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Commitment, Deficit Ceiling, and Fiscal Privilege

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Abstract

This study analyzes how commitment to a deficit ceiling can affect private agents' political efforts, as well as overall welfare, in a hard and a soft budget regime, using a two-period model simulating a present and a future generation and a government. In the hard budget regime, the government imposes the deficit ceiling before the present-generation's interest group decides the quantity of personal fiscal privileges. Since in the soft budget regime the government cannot commit itself to the deficit ceiling ex ante, the present generation exerts intense political efforts for personal fiscal privileges. We explore the interesting possibility that the soft budget regime leads to an overall welfare reduction for both generations, and hence, the commitment to a deficit ceiling benefits even rent-seeking private agents.

Keywords: deficit ceiling, fiscal privilege, soft budget, hard budget, commitment

JEL classification numbers: H42, H60, H62

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1. Introduction

In a situation of fiscal instability, it is important that target levels of deficit ceiling be determined. For example, the 27 member states of the European Union have agreed, under the Stability and Growth Pact (SGP), to facilitate and maintain the stability of the Economic and Monetary Union. As is well known, all member states must respect the following criteria: (1) an annual budget deficit no higher than 3% of GDP and (2) a national debt lower than 60% of GDP. However, following criticism regarding insufficient flexibility, the EU Council relaxed the rules in March 2005 and made the pact more enforceable as well. As a result, while the ceilings of 3% for the budget deficit and 60% for public debt remain, the decision to declare a country's deficit as excessive can now rely on certain parameters. The 2013 fiscal compact now defines a balanced budget as one with a general budget deficit of less than 3.0% of GDP, and a structural deficit of less than 1.0% of GDP if the debt-to-GDP ratio is significantly below 60% and of less than 0.5% of GDP otherwise. In Japan, a similar Fiscal Structural Reform Act was implemented in early 1997 to achieve consolidation targets similar to those of the EU. However, during the severe recession in late 1997, the Japanese government implemented expansionary fiscal measures due to political pressure from various interest groups. Thereafter, the Act was no longer regarded as a legal constraint.

These developments suggest the importance of commitment to a deficit ceiling in a political economy. The size of public deficit is endogenously determined within the political process, but is influenced by the community's privilege and consolidation activities. How long-term objectives should be modified to accommodate economic fluctuations and to maintain some flexibility with respect to a fiscal stabilization policy is a key issue, which I have investigated elsewhere (Ihori, 2013). This study focuses on another important question: the welfare impact of the commitment to a deficit ceiling. Specifically, the study examines, using a two-period model with two generations and a benevolent government, how the above commitment influences private agents' political efforts for more fiscal privileges in a simple political economy.

Fiscal consolidation is now well recognized as a public good, considering its role in improving the overall fiscal situation. Once a deficit ceiling is imposed, the fiscal situation improves with a decrease in fiscal privileges for private agents, resulting in an increase in useful public spending. Hence, as shown in Ihori and Itaya (2002, 2004), for example, the analytical framework for private provision of public goods, summarized by Cornes and Sandler (1996), is useful for an examination of the outcome

of fiscal reconstruction or consolidation. See also Velasco (2000), for example.

This study explicitly incorporates the political efforts for fiscal privileges, which potentially hurt the fiscal situation, using a simple formulation of rent-seeking activities. For the standard analysis of rent-seeking activities, see Buchanan et al. (1980) and Congleton et al. (2008), for example. The original literature suggests that resources are unproductively used in rent-seeking contests. My formulation is a very simple one, where private agents invest in wasteful political efforts rather than undertaking productive activity, although the contemporary literature on rent seeking has a much broader application than that of the initial rent-seeking studies.

Interest groups of the present generation seek fiscal privileges through political efforts, which would require the personal cost of giving up leisure. In addition, when a ceiling is imposed on fiscal deficits, an increase in fiscal privileges leads to a corresponding decrease in useful public goods; the interest groups may well recognize the additional cost of such decrease. In this simple formulation, the rent-seeking efforts are affected by political institutions and the government's behavior. It is also important that the model consider how the government imposes the deficit ceiling. This study considers a two-period model with a hard budget and a soft budget regime.

