. It also specifies the relationship between central and local governments, as well as those among local governments. Other important laws include the Local Finance (*chiho zaisei*) Law, Local Tax (*chiho ze'i*) Law, Local Public Service (*chiho komuin*) Law, and Public Offices Election (*koshoku senkyo*) Law.

There are two types of local government: one is ordinary local governments, and the other is special local governments. Ordinary local governments are prefectures and municipalities, as explained in detail below. Special local governments include special wards, municipal cooperatives, and property wards.¹ Special wards are similar to municipalities and are currently positioned only under Tokyo. Municipal cooperatives are set up for prefectures, municipalities, and special wards to jointly administer projects such as firefighting, water and sewerage, and waste disposal. Property wards are set up after municipal mergers to control the lands and properties of premerger municipalities. This study focuses mainly on ordinary local governments and special wards.

Ordinary local governments—that is, prefectures and municipalities—are democratic governing bodies, and not just administrative units or agents of the central government. Japan employs a dual representation system for local governments, where each level of government has an executive head (mayor for municipalities or governor for prefectures) and a council. The head of each local government is directly elected by the constituency (i.e., local residents); the same applies to council members.

Japan's local administration system is based on comprehensive authorization, not restrictive enumeration; therefore, prefectures and municipalities are given the authority to exert their powers to perform a wide range of tasks that they consider essential to their residents. The administrative works and projects of prefectures and municipalities are categorized into two types. One is statutory entrusted functions (*hotei jutaku jimu*), which are originally supposed to be conducted under the responsibility of the central government, but are delegated to the local governments. The statutory entrusted affairs are listed in the Appendix Tables of the Local Autonomy Law. The central government

¹ There have been other types of special local governments—that is, special city and local development corporations—but these were abolished.

is allowed to participate in the implementation of these affairs in the form of advice, agreements, directives, and even executions by proxy. The other type is local government functions (*jichi jimu*), which are defined as the administrative works and projects other than the statutory entrusted functions. Despite this definition, some local government functions are stipulated to be performed by prefectures and/or municipalities. Regarding these local government functions, the central government can give advice and request rectification, but, in principle, cannot execute by proxy.

Setting aside special local governments, Japan's local governments are two-tiered. The first (lowest) tier is the municipality. There are currently 1,718 municipalities in Japan, which are divided into 790 cities (*shi*), 745 towns (*machi*), and 183 villages (*mura*). The second tier is the prefecture. Of the current 47 prefectures, 1 is *to* (metropolis), 1 is *do* (district), 2 are *fu* (urban prefecture), and 43 are *ken* (rural prefecture). Despite historical differences, there is virtually no institutional difference among *to-do-fu-ken*. All municipalities and special wards are spatially covered by prefectures; there is no "special" city that is not placed under upper local government, like Washington, DC in the United States or Beijing in the People's Republic of China.

Municipalities—which constitute the first tier of local government—provide a wide range of public and personal services that are relevant to everyday life. Their services include education, especially compulsory (elementary and junior high) schools; public health; city planning; fire protection; water; and sewerage. Additionally, they provide social services and assistance. Some cities have more authorities transferred from the central government. There are three types of such cities: designated cities (*seirei shitei toshi*; 20 cities in 2015), core cities (*chukaku shi*; 45 cities), and special cities (*tokurei shi*; 39 cities). The designated cities are selected from those with more than 500,000 inhabitants, and the core and special cities have basically more than 200,000 inhabitants.

Prefectures, as the second tier of local governments, function as a liaison between municipalities and the central government. These upper governments provide services with benefits that spill over municipal boundaries, and they execute projects too large for municipalities. They often offer assistance to municipalities and define standards for municipalities to follow.

Table 1: Distribution of Population (1 January 2015)

Towns and Villages			Cities		
	(%)			(%)	
Total	928	100.0	Total	813	100.0
Under 5,000	246	26.5	Under 30,000	82	10.1
5,000–9,999	241	26.0	30,000–49,999	177	21.8
10,000–19,999	278	30.0	50,000–99,999	266	32.7
20,000–29,999	95	10.2	100,000–199,999	154	18.9
30,000–39,999	48	5.2	200,000–299,999	50	6.2
40,000–49,999	16	1.7	300,000–499,999	50	6.2
50,000 and over	4	0.4	500,000–999,999	23	2.8
			1,000,000 and over	11	1.4

Source: Ministry of Internal Affairs and Communications. Population Based on Basic Resident Register (1 January 2015).

Although municipalities vary in terms of population and size (Table 1), they are basically given the same authority and assigned the same tasks. This is also the case for prefectures. In addition, partially for historical reasons, local governments share the

same organizational structures to some degree; they are fairly uniform in terms of operations, because relevant national laws specify many aspects of their tasks. This uniformity is financially supported by the system of intergovernmental transfers, as explained in Section 2.4.

2.2 Taxes

The Local Tax (*chiho zei*) Law, a national law, stipulates the taxation rights of local governments and lists standard tax items. It also stipulates the standard tax rates and/or upper limit rates for some local taxes, like those on personal income, firms, fixed assets, tobacco, and consumption. Local governments need not set rates identical to the standard rates. Many prefectures and municipalities raise the corporate inhabitant tax rates—one of the corporate income taxes—to levels higher than the standard rates (excess taxation). Local governments have the authority to set up new taxes not listed in the Local Tax Law (i.e., discretionary taxes) if they successfully obtain agreement from the Ministry of Internal Affairs and Communications. The tax revenues from excess taxation (¥526 billion in 2013 fiscal year [FY2013]) and discretionary taxes (¥36 billion) were small compared with local tax revenues (¥35 trillion); they represented only 1.5% of all tax revenues. As expected from this figure, differences between local tax rates and standard rates are small, and local governments do not consider local tax rates a plausible choice variable (Mochida 2001, Tajika and Yui 2006). One reason for these small differences is that, as described below, local governments need to obtain “permission” from their upper government to issue local bonds if their tax rate is below the standard rate.

Table 2 shows the composition of tax revenues of Japan’s central and local governments. Prefectures depend on personal and corporate income tax; they also gather revenues from a value-added tax (or consumption tax) under tax-sharing arrangements between the central and prefectural governments. Large proportions of municipal tax revenues come from personal income tax and property tax, which are levied on land, buildings, and tangible depreciable assets. Additionally, a city planning tax is levied on lands and buildings, but not on tangible depreciable assets.

Table 2: Composition of Tax Revenues (FY2013)

(Trillion Yen)	PIT	CIT	VAT	Automobile Tax	Light Oil Tax	Property Tax	City Planning Tax	Others
Central	15.5	10.5	10.8					14.4
Prefectures	5.1	3.5	2.6	1.6	0.9			1.0
Municipalities	7.0	2.2				8.6	1.2	1.6

CIT = corporate income tax, FY = fiscal year, PIT = personal income tax, VAT = value-added tax.

