ANNALS OF ECONOMICS AND FINANCE **3**, 169–183 (2002)

Government Deficits, Political Inefficiency, and Fiscal Reconstruction in Japan*

Takero Doi

Faculty of Economics, Keio University
2-15-45, Mita, Minato-Ku, Tokyo, 108-8345, Japan
Graduate School of International Relations and Pacific Studies
University of California, San Diego
E-mail: tdoi@econ.keio.ac.jp

Toshihiro Ihori

Department of Economics, University of Tokyo
Hongo, Tokyo, 113-0033, Japan
E-mail: ihori@e.u-tokyo.ac.jp

and

Hiroki Kondo

Department of Econmics, Shinshu University
3-1-1, Asahi, Matsumoto, Nagano, 390-8621, Japan
E-mail: kondo@econ.shinshu-u.ac.jp

We investigate the behavior of government deficits and fiscal reconstruction movement in Japan both theoretically and empirically. We first develop a dynamic framework of fiscal reconstruction process using the dynamic game theory among various interest groups. The distribution of a tax increase, that is, contribution of taxes to reducing public debt and raising privileges, depends on the political efficiency of lobbying activities. We also investigate empirically the relationship between the political inefficiency and the outcome of fiscal reconstruction process in the Japanese (national) general account.

Key Words: Government deficits; Fiscal reconstruction; Political inefficiency.
JEL Classification Numbers: H620, H800.

* An earlier version of the paper was presented at IIPF conference in Seville, Spain on August 28-31, 2000 and University of California, San Diego on January 20, 2001. We would like to thank Henning Bohn, Jun-ichi Itaya, Tastuo Hatta and other seminar participants for some helpful comments.

1529-7373/2002

1. INTRODUCTION

Most developed countries including Japan have been suffering from huge government deficits. We investigate the behavior of government deficits and fiscal reconstruction movement in Japan both theoretically and empirically. In the middle of 1990s, the Japanese budget deficit was rapidly increasing. The bond-dependency rate in the general account of the national government rose from 6.7% in FY 1991 to 21.7% in FY 1996. In 1997, the Japanese government started on fiscal structural reform or fiscal reconstruction movement, that is, the control of public spending to reduce the budget deficit-GDP ratio to 3% by 2003. The Fiscal Structural Reform Act was enacted in November 1997. The government increased revenue of income and consumption taxes and cut expenditure of public works in FY 1997. The bond-dependency rate was supposed to decline to 18.5% in the fiscal year. The Japanese economy, however, confronted a recession from FY 1997. Under its influence, the act was suspended in 1998. In FY1998 supplement budget, spending of public works was further increased, and the bond-dependency rate rose up to 34.0%. The deficit-GDP ratio was about 10% in 2000.

Why fiscal reconstruction was unsuccessful in Japan? Besides, as a result of increased government deficits, the size of government will rise. Slowdown of economic growth may be one of the reasons. In this paper we concentrate on another factor: the political aspect of fiscal reconstruction. There are two common political measures to combat huge fiscal deficits: imposing a ceiling constraint on some of public spending and raising consumption taxes. However, since most of transfer payments, which constitute a large part of government expenditures, are actually controlled by interest groups, such attempts would often end up in failure without their concessions to accept cuts in such transfers. For example, Japan introduced the consumption tax at 3% in 1989 and raised to 5% in 1997. During the same period Japan's government deficit has been growing rapidly mainly due to an increase in transfer payments, which is the outcome of lobbying activities of interest groups.

The main purpose of the present paper is to investigate the behavior of such interest groups in a fiscal reconstruction process and the implications of fiscal reconstruction attempts on the size of government, rather than knowing when fiscal reconstruction would begin, which is the main question of the war-of attrition model of Alesina and Drazen.[1] More precisely, the fiscal authorities are assumed to be strong enough to impose a ceiling

[1]There are several papers including Chari and Coles (1993) and Velasco (1997) that analyze the free rider behavior of interest groups. However, there have been no theoretical or empirical analyses to investigate the political aspect of fiscal reconstruction in Japan.

rule for a certain area of public spending including public consumption and interest payments. This is a starting point of fiscal reconstruction. However, they may be weak in the sense that they cannot restrain group-specific privileges or transfers. Each of the interest groups can actually set a group-specific privilege.

