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Inflation target and debt management of local government bonds☆,☆☆

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Abstract: We show that the optimal inflation target imposed on a discretionary central bank varies with the extent of fiscal decentralization. Our analysis compares two fiscal regimes for local government bond management: the partially decentralized (PD) regime where the central government determines the amount of local bond; and the fully decentralized (FD) regime where each local government determines the amount of local bond. In both regimes, an inflation target has two effects: it harnesses surprise inflation; and it induces excess issuance of local bonds. Due to externality in determining the level of local government bond, however, the second effect, and thereby the optimal level of the inflation target, are smaller in the FD regime than in the PD regime. We also find that even if fiscal decentralization in its isolation deteriorates social welfare, we may be able to *improve* social welfare by introducing an inflation target when fiscal decentralization measures are adopted.

1. Introduction

The aim of this paper is to theoretically investigate the impact of fiscal decentralization on the design of monetary policy. The proponents of fiscal decentralization argue that "each public service should be provided by the jurisdiction having control over the minimum geographic area that would internalize benefits and costs of such provision" (Oates, 1972). In line with this argument, many economies including Canada, China, Colombia, Indonesia, Italy, and Spain have recently put forward fiscal decentralization. In Japan, the movement towards fiscal decentralization began in June 2003 when the Japanese Council of Economic and Fiscal Policy (CEFP) announced the "Trinity Reform Package" that aims to decentralize Japanese fiscal policy.[1]

Although fiscal decentralization is an important change in policy implementing structure, monetary economists did not pay, to the best of our knowledge, much attention to the design of optimal *monetary policy* under fiscal decentralization. We can indeed evaluate the welfare impact of fiscal decentralization in its isolation by assuming that the structure of monetary policy bodies is given. However, as fiscal policy and monetary policy are closely interacted with each other, it is important to investigate the impact of fiscal decentralization on the interaction of fiscal and monetary policy. For example, in economies like Japan where fiscal decentralization is put forward within a country, we need to investigate the interaction among a monetary authority and multiple fiscal authorities, including a central government and local governments.

In this paper, we theoretically consider the impact of fiscal decentralization on monetary policy. More specifically, we investigate how fiscal decentralization of public bond issuance affects the conduct of monetary policy. To do so, we consider the interaction of three factors, an inflation target, fiscal discipline, and fiscal decentralization of public bond issuance.

Our modeling of the first factor, the *inflation targeting scheme*, is based on the literature on the time-inconsistency problem of discretionary central banks. Kydland and Prescott (1977) show that without commitment to a predetermined policy and given the expectations of private agents, the central bank has an incentive to create *surprise inflation*, thereby boosting the economy. Given rational expectations of agents, surprise inflation increases the

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[1] See Section 2 for more institutional background of the fiscal decentralization in Japan.

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equilibrium inflation rate, but fails to raise equilibrium output. This *time-inconsistency problem* is important because, in practice, it is difficult for a central bank to commit to a predetermined policy. A solution to this problem is to introduce an inflation target, as suggested by Walsh (1995). As for the second factor, we follow Beetsma and Bovenberg (2001) and model *fiscal discipline* as reducing socially wasteful expenditure by local governments that only meets specific local interests. The consideration of fiscal discipline is important because it directly affects the determination of the amount of local bonds. In practice, introducing fiscal discipline may involve reducing the benefits of local special interest groups, which may impose the costs of regional unrest and tension. However, neither the central bank nor the central government considers the imposition of fiscal discipline costly.

Under the framework that integrates these two factors, we investigate the impact of the third factor, a change in the management of local government debt due to *fiscal decentralization*. We examine the change by comparing the following two fiscal regimes. First, we consider a partially decentralized fiscal policy (PD) regime, which best represents Japan's situation before fiscal year 2006. In this regime, the central bank controls the inflation rate, the central government determines the amount of local bonds issued and the local tax rate, and local governments determine the level of local government expenditure. Second, we consider a fully decentralized fiscal policy (FD) regime, which represents Japan's fiscal policy after fiscal year 2006. In the FD regime, the central bank controls the inflation rate, the central government determines the local tax rate, and local governments determine the amount of local bonds to be issued and the level of local government expenditure.

Under the setting explained above, we first demonstrate that in the PD regime, the central government determines the amount of local bonds outstanding by taking into account two marginal effects of issuing an additional local bond. Firstly, the local bond compensates for the adverse effects of wasteful fiscal expansion by the local governments (the *compensation effect* of local bonds). Secondly, it affects the inflation-setting behavior of the central bank, and thus increases the magnitude of surprise inflation and social loss in the future (the *cave-in effect* of local bonds). The amount of local bonds outstanding is determined by balancing these two effects.