Source: Ministry of Internal Affairs and Communications.

The local share of local tax revenues is not very small, at least relative to comparable figures from other countries. Table 3 shows the local share of tax revenues of the general government in selected countries. Japan’s share was among the highest of unitary countries, and it was comparable to the sum of the shares of state and local governments in many federal countries. However, Japan’s local tax revenues are not large compared with local expenditures, as explained below.

Table 3: Local Share of Tax Revenues (2013)

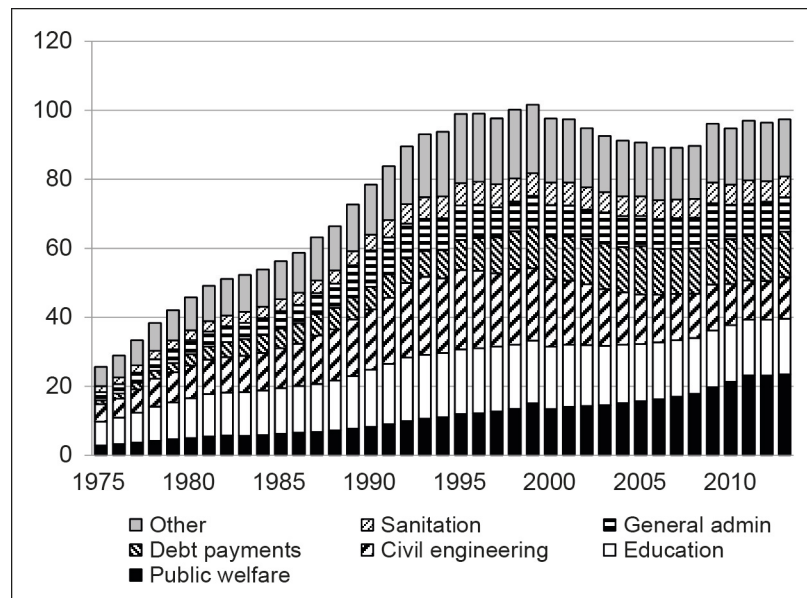
	State	Local
Canada	44.2	11.0
Germany	36.1	13.2
Switzerland*	32.8	20.2
Spain	21.0	14.8
Australia	15.3	3.4
Japan		40.6
Sweden		34.3
Finland		33.0
Iceland		29.4
Denmark		26.2
Italy		21.7
Korea, Republic of		21.4
France		19.1
Norway		17.3
Portugal		9.5
New Zealand		7.2
Netherlands		6.5
United Kingdom		5.9
Luxembourg*		5.7
Greece		3.8
Ireland		3.7

*As of 2012. Source: International Monetary Fund, Government Financial Statistics.

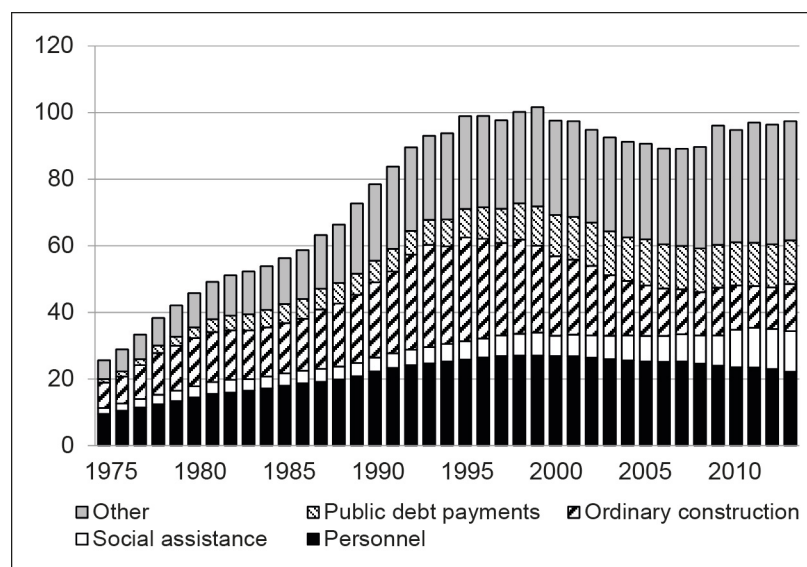
2.3 Expenditures

Japan's local governments are responsible for a wide range of tasks. Figure 1 shows the history of composition of local expenditures, categorized by function. Based on settlements for FY2013, public welfare expenses constituted about a quarter (24.1%) of expenditures of local governments (i.e., net total of prefectures and municipalities). This is because local governments bear the responsibility for a large proportion of welfare implementation for children, the elderly, and the disabled, as well as a public assistance (income maintenance) program. Education expenses are next, as municipalities operate compulsory education—that is, elementary and junior high school—and prefectures operate high schools (and universities, in some cases). Debt services constituted the third-largest share. The sum of these three components exceeded 50% of expenditures. Other items include expenses for civil engineering work, general administration, and sanitation (i.e., public health, water, and sewerage).

Figure 2 shows the history of composition of local expenditures by type. According to the FY2013 settlement, more than 20% of expenditures relate to personnel, including salaries for teachers in public elementary, junior high, and high schools; police officers; and general public workers. Social assistance expenses account for 12.5% of expenditures while debt services make up 13.4%. These three sets of expenses are often classified as “mandatory expenses,” because it is difficult for local governments to reduce these expenditures at their own discretion. Investment expenses also represented a large share of expenditures (15.5%), but that share has been in decline since the late 1990s.

Figure 1: Composition of Local Expenditures by Function

Source: Ministry of Internal Affairs and Communications. Annual Statistics on Local Public Finance, various years.

Figure 2: Composition of Local Expenditures by Type

Source: Ministry of Internal Affairs and Communications. Annual Statistics on Local Public Finance, various years.

As described, Japan's local governments implement many redistribution programs such as social assistance and compulsory education (Joumard and Kongsrud 2003, Hayashi 2010). Exceptions are public pension and work-related insurance. From the international perspective, local governments in Japan do much more than those in most other Organisation for Economic Co-operation and Development countries. The share of local expenditures within public expenditures is one of the highest among the unitary countries, and is comparable even to that seen in federal states, where provincial or state governments have constitutionally stronger powers and functions.

The local governments' shares of revenues and expenditures, based on national account statistics, are shown in Table 4. The local shares were larger than central shares for collective consumption, gross capital formation, and other social benefits. Other social benefits include social benefits in kind, transfers of individual nonmarket goods and services, and social assistance. Pension benefits are paid from social security funds—which, in this case, are part of the central government—but some medical and long-term care benefits are paid by the local government. Thus, especially in the area of redistribution programs, the local shares are larger than the central shares.

