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CARF-F-043

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September 2005

CARF is presently supported by Bank of Tokyo-Mitsubishi UFJ, Ltd., Dai-ichi Mutual Life Insurance Company, Meiji Yasuda Life Insurance Company, Mizuho Financial Group, Inc., Nippon Life Insurance Company, Nomura Holdings, Inc. and Sumitomo Mitsui Banking Corporation (in alphabetical order). This financial support enables us to issue CARF Working Papers.

Interaction between Monetary and Fiscal Policy and the Policy Mix

Theoretical Consideration and Japanese Experience[*]

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Abstract

Interactions between monetary and fiscal policy depend on the specification of policy variables that fiscal policy uses. However, a general rule is that when monetary policy is capable of dealing with sticky price adjustment, a primary concern of fiscal authority should be to remedy the resource allocation. My regression study using cross-country data shows that in a majority of OECD countries fiscal policy relies on the automatic stabilizer. Japan is a unique case in that it relies heavily on discretionary fiscal policy. However, Japanese policymakers have recently changed their thinking regarding fiscal policy.

JEL classification numbers: E63, E62, E52
Keywords: monetary and fiscal policy; policy mix; automatic stabilizer; inflation targeting; tax smoothing

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[*] An earlier version of this paper was presented at the Bank of Korea International Conference on the Effectiveness of Stabilization Policies, May 27, Seoul, Korea. I would like to thank Micheal Artis and Kookshin Ahn for helpful comment. Part of my research is financially supported by Grants-in-Aid for Scientific Research 12124206 and 17530141 of the Ministry of Education.

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1. Introduction

In the discussion of policy mix in the intermediate macroeconomics textbook, monetary policy and fiscal policy play an equal role in stabilizing economic fluctuations. However, recent theory and practice presumes the division of labor regarding policies. Fiscal policy is in charge of resource allocation, while monetary policy addresses economic stabilization. The purpose of this paper is to discuss how and when theory justifies this kind of separation, as well as to empirically examine how developed countries have accepted this idea.

This paper will first give a theoretical review as means of introducing our discussion of the separation of monetary and fiscal policy. Recently the analysis of monetary policy has dramatically advanced from the new Keynesian framework which established a solid micro foundation of behavioral equations. A consideration of fiscal policy under this framework has been newly developed by recent researchers such as Benigno and Woodford (2003), Eggertsson and Woodford (2004), Schmitt-Grohe and Uribe (2004) and Siu (2004). Under optimal policy management by a consolidated government, monetary authority and fiscal authority seek to maximize a singular objective function while under the same restrictions. Policy variables are included in the consolidated government's budget equation. In general, monetary policy and fiscal policy closely interact; monetary policy cannot ignore fiscal concerns, while fiscal policy should be concerned with output fluctuations. However, the above-mentioned literature also characterized specific cases where the interaction between monetary and fiscal policy was inherently weak. In these situations, ignoring the interplay between monetary and fiscal policy is accepted as good practice.

Taylor (2000) empirically examined the practice of fiscal policy in the United States. He focused on the relationship between the structural balance of government and the output gap. He found that the structural balance did not respond to the output gap. This implies that fiscal authority abandons discretionary policy and that fiscal policy sticks to an automatic stabilizer. On the other hand, Gali and Perotti (2003) examined how the Maastricht Treaty and the Stability and Growth Pact affected fiscal policy in EU countries, and found that fiscal policy had become more countercyclical in the post-Maastricht period (1992-2000).

Section 2 will be a discussion of the interaction of monetary and fiscal policy under the new Keynesian framework. In Section 3, the paper will take a look at the recent practice of other OECD countries as well as examining the specific case of Japan. My regression study using cross-country data indicates that fiscal policy works as an automatic stabilizer in many OECD countries. Japan belongs to the opposite case; the structural balance responds strongly to the output gap. In Section 4, the paper will further analyze the Japanese situation as well as identify key issues facing Japanese fiscal policy.

2. Interaction Between Monetary and Fiscal Policy

2.1 Market Failures in the new Keynesian framework

This section gives a brief overview of the theoretical framework of monetary and fiscal policy from the viewpoint of new Keynesian economics. A principal focus of the new Keynesian framework is to give a solid micro foundation of price adjustments. Since the model needs to formulate the firm's price setting behavior, they must have some market power. Therefore, the model contains market failure caused by imperfect competition. Market power and sticky price adjustment force the economy to diverge from the point of efficient resource allocation. The business cycle caused by the sticky price adjustment is a market failure. Therefore, stabilization policy is a tool utilized by the government to intervene and remedy market failure.

It is useful to decompose the fluctuation of output; market failure caused by imperfect competition and market failure caused by the sticky price adjustment. Let us denote the actual output as Y_t, the output under flexible price adjustment (natural output) as Y_t^n, and the output under efficient resource allocation (efficient output) as Y_t^*. Since the main concern of monetary policy is the cyclical fluctuations caused by the sticky price, monetary theory usually focuses on the output gap $x_t \equiv \log\left(Y_t / Y_t^n\right)$. On the other hand, since the evaluation of economic welfare is defined based on its deviation from efficient resource allocation, another important variable to consider is the difference between the actual output and the efficient output $y_t \equiv \log\left(Y_t / Y_t^*\right)$.

Current research on monetary policy usually describes the movement of inflation and the output gap using the Expectation IS curve and the new Keynesian Phillips curve.[1] Following Benigno and Woodford (2003) and Eggertsson and Woodford (2004), this paper presents a model that incorporates fiscal policy into the new Keynesian framework. The expectation IS curve is

$$x_t = E_t x_{t+1} - \sigma\left(\log\left(1+i_t\right) - E_t \pi_{t+1} - r_t^n\right) \ , \qquad (1)$$

[1] For a derivation of the following equations, see Woodford (2003) and Benigno and Woodford (2003).

where σ is the elasticity of intertemporal substitution, i is the nominal interest rate, $\pi_t \equiv \log(P_t / P_{t-1})$ is the inflation rate, and P is the price level. The natural interest rate r^n is the interest rate where the inflation rate is zero and the economy is at the natural level of output.

The new Keynesian Phillips curve is described as

$$\pi_t = \kappa[y_t + \psi\hat{\tau}_t + u_t] + \beta E_t \pi_{t+1} \quad , \tag{2}$$

which is derived from Calvo's (1983) specification of firm's price adjustment. In (2), κ is a parameter, and $\hat{\tau}$ is the tax rate that affects the supply side of the economy, and u is a set of exogenous shock (other than the tax rate) to the efficient output and inflation, and β is the discount factor of consumers. The above equation implies that the government can offset the shock by changing the tax rate. To highlight this fact, we rearrange the equation (2) to

$$\pi_t = \kappa[y_t + \psi(\hat{\tau}_t - \hat{\tau}_t^*)] + \beta E_t \pi_{t+1} \tag{3}$$

where $\hat{\tau}^*$ stands for the tax rate that exactly offsets the movement of u. If the fiscal authority sets $\hat{\tau}$ as $\hat{\tau}^*$, the difference between the efficient output and natural output remains constant. Even when the true objective of the consolidated government is to minimize the deviation of output from its efficient level, the monetary authority is allowed to be concerned with the deviation of output from its natural level.

We consolidate the budget equations of the fiscal authority and the central bank into one. The budget equations of the consolidated government are shown as

$$B_t = (1 + i_{t-1})B_{t-1} - P_t s_t \tag{4}$$

$$s_t \equiv \tau_t Y_t - G_t - \zeta_t \quad , \tag{5}$$

where B stands for the nominal public debt, s the primary balance, τ the tax rate, and G government expenditure, ζ exogenous transfer expenditure. The above equations can be

arranged as an equation for the real value of public debt ($b \equiv B/P$):

$$b_t = (1 + i_{t-1})\frac{P_{t-1}}{P_t} b_{t-1} - (\tau_t Y_t - G_t - \zeta_t) \quad . \tag{6}$$

2.2 Settings of policy variables in the budget of the consolidated government

Fiscal authority is responsible for controlling four variables in Equation (6). The characteristics of these variables warrant further discussion. G and ζ are spending items. They are separated because the latter does not cause the distortion of resource allocation, while the former influences the natural output and the natural interest rate. Government expenditures are usually considered as exogenous shocks, because each governmental spending item has its own purpose which is separated from the scope of stabilization policy. However, aspects of these items may be used as stabilization policy. An alternative specification is to set ζ as a policy variable. Government debt is usually specified as a safe nominal debt. Alternative specification is that the government conducts a sophisticated debt management policy with the presence of state-contingent government debts. Benigno and Woodford (2003) and Eggertsson and Woodford (2004) use the tax rate as an instrument of stabilization policy. In contrast to monetary policy, it is impractical to frequently adjust tax rates in response to economic conditions.

