Fiscal Fluctuation Risks and Intergovernmental Functional Allocation

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Abstract

To cope with business cycle risks, a government has several fiscal measures at its disposal. First, the government may reduce the economic cost of recession. Second, the government may stimulate GDP in a recession. Furthermore, it is also useful to maintain a boom as long as possible. For each policy option, the government can use both automatic stabilizers and discretionary fiscal policy. Automatic stabilizers prepare business fluctuation risks in advance as a part of fiscal systems. At the same time, it is sometimes necessary for the government to use discretionary fiscal policy to cope with a serious recession. In terms of intergovernmental financing, local governments should play a major role, as well as central government. If both informational asymmetry and regional heterogeneity are relevant, local governments have a comparative advantage on discretionary social welfare programs. In order to maintain the sustainability of such measures, the government has to ensure the sustainability of the fiscal system. In this sense, it might be an important measure to build an automatic fiscal stabilizing mechanism into the budgetary system, which would reduce spending and raise revenues automatically when fiscal deficit accumulates.

I. Introduction

The government has two fiscal instruments, automatic stabilizers and discretionary stabilizing policy, to cope with business cycle risks. How should these functions be allocated between central and local governments? It is well known that counter-cyclical fiscal policy is one of main tasks of central government. Namely, if discretionary macroeconomic stabilizing measures are needed, these fiscal actions should be conducted by the central government. However, in reality, many fiscal measures are conducted by local governments as well. Among these measures, local public works have been the main instrument of expansionary fiscal policy for local governments. Since these public works do not often benefit people beyond regional boundaries, they may be regarded as small local public goods. Therefore, these local public goods should be controlled so as not to become too great. In this paper, considering the characteristics of Japan’s fiscal system, we would like to reconsider the desirable allocation of functions between central and local governments for stabilizing policy from the viewpoint of intergovernmental fiscal theory.

To date, the standard literature in public economics has not discussed the desired
allocation of automatic stabilizing measures between central and local governments in much depth. The implicit conjecture is that the central government should have the main function of automatic stabilizers, such as progressive income tax, cooperative tax, and unemployment benefits. On the other hand, local governments should maintain stable tax revenues under the balanced budget rule, even if this rule could have an offsetting effect on macroeconomic activities, unlike automatic stabilizers. How should we consider the desirable role of local governments in terms of automatic stabilizers and discretionary policy? This paper intends to clarify these issues with respect to the role of governments during business cycles based on Japan’s experience.

II. Role of Governments in Business Cycle Fluctuations

1. The Scope of Counter-cyclical Measures

The Purpose of Fiscal Measures

Since the 2008 economic crisis and serious recession all over the world, the optimal magnitude and role of counter-cyclical fiscal policy has been discussed intensively. It is natural to conduct expansionary fiscal measures to stimulate aggregate demand when the economy is in a serious recession. However, we cannot determine the optimal magnitude of fiscal measures easily. Even if an expansionary fiscal measure is needed, it does not necessarily imply that we can justify any size of fiscal measures, without limit or forever. The issue is how to specify the desired scope of fiscal measures in terms of purpose, content, and duration.

One important issue is the desired allocation of functions between central and local governments. The conventional argument is that the central government should conduct fiscal measures to stabilize macroeconomic activities. Normally, discretionary policy is the main concern of the central government. But, automatic stabilizers are not recognized well in actual policy discussion. Moreover, an expansionary discretionary policy usually means an increase in public works. Since most public works are actually local public goods, it might be desirable for local governments to conduct such fiscal measures so long as they can choose the optimal size of the public works. This paper compares the comparative advantages of central and local governments with respect to discretionary policy and automatic stabilizers, respectively, to help smooth business cycle fluctuations.

Fiscal Measures in a Recession

First of all, we discuss the desired functions of central and local governments with respect to discretionary policy. In doing so, it is important to clarify the purpose of discretionary policy.

Needless to say, the government should support people who are affected by major
disasters, such as the Great East Japan Earthquake of 2011. If a discretionary policy improves the well-being of poor people who suffer from a recession, the concern is with the economic situation of the poor only. This sort of policy may be regarded as a social welfare program. It is an important objective of government to alleviate the economic difficulties of the poor. Since such a fiscal measure is a targeted social welfare program, we do not have to stimulate macroeconomic activities. When a severe economic crisis hurts the poor, it is necessary to conduct this sort of social welfare policy.

If an individual’s income declines in a recession, her consumption will also decline. It is not good for her consumption to fluctuate intertemporally. The government may smooth out her consumption by giving her a subsidy in a recession or levying a tax in a boom. Such an offsetting policy may be regarded as a fiscal measure to smooth out private consumption fluctuations. If this sort of measure could also stimulate GDP, it would certainly be a good thing.

At the same time, it is also important to pursue fiscal measures to stimulate GDP in a recession. The effect of this policy has been traditionally summarized by the magnitude of fiscal multiplier. If the government can raise GDP in a recession, it will reduce the number of people who face the severe economic difficulties in the recession. In this sense, this policy produces similar benefits to a social welfare program. The main purpose of a stabilizing policy is to stabilize GDP or consumption fluctuations in a recession and reduce losses in resources, resulting an enhancement of economic welfare over time.

Thus, fiscal measures in a recession should be targeted on poor people or poorer regions that are affected most by the recession. For example, suppose that the number of poor households is several million. Then, the total fiscal spending for a social welfare program would be several hundred thousand million yen, if the government gives one hundred thousand yen to each household. This fiscal need is lower than in the current welfare program in Japan. By targeting only the poor, the government may give a large amount of money per capita even if the fiscal situation is bad and the total funds are limited. In particular, this fiscal measure should be a temporary measure, only for a recession, and should end when the recession is over.

Measures to support poor are in principle the scope of permanent social welfare programs, such as livelihood protection. It is important to distinguish the role of temporary fiscal measures from that of permanent social welfare programs. Similarly, expansionary fiscal measures to stimulate aggregate demand should also be temporary and only for the recession, and targeted to regions or industries that are heavily damaged by the economic crisis.

In some cases, this stabilizing policy in a recession could be done by local governments more appropriately than the central government. This is because local governments have more accurate information on who are actually poor in a recession than the central government. Even in the discretionary instruments local governments may have the comparative advantage on social welfare measures, more than the central government. On the other hand, if a recession occurs all over the nation, the central government should
conduct nationwide stimulus measures.

**Fiscal Measures to Prolong the Period of a Boom**

Along with the conventional discretionary fiscal policy to stimulate GDP in a recession, fiscal measures to avoid a recession or maintain a boom as long as possible have similar desirable effects of alleviating business cycle risk. Note that the main purpose of a discretionary stabilization policy is to smooth out business cycle fluctuations. If the boom is normal and the recession is temporary and exceptional, a policy to avoid recession and maintain the boom as long as possible may be regarded as increasing GDP in the mid-term or long-run. For example, to avoid the serious bursting of a bubble and to restore market mechanisms in a recession could be examples of such measures.

Also, in addition to such measures to smooth out fluctuations or reduce the probability of recession, another necessary measure is the structural reform of raising the trend of potential GDP. To raise the potential GDP is classified as a structural reform. But it may also be regarded as a stabilization policy in a broader sense, in that by doing so, GDP would not decline much even in a recession.

From this viewpoint, it is important to simulate private investment, savings, and labor supply in the supply side. It is desirable to conduct deregulation or to lower corporate income tax, in order to create incentives for the private sector. Since these policies have spillover effects on the whole economy, they should be conducted by the central government.

At the same time, depending on the content of deregulation, it might be the case that local governments have the comparative advantage of conducting delicate operations. In special deregulated regions, local governments in such regions could try new reforms. If these turn out to be successful, they may then be implemented for other regions. On the other hand, if the spillover effects are really large, then such measures should be conducted on a nationwide scale.

2. **Understanding Fiscal Policy**

**Standard Arguments in Public Economics**

The standard argument on fiscal stabilization in public economics is that it is more effective to use the automatic stabilizing rule than it is to use the discretionary policy in order to stabilize business fluctuations appropriately. The standard argument on macroeconomic fiscal management would be as follows: in a general equilibrium dynamic model with imperfect markets, both discretionary policy and automatic stabilizers are mostly substitutes. However, as discussed in 1. of section III, if we consider bad outcomes of policy lags, it would be better to rely on the rule than on discretionary policy.