In the real economy when facing fiscal crises, every interest group generally agrees with the implementation of fiscal reconstruction (such as imposing a ceiling constraint on some of public spending). But it would not necessarily imply that each interest group is willing to accept cuts in its own privilege. This phenomenon may be called 'acceptance with the overall goal but objection to more specific arrangements'.

In order to investigate the lobbying behavior, we first develop a dynamic framework of fiscal reconstruction process using the dynamic game theory among various interest groups, by extending a framework of Ihori and Itaya (2001). An important feature of the present paper is to incorporate political inefficiency, which is summarized by deadweight loss of lobbying activities by interest groups. By doing so, our analysis would explore an important mechanism by which raising taxes results in larger size of government. We show that when the political decision process is not efficient, an increase in the tax revenues produces the negative income effect, leading to an excessive increase in privileges as well as an increase in the government debt during fiscal reconstruction. As for the empirical analysis we focus the general account of the national government (excluding grants of local allocation tax) in FY 1955-1998. Our empirical result suggests that the Japanese political decision process was rather inefficient. In other words, the Japanese government could not utilize an increase in tax revenues for fiscal reconstruction because of both the weak political leadership and the inefficient decision process.

Section 2 presents the theoretical framework of our model. Section 3 examines the impact of political inefficiency and a tax increase on the size of government and government debt outstandings. We investigate how political inefficiency is related to these comparative static results. Section 4 presents an empirical study on fiscal reconstruction in Japan. Finally, section 5 concludes the paper.

2. THE ANALYTICAL MODEL

Fiscal reconstruction usually takes much time and public asset balances change over time. It is thus important to explore dynamic properties of fiscal reconstruction process from the theoretical point of view. The critical point of formulating fiscal reconstruction process in Japan is to clarify how the existing privileges of interest groups such as preferential treatments of public works and/or subsidies are to be abandoned.

Following Ihori and Itaya (2001), we develop a dynamic game among various interest groups, which would accept voluntarily decreases in their transfers (or abandon some of group-specific privileges) in order to gain the benefits resulting from a reduction in government debts. The marginal benefit of doing so is an increase in public goods since a decrease in privileges given to each group can reduce the size of deficits and interest payments on public debt, leading to a more room for public goods. The marginal cost of that is a decrease in private consumption since a decrease in its transfer payments reduces disposable income of each group. They are therefore willing to abandon some of these privileges if this marginal benefit would outweigh this marginal cost.

Suppose there are many ($n \geq 2$) symmetric interest groups in a small open economy. Each of them enjoys a group-specific privilege of higher subsidies, which may be used for private consumption. The instantaneous utility of group i (or the representative agent of group i) is assumed to be strictly increasing in private consumption c_i and the benefit of public consumption or amenity G, which is common to all groups and may be viewed as a pure public good. It is further assumed to be a twice-continuously differentiable and strictly quasi-concave function, which is expressed by

$$U = U(c_i, G) \tag{1}$$

where subscript (or superscript) i means group i. Moreover we assume that both goods are normal ones. Given the instantaneous utility function (1), the intertemporal utility function of group i over an infinite-horizon starting at time 0 is given by

$$\int_0^\infty U(c_i(t), G(t))e^{-\rho t}dt \tag{2}$$

where $\rho(> 0)$ is the constant discount rate, which is common to all groups.