Taxation under a stabilization policy has been addressed in the context of tax smoothing behavior, which was discussed by Barro (1979). When the consumers have the infinite time horizon, and distortionary cost does not exist, Ricardian equivalence holds. When tax has distortionary costs, a higher tax rate leads to a larger welfare loss. For this reason the fiscal authority should keep the tax rate as smooth as possible. For example, the tax smoothing theory argues that when there is a temporary big fiscal demand, government should choose a persistent, small tax increases and issue a bond, rather than immediately passing a large tax increase. As a result, the fiscal deficit will increase during a period of high fiscal demand.

Barro (1979) developed the tax smoothing theory under the real economy without the consideration of money. Bohn (1990), Chari, Christiano and Kehoe (1991) argued that when the price was flexible in a monetary economy, it was preferable to raise the inflation rate to correspond to a temporary increase in fiscal demand, which is contrary

to the discussion of the real economy. Beningo and Woodfored (2003), Schmit-Grobe and Uribe (2004) and Siu (2004) examined the tax smoothing theory when price adjustment was not flexible. In the case of sticky price adjustment in a monetary economy, the adjustment of fiscal shock through the manipulation of the inflation rate should lead to a change in income, thus possibly deteriorating the public welfare level. The implication for price stability critically depends on price adjustment speed. Under the reasonable price adjustment speed, price stability is still an important policy concern for the central bank, even if policy makers take account of government budget.

2.3 Solvency of the consolidated government

In order for the government to be solvent, the future government debt should satisfy the No-Ponzi Game (NPG) condition, which prohibits the real value of government debt from growing more than the discount rate. When the fiscal authority and the central bank independently determine policy variables, an important question is which is responsible for guaranteeing the solvency of the government. Sargent and Wallace (1981) is an influential study on this topic, and many studies followed it. There are three ideas about how the intertemporal budget constraint of the consolidated government should be satisfied through a conduct of monetary and fiscal policy.

(1. Monetarist theory of inflation) The central bank independently determines the growth rate of money. Fiscal authority passively adjusts a primary balance, and assures the solvency of the budget.

(2. Fiscal theory of inflation) The fiscal authority independently determines a primary balance other than seigniorage, and the central bank passively adjusts the growth rate of money, and guarantees the solvency of the budget.

(3. Fiscal theory of the price level) The central bank and fiscal authority independently determine their respective policy variables, and the price level is adjusted to guarantee the solvency of the budget. This idea has recently become a hot issue.[2]

The first is a widely accepted idea. Sargent and Wallace (1981) extensively discussed the second idea, and many studies followed it. When evaluating the

[2] Leeper (1991), Sims (1994) and Woodford (1994, 1995) are classical studies that advocate the fiscal theory of the price level. Critical views to this theory are found in Buiter (1999) and McCallum (2001).

plausibility of these theories, it is natural to think that fiscal policy should be adjusted, especially when we take into account of the quantitative impact of policy variables on the government budget. Table 1 calculates a primary balance and seigniorage of the last 15 years in Japan. While the change in primary balance is several percents of GDP, the change in seigniorage is one digit smaller. Therefore, it would be very difficult to use seigniorage for the purpose of offsetting a change in the primary balance. Furthermore, a growth of seigniorage should be accompanied by a steep growth of inflation. Even if a required seigniorage is several percents of GDP, the economy would suffer from exorbitant inflation. Therefore, the fiscal authority should be responsible for the solvency.

2.4 Fiscal policy under the new Keynesian framework

Log-linearizing (6) around the steady state and rearranging it yields

$$\hat{b}_{t-1} - s_b \pi_t - s_b \sigma^{-1} y_t + f_t = \left[b_y y_t + b_\tau \left(\hat{\tau}_t - \hat{\tau}_t^* \right) \right] + \beta E_t \left[\hat{b}_t - s_b \pi_{t+1} - s_b \sigma^{-1} y_{t+1} + f_{t+1} \right] , \tag{7}$$

where $\hat{b}_t \equiv \left(b_t - \bar{b} \right) / \bar{Y}$ is the deviation of public debt from the steady state denominated by the steady state output, f is a set of shocks affecting the budget of the government, and $s_b \equiv \bar{s} / \bar{Y}$ is the ratio of public debt to the output in the steady state. A variable with a bar stands for its steady state level. The derivation of (7) is described by Benigno and Woodford (2003).

The utility of the representative consumer depends on consumption and leisure. From the model which derived (1), the second-order approximation of welfare can be written as

$$\sum_{t=0}^{\infty} \beta^t \left[\pi_t^2 + \lambda y_t^2 \right] . \tag{8}$$

where λ is a parameter. Since the behavior of price adjustment and economic agents have a micro foundation, it is natural that the objective function of the monetary and

Table 1: Primary Balance of General Government and Seigniorage

(Percent)

Year	(A) Primary balance	(C) Seigniorage	(D) Growth rate of monetary base
1980	-3.1	0.6	8.7
1981	-2.6	0.7	10.1
1982	-2.1	0.0	0.3
1983	-1.3	0.6	7.7
1984	-0.2	0.3	4.9
1985	0.7	0.4	5.8
1986	1.2	0.5	6.4
1987	1.8	0.6	8.3
1988	2.9	0.9	12.3
1989	3.1	0.9	11.0
1990	3.7	0.9	11.4
1991	3.4	0.6	7.6
1992	0.2	0.0	-0.3
1993	-1.7	-0.1	-0.9
1994	-3.0	0.3	4.0
1995	-3.7	0.4	4.5
1996	-3.5	0.5	6.0
1997	-2.6	0.7	7.9
1998	-10.0	0.8	8.2
1999	-6.3	0.8	7.4
2000	-5.2	1.2	9.7
2001	-5.3	0.5	3.8
2002	-6.9	2.2	14.7
2003	-6.1	3.8	21.4

Note) All numbers are based on fiscal year. (A) and (B) are a percent of GDP. (A) Primary balance of general government is calculated as net lending plus property income paid minus property income received. (B) Seigniorage is calculated as a product of the growth rate of monetary base and the average stock of monetary base.
Source) (A) National Accounts, Cabinet Office. (C) for monetary base, Bank of Japan.

fiscal policy should be based on the individual's utility function.[3]

Lagrangian of the consolidated government can then be written as

$$E_0 \sum_{t=0}^{\infty} \beta^t \left\{ \frac{1}{2}\left[\pi_t^2 + \lambda y_t^2\right] + \varphi_{1t}\left[\pi_t - \kappa y_t - \psi \hat{\tau}_t - \beta \pi_{t+1}\right] \right. \\ \left. + \varphi_{2t}\left[\hat{b}_{t-1} - s_b \pi_t - s_b \sigma^{-1} y_t - \left(b_y y_t + b_\tau \hat{\tau}_t\right) - \beta\left(\hat{b}_t - s_b \pi_{t+1} - s_b \sigma^{-1} y_{t+1}\right)\right]\right\} . \quad (9)$$

Differentiating (A.12) with respect $\pi, y, \hat{\tau}, b$, we obtain the first-order conditions:

$$\pi_t + \left(\varphi_{1t} - \varphi_{1,t-1}\right) + s_b\left(\varphi_{2t} - \varphi_{2,t-1}\right) = 0 \quad (10.a)$$

$$\lambda y_t - \kappa \varphi_{1t} - \left[b_y + s_b \sigma^{-1}\right]\varphi_{2t} + s_b \sigma^{-1} \varphi_{2,t-1} = 0 \quad (10.b)$$

$$-\psi \varphi_{1t} + b_\tau \varphi_{2t} = 0 \quad (10.c)$$

$$\varphi_{2t} = E_t \varphi_{2,t+1} \quad (10.d)$$

Due to the structure of the above equations, monetary authorities must be aware of fiscal concerns such as the impact of fiscal policy variables on the optimization problem and the impact of monetary policy variables on the budget equation of the consolidated government.

With the aid of research by Benigno and Woodford (2003) and Eggertsson and Woodford (2004), I will examine specific cases where monetary authorities are not concerned with fiscal responsibilities.

(a) Tax rate is not flexible and cannot be frequently adjusted.

If the tax rate is difficult to adjust and cannot be use as an instrument of stabilization policy, (10.c) is not a part of optimality conditions. In this case, taking the first difference of (10.b) and substituting it into (10.a) yields

[3] We assume the preference is separable between consumption and leisure. With this assumption, the consumption Euler equation is not affected by labor supply. For a derivation of (8), see Woodford (2003).

$$\pi_t + \frac{\lambda}{\kappa}(y_t - y_{t-1}) - \left[\frac{b_y}{\kappa} - s_b + \frac{s_b\sigma^{-1}}{\kappa}\right](\varphi_{2t} - E_{t-1}\varphi_{2t}) + \frac{s_b\sigma^{-1}}{\kappa}(\varphi_{2t-1} - E_{t-1}\varphi_{2t-1}) = 0 \quad . \tag{11}$$

While this procedure is an alternative method of analyzing monetary policy in order to obtain an inflation targeting rule, it clearly indicates that fiscal concern directly affects the outcome of the targeting rule. The inflation rate should be related to the change in the fluctuation of output from the efficient level and the shock in the marginal cost of government spending.