The efficacy of country-cyclical fiscal policy depends on the degree of market
imperfection; in particular, inefficiency of labor markets in terms of employment rules, informational asymmetry, and imperfect adjustments of wage. For example, if wages do not change much during output fluctuations, country-cyclical policy becomes much more effective. See among others Marcellino (2006) and Momigliano et al. (2007). Therefore, if market mechanisms are not working well in a recession, the effectiveness of country-cyclical fiscal policy becomes larger. On the other hand, if price mechanisms in the labor market are flexible due to deregulation, the effectiveness of discretionary policy is restricted.

By the way, in a new understanding of country-cyclical fiscal policy, public consumption as entitled spending is seen as more effective than public investment as discretionary and non-entitlement spending. In the conventional understanding, public investment was recognized as an important tool for stabilizing macroeconomic activities. Nowadays, the effectiveness of public investment has become limited. Interestingly, there are some cases in which public consumption can have greater effects on the private economy than public investment can. This is because changes in discretionary spending are ambiguous in the long run. For example, an increase in public investment now does not necessarily mean an increase in the permanent level of public investment, and hence a temporary change in government spending will not affect private investment or consumption much. Moreover, considering the political bias towards pork-barrel spending, public investment does not necessarily produce useful public capital in the future, but only benefits specific interest groups. Hence, it will not have a large spillover effect on all the economy.

On the other hand, government consumption is a sort of committed spending, and changes in present spending normally imply an institutional reform, resulting in a permanent change. Since it also means a permanent change in taxes, it could affect permanent disposable income as well. Since such a change will affect many private agents, we may expect that there would be less possibility of political bias due to special interest groups causing wasteful spending.

In the conventional literature, discretionary policy has been regarded as the main policy tool of counter-cyclical policy measures, mainly because it has a lot of flexibility. However, if it is too flexible, its effectiveness is restricted. On the other hand, committed spending is not suitable for discretionary policy. But once it changes, it means a permanent change, so that it may affect private economy greatly. Put another way, standard discretionary policy is useful to cope with a temporary shock in a recession. Its effects will be very modest. If the recession is serious, discretionary policy may require institutional change in order to make its effects large.

The Fiscal Situation and Discretionary Fiscal Policy

There are many policy options for the government to strengthen the effectiveness of discretionary policy. The central government should play the main role in this policy. The
efficacy of this policy depends on the fiscal situation. In particular, if the government
deficit is low before the recession occurs, the efficacy of counter-cyclical policy is large. In
this sense, it is also important for the central government to maintain fiscal sustainability.

In the standard new Keynesian model, the effectiveness of discretionary policy depends
on the fiscal situation. Magud (2008) shows that the role of fiscal policy in smoothing out
the effects of business cycle fluctuations depends on initial conditions at the time of the
shock. Based on the degree of fiscal fragility of the government, expansionary fiscal policy
may be expansionary or contractionary in terms of output. He developed an investment
model with informational frictions and uncertainty to capture the asymmetric dynamics of
business cycles. When hit by a negative shock, the economy responds differently, in both
size and recovery length, than when hit by a positive shock.

Given the uncertainty about the future, investors may prefer to delay investments to
allow more information to accrue. Consequently, even in periods where no recession
should be observed under complete information, asymmetric business cycles arise due to
information failures. The economy displays both “deep” and “steep” business cycle
asymmetry. Furthermore, the economy reacts more to negative shocks than to positive
ones.

In this context, Magud shows that the optimal policy in the face of a recession depends
on initial conditions once the intertemporal solvency constraint is internalized. For
highly-indebted countries, reducing government expenditures proves to be a better policy
because of its expansionary effect on output. For low-indebted countries, the standard
Keynesian policy of increasing government expenditures does work. Moreover, under
sustainability conditions, the government should react not only to reductions in aggregate
demand, but also to uncertainty about it, conditional on shocks being sufficiently persistent
in expected value.

Thus, the government can act as a coordinating device, provided ex-post sustainability
is fulfilled. Given specific conditions it can also smooth the business cycle. But two
countries should not necessarily use the same type of counter-cyclical policy: the policy
response should depend on specific country characteristics.

The fiscal deficit discussed above is the overall deficit of public sector. However, when
we consider the effectiveness of counter-cyclical policy, the fiscal situation of the central
government is most relevant. Moreover, in reality the central government may transfer
subsidies to local government, resulting in ‘soft budget’ constraints. Although local
governments may conduct fiscal measures in response to region-specific shocks, the fiscal
condition of central government matters.

The Japanese experience in recent years seems consistent with these theoretical
conjectures. In the late 1990s, the effectiveness of counter-cyclical policy became smaller
as the fiscal condition became worse. Firstly, let us consider the tax cut policy. Private
consumption can be stimulated if permanent disposable income rises due to permanent tax
cuts. However, when the fiscal condition is already bad, and social welfare spending is
expected to increase considerably in the future, it is not feasible to cut taxes permanently.
Actually, the tax cut in the 1990s was so temporary that it could not stimulate private consumption much.

Next, let us consider public investment. If its content is efficient and productive, public investment can stimulate GDP. However, if its content is wasteful, as in the allocations to public works in 1990s Japan, it will not have a large spillover, and the magnitude of the multiplier effect would be very small, almost 1. Despite the many empirical academic studies on Japan, we could not confirm a large spillover effect from public investment in the 1990s. See, among others, Doi and Ihori (2009). Rather, it simply shifted the construction and maintenance costs to future generations. Moreover, Japan’s fiscal condition has become worse recently. Hence, the benefits of country-cyclical fiscal policy are very small these days, while the costs of worsening fiscal conditions are serious. See Ihori (2011a), among others.

Automatic Stabilizers and Local Governments

The purpose of automatic stabilizers is to smooth out output fluctuations in real time. The central government should have the main role in this function, if fluctuations occur nationwide at the same time. However, macro-economic shocks may occur differently in several regions, since structures of industries and demography are heterogeneous across regions. Thus, shocks may affect regions differently. In such a case, local governments may have additional roles in conducting more region-specific measures. In other words, local governments may implement discretionary policy in some areas.

Automatic stabilizers built into the local tax system reduce local tax revenue in a recession, which may stimulate aggregate demand. Or, they may support the poor as a form of social welfare program in a recession. Since local tax is normally levied under the benefit to pay principle, it is not progressive. However, so long as the tax base is positively correlated with GDP, it should have some stabilizing effects.

In Japan, since the local inhabitant tax is levied with a one year lag, the stabilizing effect of the local inhabitant tax is weaker than that of the national income tax, which is progressively levied without such a one-year lag. Moreover, social welfare programs for local regions also take some time to implement. Thus, compared with uniform unemployment benefits or nationwide social security benefits imposed by the central government, the effects of stabilizers in the local public finance system are weaker. Nevertheless, in a serious crisis, local governments should conduct several fiscal measures, such as hiring civil servants temporarily, lending money to small businesses at lower rates of interest, and so on. If these measures are built into local fiscal rules, they may be regarded as examples of automatic stabilizers by local governments.

3. Fiscal Policy in a Crisis

It is useful to distinguish between ordinary fluctuations and serious crises in
understanding the mechanisms of counter-cyclical policy. In the case of a normal fluctuation, the fiscal condition is sustainable and the government may attain the potential growth path in the long run, even if output fluctuations cause a recession temporally. Although expansionary fiscal measures might be needed, built-in stabilizers can handle it better. From the viewpoint of long-run intertemporal efficiency and equity among generations, individuals, and regions, sustainable fiscal management can easily be conducted.

It is desirable to have deficits in a recession in the case of ordinary fluctuations. This policy implication holds in both Keynesian or neoclassical models. The Keynesian argument utilizes fiscal deficits as a tool for stabilizing measures, while the neoclassical argument utilizes fiscal deficits as a tool for smoothing tax revenues. If the macro-economic situation is in a serious crisis, many people will suffer badly from the recession and hence it becomes a top propriety to improve the macroeconomic situation as soon as possible. An active counter-cyclical policy may be justified, even if the burden will be shifted to future generations. If the potential growth path is maintained at a high level by such a policy, it will be beneficial for future generations in the long run.

On the other hand, there have been few analytical arguments on fiscal management in a serious crisis. In an emergency, the negative shock is so large that it is difficult to apply the standard analytical framework.