In the hard budget regime, the government imposes a deficit ceiling before the interest groups of the present generation decide the quantity of privileges they want. This is the commitment case where the government is politically strong enough to impose a deficit ceiling, though not to control fiscal privileges. In the soft budget regime, the government imposes the deficit ceiling after the interest groups of the present generation decide the fiscal privileges they want. This is the non-commitment case where a politically weak government cannot commit itself to a deficit ceiling *ex ante*.

Janeba (2012) analyzed the costs and benefits of a credibly announced but lagged deficit or deficit ceiling rule in a political economy model. He showed that a constitutional limit on the future debt level is more effective than a balanced budget rule. He highlighted an interesting issue of delay in the commitment problem. The present study also investigates the intragenerational and intergenerational spillovers of the political efforts in both deficit ceiling regimes, but focuses on the welfare implications of commitment, instead. We compare the hard and soft budget outcomes in a political economy where private agents make rent-seeking political efforts. This study then explores a seemingly paradoxical outcome in the soft budget regime. For

literature on the soft budget regime in a political economy, see Boadway and Tremblay (2006) and Ihuri (2011), for example.

In the soft budget game, when the deficit ceiling is determined after political efforts by the interest group, the government's loose response directly benefits the present generation, as expected, but hurts the future generation. Nevertheless, the increased privileges indirectly hurt the private agents by deteriorating the overall fiscal situation. In such a paradoxical case, the commitment to a deficit ceiling could benefit even the rent-seeking present generation as well as the future generation. This study explores not only the merits of a hard budget deficit ceiling but also some limitations of the political efforts for obtaining the privileges. It thus highlights the importance of the negative spillovers of political efforts and the commitment to a deficit ceiling in a political economy by explicitly comparing the hard and soft budget games.

The rest of this paper is structured as follows. In section 2, we develop the basic analytical framework. In section 3, we investigate the hard budget outcome. Section 4 examines the soft budget outcome of the non-commitment case. In section 5, we explore the policy implications of the timing of the deficit ceiling by comparing the soft and hard budget outcomes. Finally, we present our conclusions in section 6.

2. Analytical Framework: Fiscal Consolidation and Ceiling on Deficits

As stressed by Ihuri and Itaya (2002, 2004), interest groups may accept the overall objective of fiscal consolidation although they do not agree with the process of its implementation. More objectively, this study focuses on the cost side of fiscal consolidation, the rent seeking for fiscal privileges. Once the government imposes a ceiling on fiscal deficits, an increase in fiscal privileges leads to a corresponding reduction in useful public goods, hurting welfare. Thus, the interest groups may have an incentive to cooperate with fiscal consolidation to some extent. Since improving the fiscal situation in this regime is in the nature of a public good, the analytical framework of private provision of public goods is useful in this analysis.

This study explicitly introduces a present and a future generation, as well as a benevolent government, in a two-period framework. Each generation lives for one period and has selfish preferences. Alternatively, we may regard the future generation as a proxy for the altruistic benevolent voters in period 1 (see section 4.3). Each generation consists of n identical agents, or interest groups. In order to incorporate the negative spillovers of fiscal privileges, we consider the non-cooperative behavior among

various interest groups, and hence, n is assumed to be greater than 1. For simplicity, we do not consider the political behavior of the future generation.

The government's budget constraint for each period is given as

$$T_1 - G_1 - Z_1 = -\bar{D} \quad (1-1)$$

$$T_2 - G_2 - Z_2 = (1+r)\bar{D} \quad (1-2)$$

where T_i is the exogenously given part of total tax revenue in period i ($i = 1,2$),

$T_i \equiv \sum_{j=1}^n \tau_{ij}$, and $\tau_{ij} > 0$ is the exogenously given part of tax burden for each agent j in

period i . Let $Z_i \equiv \sum_{j=1}^n z_{ij}$ be the total fiscal privilege in period i , which includes

group-specific tax expenditures, transfers, and/or region-specific wasteful public works.

Thus, z_{ij} is the fiscal privilege or net transfer that may be politically determined and

only benefits interest group j in period i . Further, let G_i be the amount of useful

nationwide public good in period i . Since we do not consider the political behavior of the

future generation for simplicity, we may assume that Z_2 is equal to zero.