(b) Tax rate is flexible and can be frequently adjusted

Utilizing (10.c), we can relate two Lagrange multipliers. As shown in Benigno and Woodford (2003),

$$\pi_t + \frac{n_\varphi}{m_\varphi}\pi_{t-1} + \frac{\omega_\varphi}{m_\varphi}(y_t - y_{t-1}) = 0 \quad . \tag{12}$$

The coefficients of inflation and the change in y are given in their paper. The current level of inflation is related with both past inflation and output.

(c) No public debt in the long run

Under the setting of the optimization problem, the central bank, which is concerned with inflation, should also take into account the fact that inflation reduces the real value of public debt. However, this interplay does not appear to concern the central bank when it conducts monetary policy. Consider a case where this interaction is neglected. If the outstanding stock of public debt is small (or zero on average), this channel can be neglected. When the level of public debt is zero under the steady state, $s_b = 0$. The optimality condition of (10.a) and (10.b) becomes simpler as

$$\pi_t + (\varphi_{1t} - \varphi_{1,t-1}) = 0 \tag{13.a}$$

$$\lambda y_t - \kappa\varphi_{1t} - b_y\varphi_{2t} = 0 \quad . \tag{13.b}$$

The flexible inflation-targeting rule is changed as

$$\pi_t + \frac{\lambda}{\kappa}(y_t - y_{t-1}) - \frac{b_y}{\kappa}(\varphi_{2t-1} - E_{t-1}\varphi_{2t-1}) = 0 \quad . \tag{14}$$

Unlike (11) or (12), the inflation rate is not affected by the past expectation error of the marginal cost of public funds.

(d) State-contingent public debts are available

When the government issues state-contingent public debts and conducts a sophisticated debt management policy, it holds

$$\varphi_{2t} = \varphi_{2,t+1} \quad . \tag{15}$$

Substituting (15) into (10.a) reduces to

$$\pi_t + \frac{\lambda}{\kappa}(y_t - y_{t-1}) = 0 \quad , \tag{16}$$

which is very similar to the well-known inflation targeting rule in the analysis of monetary policy. One important difference is that equation (16) cares about the deviation of output from its efficient level.

When tax policy is used as a policy variable, it can offset the exogenous shocks of the new Keynesian Phillips curve. Therefore, the output can reach its efficient level. From the viewpoint of remedying sticky price adjustment, perfect output stabilization is achieved.

(e) Monetary policy does not care fiscal concern

When the difference of natural output and efficient output is constant ($y_t = x_t - x^*$) and the central bank can commit to future policy, the optimal policy is derived through maximizing the Lagrangian

$$E_0 \sum_{t=0}^{\infty} \beta^t \left\{ \frac{1}{2} \left[\pi_t^2 + \lambda \left(x_t - x^* \right)^2 \right] + \varphi_t \left[\pi_t - \kappa x_t - \beta \pi_{t+1} \right] \right\} \quad . \tag{17}$$

In order to focus on the discussion of monetary policy management, the model assumes the difference between natural output and efficient output are constant, $y_t = x_t - x^*$.

If the central bank can commit to the future policy, the following equation is employed as the flexible inflation-targeting rule:

$$\pi_t + \frac{\lambda}{\kappa} \left(x_t - x_{t-1} \right) = 0 \quad , \tag{18}$$

or, the following equation is employed as the flexible price level-targeting rule:

$$p_t + \frac{\lambda}{\kappa} x_t = \bar{p} \quad , \tag{19}$$

where the inflation rate is π, the log of the price level as p, and the log of target price level as $\bar{p}$.

2.5 Summary of discussion

Interactions between monetary and fiscal policy crucially depends on the specification of policy variables that fiscal policy uses. However, a general rule is that when monetary policy is capable of dealing with sticky price adjustment, a primary concern of fiscal authority should be to remedy the resource allocation. Fiscal policy aims at narrowing the gap between natural output and efficient output by changing the tax rate in the new Keynesian Phillips curve. It also attempts to equalize the marginal cost of spending. Sophisticated debt management policy may be useful for this purpose. The unexpected inflation should not be used as a primary policy instrument of tax smoothing.

In some cases, concerns of the central bank and the fiscal authority are to be

interplayed. Such an example is when fiscal policy is unable to equalize the marginal cost of spending. As shown in equation (10.a), the inflation targeting rule is aware of the movement of the marginal cost of government spending. On the other hand, when there are limitations to monetary policy, fiscal policy has the additional concern acting as a stabilization policy.[4]

[4] Eggertsson and Woodford (2004) examined such a case when the zero lower bound of nominal interest rate is binding.

3. Fiscal Version of Taylor Rule

3.1 Empirical specification and United States experience

The flexible-inflation targeting rule (18) of monetary policy can be transformed into an instrument rule which represents the nominal short-term interest rate as a function of the inflation rate and the output gap.[5] While fiscal policy can be transformed into this type of instrument rule, a simpler policy rule had already been considered and empirically analyzed by Taylor (2000) in his focus on the response of the structural (or cyclically-adjusted) budget surplus.[6]

The following special case of the model in Section 2 can be represented as a fiscal version of the Taylor rule.

When $s_b = 0$, the dynamic equation for the real debt can be transformed as

$$\beta E_t\left(\hat{b}_t - \hat{b}_{t-1}\right) = (1-\beta)\hat{b}_{t-1} - b_y y_t - b_\tau\left(\hat{\tau}_t - \hat{\tau}_t^*\right) - \beta E_t f_{t+1} + f_t \quad . \tag{20}$$

The left hand side of (20) corresponds to the budget deficit. The first term on the right hand side represents the interest payment of debt, the second term is a change in tax revenue due to cyclical movements of output[7], the third term is a change in tax revenue due to the shift of tax policy, and the last two terms represent the movement of fiscal shock. If the other terms are not changed by a cyclical movement, the structural balance will not respond to the output gap[8]. One explicit case is when there is no external change in fiscal demands ($f = 0$) and the tax rate is not a policy variable.

The response of the structural balance to a cyclical movement provides insightful information of the nature of fiscal policy. Taylor (2000) conducted the following

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[5] They may be a current, past or expected future value, depending on the specification of the model.

[6] The structural balance of government is the financial balance when the economy was at its natural level. It has been used as a measure of the discretionary fiscal policy.

[7] Since y and the output gap (x) are different, the second term is not exactly equal to the structural balance. However, since it measures a change in fiscal balance given the policy, it does not correspond to the structural balance.

[8] On the other hand, if the tax rate is used as a policy variable but perfect output stabilization is impossible, the structural balance may be correlated with a cyclical movement of output.

empirical analysis, and examined the role of fiscal policy as a stabilization policy in post WWII United States. The structural, cyclical and financial balance (a positive value means a surplus) is assumed to be a linear function of the output gap. We denote a structural balance as s^S, a cyclical balance as s^C, and the output gap as *x*:

$$s^S = a_0 + a_1 x \tag{21.a}$$

$$s^C = a_2 x \quad . \tag{21.b}$$

Actual fiscal balance is represented as

$$s^G = a_0 \alpha + (a_1 + a_2) x \quad . \tag{21.c}$$

Three policy positions stand out when we focus on the response of the structural budget balance to a cyclical movement of output.

(1) When the government maintains the balanced budget, $a_1 + a_2 = 0$. Cyclical balance is likely to be procyclical ($a_2 > 0$), because during a recession, social security expenditures increase and tax revenue decreases. Therefore, the structural balance under a balanced budget should be in a surplus during a recession ($a_1 < 0$). It is now recognized that the balanced budget principle is not preferable because while it stimulates the economy during a boom, it dampens the economy during a recession. Thus, policy becomes the factor which destabilizes the economy.

(2) The automatic stabilizer implies $a_1 = 0$; a structural balance does not correlate with the output gap because policy does not react to the business cycle. a_2 demonstrates the strength of the automatic stabilizer because the actual balance reflects the movement of cyclical balance.

(3) Under an active fiscal policy, a structural balance runs a deficit during recession, and a structural balance is positively correlated with the business cycle ($a_1 > 0$).

From his analysis of the United States between 1960 and 1999, Taylor (2000) found that, while the structural balance was hardly influenced, a 1.0 percentage point decrease in the output gap caused a 0.5 percentage point decrease in the actual fiscal

balance. This finding indicated that fiscal policy in the United States has acted as an automatic stabilizer. Auerbach and Feenberg (2000) measured the quantitative magnitude of the automatic stabilizer, and reported that an eight percent shock to GDP was counterbalanced by the automatic stabilizer. Thus, the automatic stabilizer has played an important role in fiscal policy for the United States.[9] Romer (1999) has added to these findings by identifying that this stabilization policy had significantly contributed to the US's mild business cycle.