Generally speaking, the criterion for fiscal management assessment is different between normal fluctuations and serious crises. Moreover, it is actually hard to differentiate normal fluctuations from serious crises. In reality, even if a recession occurs just as one stage in ordinary fluctuations, it may well be perceived as a serious crisis. If so, the political pressure to seek massive fiscal measures is large, even though these can be justified only in a serious crisis. If the economy faces a serious crisis, all kinds of fiscal stimulating measures may be easily conducted in a political economy. However, even in a serious crisis, we cannot justify all expansionary fiscal measures.

In Japan, since the worldwide financial crisis in 2008, the government has conducted a large scale fiscal stimulus to stimulate the Japanese economy, which was badly affected by the world financial crisis. In 2011, Japan’s government also conducted massive fiscal measures to cope with the Great East Japan Earthquake. As a result, Japan’s fiscal condition became worse and worse. Even in the case of a serious emergency, we have still to compare the cost and benefit of fiscal measures appropriately.

To sum up, in ordinary fluctuations we should mainly use the automatic stabilizing policy, while in the case of a serious emergency, we should also implement an expansionary discretionary policy. At the same time, this policy measure should be consistent with long run fiscal sustainability. Moreover, it is desirable to improve the fiscal condition before recession comes.

The concept of the non-Keynesian effect is useful here. This effect means that if fiscal spending is wasteful or the fiscal condition is very bad, fiscal consolidation such as spending cuts and/or tax increases will instead stimulate private demand, contrary to the
conventional Keynesian effect. If a non-Keynesian effect occurs, the government can attain both fiscal sustainability and economic recovery at the same time. This argument is consistent with the analytical understanding that fiscal conditions affect the effectiveness of counter-cyclical policy.

According to empirical studies so far in Japan, in sustainable periods when fiscal deficit and debt outstanding/GDP were smaller than a certain level, we can observe the standard Keynesian effect. However, in unsustainable periods, when fiscal deficit and debt outstanding/GDP were much larger than a certain level, a non-Keynesian effect occurred, so that an increase in public spending and/or a decrease in tax revenue depressed private demand, since these actions deteriorated the fiscal situation.

In the case of serious crisis, discretionary policy becomes important, which is conducted by the central government. Since a negative shock hurts the overall economy, the central government has the comparative advantage for conducting expansionary fiscal measures. But if a negative shock hurts specific regions badly, such as the East Japan Great Earthquake of March 11, 2011, local governments in the damaged areas should conduct fiscal measures as well.

On the other hand, in the case of ordinary fluctuations, built-in-stabilizers could sufficiently cope with recessions. It is not necessary for the central government to conduct a massive discretionary policy. The central government may arrange tax and social welfare systems to be consistent with automatic stabilizers. Once the system is established, the central government would not have to conduct discretionary policy. If the shocks in ordinary fluctuations are relatively small and affect regions differently, the role of local governments would become important even for discretionary policy.

III. Rule and Discretion

1. Policy Lag

Effect of Policy

In comparing discretionary policy and automatic stabilizers, it is useful to evaluate each tool from the viewpoints of rules and discretion. In particular, when we discuss the efficacy of discretionary policy, a policy lag matters. In reality, any policy requires some degree of time lag before it is implemented. This is called a policy lag. The policy authority may not anticipate a policy lag precisely.

Policy or time lags are another complicating factor in macroeconomic policy. First, there is recognition lag. Our economic data gives us a rearview mirror through which to view the economy. We may discover only after the fact that the economy has been in recession for a year, or that our estimate of the natural rate of unemployment is too optimistic. For example, even if the economy is getting worse, it may take some time until GDP begins to decline. For social welfare measures, it takes some time to specify who is
really being hurt by a recession.

Second, there is implementation lag. The policy authority might recognize a recession, but it may take some time for the Diet to enact a stimulative tax cut or spending program. Even if the policy action is recognized as being needed, it may take some time to make plans due to adjustments among policy authorities, resolution by the Diet, and so on.

Finally, there is impact lag. When a policy is implemented, it may take some time to affect the economy. Consider monetary policy. There may be a lag of several quarters between a cut in interest rates and the response of aggregate demand. For example, a drop in interest rates is supposed to raise the cost of foreign goods due to depreciation, but even if the exchange rate moves in the right direction, it may take a while for foreign producers to mark up the prices of their exports to us. And even after prices change, it may take a while before domestic buyers switch from imported products to domestic products.

Hence, for monetary policy, the second lag of implementation may be short but the third lag of impact may be large. The Bank of Japan usually holds policy decision meetings twice a month to discuss monetary policy. These meetings are the main opportunity for the Bank of Japan to change the target interest rate. Thus, it may change the rate promptly if necessary. However, a change in the rate will affect the investment of firms and consumption of households gradually. It may take some time to achieve the purpose of country-cyclical policy.

On the other hand, in the case of discretionary fiscal policy the lag of implementation may be large but the lag of impact will be short. Namely, in order to implement discretionary fiscal policy, a budget normally needs to be made, which should be approved by the Diet. This takes some time. However, once the budget is approved, fiscal action may affect aggregate demand by changing government spending directly. Or it may affect investment and consumption of private agents through changes in taxes and transfers. However, although the impact lag may be short, it does not necessarily mean that the magnitude of the impact is large. For example, when the central government gives money to local governments, which are conducting discretionary measures, the central government should first take budgetary action. If the adjustment of intergovernmental financing takes some time, the lag of implementation becomes large.

The combination of model uncertainty and time lags makes a mockery of the notion of "fine tuning" the economy, to always be at optimum performance. Instead, policymakers try to adjust slowly and more-or-less grope to find the best outcome that they can achieve. Thus, monetary policy and fiscal policy have merits and demerits with respect to policy lags respectively. Moreover, the lag of recognition may be serious for both policies. Therefore, it is hard to conduct the appropriate discretionary policy at the right time. Even if a discretionary policy may be effective in the short run, as suggested by the standard Keynesian model, it may not be desirable to use it unless it is implemented at the right time.

For example, suppose the economy is in a recession and the government conducts expansionary monetary and fiscal policies. It might take some time to do so, so that the
actual implementation might occur after the economy has already recovered. If so, the expansionary policy may not stabilize output fluctuations but, in fact, destabilize the economy. Or, even if social welfare measures are needed in a recession, their implementation could take some time. But such measures may not necessarily be desirable anymore, since the economy will already have recovered.

If the government can anticipate the time lag precisely, it can make the necessary decision. However, it is hard to anticipate the size of lags correctly. Thus, it may be desirable not to use discretionary policy but to use monetary and fiscal rules to smooth out output fluctuations. This is the issue of rules versus discretion.

Those who support discretion argue that the government may anticipate the policy lags to a great extent, so that a discretionary policy can produce the desirable impact at right time. On the other hand, those who emphasize the merit of rules are not confident about the correct anticipation of policy lags or the effectiveness of discretionary policy. Rather, they are concerned with the distortionary effect of bad discretionary intervention. Automatic stabilizers would be better to avoid such distortionary costs. Which argument is appropriate depends on the capabilities of the government, the nature of business cycle risks, the macroeconomic situation and fiscal conditions.

Dynamic Inconsistency

The issue of rule versus discretion could be discussed from the viewpoint of dynamic or time inconsistency. The optimal policy at present might not be optimal after time has passed and the economic situation changes. This is called dynamic inconsistency. For example, suppose the government promises to conduct a certain policy in the future. But the policy may not be optimal when the economic situation changes in the future and the government reconsiders the optimization problem. Such a policy may be called time inconsistent.

In a dynamic world an asset accumulated in the present is a stock variable and hence initially given at this point. Taxing the asset constitutes a lump sum tax and hence it does not affect private agents and revenues can be collected without any distortionary costs. Since an asset is a stock variable, raising tax rates just results in raising revenues. However, if the government imposes a high tax rate from the beginning, it raises the cost of asset accumulation and depresses the incentive to save. Therefore, the optimal policy is that the government promises not to tax asset accumulation from now on and then, once the asset is sufficiently accumulated, the government raises tax rates to collect tax revenues.