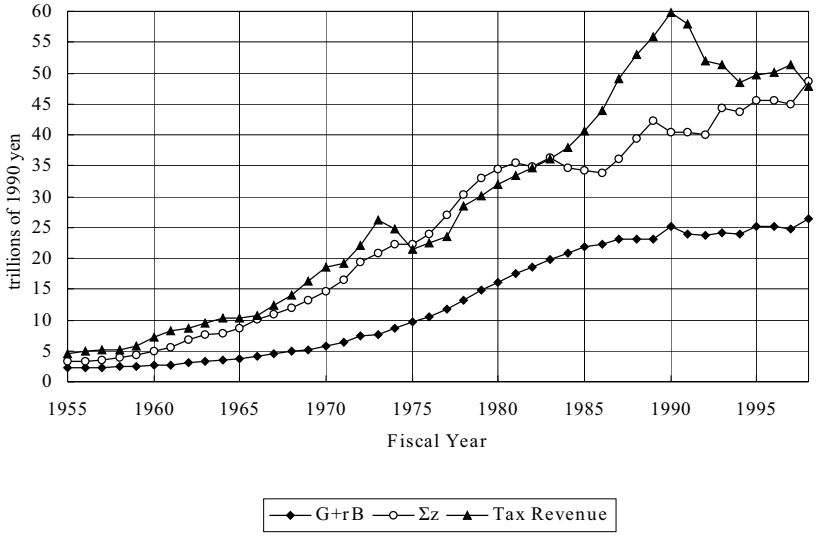
Public consumption G at each point in time is determined according to

$$G(t) = G^* - rB(t) \tag{3}$$

where G^* is an exogenously given ceiling level, r is the exogenously given world interest rate, and B is external government debt. Equation (3) means that the total government spending on public consumption and interest payments is fixed at the level of G^* through time, so that higher public consumption G is possible only by reducing the external debt outstanding B.

During the fiscal reconstruction process since 1980 Japan has actually imposed the ceiling constraint, similar to (3), on some of government spending (mainly public consumption) in order to prevent a further deterioration in

FIG. 1. Real National Government Expenditure and Revenue



budget deficits. See Figure 1. Equation (3) formulates such a ceiling rule. The strict ceiling rule of (3) (i.e., constancy of G^*) is adopted only for simplicity.[2]

The pubic debt, B, will change over time, following the government budget constraint. Hence, the dynamic evolution of B is given by

$$\dot{B} = G + rB + \sum_{i=1}^{n} z_i - \sum_{i=1}^{n} \omega Y_i \tag{4}$$

where Y is exogenously given income common to all interest groups and ω is the common income tax rate. z_i is group-specific privileges (e.g., subsidies to group i and public spending that benefits only group i). The overall size of government is defined by the sum of public consumption, interest payments, and transfer payments, $G + rB + \sum_{j=1}^{n} z_j$.

Although every interest group agrees with imposing the ceiling constraint on some of public spending for fiscal reconstruction, there exist a lot of freedom on how to stabilize the debt-to-GDP ratio and group-specific transfers are not easily restrained by the fiscal authorities. In formulating the political process of fiscal reconstruction it is critical to clarify how the existing

[2]A more general ceiling rule could be employed with the analytical results intact. All we need below is the negative relation between G and rB at a given level of GDP.

privileges of interest groups such as preferential treatments of subsidies and transfers are to be abandoned.

The ceiling constraint in (3) may be viewed as an agreement to reconstruct the fiscal system towards balanced budget. The government (more precisely, fiscal authorities) may be 'strong' enough to impose the ceiling constraint (3). However, the government cannot directly reduce group-specific transfers, so that they could be restrained only with the agreement of the associated interest groups. In this sense, the government is 'weak' in that fiscal reconstruction can be thought of as an outcome of voluntary concession on how the increases in net taxes g_i are to be apportioned between various interest groups. More formally, each interest group can voluntarily set cuts in group-specific subsidies to accomplish fiscal reconstruction at each point in time, given the expectations about the time path of others' concessions g_i.