3.2 Cross country analysis

Gali and Perotti (2003) examined the role of discretionary fiscal policy, using OECD country data from 1980 to 2002. Their primary concern is how the Maastricht Treaty and the Stability and Growth Pact affected fiscal management style of EU countries. From their panel data estimation, they found that fiscal policy had become more countercyclical in the post-Maastricht period (1992-2000). They grouped 19 countries into EMU countries (11), Non-EMU EU countries (3), and other OECD countries (5), and ran a panel data regression for each group. They added government debt as a ratio of potential GDP and the lagged value of the dependent variable to explanatory variables of equation (21.a). Since the budget is planned before that fiscal year, discretionary fiscal policy responds to the expected value of the output gap. Gali and Perotti (2003) instrumented the output gap using past values of the output gap in a country and another group or country (the sum of EU countries for the US, the US for other countries).

For a group of EMU countries, fiscal policy was procyclical in the pre-Maastricht period (1980-1991), but the coefficient was not statistically significant in the post-Maastricht period. In other two panel data, fiscal policy moved from an automatic stabilizer to countercyclical, as shown in Table 3 of their paper. They concluded that there was a global trend in fiscal policy towards countercyclical and that the EMU countries lagged behind it.

However, adding some qualification is in order. When the same equation is regressed with time series data of each country (Table 2 of their paper), most of the

[9] For further discussion of historical developments, see Schultz (1996), Stein (1996) and Stiglitz (1997).

coefficients of the output gap are not statistically significant at 10 percent level (14 out of 19 countries in the post-Maastricht period). The difference in coefficients between the periods is not significant either (15 out of 19 countries). A straightforward interpretation of these facts is that the structural balance did not respond to the output gap before or after the Maastricht Treaty.

Since the evidence of time series data may be imprecise due to few degrees of freedom in regressions, I conducted alternative empirical study, aiming at increasing the degree of freedom. To this end, I first covered a longer time span by using all of available data from the data source. Regression results of three samples are presented. The first one covers all available data, the second one consists of observations before 1989, and the last is the period from 1985 to 2003. The latter two samples are overlapped because getting a larger degree of freedom is a prime concern. Secondly, I confined explanatory variables by estimating equation (21.a), while Gali and Perotti (2003) included lagged values of government net debt and structural balance in a set of explanatory variables.[10]

Tables 2 through 4 report regression results of equations (21.a) and (21.b) during 1966 and 2003. The structural balance, the cyclical balance and the output gap were taken from *OECD Economic Outlook Database* (May 2005), and represented as a percent of potential GDP. My sample was restricted to the 21 countries OECD had structural balance data on.[11]

Table 2 reports results of instrumental variables regressions. I used the one-year lag of output gap of a country and the one-year lag of the average of output gap of all countries. In the sample after 1985, the coefficients of output gap were statistically significant in Australia, Norway, Sweden and the United Kingdom. In the sample before 1989, the coefficient was not significant in 13 out of 19 countries. The number of statistically significant coefficients does not increase in the later period. Unlike Gali and Perotti (2003), a trend to discretionary fiscal policy is not found.

Table 3 shows results of ordinary least squares regressions. When the government projects the output more sophisticatedly, there is a possibility that OLS estimation,

[10] While I also ran the regressions that include these variables as explanatory variables, the results were not essentially altered.

[11] Unfortunately, Korea is dropped from my sample, because OECD did not estimate a structural balance of general government.

Table 2: Response of Structural Balances to Output Gap in OECD Countries: Instrumental Variable Regressions

	(A) All periods		(B) before 1989		(C) 1985-2003	
Australia	0.83	(0.24) **	1.03	(0.56) *	0.75	(0.23) **
Austria	0.72	(0.31)	0.41	(0.27)	0.39	(0.24)
Belgium	-0.07	(0.51)	0.11	(0.44)	0.34	(0.64)
Canada	0.30	(0.29)	0.22	(0.27)	0.18	(0.59)
Denmark	0.91	(0.31) **	0.84	(0.37) **	0.30	(0.24)
Finland	0.14	(0.09)	-0.22	(0.22)	0.11	(0.08)
France	0.31	(0.21)	0.33	(0.17) *	0.00	(0.22)
Germany					-0.40	(0.27)
Greece	0.08	(0.40)	0.54	(0.50)	-0.19	(0.72)
Iceland	-0.05	(0.16)	-0.10	(0.24)	-0.24	(0.22)
Ireland	-0.10	(0.42)	-0.72	(0.70)	0.21	(0.29)
Italy	0.38	(0.38)	0.63	(0.38)	0.41	(0.72)
Japan	0.30	(0.36)	-0.56	(0.39)	0.54	(0.47)
Netherlands	0.01	(0.23)	0.09	(0.34)	-0.10	(0.36)
New Zealand					0.20	(0.31)
Norway	0.00	(0.16)	-0.64	(0.22) **	0.41	(0.18) **
Portugal	-0.18	(0.11)	-0.31	(0.14) *	-0.05	(0.12)
Spain	0.02	(0.17)	-0.05	(0.14)	0.21	(0.23)
Sweden	0.90	(0.22) **	1.10	(0.29) **	0.79	(0.21) **
United Kingdom	-0.19	(0.19)	-0.25	(0.14)	0.32	(0.28)
United States	0.33	(0.19) *	0.18	(0.15)	0.51	(0.62)

Note) Numbers in parentheses are the standard error. ** and * indicate a statistically significant coefficient at 5 percent level and at 10 percent level, respectively. Instrumental variables are the one-year lag of output gap of the estimated countrry and the one-year lag of the average of output gaps of all countries.
In (A) and (B), sample periods depend on the availability of data for each country. In (C), the sample period is from 1992 to 2003 for Germany, and from 1988 to 2003 for New Zealand.
Source) Data are taken from *OECD Economic Outlook Vol. 77* (May 2005) Database.

Table 3: Response of Structural Balances to Output Gap in OECD Countries:
Ordinary Least Squares Regressions

	(A) All periods		(B) before 1989		(C) 1985-2003	
Australia	0.53	(0.15) **	0.37	(0.22)	0.68	(0.19) **
Austria	0.14	(0.15)	0.27	(0.17)	0.07	(0.19)
Belgium	-0.14	(0.38)	0.21	(0.33)	0.30	(0.52)
Canada	0.33	(0.21)	0.17	(0.20)	0.39	(0.41)
Denmark	0.50	(0.19) **	0.72	(0.25) **	0.12	(0.18)
Finland	0.09	(0.08)	-0.41	(0.18) **	0.11	(0.06)
France	0.26	(0.16)	0.27	(0.12) **	-0.06	(0.18)
Germany	-0.25	(0.15)			-0.25	(0.14)
Greece	0.27	(0.30)	0.44	(0.34)	-0.41	(0.56)
Iceland	-0.08	(0.12)	-0.10	(0.24)	-0.18	(0.15)
Ireland	0.31	(0.34)	-0.51	(0.56)	0.37	(0.24)
Italy	0.61	(0.27) **	0.63	(0.26) **	0.92	(0.61)
Japan	0.47	(0.27) *	-0.30	(0.32)	0.75	(0.34) **
Netherlands	-0.11	(0.16)	-0.04	(0.21)	-0.21	(0.26)
New Zealand	0.40	(0.25)			0.40	(0.25)
Norway	-0.06	(0.14)	-0.58	(0.20) **	0.28	(0.16)
Portugal	-0.15	(0.09)	-0.20	(0.13)	-0.05	(0.11)
Spain	0.03	(0.15)	-0.28	(0.13)	0.08	(0.20)
Sweden	0.84	(0.19) **	1.00	(0.27) **	0.82	(0.18) **
United Kingdom	-0.11	(0.15)	-0.29	(0.12) **	0.45	(0.22) **
United States	0.27	(0.12) **	0.19	(0.11) *	0.49	(0.40)

Note) Numbers in parentheses are the standard error. ** and * indicate a statistically significant coefficient at 5 percent level and at 10 percent level, respectively. OLS estimation.
In (A) and (B), sample periods depend on the availability of data for each country. In (C), the sample period is from 1991 to 2003 for Germany, and from 1987 to 2003 for New Zealand.
Source) Data are taken from *OECD Economic Outlook Vol. 77* (May 2005) Database.

which implicitly assumes the perfect foresight of the output gap, becomes a better approximation to the reality. In the period after 1985, the coefficient was not statistically significant in 17 out of 21 countries. Based on these findings, it appears that the majority of developed countries do not actively use fiscal policy as a stabilization policy. While its quantitative magnitude differs among countries, fiscal policy is instead used as an automatic stabilizer. On the other hand, a statistically significant response regarding structural balance was found in Australia, Japan, Sweden and the United Kingdom. Sweden's coefficient was the most significant. In Figure 1(A), the structural balance and the output gap in Sweden demonstrates the synchronized movement. Japan's coefficient of 0.75 is high as well. Those of Australia and the United Kingdom follow.