When the future comes, the promise of zero tax is not desirable for the government. By raising tax rates on assets, the government may reduce other distortionary taxes, which is desirable for resource allocation. Since the government intends to maximize the social welfare of households, the government has an incentive to break the promise in order to improve social welfare. The initial promise of maintaining zero tax in the future is not time consistent, simply because the policymaker has an incentive to break it in the future.
If the private sector does not pay attention to the government’s future action, the dynamic inconsistency problem would not cause any costs. By breaking the promise, social welfare can be increased. However, it is plausible to assume that the private sector will pay attention to future government behavior. Then credibility of policy matters.

When a policymaker faces dynamic inconsistency, they will change policy after some time passes. Sooner or later, the private sector may begin to anticipate such policy changes. For example, once the private sector anticipates future increases in tax rates, it will depress private savings from the beginning. Hence, a policy of zero tax now will not stimulate savings. As the result, social welfare may be smaller than in the case that the policymaker does not raise tax rates in the future. Therefore, it might be desirable to restrict the freedom of policy options in the future by rules. This is an example of why rules can be better than discretion. Ihori (2010) investigated the importance of committing ceiling to a on debt limit from the viewpoint of dynamic inconsistency.

In order to make rules credible, who should set the rules, the central government or local governments? Considering competition among local governments, yardstick competition, or vote on foot, local governments might face more pressures regarding commitment. For example, remember the example of a tax on asset accumulation. If many local governments tax an asset, due to tax competition, each local government cannot raise taxes in the future, even if the asset is sufficiently accumulated, since the asset may move across regions. Moreover, if one local government breaks the promise and another does not break it, it may send a signal that the former local government is not credible. Considering such aspects of yardstick competition, local governments tend to avoid sending such bad signals. In this sense, local governments could take on some role in conducting counter-cyclical measures, in the form of imposing rules.

2. **Sustainability of Fiscal Policy and Automatic Fiscal Stabilizers**

Since business cycle risks occur cyclically, counter-cyclical measures are needed periodically. At the same time, any fiscal policy must be sustainable in the long run. In reality, expansionary measures are taken under political pressure and hence in a recession fiscal deficits easily increase. On the other hand, it is hard to conduct restrictive fiscal policy in a boom. Thus, expansionary measures are often conducted with little attention to fiscal sustainability.

In order to attain sustainable counter-cyclical policy, it might be useful to impose the conditional expansionary policy rule. For example, we may impose an institutional setting for both fiscal policy and fiscal consolidation. In the standard budget system, built-in-stabilizers have been imposed such that in a recession spending is automatically raised and taxes are automatically reduced, due to progressive income tax, the social welfare system, unemployment benefit, and so on. Automatic stabilizers normally improve the macroeconomic situation. In addition to this, we may impose other automatic fiscal stabilizers into the budget system. Namely, if fiscal conditions worsen, the budget system
may automatically improve fiscal conditions by reducing spending and raising taxes.

Fiscal stabilizers are fiscal rules, such as for raising taxes in a recession, which are built into the budget system. Without such rules, the government has to raise taxes ex post after fiscal conditions become worse. In this case, it may result in an increase in wasteful spending in a political economy. This is because an ex post tax increase would only have the income effect and interest groups do not have an incentive to cooperate with fiscal consolidation attempts. On the other hand, if an increase in deficits automatically corresponds to an increase in taxes and the interest groups can anticipate this rule in advance, it has a substitution effect. Namely, when the deficit rises and the tax burden is shifted to the future, it will automatically raise the tax burden further in the near future. Hence, interest groups will have an incentive to cooperate with fiscal consolidation right now (see Appendix 1).

In order to restore fiscal sustainability, a large tax increase will be necessary sooner or later. In such a case, the ex ante fiscal stabilization rule is a more feasible method than the ex post tax increase for promoting fiscal consolidation. This rule is more effective for fiscal sustainability than discretionary fiscal policy.

It is true that automatic fiscal stabilizers have a contractionary effect on macroeconomy. That is, in a recession, it is normally necessary to stabilize output fluctuations. It does not seem a good idea to reduce deficits in a recession. However, automatic fiscal stabilizers may work at the stage when the economy is recovering after the worst of the recession is over. For example, if the fiscal condition becomes bad to a certain level, the rule should imply that a tax increase will be implemented in the near future. When the fiscal deficit is very large, a recession has been serious. This means the economy is likely to recover soon. In such a case, anticipation of a future increase in tax rate will stimulate consumption demand due to the intertemporal substitution effect. This will help the economy to recover, since aggregate demand is stimulated. Therefore, if we determine the timing of raising taxes appropriately, automatic fiscal stabilizers may be consistent with automatic macroeconomic stabilizers.

The central government should impose automatic fiscal stabilizers. It is more desirable that the central government to set a unified rule of fiscal stabilizers, than it would be for local governments to set various regional rules.

IV. The Role of Governments and Fiscal Measures

1. Counter-cyclical Policy and Risk Management

Fiscal Federalism

Let us investigate the desired role of governments from the viewpoint of the optimal allocation of intergovernmental functions between central and local governments. In reality, both central and local governments provide similar goods and services. A similar argument
would apply to fiscal measures. In a recession, both central and local governments spend more on public works and hire public workers temporarily. It seems hard to judge which government has the comparative advantage for conducting such fiscal measures.

The concept of fiscal federalism means that local governments should do anything that they can do. Local governments can provide most of goods and services which are actually provided by the central government. Considering the inefficiency of fiscal management by the central government in Japan, the movement toward fiscal federalism is plausible. However, it is also true that many local governments in Japan are very inefficient. Even if the local government actually provides goods, it is not necessarily desirable for the central government not to provide similar goods. The optimal allocation of functions between the two types of governments depends on which government may provide fiscal measures more efficiently.

**Central and Local Governments**

Let us consider how both governments should behave with respect to business cycle risks. There are two remarks to be noted.

First, it is important to conduct fiscal action by explicitly taking dynamic inconsistency into account. If output fluctuations occur exogenously, we do not expect strategic behavior of agents. However, there is still the problem of informational asymmetry about how the central government recognizes the content of recession. The central government usually determines fiscal measures based on ex post information. Suppose the central government intends to give money to local governments when their regions are seriously damaged by a recession. Then, we may have the problem of dynamic inconsistency and some paradoxical results.

For example, suppose that the central government wants to conduct a discretionary subsidy policy to the targeted local government for as long as the region is in bad shape. The local government and private agents living there may anticipate this measure. If so, the local governments and their residents have an incentive to send signals that they are facing bad economic conditions, even if they are not. By doing so, they can obtain more subsidies than they need. This outcome is inefficient.

Second, risk management is important. Due to globalization, macroeconomic activities face more shocks and fluctuate more than before. Costs of output fluctuations have become larger. If costs increase, the central government has to provide a safety net for private agents to a greater extent. Moreover, providing mutual assistance at the time of a natural disaster could also be regarded as one of these safety nets. When income inequality increases due to risk, such as unemployment in a recession, public spending and income redistribution will be conducted to a large extent. These measures may also be examples of safety nets. These measures may improve the expected welfare of all regions from the viewpoint of risk aversion. These measures are often conducted in the form of regional income transfers ex post. However, we do not know exactly which region is damaged by
the recession ex ante.

2. Fiscal Measures and Public Goods

Counter-cyclical Policy as a Public Good

First of all, let us consider counter-cyclical policy as a public good. When a business cycle fluctuation occurs nationwide, all the people can benefit from being prepared for this risk. Such a measure may be regarded as a pure public good. Since this benefit is the ex ante benefit, we do not know how the risk actually occurs. In such a case, the optimal level of fiscal action is determined by the well-known Samuelson rule, which means that the expected social marginal benefit equals the expected social marginal cost. If the central government can levy a lump sum tax and it knows the true marginal benefit of avoiding fluctuation risk, it can provide this pure public good at the optimal level. In the case of perfect information, the central government can cope with this matter using either discretionary policy or automatic stabilizers.

On the other hand, some business cycle risks may affect different regions, industries, and agents differently. If a negative shock is not so large but specific to some regions, it will not affect all the regions in the same way. The effect of negative shock may differ across the regions. In such a case, it is hard to share the risk after the negative shock actually occurs.

The government should provide social welfare measures to the regions, industries, and agents that are damaged by a recession. Since this is a discretionary policy, it requires microeconomic care. Hence, it may be desirable for governments to take action on a case by case basis, rather than providing uniform measures nationwide. This is mainly the role of local governments. In this case, so long as public spending and tax revenues are linked within a region, there is no interregional transfer. If a fiscal deficit occurs in a recession, it can be financed by the fiscal surplus in a boom. It is only a matter of an intertemporal fiscal transfer within a region.