The direct effect of imposing an inflation target in this setting is to prevent surprise inflation, which has been already recognized in the literature. We call this direct effect the *monetary discipline effect* of inflation targets. In addition, however, there is another effect. By harnessing surprise inflation, an inflation target indirectly weakens the cave-in effect of local bonds, and thereby increases the equilibrium amount of local bonds. This is the *fiscal expansion effect* of inflation targets. The optimal level of the inflation target balances these two offsetting effects.

We then proceed with the case in which fiscal decentralization occurs (i.e., the FD regime). In this case, yet another distortion, referred to as the *externality effect*, appears in the determination of local bonds. The local governments, which now control the amount of local bonds, put a greater weight on output gap minimization in their own region, and do not fully take into account the effect of their behavior on the national inflation rate. This reduces the compensation effect of local bonds relative to the cave-in effect, and more local bonds are issued in the FD regime.

When an inflation target is introduced in this regime, it has the same two effects, the monetary discipline effect and the fiscal expansion effect, on the amount of local bonds as in the PD regime. However, the latter effect becomes smaller in the FD regime than in the PD regime because the local governments issue *ceteris paribus* more local bonds than in the PD regime due to the externality effect explained above. It is thus optimal to set a more conservative (i.e., smaller) inflation target in the FD regime than in the PD regime.

The most important policy implication obtained from this analysis is that policy makers should pay attention to the degree of fiscal decentralization when they impose an inflation target on a discretionary central bank. Svensson (1997) shows that setting a constant inflation target eliminates inflation bias associated with surprise inflation. This rule is undesirable once we take into account the fiscal policies by central and local governments. We further show that as fiscal decentralization advances, the optimal target level should be conservative.

Finally, we evaluate the welfare levels in the alternative fiscal regimes. In our model, on the one hand, fiscal decentralization which is characterized as a change from the PD regime to the FD regime increases social loss because of the externality effect. On the other hand, the introduction of an inflation target decreases social loss, both in the FD regime and in the PD regime. An interesting implication derived from these results is that accompanying fiscal decentralization with introduction of an inflation target achieves a lower level of social loss.

Our model is an example of the conflict between fiscal decentralization and macroeconomic policy that is pointed out in the fiscal decentralization literature. Fiscal decentralization may lead to a conflict between local governments pursuing an expansionary fiscal policy and the national government pursing a contractionary fiscal policy. The situation is likely to be relevant if the local government faces a soft budget constraint (see Tanzi, 2001 for details). In our model, we additionally consider the presence of the monetary authority and thus fiscal decentralization puts pressure on both the central bank and the central government. Although we take Japan as an example of an economy pursuing fiscal decentralization of public bond issuance, the present analysis is applicable to other economies which are moving towards fiscal decentralization as well as an introduction of an inflation targeting framework.

Methodologically, the present paper is closely related to two studies by Beetsma and Bovenberg (1997, 2001). Beetsma and Bovenberg (2001) consider the role of a fiscal transfer system, taking into account the lack of fiscal discipline. There are three main differences between their model and that presented in the current analysis. First, they do not consider fiscal decentralization because in their model, national, rather than local, government implements decentralized fiscal policy. Second, their model is static whereas we consider debt issuance in a two-period model. Third, their primary interest is the role of monetary policy and the public transfers system as shock absorbers for region-specific economic shocks. This is of no concern in this paper.

With regard to the relationship between time-inconsistent monetary policy and public-debt policy, our model is similar to Beetsma and Bovenberg (1997). However, their analysis focuses only on centralized fiscal policy, and they do not focus on the issue of fiscal decentralization and fiscal discipline. Furthermore, they do not investigate inflation targets in their model.[2]

With regard to the relation between our theoretical institutional setup of inflation targeting and *actual* examples of such schemes, Heenan et al. (2006) and Svensson (2011) recommend a small but positive rate of inflation target as a practically desirable target, because in practice we need to take into account issues such as measurement bias of price indexes, rigidity of nominal wages, and the reduction of the probability of hitting zero bound of

[2] In a similar setting, Fujiki et al. (2004) compares alternative institutional arrangements including inflation targets to achieve the optimal outcome, and Uchida and Fujiki (2005) examine the optimal state-contingent inflation target under uncertainty. However, these studies also do not consider the issue of fiscal decentralization.