In order to get z_i, interest groups sacrifice deadweight loss $\alpha(z)$ as the result of lobbying activities. The parameter α reflects the degree of political inefficiency of lobbying activities. In Japan many interest groups spend a lot of time and efforts to obtain group-specific transfers. If α is low, their lobbying behavior is efficient in the sense that interest groups do not sacrifice little deadweight loss to obtain privileges, while if α is high, the political decision process is not efficient. Hence, group i' s flow budget constraint is given by

$$(1-\omega)Y + (1-\alpha(z))z_i = c_i \tag{5}$$

where the deadweight loss function is assumed as a linear one; $\alpha(z) = \alpha z$. $0 < \alpha < 1$. Alternatively, we may rewrite as follows

$$c_i + g_i = Y \tag{5'}$$

Here, g_i is defined as

$$g_i \equiv \omega Y - z_i + \alpha z_i \tag{6}$$

which is the income tax payment applied to all groups ωY minus group-specific privileges z_i (net of deadweight costs αz_i).

We further assume that each interest group has enough information to exactly know the structure of the government budget constraint (4). In other words, there is no budgetary illusion. This assumption implies that the number of interest groups is relatively small so that they can easily recognize the effect of changes in their concessions on public consumption or its accumulation path [see, e.g., Boadway et al. (1989)].

Considering (6), from (3) and (4) we have

$$\dot{G} = \frac{r}{1-\alpha}\sum_{j=1}^{n} g_j - \frac{r\alpha}{1-\alpha}\sum_{j=1}^{n}\omega Y_j - rG^* \tag{4'}$$

where the relative price of private consumption and public consumption is set to be unity for simplicity. To focus on the problem at hand, Y is assumed to be fixed over time. Although this assumption appears to be extremely strong within a dynamic setting, it can be justified by observation of the fact that in Japan facing large budget deficits the balanced budget movement takes place in economies where the growth rate of GDP is close to zero (i.e., GDP is nearly fixed over time). In addition, we assume that there is neither private saving not private bequests for analytical simplicity[3].

3. RAISING TAXES AND THE SIZE OF GOVERNMENT

3.1. Dynamics and steady state

Let us investigate open-loop strategies. This type of Nash equilibrium concept presumes that the contribution to tax revenue made by each group in the fiscal reconstruction process at each point in time is only conditioned on the initial stock of public debt and hence the initial level of public spending, and thus each group precommits itself to the chosen path of contribution at the outset of fiscal reconstruction over an entire planning horizon.

The problem is formulated as follows: Maximize (2) subject to (4') (5') and the exogenously given $G(0)$ and $g_j(t)$ $(j \neq i)$ at time 0. The first-order necessary conditions with respect to c and G are as follows:

$$-U_c + \mu\frac{r}{1-\alpha} = 0 \tag{7}$$

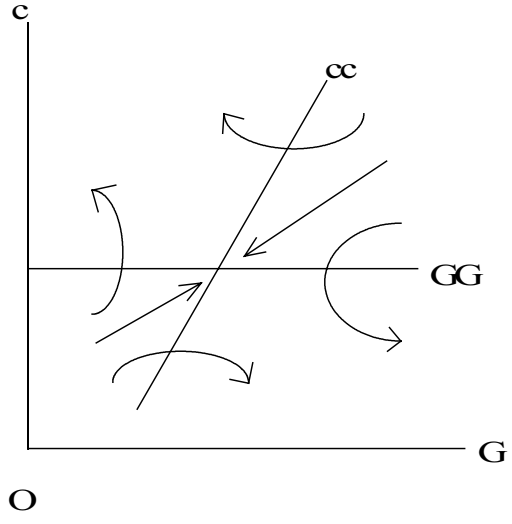
$$\dot{\mu} = \rho\mu - U_G \tag{8}$$

where μ is the shadow price associated with the accumulation of public spending. From (7) and (8) we have

$$\frac{\dot{c}}{c} = \sigma(c)\left(\rho - \frac{rU_G}{(1-\alpha)U_c}\right) \tag{9}$$

[3]Moreover, if the fully intertemporal optimization of private agents with perfect foresight were allowed within an infinite horizon framework, the debt neutrality proposition of alternative financing of government spending prevails. In order to discuss the meaningful problem of government deficit, we need the assumption made above.