When business cycle fluctuations are heterogeneous with respect to regions, the central government can conduct region specific measures. In this case, the central government would make subsidies to the regions hurt by recession. This is an example of interregional transfers. At the same time, this policy effectively transfers fiscal resources to the regions in a recession from the regions in a boom.

Impure Public Goods as Fiscal Measures

Impure public goods have characteristics between pure public goods and private goods. Pure public goods are provided by the central government, and private goods are provided by the markets. Impure public goods may be provided by local governments. Many fiscal measures in reality may be regarded as impure public goods. If so, these goods and
services can be provided by local governments.

As for impure public goods, one might usefully ask what the difference is between a club good and a LPG, or local public good. Exclusion appears to be critically important for club goods. This is what allows the good to be provided by the private sector, since firms can charge a price for membership in the club, or for visits to the club, and earn a normal return. There are other goods for which this is not true, such as city streets, traffic lights, police and fire protection. We will refer to an impure public good that exhibits exclusion as a club good. Impure public goods that do not exhibit exclusion will be referred to as LPGs. Both types may exhibit congestion and hence rivalry. There are also other goods that can exhibit exclusion but where one would not wish to exclude because they have other important social benefits, e.g., schools, libraries, and museums. These goods can be considered club goods but would have to be provided by government if private firms are not allowed to exclude.

As explained before, fiscal measures have two objectives: stimulating aggregate demand in a recession and alleviating economic disasters due to a recession. Either measure will have some spillover effect across regions. From the objective of stimulating demand, local public works should benefit people living in regions in a recession. From the objective of social welfare measures, if the poor people’s economic condition is improved, it will contribute to enhancing the safety of society and credible norm. The improvement of social circumstances should have a positive spillover effect on other regions, although it might not spillover nationwide.

Therefore, if business cycle risks occur differently among regions, fiscal measures have the nature of impure public goods. The local government could provide these goods as local public goods.

In such a case, it is not good for the central government to regulate the content of local public goods uniformly. When the content of the optimal fiscal measures differs among region, it is hard for the central government to make delicate policy plans appropriately. Or, if a negative shock affects agents differently in a region, the local government may provide more appropriate care than the central government, since the local government has more appropriate information on the wellbeing of residents there.

Impure public goods have spillover effects across regions. For example, some local public works may give benefits to residents living near the region. If the local government does not take into account the size of spillovers, the optimal level of fiscal measure cannot be provided. In such cases, the central government should intervene. Namely, the central government may internalize the spillover effect by using subsidies to local governments. The optimal size of subsidies becomes larger, the greater the degree of spillovers local fiscal measures will produce. Furthermore, even if the spillover effect is zero, the central government may still subsidize local public works if these public works are not a perfect substitute for public investment by the central government and may be very useful.
3. Federalism and Fiscal Policy

Social Welfare Measures

If a region is damaged by a serious negative shock, a large amount of public works will be needed both as a social welfare objective and as an aggregate demand-stimulating policy. In the Japanese local allocation tax system, when local tax revenues decline in a recession, subsidies from central government increase. This is a sort of automatic stabilizer. On the other hand, fiscal measures implemented by the central government’s supplementary budget, especially, such as those for local public works to stimulate aggregate demand in the region, may be regarded as discretionary policy.

Let us consider the possible bad outcomes of intergovernmental fiscal measures. If the negative shock in a recession differs across regions, local fiscal measures financed by central government subsidies could produce a bad outcome. For example, a local government may give a lot of money to the poor in a recession but it may not reduce unnecessary subsidies to the poor in a boom. If the total amount of social welfare benefits is almost the same among regions, it would be desirable to differentiate the timing and target of benefits, depending on the nature of regions. In Japan, the tax burden is almost the same in most regions. Since large benefits do not correspond to large local tax revenue, there is not a link between benefit and burden in regions.

Let us then consider income redistribution policy within a region. Suppose the central government does not give any money to local governments. Nevertheless, if the local government intends to conduct social welfare measures, it is necessary to judge the economic difficulties of each agent in a recession. The local government in a rich area may spend a lot of money on social welfare measures to support the poor. This is desirable from the vertical equity principle.

On the other hand, the local government in a poor region may not have a sufficient amount of money to support the poor, even in a recession. Such a local government does not have enough revenue for redistribution. Thus, the central government will need to give subsidies to the poor local government. In this case intergovernmental subsidies are useful.

In principle, social welfare measures should not be conducted by temporary counter-cyclical policy, but by permanent income redistribution or social security benefit programs as their own objectives. However, if asymmetric information among individuals exists or ‘stigma’ on receiving social welfare benefits is serious, the system or policy to support poor individuals will not work well. In such a case, it might be desirable for the central government to subsidize the local government in regions damaged by a recession.

In sum, financial aid from the central government to local governments will often be necessary to some extent. However, the size should be carefully controlled. If regional inequality increases in a recession, and/or the existing redistribution programs in the local governments are not working well, it is desirable to raise subsidies to poor regions further. However, if the existing redistribution among regions is too much, it is not desirable to
raise subsidies any more. The redistribution policy among regions should be managed by considering the costs and benefits appropriately.

Political Economy of Intergovernmental Financing

In intergovernmental financing in Japan, many transfers are made from the central government to local governments. The central government subsidizes local governments by the amount of 5% of GDP every year. Since local governments heavily depend on subsidies from the central government, they may try to obtain as much money as possible from the central government, irrespective of their economic conditions. If the central government is politically weak, it may respond to these pressures by simply giving subsidies to local governments. This soft budget mechanism further stimulates rent-seeking behavior by local governments and politicians. That is, even when the economy is not in a recession, too much discretionary policy is conducted by local governments, resulting in a huge amount of wasteful public works. If local fiscal measures are affected by political pressures from local interest groups, the central government’s fiscal policy will not necessarily attain a successful outcome.

As examined by Ihori and Itaya (2002, 2004) and Ihori (2011b), if intergovernmental financing system is soft, local governments may free ride on subsidies from the central government, without imposing sufficient taxes on their residents. As the result, the overall government deficit may increase. In particular, in Japan, the criterion of basic fiscal need in the local allocation tax formula has not been explicitly specified. The amount of local allocation tax is actually determined by political negotiation among various interest groups and politicians. Furthermore, local governments do not determine their own local tax rates with their own will. Instead, they seek heavy subsidies from the central government. Moreover, although the expansionary fiscal measures have often been conducted, they have not produced any expansionary effects on the economy.

The main direction of fiscal federalism in Japan has been that of transferring the tax base from the central government to local governments. Actually, some steps have been implemented. However, even if the deficit of local governments decreases as a result of this reform, the deficit of central government increases by the same amount. The overall deficit in the public sector in Japan does not change, so that it does not improve the fiscal condition of the public sector.

In order to attain the efficacy of fiscal policy in a recession, local governments should have freedom of choice under hard budget constraints. To do so, we should reform the local allocation tax formula, so that local governments and residents may take burden of tax revenues, without relying on subsidies from the central government under soft budget constraints. See Doi and Ihori (2009) among others. It is important to reform intergenerational financing to restore the efficacy of counter-cyclical measures.
Local Tax and Stabilizing Policy

Let us consider the stabilizing effects of local fiscal measures from the viewpoint of their financing. A fundamental principle of local taxation is to stabilize tax revenues. If local tax revenues are heavily dependent on corporate taxes, local tax revenues fluctuate greatly during business cycles. These fluctuations are not good for smoothing tax revenue but desirable from the viewpoint of automatic stabilizers. Namely, if the economy is in a recession, a decline in the local tax burden increases the disposable income of the private sector, alleviating economic difficulties.

In Japan ‘a uniform standard levying taxes’ has been introduced for local corporate tax. This tax reform reflects local governments’ need to stabilize revenues during business cycles. For local governments attaining stable revenues is one of the top priorities in order to provide stable public services. Unlike the central government, local governments may not easily issue debt, and mainly employ a balanced budget policy. In such a case, stable tax revenues means stable public services. Local governments regard automatic fiscal stabilizers as an important policy objective.