OLS regression results of equation (21.b) are reported in column (A) of Table 4[12]. While all are statistically significant, the response of the cyclical balance differed among countries. Nordic countries (Denmark, Finland, Norway and Sweden) and the Netherlands have large coefficients (a_2). Japan has the lowest value, 0.22. Therefore, Japan's characteristics are unique; its structural balance responds strongly to the output gap, while the magnitude of an automatic stabilizer is the smallest among the sample. Table 2 also draws the OECD's estimate of the elasticity of total balance with respect to the output gap from *Sources and Methods of the OECD Economic Outlook*. Since this elasticity captures the cyclical movement of fiscal balance, it is highly correlated with the cyclical balance (as a share of GDP).

[12] The constant term is added in the estimated equation. Since the response to the actual business conditions is the focus of an automatic stabilizer, I do not instrument the output gap here.

Figure 1(A): Structural Balance and Output Gap, Sweden

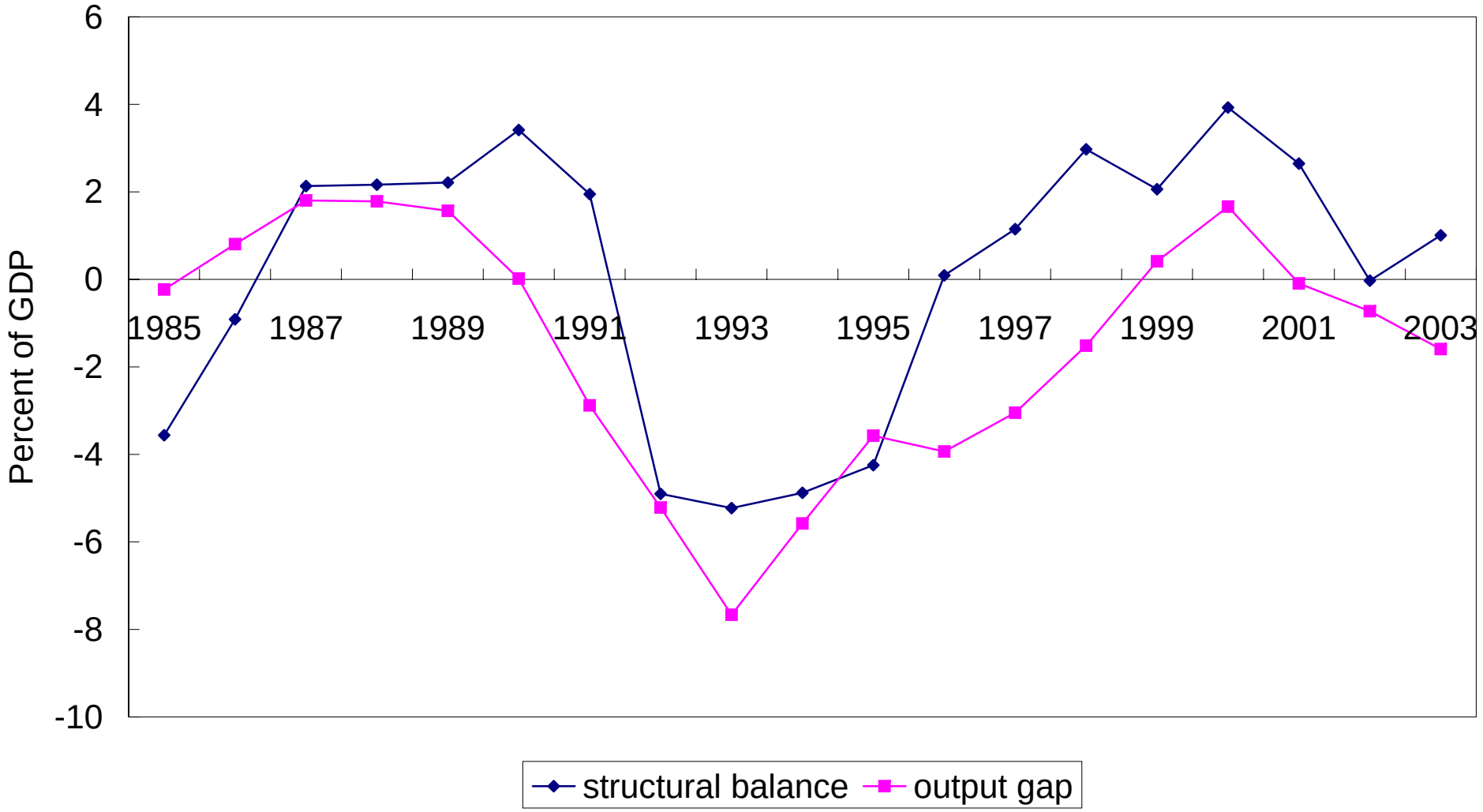


Figure 1(B) Structural Balance and Output Gap, Japan

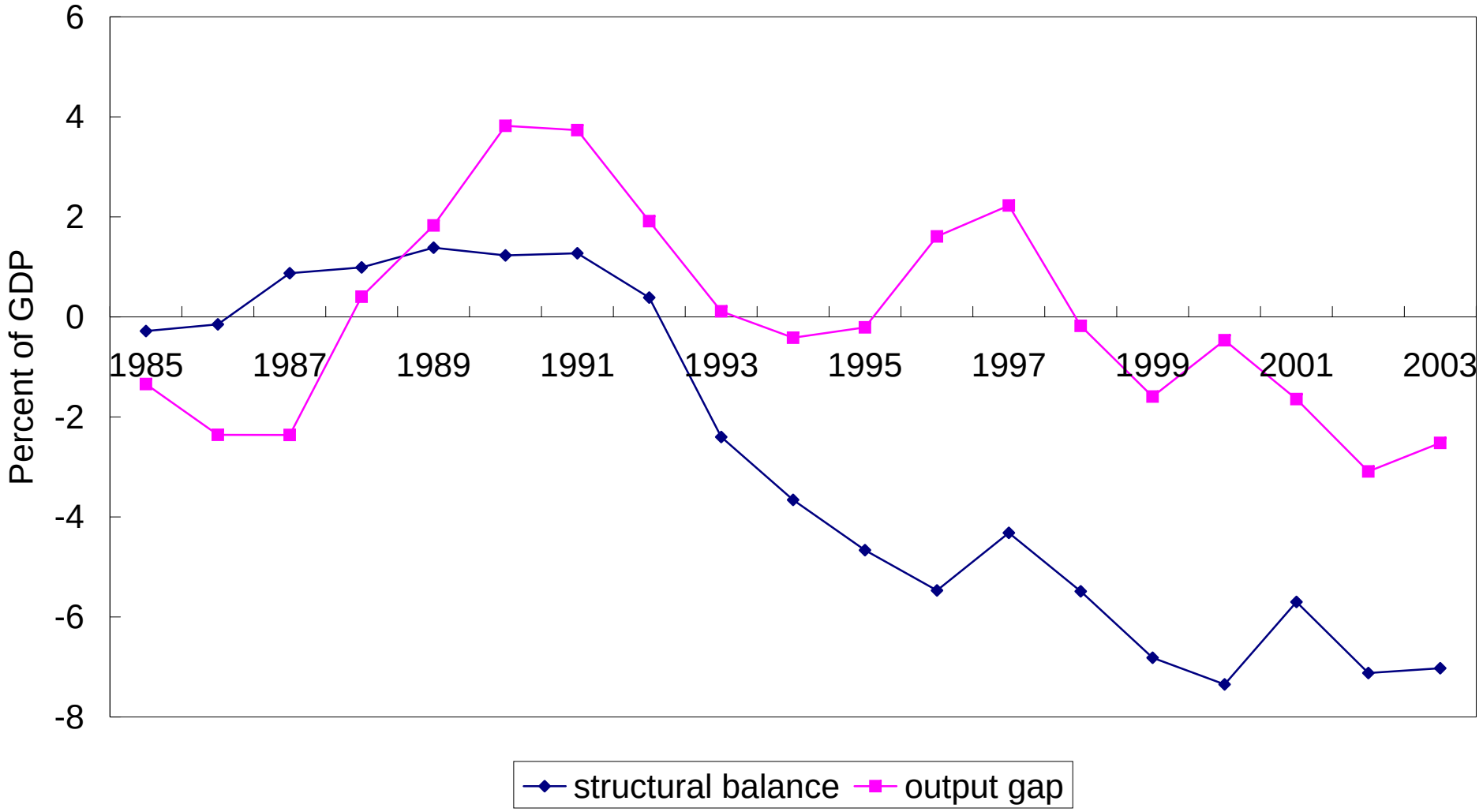


Table 4: Response of Cyclical Balances to Output Gap in OECD Countries

	(A) Cyclical balance		(B) Elasticity of fiscal balance
Australia	0.30	(0.01) **	0.25
Austria	0.32	(0.01) **	0.30
Belgium	0.69	(0.01) **	0.61
Canada	0.46	(0.01) **	0.39
Denmark	0.78	(0.01) **	0.75
Finland	0.72	(0.02) **	0.64
France	0.42	(0.00) **	0.42
Germany	0.69	(0.15) **	0.51
Greece	0.47	(0.01) **	0.44
Iceland	0.40	(0.01) **	
Ireland	0.39	(0.01) **	0.31
Italy	0.57	(0.04) **	0.48
Japan	0.22	(0.01) **	0.26
Netherlands	0.79	(0.02) **	0.64
New Zealand	0.57	(0.01) **	0.53
Norway	0.92	(0.26) **	0.63
Portugal	0.36	(0.01) **	0.39
Spain	0.42	(0.01) **	0.40
Sweden	0.77	(0.01) **	0.68
United Kingdom	0.55	(0.06) **	0.50
United States	0.28	(0.00) **	0.25