Table 4: Local Share of Revenues and Expenditures (2011)

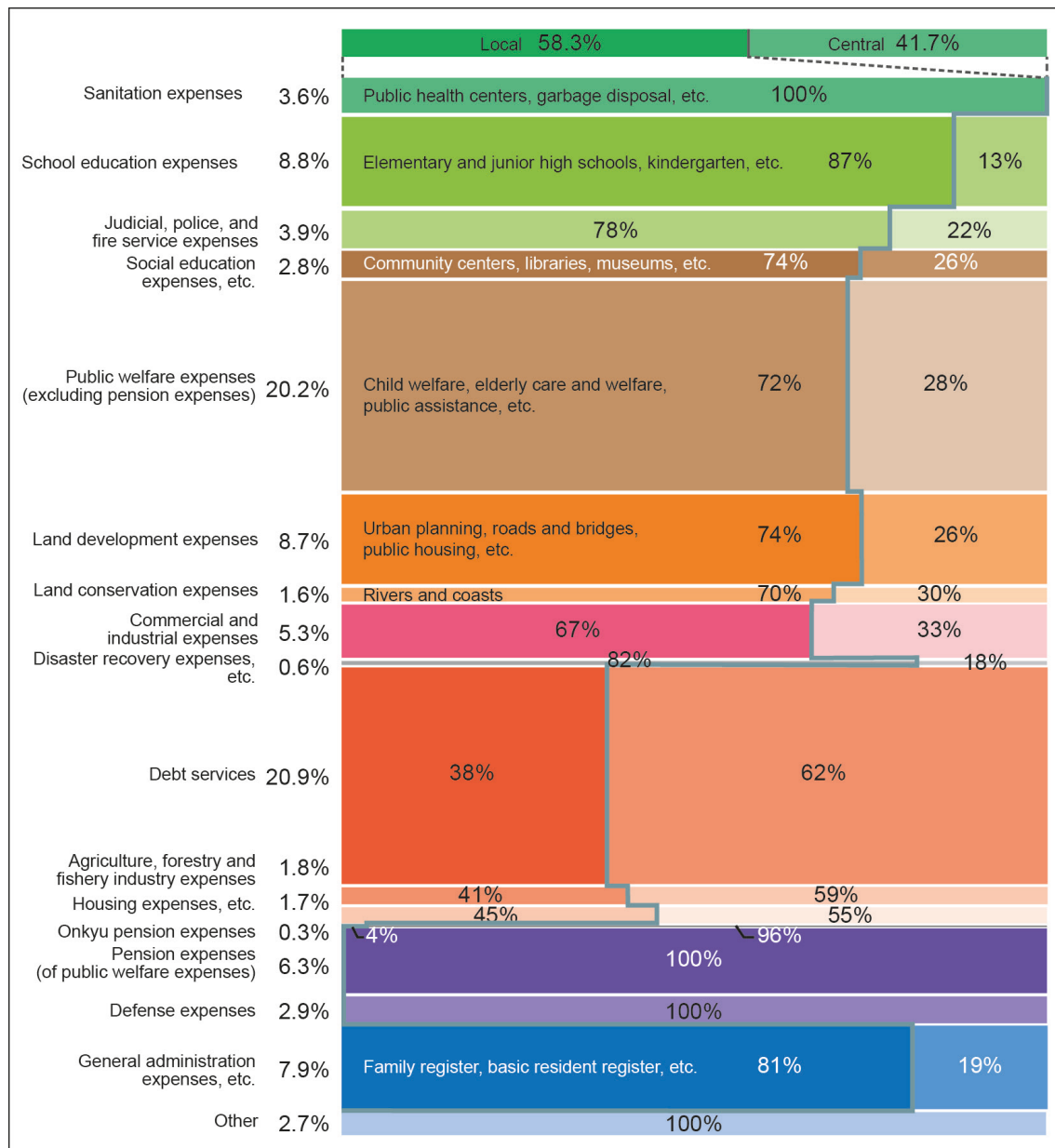
(Trillion Yen)	Central Government	Local Government	Social Security Fund
Receipt			
Tax	44.5	34.5	
Social Contribution			56.3
Capital Transfer	-5.4	4.9	
Outlay			
Collective Consumption	13.3	26.7	
Gross Capital Formation	3.7	11.3	
Pension Benefits			49.0
Medical/Long-term Benefits			33.1
Other Social Benefits	4.2	23.2	5.6
Land Purchase, etc.	3.4	7.2	
Net Property Income	5.3	1.7	-3.1
Intergovernmental Transfers	52.6	-20.5	-32.1
Fiscal Deficits	43.3	10.3	-3.9

() = negative.

Source: National Accounts (2011).

Note that although local governments in Japan implement many redistribution programs, the central government typically schematizes these programs, including social insurance (pension, health, long-term care, and work-related), the management of medical service delivery, public health (epidemic prevention), welfare programs for the disadvantaged (the elderly, the disabled, children, and single mothers), and income maintenance (poverty relief). The Ministry of Health, Labour and Welfare is the central ministry responsible for overseeing and carrying out these schemes.

As seen in Table 4, more than one-half of expenditures are incurred at the local level; however, this is not the case for revenue. This means that the expenditures of local governments exceed their tax revenues. On the other side of the proverbial coin, the goods and services expenditures incurred at the central level exceed its tax revenues. Thus, there is a large vertical fiscal gap, and intergovernmental transfers are used to fill it.

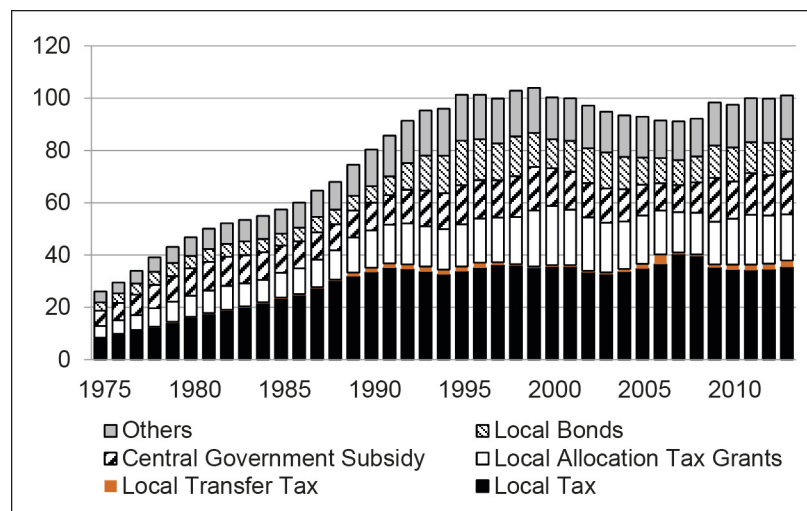
Figure 3: Share of Expenditures by Purpose of Central and Local Governments

Source: Ministry of Internal Affairs and Communications. 2015. White Paper on Local Public Finance.