FIG. 2.



where $\sigma(c) \equiv U_c/cU_{cc}$ is the inverse of the intertemporal elasticity in consumption. On the other hand, from (4') and (6') we also have

$$\dot{G} = \frac{nr}{1-\alpha}(Y-c) - \frac{r\alpha n}{1-\alpha}\omega Y - rG^* \tag{10}$$

These two equations summarize the dynamic behavior of c and G. Figure 2 shows a phase diagram of this model. Curve cc means $\dot{c} = 0$ in (9), while curve GG means $\dot{G} = 0$ in (10). It is easy to see that the steady-state equilibrium is saddle-point stable. In the steady state we have

$$\frac{U_G}{U_c} = \frac{\rho(1-\alpha)}{r} \tag{11}$$

and

$$\frac{n}{1-\alpha}(Y-c) = \frac{\alpha n\omega Y}{1-\alpha} + G^* \tag{12}$$

Equations (11) and (12) together determine the steady state values of G and c.

3.2. Comparative static results

First of all, let us consider the impact of incorporating the deadweight loss, α. From (12), we have at the steady-state solution

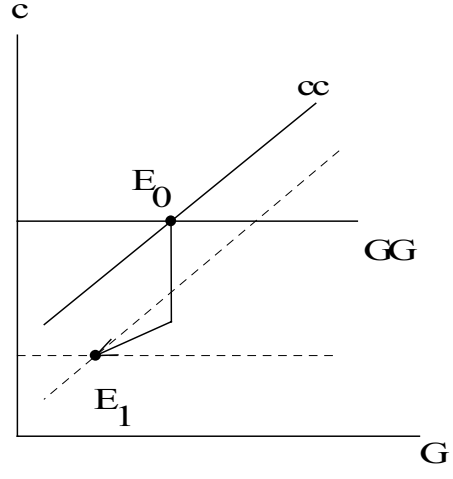
$$\frac{dc}{d\alpha} = -\omega Y + \frac{G^*}{n} = z \tag{13}$$

From (4), we also have at the steady-state solution

$$\frac{dz}{d\alpha} = 0 \tag{14}$$

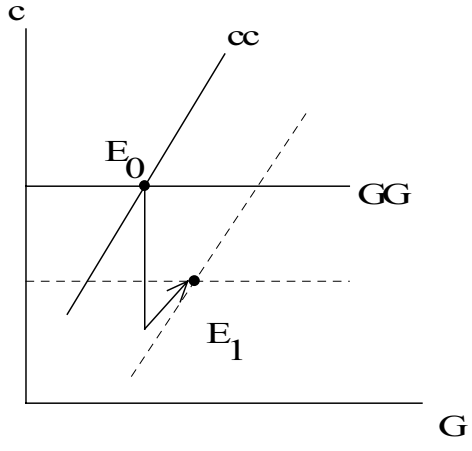
However, the sign of $\frac{dB}{d\alpha}$ or $\frac{dG}{d\alpha}$ is ambiguous.

FIG. 3A.