Note) Numbers in parentheses are the standard error. ** and * indicate a statistically significant coefficient at 5 percent level and at 10 percent level. The sample period is from 1985 to 2003 except Germany and New Zealand. The sample period is from 1991 to 2003 for Germany, and from 1987 to 2003 for New Zealand. (A) is an estimated coefficient of cyclical balance when it is regresed on the output gap. Cyclical balance is obtained by deducting the structural balance from fiscal balance. (B) is OECD's estimate of the elasticity of fiscal balance to output.
Source) (A) Data are taken from *OECD Economic Outlook Vol. 77* (May 2005) Database. (B) *Sources and Methods of*

4. Japanese experiences

It is unwise to regard the regression results in Tables 2 and 3 as the definite picture of fiscal management in developed countries. The following reservations must be stated. The Output gap is estimated with a significant margin of error. As pointed out in Orphanides (2000), the estimate of the output gap may be sensitive to when it was estimated. Since I confined the sample to the most recent years, the data contains a limited number of cycles. The estimated coefficient may not reflect a systematic response to the business cycle but instead reflect a particular episode, one which is not relevant to stabilization policy. The response of the structural balance to changes in the economy can be delayed and our uniform specification of the estimated equation does not capture the differing lag structures of each country. Therefore, this kind of cross-country study should be supplemented by a careful analysis of a particular country.

4.1 Alternative analysis of fiscal Taylor rule

This section takes a closer look at the Japanese situation. I found in the last section that Japanese fiscal policy takes a unique position when compared to a majority of OECD countries. To further substantiate my results, it is necessary to execute an analysis using alternative data. If the secondary study does not coincide with my results, then the cross-country study produced a more cohesive result for developed countries. But, if the analysis reveals that Japan really is a distinctive case, then my findings on a variety of fiscal policy stances becomes more secured.

A natural level of output or structural balance of the government has been occasionally estimated by Japanese researchers (for example, Yui, 1983, Homma et. al, 1987, Yoshida and Fukui, 2000, and Nishizaki and Nakagawa, 2000) and the Cabinet Office (formerly Economic Planning Agency). These studies aid in our examination of the robustness of the findings in Section 3.

Table 5 draws on my previous paper's empirical analysis (Iwamoto, 2002). The methodology is the same, and the regression analysis of the preceding section was used. The data was taken from different sources such as the Economic Planning Agency's *Economic White Paper* (2000), Nishizaki and Nakagawa (2000), *OECD Economic*

Table 5: The Response of Structural and Cyclical Balances to Output gap

Source Period	Structural Balance	Cyclical Balance
Economic Planning Agency (2000) 1983-1998	1.09 (0.23)	0.35 (0.04)
Nishizaki and Nakagawa (2000) 1983-1999	0.77 (0.13)	0.36 (0.01)
OECD (2001) 1985-2000	0.37 (0.45)	0.20 (0.01)
Yoshida and Fukui (2000) 1983-2000	0.38 (0.52)	0.33 (0.05)

Note) Numbers are an estimated coefficient. Numbers in parenthesis are the standard error.
Source) Iwamoto (2002).

Outlook No. 70 (2001), and Yoshida and Fukui (2000). I chose to report the estimation using the OECD data from a previous issue of *OECD Economic Outlook*, because one can check whether regression results vary according to the time and period measured. As for the reaction of structural balance, the coefficient was not significant in both OECD (2001) and Yoshida and Fukui (2000). On the other hand, the Economic Planning Agency (2000) and Nishizaki and Nakagawa (2000) obtained statistically significant coefficients of 0.77 to 1.09 respectively.

The difference in the results stems from the difference in the estimated movement of the output gap in the latter half of 1990s. Figure 2(A) shows the movement of the output gap used in Table 5. The output gap of OECD (2001) and Yoshida and Fukui (2000) declined after 1988, while data from the Economic Planning Agency (2000) and Nishizaki and Nakagawa (2000) showed that the output gap improved in the latter half of 1990s. Figure 1(B) shows that the structural balance has deteriorated steadily in 1990s, except for 1997 when financial structural reform was enacted. Therefore, while structural balance and output level were synchronized according to the Economic Planning Agency (2000) and Nishizaki and Nakagawa (2000), data from the OECD (2001) and Yoshida and Fukui (2000) claimed that the two variables diverged in later periods of the sample. That is why the former had a statistically significant coefficient while the latter did not.

Since the estimation of the output gap influences the regression, one has to determine the most reliable estimate of the output gap. The Economic Planning Agency (2000) and Nishizaki and Nakagawa (2000) employed a careful estimation method, and it appears to be consistent with other business indicators. Therefore, taking their results into an account, my research shows that the Japanese structural balance fundamentally responds to the output gap. However, this finding requires further qualification as a driving force of the structural balance might not be included in the above regression analysis. Another possible explanation of the co-movement of the structural balance and the output gap is that they were driven by a trend which was headed in the same direction. For example, although both the structural balance and the output gap showed long-term improvement in the 1980's, they could have been driven by different factors such as fiscal reconstruction.