2.4 Intergovernmental Transfers

2.4.1 Three Interrelated Factors

Figure 4 shows the revenue composition of local governments. According to the settlement of FY2013 ordinary accounts of the net total of prefectures and municipalities, the share of local tax revenues was 35%. This figure has been stable since the late 1990s, giving rise to the commonly used term “30% autonomy.” The share of local borrowing was 12%; other revenues (e.g., fees, charges, donations, and the like), 17%; and revenue from the central government, one-third of total revenues.

Figure 4: Composition of Local Revenues

Source: Ministry of Internal Affairs and Communications. Annual Statistics on Local Public Finance, various years.

The purposes of intergovernmental transfers from central to local governments are threefold. First, as described above, there is a vertical fiscal gap between the central and local governments. This gap derives from the fact that the central government assigns to the local governments a number of functions that require more funds than the local governments can collect as local taxes under the inflexible local tax system.

Second, the central government expects national uniformity in the provision of public services. A large portion of public services are provided by local governments but national laws often require that local governments supply such services in a way that meets uniform national standards.

Third, although the central government demands uniformity in terms of various kinds of public services, tax capacities vary seriously among local governments. Thus, the central government needs to compensate for differences between expenditures and revenues for those local governments that lack sufficient tax capacity.

Three types of funds are transferred to local governments: the central government subsidy (CGS), local allocation tax (LAT) grants, and local transfer tax grants. The local transfer tax grants are general-purpose and based on a tax-sharing scheme, wherein some tax revenues collected as national taxes are transferred to local governments in line with some specific rules. The total amount of these grants is relatively small, as shown in Figure 4; thus, I focus here on the CGS and the LAT grants.

2.4.2 Central Government Subsidy

The CGS, also known as National Treasury Disbursements, comprise categorical grants that are disbursed directly from the budgets of central ministries—that is, from the general account of the central government. Since the CGS is purpose-specific, the project “price” subsidized by the CGS will be low, and thus acts as an incentive for local governments to implement such projects.

The purpose of the CGS is twofold. First, this grant helps local governments maintain uniform services required by national laws. For example, the CGS is set for public assistance and other social programs, as well as compulsory education. Second, this grant functions as an incentive for local governments to adopt projects that contribute to national objectives; such projects often have positive (technological) externalities, and so the CGS can be considered a Pigovian subsidy. Examples include epidemic

prevention (vaccination) and road construction, both of which would have network externality. Since one of the national objectives is economic stimulus, public works and infrastructure formation are often financially supported by the CGS.

2.4.3 Local Allocation Tax Grants

The LAT grants are general-purpose grants disbursed through a special account of the central government. The purpose of LAT grants is, according to the Ministry of Internal Affairs and Communications, to “adjust imbalances in tax revenue among local governments” and to “guarantee revenue sources so that local governments in whatever region can provide a certain level of administrative services.”

The LAT grants are divided into two parts: the Ordinary LAT grants (94%) and the Special LAT grants (6%). The Special LAT grants are distributed in the case of unexpected fiscal shocks, such as natural disasters.

The amount of Ordinary LAT grants that each prefecture and municipality receives is determined after the total amount of LAT grants is set through negotiations among central government ministries. On the one hand, the total amount of LAT grants is, on the whole, set as the difference between expenditures and the sum of local tax revenues, the CGS, and local borrowing. All of these components are estimated by the central government. On the other hand, the LAT Law allocates a specific portion of national tax revenues to the LAT grants—33.1% of personal income tax and corporate income tax, 50% of liquor tax, 22.3% of consumption tax, and 100% of local corporate income tax (a national tax). For years, the amount that the LAT Law has allocated has fallen far short of the amount needed to fill the gap between the expenditures and sum of local tax revenues, the CGS, and local borrowing; thus, each fiscal year, the central ministries negotiate by how much LAT grants will be increased. This procedure is referred to as “local fiscal measures.”

The amount of Ordinary LAT grants that each prefecture and municipality receives is defined as the difference between the standard fiscal demand (SFD) and the standard fiscal revenue (SFR). If the SFR exceeds the SFD, the local government cannot receive LAT grants, and need not pay back funds to the central government. The SFD is supposed to represent the “standard” amount of expenditures of local governments, and the SFR the “standard” amount of revenues.

The SFD for a local government is determined through the use of a complicated formula, but it is basically calculated by determining the product of the measuring unit, unit cost, and adjustment coefficients for each service, and then summing all such products. Take the expenditures for elementary schools as an example. One of the measuring units is the number of students in elementary schools. The corresponding unit cost is the necessary expenditure per student in a standard local government. (This “standard local government” is an imaginary locality, with populations of 1.7 million for prefectures and 100,000 for municipalities.) The adjustment coefficients are set to account for unit cost differences among local governments due to, for example, economies of scale and the effects of socioeconomic characteristics. The product of the measuring unit, unit cost, and adjustment coefficients is calculated for each expenditure item.

The SFR for a local government is calculated as 75% of standard tax revenues plus the Local Transfer Tax. One reason why the SFR does not reflect 100% of the standard tax revenues is that it alleviates the incentive problem that the LAT grants might cause in “cultivating local tax revenues.” Another reason is that the SFD may not capture all of the fiscal needs of local governments. These “standard” tax revenues do not include all local taxes; it excludes, for example, taxes not listed in the Local Tax Law (e.g., the

City Planning Tax). In addition, the tax rates used to calculate the SFR are the standard rates listed in the Local Tax Law, and so they may differ from actual tax rates.

The sum of the LAT grants that prefectures and municipalities receive must be equal to the predetermined total amount. This requirement necessitates a readjustment of the parameters in the SFD formula, including the unit cost.

Since LAT Grant amounts depend on formula outcomes, revising the formula can affect LAT Grant allocations. Thus, LAT grants are used also to mobilize local governments and, as a result, LAT grants are often seen as matching grants.

2.5 Borrowing

As seen in Figure 4, in recent years, more than 10% of local government revenues have been contingent on borrowing, on average. Japan's local governments can issue local bonds in the name of local autonomy, but their issuance is controlled by the central government to some extent.

If a local government wants to issue a local bond, it in principle needs to “consult” with an upper level of government: municipalities need to consult with their prefecture, and prefectures with the central government. If the local government successfully obtains consent from its upper government, the funds will be forwarded through the Local Bond Program by the central government, which is an integral part of the Local Public Finance Program. If a local government's fiscal situation is not sufficiently healthy, it needs to obtain “approval” from its upper government; if its tax rate is below the standard rate, it needs “permission.” Before 2006, it was permission from its upper government that each local government required, before it could issue local bonds.