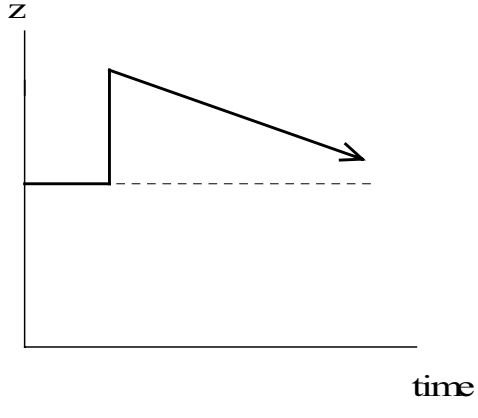
As shown in Figure 3, an increase in α will shift curve GG downward, while it will shift curve cc to the right. The shift of curve GG reflects an income effect: An increase in α reduces disposal income of the interest group, inducing less demand for the public good G and thus more demand for privileges z. On the other hand, the shift of curve cc reflects an substitution effect: An increase in α raises the relative cost of private consumption in terms of the public good, inducing less demand for z. Hence a substitution from c to G takes place. If the income effect dominates the substitution effect, G declines, while if the substitution effect dominates the income effect, G increases in the steady state from point E_0 to E_1. Figure 3A shows that in the former case c jumps downward and then declines during transition. On the other hand, Figure 3B shows that in the latter case c jumps

FIG. 3B.



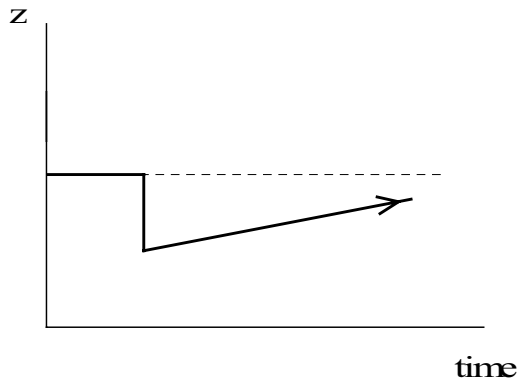
downwards and then increases during transition. We have an overshooting response of private consumption in the latter case.

FIG. 4A.



Equation (5) means that c and z move in opposite directions during transition. Hence, if the income effect dominates the substitution effect, z jumps upward and then declines towards the original level during transition as in Figure 4A. If the substitution effect dominates the income effect, z jumps downward and then increases towards the original level during

FIG. 4B.



transition as in Figure 4B. An intuition is as follows. In Figure 3A an increase in α will reduce the marginal benefit of cooperating with fiscal reconstruction since the marginal benefit of an increase in public spending declines due to the negative income effect. Hence, the interest groups stimulate their lobbying activities to seek for more privileges. Thus, during transition z is excessively high and hence the government is in deficit. The debt outstanding, B, increases over time.

Let us now investigate the impact of a tax increase, by which the government attempts to reduce government deficits. From (12) we have at the steady-state solution

$$\frac{dc}{dT} = -\alpha < 0 \tag{15}$$

where $T = \omega Y$. From (4) we also have at the steady-state solution

$$\frac{dz}{dt} = 1 \tag{16}$$

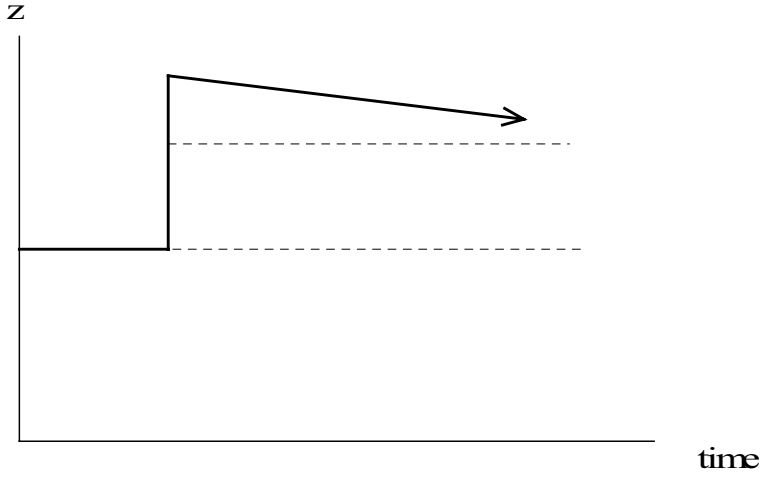
In this case an increase in T would always reduce G and raise B.