Asako, Ito and Sakamoto (1991) analyzed the cause of the chronic budget deficit

Figure 2(A) Output Gap, Japan

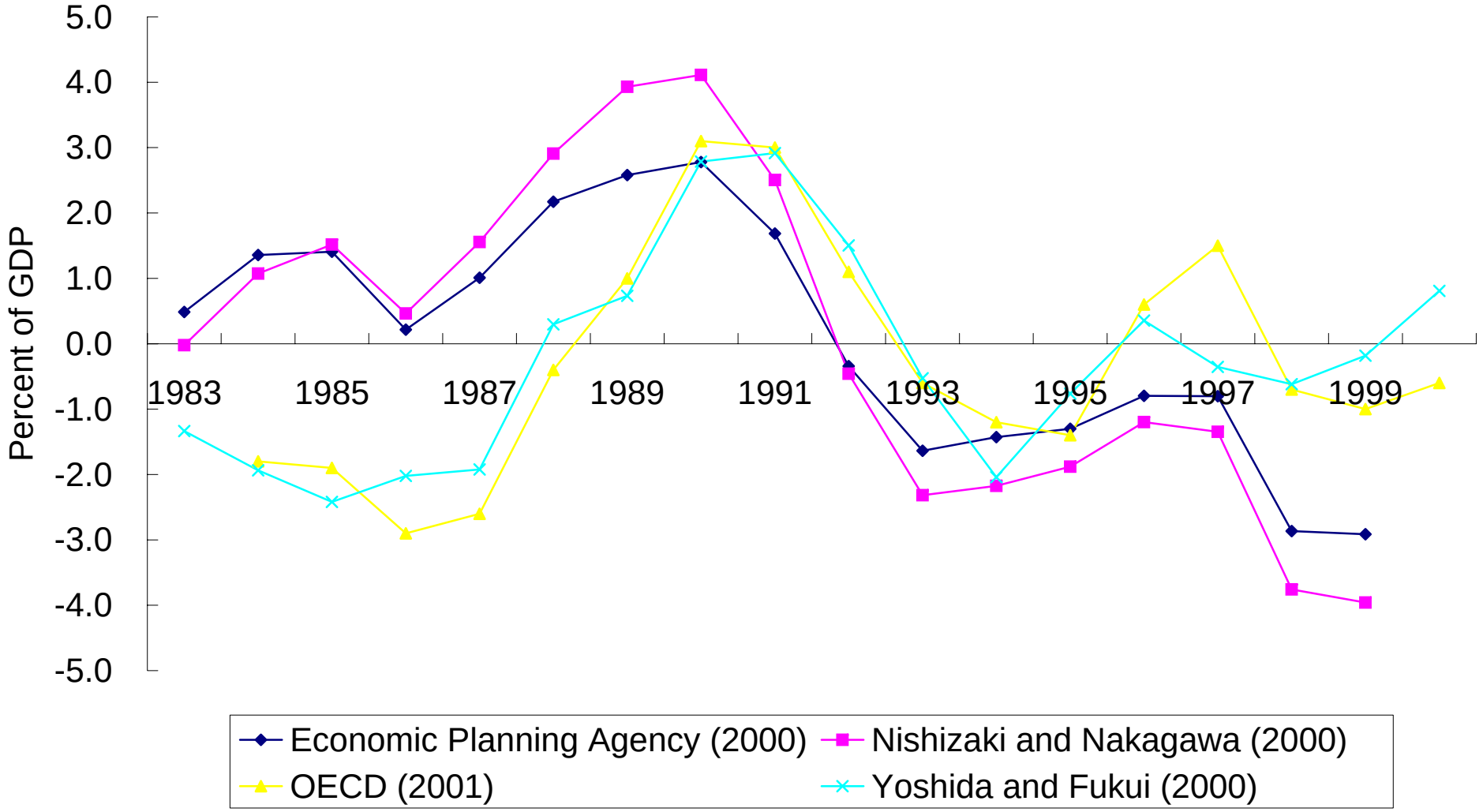
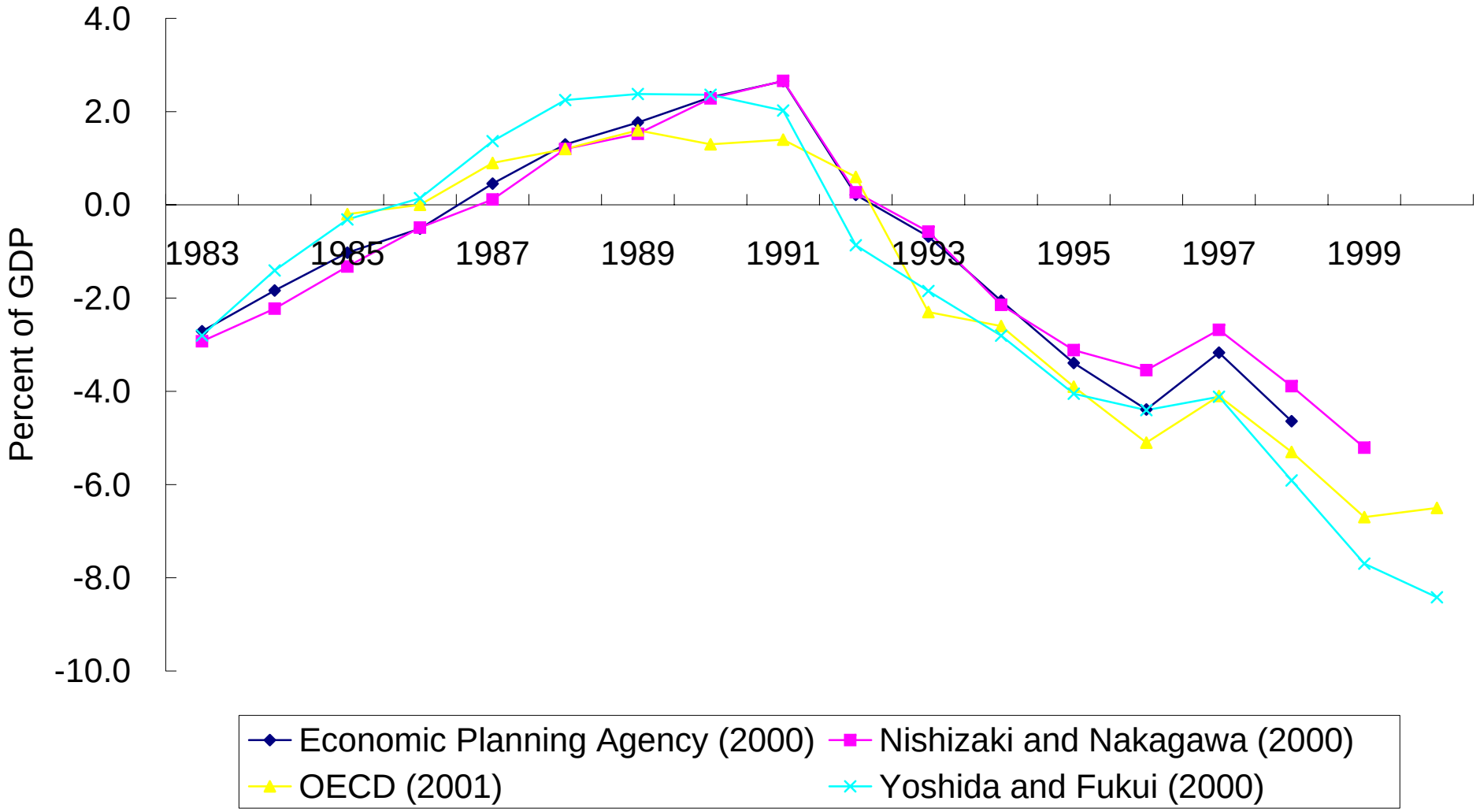


Figure 2(B) Structural Balance of Central Government, Japan



which started in the latter half of the 1970's. They found that two factors played an important role in creating the deficit. First, the inertia of nominal spending growth was strong enough to continue after the decline of nominal economic growth. The other is that the policymakers were optimistic about introducing a new sales tax, even though the structural deficit followed the economic downturn. Their findings imply cyclical factors did not largely impact the budget deficit.

Homma et al. (1987) attempted to eliminate the influence of a long-term trend by taking a first-order difference of each variable. Observations from 1970 to 1983 showed that the structural balance and the output gap only moved in opposite directions from 1970-73. The remainder of the time the structural balance and output gap moved together. However, Homma et al. thought that fiscal policy actively responded to the business cycle. They interpreted that the comovement of the structural balance and output gap was caused by the fact that there is lag time when implementing discretionary policy.[13]

4.2 Regime shift in 2001

In spring of 2001, Mr. Junichiro Koizumi, who favored emphasizing fiscal adjustment, became prime minister. A new idea of fiscal management was formulated

[13] Among the existing literature of Japanese fiscal policy, there are contrasting views on whether Japanese fiscal policy has played an active role in stabilizing the economy. Noguchi (1983) provocatively argued that Japan had seldomly taken Keynesian policy since 1955. He confined Keynesian policy on an expansionary fiscal policy, and pointed out that such a policy was only enacted in FY 1965 Supplementary Budget.

Okazaki (1998) took an opposing view. He put emphasis on "stabilization," and focused on a broader policy by including contractionary policies. He pointed out that discretionary fiscal policy was actively used since 1965 and had been occasionally used before 1965. In 1980's, when the fiscal reconstruction became a top priority, economic stimulus measures in the recession period became mild. However, he regarded this period as exceptional. He also pointed out that the reliance of discretionary policy was caused by the fact that a Keynesian idea had widely infiltrated the policy makers.

Two points may contribute to creating these different views. First, They focused on different policies. Okazaki (1998) included the contractionary policy and observed that it was widely taken up during the high growth era, while Noguchi (1983) limited Keynesian policy to the expansionary policy. Secondly, narrative analysis can be influenced by subjective judgment.

and described in the Preliminary Report[14] of the Fiscal System Council.

The Report summarized the experience of fiscal policy after the collapse of the "bubble economy" as:

> "During this period Japan implemented a total of 11 economic stimulus packages (a scale of activity totaling more than 130 trillion yen) as part of supplementary budgets. Nevertheless, Japan's economic growth rate has generally remained sluggish and a recovery centered on private demand was seen only for very short periods.
>
> The problems concerning fiscal management during this period were concentrated in two areas.
>
> The first is that by focusing unduly on the problem of demand shortage as the cause of economic stagnation, the government underestimated the seriousness of the non-performing loan problem in the financial system. …
>
> The second problem is that from a viewpoint of economic stabilization (economic adjustment), the government relied too heavily on the use of expansionary fiscal policy. Two factors acting as restrictive conditions when giving fiscal policy an economic stabilization function are (a) not to sacrifice resource allocation efficiency and (b) ensure that it is possible to maintain the fiscal policy (sustainability). In addition fiscal policy has the defect of being less flexible than monetary policy. It must therefore be said that during the 1990s, Japan came to rely too excessively on fiscal policies that exceeded the limits permitted by these restrictive conditions.
>
> As a result of these problems, the central government's efforts failed to achieve the expected intent of lifting the economy. They also left fiscal policy itself with two serious structural problems by (a) reducing the confidence in resource allocation efficiency and (b) fanning doubts with regard to the sustainability of fiscal stimulus."

Its very critical stance to the past policy action was very unique and impressive, because the government has been always reluctant to admit that they made a mistake.

After the report reviewed the past experiences, it tried to set a new fiscal management style that performed as a stabilization policy. The Report said

> "(T)he government in Japan as well should use monetary policy principally for its economic stabilization function, and use fiscal policy for its resource allocation function while maintaining fiscal discipline. Fiscal policy has the function of easing business fluctuations because of its automatic stabilization mechanism ("built-in stabilizers") supplementing this with discretionary use of fiscal[15] policy should be limited to only those situations where a recession is extremely serious and the latitude for exercising monetary policy is extremely limited."