The Local Bond Program is an annual program by which the Ministry of Internal Affairs and Communications allocates funds for a local bond that has approval or permission from the relevant upper government. There are two funds sources—private funds and public funds. Private funds are public market issue funds or bank acceptance funds, which are not directly controllable by the Ministry. Issuance on the open market is permitted to large localities. Public funds are fiscal loan funds or Japan Finance Organization for Municipalities (JFM) funds, both of which are part of the Fiscal Investment and Loan Program. The major source of revenue for the JFM is its own bonds, and the JFM raises funds mainly in debt capital markets. In general, public funds are provided on favorable terms, with lower interest rates and longer maturity periods than those for private funds. Thus, most local governments manage to obtain the approval or permission from their upper government to issue bonds.

Local bonds are purpose-specific, and a local government must clarify how it will use the funds thus obtained. The eligible types of projects for which a local government can issue bonds are listed in the Local Public Finance Law. A local government basically can borrow money only to finance capital expenditures (infrastructure investment) and disaster recovery. In addition, there is a bond issuance cap set for each project, as a percentage of expenditures.

The local bond system is intertwined with the intergovernmental transfer system, especially LAT grants. The amount of LAT grants that each local government receives is calculated as the difference between the SFD and the SFR, as explained above. The SFD covers some debt services, and this arrangement virtually reduces the interest rate of local bonds and provides an incentive to issue bonds and invest in infrastructure. Take as an example a seismic-strengthening project for public school buildings. Two-thirds of the project's expenditures are subsidized through the CGS, and so the local government is responsible for preparing the remaining one-third. Since

the bond issuance cap for this project is 90%, the percentage that the local government needs in the first year is only 3% ($=1/3 \times 10\%$). This 3% can be financed through local taxes or LAT grants. The local government can issue bonds for the remaining 30% ($=1/3 \times 90\%$) of the project's expenditure. When the local government pays back this local bond in the future, some portion of the corresponding debt service will be included in the SFD. In this case, two-thirds of the debt service will be booked in the SFD, and so the local government will need to pay 10% ($=1/3 \times 90\% \times 1/3$) of the project's expenditure in the future. Adding the payment in the first year, the ratio of the local tax revenues to the full expenditure will be less than 13%.

The local bond system, combined with the intergovernmental transfer system, functions as a device by which the central government can control or guide local governments. As Bessho (2010) pointed out, such fiscal incentives are not the single tool of the central government. Japan's central government compels local governments involved in drawing up development plans or preparing budgets to offer voluntary cooperation and coordinate multiple objects and instruments. In the background of such planning and budget preparation are frequent and institutional contact, exchanges among personnel, and high levels of integration between the central and local governments (e.g., Muramatsu et al. 2001).² However, precisely because local governments are independent decision makers in the name of local autonomy, it is possible for them not to follow the plan or guidance provided by the central government. In the following, I introduce the results of Bessho and Ogawa (2015), who examined how Japan's local governments react to fiscal shocks as independent decision makers.

3. FISCAL ADJUSTMENT OF MUNICIPALITIES

3.1 Framework

Policy reactions to cope with various fiscal shocks, such as economic downturns, national fiscal reforms, and tax-base reductions owing to natural disasters, are called fiscal adjustments. Buettner and Wildasin (2002, 2006) attempted to quantify the dynamics of fiscal adjustments of United States cities using a balanced panel dataset compiled from 1,270 cities in the United States between 1972 and 1997, and a VECM, which was originally developed to describe the dynamic interrelationships among stationary variables in macroeconomic fields. Several subsequent studies applied the Buettner–Wildasin approach to other countries, including Norway (Rattsö 2004), Israel (Navon 2006), Germany (Buettner 2009), and Spain (Solé–Ollé and Sorribas–Navarro 2012). Bessho and Ogawa (2015) also adopted the VECM approach to estimate municipal fiscal adjustments in Japan.³

² The tendency for high levels of integration between local and central governments in Japan is captured by the integrated model of Muramatsu et al. (2001), in which local governments are assigned a large range of tasks, the competencies of the central and local governments are intertwined, and the central government steers local governments through partnerships. Typical examples of highly integrated or closed partnerships between the local and central governments are various public works projects implemented under the initiative of the local authorities, but with the central government monitoring day-to-day operations.

³ Sections 3.1–3.2.5 are based on Bessho and Ogawa (2015). The reader may consult that paper for further details.

The analytical framework is the VECM. Denoting own-source revenue (mainly tax revenue) as R_{it} , government investment (capital expenditure) as G_{it}^I , expenditure excluding government investment and debt services (hereafter, government current expenditure) as G_{it}^C , net intergovernmental transfers as Z_{it} , debt services as S_{it} , and the fiscal deficit as D_{it} , the government's budget constraint is represented as

$$D_{it} = G_{it}^I + G_{it}^C + S_{it} - R_{it} - Z_{it}. \quad (1)$$

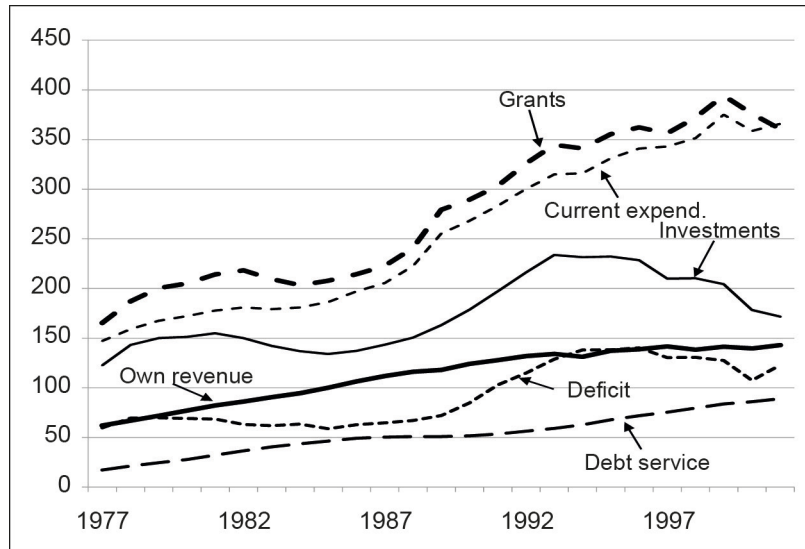
If the fiscal deficit, D_{it} , is stationary, and if the variables on the right-hand side of equation (1) are all difference-stationary, then the five variables (G_{it}^I , G_{it}^C , S_{it} , R_{it} , and Z_{it}) are cointegrated with the cointegration vector $[1, 1, 1, -1, -1]$. In this case, the VECM (p) of the five variables is expressed as follows:

$$\Delta Y_{it} = \gamma D_{it-1} + \sum_{j=1}^p \Gamma_j \Delta Y_{it-j} + u_{it}, \quad (2)$$

where $Y_{it} = (G_{it}^I, G_{it}^C, S_{it}, R_{it}, Z_{it})'$. Here, \square and \square are the parameter matrices to be estimated. The reaction of Y_{it} to innovations in fiscal shocks, u_{it} , describes the process of fiscal adjustment.⁴

The data are based on the settlement of municipalities' ordinary accounts from 1977 to 2001. All types of intergovernmental grants are grouped into one component, Z_{it} , including the CGS, purpose-specific grants, LAT grants, and general grants. This is because Japan's central and local governments are highly integrated (e.g., Muramatsu et al. 2001), and LAT grants, as well as the CGS, are used to mobilize local governments through revisions of the LAT grants formula.