When $\alpha = 0$, it is easy to see that an increase in T has no real effects. It will raise z by one-to-one and other variables such as c, G, and B do not change at all even during transition. This is the benchmark case[4]. When $\alpha > 0$, a dynamic impact of an increase in T on z during transition is

[4]In this benchmark case an increase in T cannot alleviate the fiscal situation. This is due to our simplifying assumption that each interest group can set z freely. In the real world the government could have some political power so that some portion of the tax increase would be used for reducing deficits.

qualitatively the same as an increase in α in the cases of Figure 3A and Figure 4A. Namely, z jumps upwards and then declines towards the new steady-state level in Figure 5. The size of government is also larger. Compared with the benchmark case of $\alpha = 0$, z is excessive during transition. The larger α, the larger the value of dB/dT. Namely, the less the degree of political efficiency, the more excessive the lobbying behavior during transition and the larger the steady state level of pubic debt. In this sense larger values of α would hurt fiscal reconstruction by means of raising taxes.

FIG. 5.



Suppose the utility function (1) is given as a log-linear form:

$$U = \log c_i + \beta \log G \qquad \beta > 0$$

Then, we have in the steady state

$$G = \frac{r\beta}{(1-\alpha)n\rho} \sum c \tag{17}$$

and

$$\frac{dB}{dT} = \frac{\beta\alpha}{(1-\alpha)\rho} \tag{18}$$

Thus, when an increase in tax revenues results in a large increase in public debt outstanding, we may judge that $\alpha > 0$ and hence the political lobbying behavior is rather inefficient. An intuition is the same as in the case of

Figure 3A. A large value of α means that the negative income effect is strong, inducing the excessive lobbying behavior of interest groups.

Becker and Mulligan (1998) showed that "more efficient" tax systems, which rely on broad-based taxes with fairly flat rate structures, are associated with larger government: A shift to a tax system with lower marginal deadweight loss reduces pressure by taxpaying groups, and raises total taxes and government spending. Here we have shown another reason why raising taxes results in bigger governments and public debt outstandings. An increase in the tax will lead to an excessive increase in privileges during transition due to the negative income effect when the political process is inefficient. Its real effect is to enlarge group-specific transfers during transition, resulting in a bigger size of government, while private consumption and the demand for public consumption both decline.

4. EMPIRICAL ANALYSIS

In order to evaluate the degree of political inefficiency of fiscal reconstruction in Japan, we analyze the general account (excluding grants of local allocation tax) in FY 1955-1998. In the general account, expenditures by purpose are divided into the following categories; national agencies, local government finance, national defense, disposition of external affairs, national land conservation and development (public works), industrial development, education and culture, social security, pensions, government bonds, and other. Based on the above theoretical model, we can divide these variables as follows. The first group is expenditures for provision of pure public goods, including national agencies, national defense, disposition of external affairs, and education and culture, denoted by G. The second is interest payments, equal to government bonds minus bond redemption, denoted by rB. The last one is public investment and privileges to regions, including the remaining expenditures (excluding grants of local allocation tax), denoted by $\sum_{i=1}^{n} z_i$.

On the revenue side, we divide the total revenue into tax and other revenues ($\sum_{i=1}^{n} T_i$) and net issue of debt (equal to public debt minus bond redemption:$\dot{B}$), excluding revenues for grants of local allocation tax. We use real GDP as Y in the above model, and these variables deflated by the GDP deflator.

We estimate α, based on the model in Sections 2 and 3. Substitute (17), the first-order condition of the utility maximization, into (4), the government budget constraint, we obtain

$$\sum c = \frac{1}{1-\frac{r}{n}\frac{\beta}{\rho}} nY - \frac{2-\alpha}{1-\frac{r}{n}\frac{\beta}{\rho}} nT - \frac{1-\alpha}{1-\frac{r}{n}\frac{\beta}{\rho}} (rB + \dot{B}). \tag{19}$$

TABLE 1.