However, from the viewpoint of private companies that pay taxes, stabilizing tax revenues means that they must take on the burden of fluctuation risk, hurting their welfare. Instead, they benefit from macroeconomic stabilizing effects. Thus, tax revenue stabilization is still desirable if the benefit from the local government is larger than the cost to private agents.

As explained before, the central government deficit may well accumulate due to political pressure, and discretionary policy tends to be too excessive. Therefore, it is important to maintain fiscal stabilization rules as the main tool of fiscal consolidation. On the other hand, many local governments follow the balanced budget rule. In this hard budget case, these governments have fiscal discipline. If so, the fiscal stabilizing effect may not be so important. Nevertheless, so long as the soft budget mechanism is relevant in some local governments, the automatic fiscal stabilizer becomes important in such local governments.

Counter-cyclical Measures by the Private Sector

The private sector can help cope with business cycle fluctuations as well. When output fluctuations hurt many people, including the rich, the market can offer risk aversion measures. For example, a private insurance company may provide unemployment insurance, which can complement the public employment insurance. Since these insurances are private goods, the market provides these services by the principle of benefit to pay. On the other hand, if the insurance is mandated and provided by the central government uniformly, it becomes a pure public good. In such a case, we cannot impose the excludable principle. Due to the free rider problem, the government may not provide the optimal level of insurance.
On the other hand, in the case of impure public goods, the excludable principle holds to some extent. For example, local governments provide region-specific services that can only be used by the residents there. They can collect inhabitant taxes even if they cannot impose user fees. By levying the local inhabitant tax appropriately, the benefit to pay principle may hold indirectly. Nevertheless, there is not sufficient provision of some local public services. In such cases, there is some room for providing private services in the market.

Also, those who are concerned with safety may have an incentive to obtain additional services for maintaining the safety of their neighborhood provided by private security companies. Private efforts are the engine of providing these additional public services, which complement the standard levels of public services provided by central and local governments.

The conventional fiscal measures mainly provide services to the poor. Recently, the content of such services has been differently evaluated by heterogeneous residents. If the economic growth occurs and preferences become divergent among people, many additional services could be provided by the private markets. While the volunteer activities of helping the poor are based on altruistic motives, providing private services to cope with business cycle risks requires some profit.

4. Desirable Roles for Central and Local Governments

In sum, it is not good for the central government to control fiscal policy measures fully. Local governments should have some functions to conduct discretionary policy and automatic stabilizers. Both governments have their appropriate roles.

In Japan, expansionary fiscal policy measures tend to go too far. It is important to incorporate mechanisms that may avoid wasteful fiscal management. The basic principle is to establish self-responsibility. Residents should recognize the link between benefits and burdens during the business cycles from a mid- to long-run perspective. In doing so, the effectiveness of counter-cyclical policy will be enhanced. Furthermore, if larger local governments seek considerable fiscal measures with deficits and smaller local governments conduct smaller fiscal measures with a balanced budget, residents may choose which local government is better for them. With fiscal competition, residents will choose the region that is more suitable for them. On the other hand, if the central government provides fiscal measures uniformly nationwide, the links between benefits and burdens will be weakened and the government could become too big.

It is difficult to establish fiscal institutions that can manage the fiscal risks of business cycles appropriately. If the benefits and burdens are not linked appropriately, many voters will not have to pay the taxes needed in order to finance their public services. The government wants to spend more but to collect less to cope with fiscal risks. Therefore, fiscal deficits increase, even if it is not a serious recession. We have to restore the link between benefits and burdens with respect to fiscal measures.
In reality, it is not necessarily good for either the central government or local
governments to conduct counter-cyclical policy alone. Private efforts would be useful in
addition to make fiscal measures more effective. Private efforts could provide useful
services to those who are not covered by the public services, whose target is mainly the
poor.

V. Risk Management and Fiscal Policy

1. Understanding of Risk Management

Size of Economy and Risk Management

Business cycle fluctuations mean output fluctuations, which produce considerable risk
for macro-economic activities. It might be useful to investigate fiscal measures on risk
management from the viewpoint of economic size.

Generally speaking, the larger the size of the national economy, the larger the loss from
business cycle risk in a recession. If GDP increases in a boom, the loss in a recession will
be large as well. The larger the business cycle fluctuations or the size of macroeconomy,
the more likely that the loss in a recession will be large. Similarly, in the case of regional
fluctuations, the larger the size of the regional economy, the larger the loss in the region in
a recession.

In a global economy, goods and services, capital and labor, and information move
quickly across borders. The interdependence of economic activities has become more
intense, so that a negative shock has a considerable spillover effect all over the world. The
Lehman shock (the downturn after the bankruptcy of the Lehman Brothers in September
2008) hurt the international economy very badly. Similarly, the Great East Japan
Earthquake in 2011 damaged the Japanese economy nationwide. A negative shock in a
region can cause a large loss nationwide. Since the heterogeneity of agents, industries, and
regions has enlarged over recent years, it has become even more necessary to conduct
fiscal measures to cope with these risks. This section discusses the relation between risk
management and fiscal measures.

Since the 1970s, the size of governments in advanced countries including Japan has
become bigger. This is because business cycle risks have increased and macroeconomic
activities have become more volatile. In particular, transfer payments to redistribute
income among regions have greatly increased. Moreover, the loss in a recession has
increased due to economic growth. Since many people avoid risk in Japan, political
pressures from local governments and politicians also contribute to raising
intergovernmental subsidies from the central government.

Many fiscal tools such as public works, subsidies to local governments, and social
welfare programs may be regarded as public spending to cope with risk. If business cycle
risks spread across the nation, a negative shock in one region could hurt other regions too.
Interdependence may occur nationwide, so that the central government should respond to such risk with fiscal measures. Local governments rely on subsidies from the central government to avoid such risks. It might be useful to accumulate funds in advance to prepare for such emergencies.

An increase in the size of a negative shock does not necessarily result in an increase in fiscal measures. This is because loss in an emergency situation means a negative income effect on the central government’s tax revenue. If the fiscal condition becomes worse, the government cannot afford to spend more on fiscal measures. Under hard budget constraints, fiscal measures by the central and local government have to be restricted.

On the other hand, in the case of soft budgets, local governments and their residents do not pay taxes to finance such fiscal measures. Thus, their political pressure to seek subsidies from the central government may be stimulated in a recession. The central government may respond to these political needs by accumulating deficits and shifting the burden to the future generation. Thus, the fiscal measures may be too much. Considering these bad outcomes, the central government should not easily give subsidies to local governments. We need to develop a new fiscal institution or rule of intergovernmental financing to ensure fiscal sustainability.

Reducing the Probability of a Bad Situation

In addition, to the fiscal measures which intend to reduce loss in a recession, another objective of fiscal measures is to reduce the probability of a recession. As shown in the East Japan Great Earthquake, it is not possible to reduce the probability of a bad situation in the case of a natural disaster. But it is important to reduce loss in an emergency as much as possible, once the bad situation actually occurs. The central government should prepare fiscal measures ready for this kind of serious natural disaster.

Even if the probability of a bad situation is exogenous, the government may reduce loss in a bad situation by strengthening its infrastructure ex ante. It is useful to reduce loss in emergency since it may improve the economic condition of agents damaged by the recession. The government may provide fiscal measures after the bad situation occurs. Or the central government may provide subsidies to local governments or private agents before the bad situation occurs. These measures can be done in the form of automatic stabilizers. Public works by the central government which have high productivity can improve the economic condition nationwide.

On the other hand, in the case of economic risk, output fluctuates endogenously during business cycles. For example, the bursting of a bubble economy can be related to some economic circumstances. The probability of a bad situation can be affected by fiscal measures. Thus, it is important for the central government to reduce the probability of bad situation as much as possible. This policy means to maintain the duration of a boom as long as possible. For example, the central government can make market mechanisms more efficient and provide information more transparently. It can also spend on fiscal measures
to reduce the risk of inducing a serious recession.

To sum up, in order to cope with business cycle risks, it is important to reduce the probability of a bad situation and/or economic loss in a bad situation. Although it might be hard to reduce the probability of an emergency, a lot of fiscal spending may be needed to reduce the loss. However, if the government conducts fiscal action after a recession occurs, it may stimulate moral hazard behavior. Therefore, it is useful to improve the economic condition from a long-run viewpoint, irrespective of business cycle fluctuations. By doing these actions, the government can successfully handle business cycle risk.