Figure 5: Trends of Fiscal Variables



Note: All values are in units of thousand yen. They are converted to per capita basis and deflated to FY2010 price.

Source: Author.

⁴ In equation (2), p denotes the lag length. Bessho and Ogawa (2015) chose a model with four lags, based on the results of likelihood-ratio tests. The stationarity of the variables is tested by using the panel unit root test developed by Pesaran (2007). They chose to conduct equation-by-equation estimations using an ordinary least squares estimation without fixed effects, to compare the results with the previous studies..

Figure 5 shows the level of each policy variable in per-capita terms during the sample period. Values of all items doubled or tripled during this period, and grants were two or three times larger than own-source revenue. Government investment was stable until the mid-1980s, but then increased sharply, due to large fiscal stimulus packages implemented by the central government. However, since 1997, government investment has fallen, while current expenditures have continued to rise. As a result, by the late 1990s, current expenditures were twice as large as government investment. The figure shows a very high correlation between current expenditure and grants from higher-level government.

Own-source revenue and debt services showed a stable increasing trend during this period. Therefore, trends of the fiscal deficit tend to parallel those of investment.

3.2 Main Results

To interpret the estimation results, the present values of the impulse response for each variable with respect to fiscal shock are calculated based on the VECM coefficients as in the literature,⁵ with a 3% discount rate. The results are shown in Table 5.

Table 5: Present Value Responses

Response of	<i>Innovation to</i>				
	Revenue	Investment	Current	Grants	Debt Service
Own Revenue	−0.384 (0.039)	0.023 (0.013)	0.001 (0.024)	−0.012 (0.012)	0.008 (0.026)
Investments	0.387 (0.074)	−0.957 (0.070)	−0.259 (0.092)	0.546 (0.065)	−0.460 (0.133)
Current Expenditure	−0.162 (0.084)	0.115 (0.047)	−0.112 (0.075)	0.033 (0.043)	0.053 (0.088)
Grants	−0.398 (0.096)	0.160 (0.085)	0.645 (0.109)	−0.418 (0.079)	0.163 (0.161)
Debt Service	−0.221 (0.060)	0.234 (0.051)	0.330 (0.064)	−0.154 (0.048)	−0.354 (0.099)
Response of	<i>Permanent increase in</i>				
	Revenue	Investment	Current	Grants	Debt Service
Own Revenue		0.508 (8.355)	0.002 (0.028)	−0.021 (0.021)	0.013 (0.040)
Investments	0.629 (0.122)		−0.292 (0.102)	0.945 (0.087)	−0.712 (0.168)
Current Expenditure	−0.263 (0.136)	1.119 (30.848)		0.052 (0.075)	0.071 (0.125)
Grants	−0.645 (0.146)	1.734 (27.853)	0.726 (0.101)		0.254 (0.234)
Debt Service	−0.360 (0.097)	1.767 (60.936)	0.371 (0.056)	−0.273 (0.107)	

Note: Standard errors are in parentheses.

⁵ See Appendix C in Buettner (2009) for more information.

Table 6: Present Value of Changes in Primary Balances

Own Revenue	Gov. Invest.	Current Expend.	Grants	Debt Service
–1.006	1.025	1.017	–1.010	0.578

Source: Author.

The columns in Table 5 show how innovations in one variable can affect subsequent adjustments in both itself and other variables. For example, the first column reveals how a ¥1 change in own-source revenue in one period affects the subsequent evolution of own-source revenue, government investment, government current expenditure, grants, and debt services. The data in the table show that a ¥1 decrease in own-source revenue leads to a ¥0.384 increase in future own-source revenue, a ¥0.387 decrease in government investment, a ¥0.398 increase in grants, and a ¥0.162 increase in current expenditure by ¥0.162. However, the change in current expenditure is not statistically significant.

Innovations in each budget component tend to be partially offset by future changes in the same component (Table 5). For example, ¥0.629 of the balancing adjustment to a permanent ¥1 change in own-source revenue comes from a change in government investment (Table 5, second row, bottom part).

3.2.2 Responsiveness

The rows in Table 5 show how responsive a variable is to changes to itself and other variables. The second row implies that government investment is most responsive, with changes of between ¥0.259 and ¥0.546 for ¥1 innovations in other fiscal variables.

A municipality's own-source revenue is less responsive. The first row of Table 5 shows that it does not tend to adjust to fiscal imbalances caused by exogenous innovations in other variables. The absolute values range from ¥0.001 to ¥0.023, which are much smaller than the corresponding estimates for the United States, Germany, or Spain. This unresponsiveness of own-source revenue in Japan's municipalities arises from the inflexibility of the municipal tax system, as explained in Section 2.

The fourth row shows that grants tend to adjust the budget to innovations in own-source revenue, grants, and current expenditure. However, they do not show a significant reaction to shocks in investment and debt services.

The intergovernmental grants formula explains why grants work to adjust an innovation in current expenditure; this is especially true for LAT grants. LAT grants are provided to municipalities to “fill the gap” between the SFD and the SFR, as described in Section 2. When municipalities must raise their current expenditure due to exogenous shocks—such as rapid population growth—it results in an increase in the SFD, leading to increases in grants from the central government or most municipalities. Grants also tend to adjust to an innovation in own-source revenue because of the intergovernmental grants formula, as the SFR in the LAT Grant system is based on standard local tax revenue.

3.2.3 The “Flypaper Effect”

The data in the fourth column of Table 5 relate to the so-called flypaper effect in terms of local public finance. The “flypaper effect” refers to the phenomenon that, when municipalities receive grants from a higher government, they do not reduce the tax burden (own-source revenue) but rather maintain the level of public expenditure.

Data for Japan show strong evidence of the “flypaper effect.”⁶ According to the figures in the fourth column of Table 5, the response of own-source revenue to a ¥1 innovation in central grants is small and negative—just –¥0.012. These figures are only about one-tenth the size of those for the United States, but similar to those of Spain and Germany. Since the response of current expenditure is fairly low (¥0.033), an increase in grants-in-aid mainly affects government investment (¥0.546). This difference arises partly because “mandatory” expenses, such as personnel and social assistance, make up a large share of current expenditure, while government investment can be adjusted more flexibly to circumstances.