Estimating Equation (20)

Sample period	1956-1998	1965-1998
a_0	2.148	2.676
	(1.068)	(0.943)
a_1	−3.392	−3.615
	(−10.525)	(−12.709)
α	0.539	0.515
	(2.512)	(2.531)
δ	42180000	2178330
	(0.740)	(0.036)

Test of overidentifing restriction

Wald statistic		
	1.047	1.604
p value	(0.593)	(0.449)

We add the intercept and time trend term in the above equation, then

$$\sum c = a_0 + a_1 t + \frac{1}{1-\frac{r}{n}\delta} nY - \frac{2-\alpha}{1-\frac{r}{n}\delta} nT - \frac{1-\alpha}{1-\frac{r}{n}\delta}(rB + \dot{B}). \qquad (20)$$

We set $\delta = \beta/\rho$, since we cannot identify β and δ. We estimate (20) to gain the estimate of α. We use the generalized method of moments (GMM) to avoid the problem of endogeneity of the independent variables.

The result of the estimation is shown in Table 1. The instruments are the constant term, time trend term, the growth rates of real GDP, population, and the outstanding of government bonds in both estimations. We find that the estimate of α is significantly larger than 0 in FY 1956-1998 and FY 1965-1998. It suggests that α is about 0.5 and is larger than 0.

Our empirical result is consistent with the conjecture that the Japanese government's political leadership was not strong enough to persuade interest groups to cooperate with fiscal reconstruction in the above sample period. Also, the political decision process during fiscal reconstruction period in Japan was not so efficient. Due to the negative income effect explored in the theoretical analysis, we could expect excessive lobbying behavior of interesting groups. This is one of the main reasons why fiscal reconstruction was not completed well in Japan.

5. CONCLUSION

When the government debt becomes large and the political leadership is weak, it would be much difficult to induce all interest groups to cooperate. We found that with larger deadweight loss of lobbying activities higher existing privileges and higher government debt are made relative to the benchmark case without deadweight loss. Raising taxes cannot necessarily alleviate the fiscal crisis compared with the benchmark case. Its negative income effect is to enlarge group-specific public works and transfers, resulting in a bigger size of government without reducing government deficits much. This is one of the main reasons why fiscal reconstruction was not completed well in Japan. In order to realize successful fiscal reconstruction, therefore, we need the strong political leadership and efficient decision process.

The present model could be extended in several directions. The most important extension is to allow heterogeneity across interest groups as in Alesina and Drazen (1991) and Becker and Mulligan (1998). The extension to include heterogeneous interest groups in terms of incomes, preferences, or discount factors may add further insights to our results despite the analytic complexity. Another interesting extension of the model is to treat the governing party as simply another interest group with ability to vary its actions through time (possibly also facing elections) and to investigate how the ability to precommit to a tax system improves things. This could lead to an interesting international comparison of fiscal stabilization policy in the real world to cope with fiscal deficits.

REFERENCES

Alesina, A. and A. Drazen, 1991, Why are stabilization delayed? *American Economic Review* **81**, 1170-1188.

Becker, G. S. and C. B. Mulligan, 1998, Deadweight costs and the size of government. *NBER working paper* 6789.

Boadway, R., Pestieau, P., and D. Wildasin, 1989, Tax-transfer policy and the voluntary provision of public goods. *Journal of Public Economics* **39**, 157-176.

Chari, V. V. and H. Cole, 1993, Why are representative democracies fiscally irresponsible?, Federal Reserve Bank of Minneapolis, Research Department Staff Report 163.

Ihori, T. and J. Itaya, 2001, A dynamic model of fiscal reconstruction. *European Journal of Political Economy*, forthcoming.

Velasco, A., 1997, A model of endogenous fiscal deficits and delayed fiscal reforms. *NBER Working Paper* 6336.