2. Regional Risk Aversion

Fiscal Federalism and Competition among Regions

Suppose business cycle risks occur differently among regions. One important question is whether the risks are positively correlated among regions or negatively correlated among regions. If positively correlated, a recession in one region corresponds to a similar recession in other regions. Fiscal measures in one region would be desirable, since they stimulate economic activities in other regions. Due to positive spillovers, non-cooperative action by local governments could result in too little fiscal measures being taken. It is difficult to internalize the spillover effect of a non-cooperative solution. Hence, if local governments determine discretionary policy at their own will, the optimal level of regional coordination may not be easily attained.

On the other hand, if business cycle risks are negatively correlated among regions, a recession in one region may well correspond to a boom in another region. In such a case, fiscal measures in a region are not desirable for other regions since they would stimulate aggregate demand in other regions too much. Namely, at non-cooperative solution fiscal measures would be too much.

Thus, under fiscal federalism local governments determine their discretionary policy non-cooperatively, and fiscal measures which have spillovers across regions are not chosen optimally. If business cycle fluctuations are positively correlated, fiscal measures have the nature of public goods, which benefit other regions. On the other hand, if they are negatively correlated, they have the nature of public bads, which hurt other regions. Thus, an expansionary policy may be desirable in one region, when a tightening policy is desirable in another region. We do not attain the optimal level of fiscal measures in both regions.

If subsidies from the central government are available, the appropriate fiscal measures could be attained. For example, in the case of positive spillovers, the central government may give a subsidy that corresponds to the size of the spillover. However, in reality it is hard to evaluate the true size of a spillover. If the central government gives too much money to local governments, fiscal measures become too much.
Fiscal Measures by Regional Block

One objective of federalism is to improve the fiscal condition of local governments. One possible option is called “Do-shu-sei”, a wider-area-local government system. Since local governments always want to have more freedom in fiscal measures, the movement towards regional blocks such as ‘Do-shu-sei’ are popular among local politicians. ‘Do-shu-sei’ means a kind of regional block in which the number of local governments is reduced and the fiscal size is widened. Let us investigate the merits and demerits of regional blocks such as ‘Do-shu-sei’.

When the governments of a regional block are the main agents of discretionary policy, the larger decision unit of the ‘Do-shu-sei’ block has a more expansionary policy power than the smaller decision unit of each local government. On the other hand, a regional block may act more precisely than the central government since it is still smaller than the central government. If business cycle risks occur not across the nation but in some specific regions, a regional block can more effectively conduct fiscal measures than the central government.

However, fiscal measures by a regional block have some difficulties. In a political economy where a regional block raises its fiscal measures, this would cause political pressure to other regional blocks to follow a similar expansionary policy. When residents receive gains from fiscal measures, an expansionary action in one block would make residents living in neighboring blocks seek the similar measures in their blocks. Even if the negative shock does not occur there, fiscal measures would become too much in many regions due to the political pressure. It is true that this bad outcome could occur in the case of local governments without being regional blocks. However, in the case of ‘Do-shu-sei’, the number of blocks is relatively small, and its size is relatively large, so that the demerits could be large.

There are many local governments within a regional block. If each local government determines its own fiscal action non-cooperatively, the desirable level of fiscal spending may not be implemented. If they cooperate, it would benefit them all. However, the coordination of local governments within the same regional block would be a serious issue.

Let us investigate the competition and coordination of regional blocks theoretically. Suppose two local governments in a block cooperate. They would spend more on fiscal measures than in a non-cooperative case. We may expect that the cooperative solution is better than the non-cooperative solution. This is a plausible conjecture. However, we obtain the seemingly paradoxical result that the cooperative solution is worse than the non-cooperative solution. For example, suppose the case of a three region model. Let us assume that two regions are positively correlated, while the other region is negatively correlated with respect to business cycle fluctuations in this three region model.

Theoretically, the paradoxical case could occur in the following situation. When two regions A and B, which were damaged by a recession, cooperatively raise fiscal measures, it would have positive spillovers to the third region C, by stimulating the aggregate
demand of the third region, which is already in a boom. Then, the third region C would respond by reducing its fiscal measures to depress the aggregate demand. Such a tightening policy would hurt the two regions, A and B. Thus, if the negative spillovers from the third region C dominate, the cooperative behavior of two regions, A and B, is not beneficial for A and B compared with the non-cooperative case, since it induces more tightening fiscal measures from region C.

3. Fiscal Measures as Risk Management

Risk Management in Japan

After WWII, Japan experienced an era of high economic growth. During this period, business cycle risks were correlated positively among the regions. Moreover, at the initial stage in the 1950s capital accumulation was too little. Thus, it was the right decision for the central government to allocate a lot of money to nationwide public works, resulting in accumulating productive infrastructures.

Recently, many people are concerned with inequality among regions. Heterogeneous risks such as natural disasters have occurred in various regions. Business cycle risks have also affected economic activities differently across regions. If business cycle risks occur differently among regions, the role of local governments becomes important. Moreover, as IT technology becomes more sophisticated, the government should pay attention to soft targets (human capital) more than hard targets (physical capital). Informational asymmetry becomes relevant as well. Considering these aspects, the function of local governments becomes more important. In the case of discretionary public works, local governments should allocate resources to the areas which promptly need measures for preparation against serious earthquakes, improvement of the environment and medical innovation.

Opening the Japanese economy to the world would also stimulate macroeconomic activities and benefit Japan as a whole. However, it would also raise the probability of risks. For example, with free trade, the home economy becomes a part of world economy. From the viewpoint of the comparative advantage theory, each country tends to specialize in producing goods and services in which it has the comparative advantage. As a result, once business cycle risk occurs abroad, such as a shock causing financial instability, the world financial system becomes very volatile and it can damage the domestic economy considerably. The Lehman shock in 2008 was an example of such a bad outcome.

In the case of Great East Japan Earthquake, the production activities of various industries including automobiles have been significantly damaged all over Japan due to the destruction of factories in Tohoku areas. Since domestic industries face international competition, unemployment and idle capital increase in areas where the production technology is not competitive. These potential bad outcomes become larger, the more globalization progresses.

As a result, the fiscal spending needed to alleviate these losses would increase. These
fiscal measures are to some extent necessary, to enjoy the benefits of globalization. But we have to be very careful about the size of these fiscal measures at the same time.

IV. Conclusion

Fiscal measures to cope with business cycle risks have two objectives. The first is to alleviate the damage of negative shocks and the second is to stimulate aggregate demand in a recession. Moreover, the objective of maintaining a boom as long as possible or raising the potential GDP as much as possible could also be regarded as countercyclical fiscal measures in a broader sense.

In each policy objective it is useful to conduct discretionary policy and use automatic built-in stabilizers at the same time. To make counter-cyclical policy more effective, it is important to collect information on business cycle risks and compare ex ante and ex post policies. The automatic stabilizing function mainly prepares for risks in advance and works well even if the negative shock is not anticipated. However, it may not fully cope with large size risks. If a negative shock is large, we need to conduct discretionary policy as well. In both objectives, both central and local governments should play important roles.

Theoretically, both recessions and booms are temporary phenomena during business cycles. In reality, excessive fiscal measures are often observed in a political economy simply because the recession is regarded as very serious. It is important to distinguish between a large negative shock, such as the serious bursting of a bubble, and small negative shocks in a process of ordinary business cycles. In order to attain fiscal sustainability, it might be useful to impose automatic fiscal stabilizing functions into the budget system in that if deficits increase, spending is automatically reduced and taxes automatically increase.

Business cycle risks do not often occur uniformly across the country. Considering informational asymmetry, local governments have a comparative advantage in making discretionary policy with respect to social welfare programs. If business cycle risks occur differently across regions, local governments have a certain important role. It is not sufficient for the central government alone to conduct fiscal measures in such a case.