3.2.4 *Ex post* extraction of grants

The fourth row in Table 5 can shed light on the question of whether municipalities engage in opportunistic behavior to extract *ex post* larger grants from higher-level government by changing their behavior *ex ante*. Currently, there is much debate about the extent of opportunistic behavior among local governments in Japan. Some studies find evidence of such behavior (e.g., Akai et al. 2003, Doi and Ihori 2006), but others do not (e.g., Nishikawa and Yokoyama 2004). Such opportunistic behavior is consistent with the observation of a future increase in grants following current fiscal innovations in expenditure.

In the case of Japan, a ¥1 increase in government current expenditure induces a ¥0.645 increase in grants. This implies that municipalities can induce grants by raising their current expenditures. On the other hand, a ¥1 increase in government investment also leads to a ¥0.160 increase in grants, but this impact is much smaller and not statistically significant. These results imply that municipalities can induce an increase in grants by expanding current expenditures, but not by increasing government investment.

This difference probably arises because government investment tends to occur on a one-off basis, whereas current expenditure shocks tend to be long-lasting, because they are made up mostly of “mandatory expenses” such as personnel and welfare. Taking this difference into account, the central government probably has a greater tendency to support municipalities hit by current expenditure shocks.

3.2.5 Volatility

Government investment is the most volatile among expenditure components; moreover, the extent of such volatility in Japan is much greater than that seen in all other countries.

This higher volatility of government investment in Japan could be attributed to the fact that Japan’s central government has introduced numerous fiscal stimulus packages and mobilized municipalities to expand public investment as a policy tool. For example, in the late 1990s and 2000s, after the burst of the real estate bubble, “public investment by lower-level governments has played a role in boosting the economy, as well as in supporting rural areas through income redistribution” (Tajika and Yui 2006, p.123).

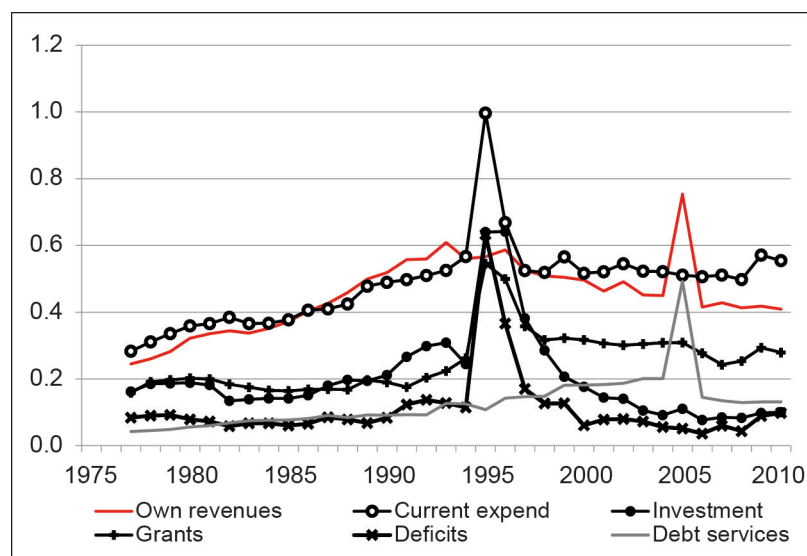
⁶ The “flypaper effect” has been observed in Japan’s municipalities, through the use of various methods. For example, see Nagamine (1995) and Doi (1996, 2000).

3.2.6 Two Examples from Japan

We provide two typical examples, to examine fiscal adjustments in own-source revenue, government investment, government current expenditure, and grants. The two are Kobe city in Hyogo prefecture, and Onagawa town in Miyagi prefecture.

Kobe's history with regard to six fiscal variables is shown in Figure 6. Kobe was hit by the Hanshin–Awaji earthquake in January 1995 (FY1994), and this created a shock on the expenditure side. The city needed large funds to finance disaster relief and reconstruction, a large part of which was financed by grants and borrowing. Spikes are seen in FY1995 in investments, current expenditures, grants, and deficits. Current expenditures reverted to the previous trend more quickly than investments did, followed by grants and deficits. Investments and deficits recovered to the trend seen in the 5 previous years. Grants shifted upward—mainly to finance debt service, even after 5 years had passed. On the other hand, own-source revenue did not show such a spike in 1995, and no shift has been observed since 1995. (The spike in 2005 was a technical one that reflected transfers from the city's special account.) The example of Kobe clearly demonstrates that municipal fiscal adjustments are achieved mainly through deficits and grants, and not through own-source revenue.

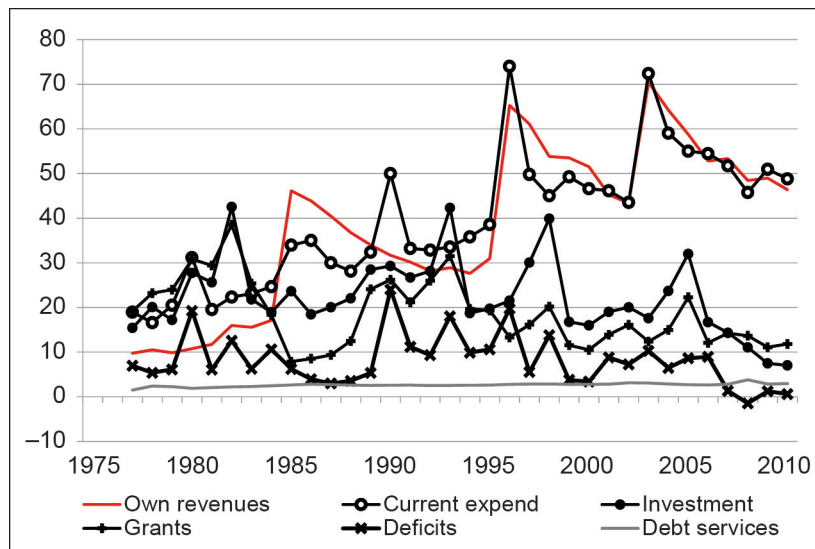
Figure 6: The Case of Kobe City, Hyogo Prefecture



Note: All values are in units of thousand yen. They are converted to per capita basis and deflated to fiscal year 2010 price.

Source: Author.