4.3 Three issues of Japanese Fiscal Policy

Japanese fiscal policy must tackle three difficult problems.

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[14] From unknown reasons, no final report was released.

[15] In the English text of this Report, this word was read as "monetary." From the original Japanese text, it should have been "fiscal." I then corrected it here.

(a) Sustainability of the budget

While the actual fiscal policy after FY2002 followed the Preliminary Report to some extent, it did not follow it in all aspects. A positive phenomenon resulting from the report was the dramatic decline of public works in the following years. However, the government cut taxes in FY 2002, and the budget continued to run a huge deficit. From Figure 1(B), we can see that the structural balance did not dramatically improve.

With the economy in a weak condition, there was strong pressure to practice a more expansionary fiscal policy. While the resulting policy change was not intended to further expand Japan's fiscal stance, it did not stop expansionary fiscal policy from occurring. This has become a problem. Years of aggressive expansionary policy have led citizens to believe this is not an extreme policy position.

As shown in Figure 3, the accumulation of government debt has not subsided. The way to rescue our budget is obvious. The government has to improve its primary balance and steadily decrease the ratio of government debt to GDP. However, it will take time to achieve a primary surplus because the primary deficit of central and local governments combined is at 4 percent of the GDP (FY2004).

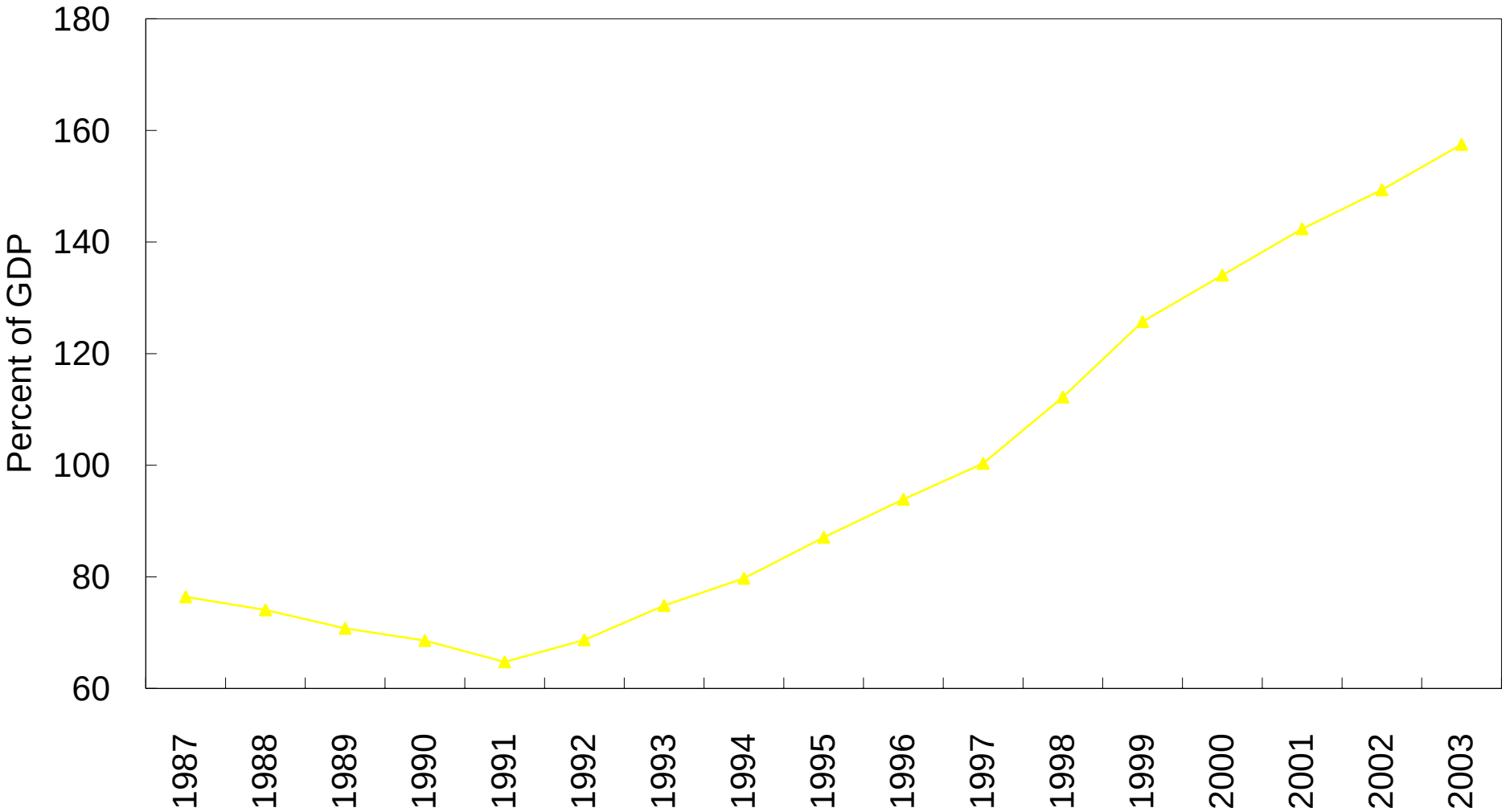
In the beginning of 2002, the Japanese government aimed at achieving a budget surplus by early 2010. Today the target is set at FY2012. This target is consistent with the recent trends, which show an increase of the primary surplus by 0.5 percent of GDP each year. After that, it will be necessary to increase the surplus to decrease the amount of government debt. Fiscal adjustment is a time-consuming process.

(b) Monetary policy

The Report from the Fiscal System Council stated that a discretionary use of fiscal policy should be limited to cases where monetary policy options are extremely limited. With the nominal interest rate hitting its lower bound, the current Japanese situation may be judged as such a situation. However, a traditional style of fiscal expansion is not a serious choice, given the huge size of the deficit. Other fiscal policy options have been extensively discussed.

When contemplating the possibility of a zero nominal interest rate, two interpretations come to the forefront. First is the liquidity trap, where the natural interest rate is temporarily negative. Feldstein (2002), Auerbach and Obstfeld (2004) and

Figure 3: Gross Financial Liabilities of General Government, Japan



Eggertsson and Woodford (2003) examined such a possibility where the policy gradually raised the consumption tax in order to create inflation and escape from the liquidity trap. The other is a “deflationary trap,” in which the natural interest rate is positive, but a persistent zero interest rate sustains an equilibrium deflation. Among others, Benhabib, Schmit-Grohe and Uribe (2002), Eggertsson and Woodford (2003) and Iwamoto (2005) have discussed the possibility that a non-Ricardian policy could rescue the economy from such a trap. Iwamoto (2005) argued that a necessary money-financed tax cut would be around 2 trillion yen. The puzzle is whether or not the current massive budget deficit is non-Ricardian enough to escape from a deflationary trap.

(c) Magnitude of an automatic stabilizer

When fiscal policy is confined to an automatic stabilizer, its magnitude becomes important. According to OECD’s estimates as well as my analysis, Japan’s automatic stabilizer has the lowest magnitude. Table 6 highlights the OECD’s estimate of the elasticity of each budget item with respect to output between Japan and the OECD average. The elasticity of corporate tax revenue is the largest in Japan. However, the elasticity of other budget items is quite low; for example, the elasticity of other tax revenues and social security contributions are the lowest or the second lowest. A lower share of tax revenues to income may be the reason for this low elasticity. Structural tax reform, a tax increase, and the restoration of fiscal discipline will be necessary in the near future.

Table 6: Elasticities of Budget Items with Respect to the Output Gap

Elasticity	Japan	OECD average
Corporate tax	2.1	1.24
Personal tax	0.4	1.05
Indirect tax	0.5	0.89
Social Security tax	0.3	0.82
Current expenditure	-0.1	-0.21
Total balance	0.26	0.47

Source) *Sources and Methods of the OECD Economic Outlook* , OECD Economics Department.

5. Conclusion

This paper explored how monetary policy and fiscal policy synchronize and interact as a stabilization policy. Interactions between monetary and fiscal policy crucially depend on the specific policy variables utilized by fiscal policy. However, a general rule is that when monetary policy is capable of dealing with sticky price adjustment, a primary concern of fiscal authority should be to remedy resource allocation. My regression study using cross-country data shows that a majority of OECD countries employs fiscal policy as an automatic stabilizer.

Japan has relied heavily on discretionary fiscal policy. In the late 1990s, the Japanese government attempted a very aggressive fiscal expansion in order to recover the economy as it was suffering from a domestic and international financial crisis. The resulting stagnant economy and inefficient spending has led policymakers to change their thoughts regarding fiscal policy. However, as I discussed throughout the paper, the complete implementation of monetary policy in Japan will take considerable time.

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