Local governments cannot smooth resources intertemporarily due to the balanced budget constraint. However, when the central government gives subsidies to local governments for their fiscal measures, we must take into account the bad outcomes of soft budget problem. Both central and local governments should conduct discretionary policy and impose automatic stabilizers which are consistent with their fiscal capabilities and characteristics.
Appendix 1: Automatic fiscal stabilizers

Suppose two types of public spending benefit two interest groups respectively. For example, these two types could be social welfare spending and public works. We denote these as $g_1, g_2$, respectively. The government levies a lump sum tax $\tau$ per capita and issues public debt $b$ if necessary. The government budget constraint may be written as

$$b = rb + g_1 + g_2 - \tau$$

where $r$ is the exogenously given rate of interest. Each interest group has its own agent in the government, who could be a politician or ministry. Politicians or ministries which reflect interest of two groups respectively would intend to maximize

$$V_i = \int_0^\infty [\lambda_i \log(g_1) + (1 - \lambda_i) \log(g_2)] e^{-\eta t} dt$$

where $\lambda(i=1,2)$ means the degree of divergence of preferences between two interest groups. If $\lambda_1=1$ and $\lambda_2=0$, each interest group receives benefits only from its own public spending. On the other hand, if $\lambda_1=\lambda_2=0.5$, two interest groups have the same preferences.

Woo (2005) investigates the feedback solution of the non-cooperative dynamic game of this model. According to his analysis, under the assumption of linear strategy we have

$$g_1^* = \lambda_1 [\tau - rb]$$

$$g_2^* = (1 - \lambda_2) [r - \tau b]$$

Therefore, the government budget constraint may be rewritten as

$$b = (1 + \theta) (\tau - rb)$$

where $\theta \equiv \lambda_1 - \lambda_2$ shows the degree of divergence of preferences.

Next, let us introduce a tax on deficits. In such a case the government budget constraint would be further rewritten as,

$$b = rb + g_1 + g_2 - \tau - \phi_b \cdot b$$

And (5) may be rewritten as

$$b = (1 + D)(\tau - rb)$$

Here, $D$ is a value less than $\theta$. (5)' is a stabilizing equation with respect to $b$. Therefore, sooner or later fiscal conditions would improve. In other words, a tax on deficit helps to
improve the fiscal conditions.

The logic is as follows. Taxing ex post may have an income effect only. An increase in \( \tau \) in (5) cannot stabilize the equation. It would not have the substitution effect, which causes an incentive to cooperate with fiscal consolidation. On the other hand, if the taxing rule is ex ante imposed into the budget system like (1)’, interest groups may anticipate that taxes will increase with deficits. This has the substitution effect that raises the cost of the political behavior of seeking more privileges \((D \text{ is smaller than } \theta)\). Since shifting burdens to the future means more tax increases in the future, interest groups have an incentive to cooperate with fiscal consolidation at the earlier stage. Taxing deficits is a formulation of the automatic fiscal stabilizing rule.
Suppose two states, boom and recession, occur during a business cycle. We denote "1" as the boom and "0" as the recession. Without any fiscal measures, the expected utility may be given as

\[ W = pU^1(Y) + (1 - p)U^0(Y - \bar{L}) \]  
\[ C^1 = Y; \quad C^0 = Y - \bar{L} \]  
\[ \text{Or} \quad W = W(Y, p) \]  

where \( W \) is the expected utility, \( C \) is consumption, \( \bar{L} \), is the loss in a recession (the amount of reduction of GDP in a recession), and \( p \) is the probability of boom.

The following model is based on Ehrlich-Becker (1972). There are two types of fiscal measures. (i) A spending to raise \( p \). GDP in a recession could be raised toward the level of boom. It may effectively enlarge the period of boom. (ii) A spending to reduce \( L \). The disposable income in a recession would be raised. It may alleviate the economic difficulties in a recession. Utility function \( U(\cdot) \) has the same functional form between boom and recession. \( U^1 \) denotes utility in a boom, and \( U^0 \) denotes utility in a recession.

\[ U_y \equiv \partial U / \partial Y > 0, U_{yy} \equiv \partial^2 U / \partial Y^2 < 0 \]

With fiscal measures (8) becomes the budget constraint. \( Y \) is GDP, \( m_k \) is fiscal measures (\( k = 1,2 \)). Namely, \( m_1 \) is to raise \( p \), while \( m_2 \) is for social welfare programs. \( p(m_1) \) is increasing with \( m_1 \). And, \( L(m_2) \) denotes the loss function, which is decreasing with \( m_2 \).

\[ Y = C + m_k \]  
(8)

(6) may be rewritten as

\[ \bar{W} = \bar{W}(Y, m_2) \]  
(9)

(9) means that expected utility depends on \( m_2 \).

If we assume a linear loss function, we have,

\[ C^1 = Y - m_1 - \pi m_2 \]  
\[ C^0 = Y - m_1 - (\bar{L} - m_2) \]  

where \( \pi m_2 \) means social welfare spending needed in the boom (in term of \( C^1 \)), \( m_2 \) means transfer to households in a recession, and \( \pi \) denotes the effective insurance price. In order to spend in the recession, the government has to accumulate asset in the boom by making a
fiscal surplus. The fiscal surplus in the boom is $\pi m_2$ per period, and the total of reserves is spent in the recession. The relative ratio of boom period and recession period is $\pi$. This corresponds to the insurance price, which is $\pi=(1-p)/p$. This is the actuarially fair price.

Then, the expected utility is given as:

$$W = p(m_i)U^1[Y - m_i - \pi m_2] + (1 - p(m_i))U^0[Y - m_i - (\overline{L} - m_2)]$$

(12)

$m_2/\pi$ means the amount of insurance covering, and $m_2$ is the insurance payment. Therefore, we may have

$$W = p(m_i)U^1[Y - m_i - m_2] + (1 - p(m_i))U^0[Y - m_i - (\overline{L} - \frac{m_2}{\pi})]$$

(13)

(12) and (13) are the same equations. We use (12).

The optimal condition with respect to $m_2$ may be written as

$$-p\pi U^1_Y + (1 - p)U^0_Y = 0$$

(14)

If the insurance price is actuarially fair, the optimal condition (14) reduces to

$$U^1_Y = U^0_Y$$

$$\pi = (1-p)/p$$

$$U^1 = U^0, \quad C^1 = C^0$$

(15)

Or

$$Y - m_i - \pi m_2 = Y - m_i - (\overline{L} - m_2)$$

Therefore, we get the following relation.

$$m_2 = p\overline{L}$$

(16)

We have also

$$\pi m_2 = (1 - p)\overline{L}$$

(17)

This result suggests that by choosing social welfare measures appropriately, the government can smooth consumption between the boom and recession under an actuarially fair price. Thus, we may completely avoid consumption fluctuations during the business cycle. Note that this result holds only in the case of an actuarially fair price. Without this condition, it is not possible to attain perfect risk aversion. As shown in (16), it is desirable to accumulate a certain amount of surplus specified by (17) in the boom, so that in a
recession the government may spend on subsidies, which are equal to the losses times the probability \( p \). If the probability of good and bad situations is exogenously given and easily anticipated, the government may impose this type of expenditure as the automatic stabilizer into the budget system. If \( L \) is affected by \( m_2 \), then the result does not necessarily hold. See Ihori=McGuire (2008).

Next, let us consider the optimal condition with respect to fiscal measures to raise \( p \). Considering the equation, \( \pi = [(1-p)/p] \), the objective function is given as

\[
W = p(m_1)U^1[Y - m_1 - \frac{1-p(m_1)}{p(m_1)} m_2] + (1-p(m_1))U^0_{y}[Y - m_1 - \{L - L (m_2)\}] 
\]

The optimal condition with respect to \( m_1 \) is as follows:

\[
[p'(U^1 - U^0)] - [pU^1_{y} + (1-p)U^0_{y}] + [(p'/p)m_2U^0_{y}] = 0 . 
\]

The direct benefit of raising \( p \) is \( p'(U^1 - U^0) \), while the direct of raising \( p \) is \( pU^1_{y} + (1-p)U^0_{y} \). Moreover, the indirect benefit is \( p'm_2U^1_{y} / p \), which corresponds to a reduction of insurance payment due to the reduction of bad situation, 1-\( p \). It is not easy to relate directly the optimal level of \( m_1 \) with some exogenous variables, \( L \) and \( Y \). Thus, it is hard to use this measure as the automatic stabilizer. The government should use the discretionary policy with respect to raising \( p \). If \( Y \) increases, it is desirable to raise \( m_1 \). Similarly, an increase of loss in a recession would stimulate the demand for this measure.
References


Ihori, T., [2010], Deficit Ceiling, Privileges, and Fiscal Consolidation, to be presented at a political economy conference at Waseda University, December 2010.