The other example is Onagawa; its history is detailed in Figure 7. There, nuclear power plants generate huge property tax revenues, since the tax base of Japan's property tax includes depreciable assets. Thus, there were fiscal shocks to the revenue side. Unit 1 of Onagawa Nuclear Power Plant started operations in 1984, Unit 2 in 1995, and Unit 3 in 2002. There were own-source revenue hikes in these years, but they decreased gradually as the value of the plants depreciated. Current expenditures increased along with own-source revenue. Investments seemed to respond to hikes of own-source revenue, with lags of several years. At the same time, grants decreased in the corresponding years, to some degree. Deficits did not seem to respond to movements in own-source revenue. Onagawa's case in Figure 7 demonstrates, especially for the period after the mid-1990s, that municipal fiscal adjustments to a shock on the revenue side are achieved mainly through expenditures.

Figure 7: The Case of Onagawa Town, Miyagi Prefecture

Note: All values are in units of thousand yen. They are converted to per capita basis and deflated to fiscal year 2010 price.

Source: Author.

Table 7: Average Values by Municipality Size

	City (676)	Large (781)	Medium (818)	Small (935)
Own Revenues	148.768	100.810	96.434	110.096
Investment	87.219	108.166	154.776	311.524
Current Expend.	189.852	185.289	236.087	377.568
Grants	128.124	160.678	251.080	507.843
Debt Services	28.651	32.091	46.900	93.681
Deficits	28.828	64.057	90.249	164.835
Own Revenues	3.526	2.833	3.144	3.922
Investment	0.247	0.385	1.378	5.317
Current Expend.	5.415	6.066	8.380	14.968
Grants	3.207	3.783	6.785	16.524
Debt Services	1.336	1.624	2.598	5.658
Deficits	0.266	1.459	2.428	5.496

Notes: All values are in units of thousand yen. They are converted to per capita basis and deflated to fiscal year 2010 price. Sample sizes are in parentheses.

Source: Author.

Table 8: Present Value Responses

Response of		<i>Innovation to</i>				
		Revenue	Invest.	Current	Grants	Debt Ser.
Own Revenue	City	−0.079	−0.203	−0.125	0.054	−0.147
	Large	−0.106	−0.027	−0.088	−0.020	0.023
	Medium	−0.352	0.004	−0.036	−0.031	0.006
	Small	−0.407	0.019	−0.003	−0.006	0.009
Investment	City	0.795	−1.158	−0.438	0.683	−0.837
	Large	0.632	−1.067	−0.448	0.606	−0.526
	Medium	0.584	−1.086	−0.475	0.681	−0.596
	Small	0.382	−0.993	−0.311	0.555	−0.465
Current Expenditure	City	0.201	−0.169	−0.433	0.229	−0.112
	Large	0.124	−0.067	−0.358	0.183	−0.126
	Medium	0.083	−0.090	−0.439	0.209	−0.050
	Small	−0.040	−0.001	−0.317	0.091	0.011
Grants	City	0.127	−0.185	0.207	−0.054	−0.233
	Large	−0.128	−0.100	0.267	−0.188	−0.031
	Medium	0.031	−0.193	0.097	−0.061	−0.036
	Small	−0.256	0.020	0.397	−0.367	0.105
Debt Services	City	−0.183	0.182	0.198	−0.158	−0.348
	Large	−0.094	0.104	0.155	−0.061	−0.380
	Medium	−0.109	0.112	0.142	−0.037	−0.373
	Small	−0.163	0.197	0.254	−0.141	−0.376
Primary Balance	City	−0.947	0.939	0.953	−0.912	0.569
	Large	−0.989	1.008	0.984	−0.997	0.644
	Medium	−0.988	0.987	0.975	−0.982	0.616
	Small	−1.005	1.032	1.021	−1.019	0.568

Note: The first upper row in each cell stands for the response of cities. The figures in the following rows stand for the response of large, medium, and small towns/villages.

Source: Author.

4. CONCLUDING REMARKS

This study sought to provide an overview of the basics of Japan's local public administration and finance system, and to analyze how Japan's municipalities restore their fiscal balance after a fiscal shock.

The features of Japan's system are summarized as follows. First, Japan's local governments disburse more money than the central government, and thus play a major role in redistribution. Second, local tax systems are inflexible, and differences between local tax rates and those dictated by the system are very small; this leads local governments not to consider local tax rates a plausible choice variable. Third, a large vertical fiscal gap exists between the central and local governments, and so intergovernmental transfers from central to local governments are necessary. Intergovernmental transfers also contribute to uniform public service provision (in line with national standards) and to closing serious gaps in tax capacities among local governments. Fourth, the local borrowing system is also intertwined with the local tax and intergovernmental system.

Analysis of fiscal adjustments in Japan's municipalities, based on the VECM, provides the following results. First, Japan's municipalities respond to fiscal shocks mainly by adjusting their expenditures, especially through government investments. Second, the municipalities' own-source revenue plays a limited role in balancing the local budget, while grants from the central government play a significant role. Third, the magnitude of volatility in own-source revenue and grants is relatively small, whereas government investment in Japan is highly volatile compared with that seen in other countries. Fourth, international comparisons show that municipalities are likely to induce grants from higher-level government, but that this is also the case with current expenditures in Japan. Fifth, the responses of government investments explain almost everything about permanent unit increases in grants, providing possible evidence of the "flypaper effect."

This study places emphasis on the close link between the central and local governments. The central government supervises and supports local governments by making fiscal transfers, and through local bond system settings under the inflexible local tax system. On account of these supports, local bond "defaults" are very rare in Japan: only 17 municipalities have defaulted since 1975, with the two most recent examples being Akaike town in Fukuoka prefecture in 1992, and Yubari city in Hokkaido in 2007. These circumstances contrast with other developed economies; in the United States, for example, there were 2,521 defaults during the 1970–2011 period—that is, an average of more than 60 defaults per year (Appleson et al. 2012). Note that a local bond "default" is often defined in Japan by the filing of a case for fiscal reconstruction. Under the Fiscal Reconstruction Law, all local borrowings are assumed to be paid back following the approval of a fiscal reconstruction plan that the central government advises and supervises. This system can create a "soft budget" problem, as suggested in Section 3, and may induce moral hazard behavior among local governments.

One policy option by which to constrain such behavior is the introduction of a bankruptcy system for local governments; this topic has led to heated debate in the course of enacting a series of local decentralization reforms in Japan. The new Fiscal Reconstruction Law, established in 2009, did not introduce a bankruptcy system, but rather an "early warning system" based on a combination of fiscal indicators; this system requires a local government to create a fiscal reconstruction plan, if it sets off a proverbial alarm. One of the advantages of a bankruptcy system is that, under the pressure of financial markets, it deters moral hazard behavior among local governments, including investments in risky projects and irresponsible expenditures. One disadvantage is that it creates concern among local residents with regard to government shutdowns. In Japan, where there are serious disparities in local tax capacity and local governments play a major role in redistribution, these advantages and disadvantages should be carefully evaluated in the course of undertaking decentralization reforms.

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