The ceiling on fiscal deficits is denoted by \bar{D} , which is imposed by the government in period 1. We assume that debt cannot be negative, $\bar{D} \geq 0$, and r is the exogenously given interest rate. In the commitment case, the government is politically strong enough to impose a deficit ceiling, though not to control the fiscal privileges directly. It follows that the government may impose a ceiling on the total spending, $G + Z$, but cannot control the distribution between G and Z . It is not easy for the government to control fiscal privileges such as wasteful public works directly.

Actually, many countries have recently imposed such a ceiling on total spending. As explained by Nerlich and Reuter (2012), many EU countries introduced some kind of scale rule. In particular, expenditure rules and balanced-budget rules are the most common scale rules in place among EU countries, while there are generally only very few revenue rules in place. Since taxes are fixed in our simple model, expenditure rules are equivalent to deficit rules here. Even if all the taxes were controlled by interest groups, the analytical results would be the same since we may assume $T_i = 0$ without loss of generality. Alternatively, if the government can choose taxes optimally, it may attain the private consumption smoothing intertemporally and the analytical results in section 5 would become ambiguous. However, this case is not

interesting in the analysis of deficit ceiling since the government may easily avoid fiscal crisis by raising taxes when it can choose taxes optimally.

The utility function of private agent j in period i is given as

$$U^{ij} = U_{ij}(y_{ij}, G_i)$$

The utility of agent j in period i depends on private consumption, y_{ij} , and the quantity of the useful public good, G_i . Both private consumption and public goods are normal goods.

Substituting the budget constraints (1-1)(1-2) into the above utility function, the utility function of agent j in each period ($i = 1, 2$) may be rewritten as

$$U^{1j} = U_{1j}(y_{1j}, T_1 - Z_1 + \bar{D}) \quad (2-1)$$

$$U^{2j} = U_{2j}(y_{2j}, T_2 - (1+r)\bar{D}) \quad (2-2)$$

The utility in period 1 depends on the amount of total fiscal privileges, Z_1 , as well as the quantity of private goods consumed, y_{1j} .

The greater the political efforts by each agent of the present generation, the more are the privileges, and the higher is the income. Therefore, a simple but plausible formulation is that agent j 's production of overall disposable income is to some extent associated with a quantity of privileges, denoted by z_{1j} , which is the outcome of political efforts. Thus, each agent's budget constraint in period 1 is given as

$$y_{1j} = w_{1j} + z_{1j} - \Phi(z_{1j}) \quad (3)$$

Here, the after-tax income, excluding fiscal privileges, w_{1j} , is exogenously given. The overall disposable income includes fiscal privileges, z_{1j} . To obtain z_{1j} , we need some resources, the cost function of which can be summarized as $\Phi(z_{1j})$. The marginal product, $m \equiv 1 - \Phi'$, reflects the degree of efficiency of privilege activities. With a large Φ' , m could be negative. The lower m is, the larger are the political efforts needed to produce a given amount of privilege, and hence, the less economically efficient the political-effort technology. We do not consider bequests since the agent is selfish.

For the private agent in period 2, whose consumption is fixed, we have

$$y_{2j} = w_{2j}$$

Since the agents are identical, we may omit the subscript j from now on.

3. Hard Budget Game

The structure of the hard budget game is as follows. In the first stage, the government imposes a deficit ceiling. In the second stage, the present generation in period 1 makes political efforts to obtain fiscal privileges. First, we show that the weaker the deficit ceiling, the greater the political efforts by the present generation's interest groups. Likewise, the lower the disposable income, or the higher the tax levels, the greater the political efforts by these interest groups. The government may depress the political efforts by lowering the deficit ceiling. We then show that the government may set the optimal deficit ceiling either at zero or at a positive level, depending on the size of the negative spillovers of political efforts. The optimal deficit ceiling at an interior solution decreases with the interest rate but increases with the discount rate.

3.1. Second Stage

We first consider the optimizing behavior of the present generation's interest group in period 1. The optimality condition with respect to z_1 is given as

$$U_y^1 m = U_G^1 \quad (4)$$

where $U_y^1 \equiv \frac{\partial U^1}{\partial y_1}$ and $U_G^1 \equiv \frac{\partial U^1}{\partial G_1}$. The representative agent non-cooperatively chooses

a positive value of z_1 at an interior solution. If the marginal utility of private consumption (U_y) is high or the marginal utility of public goods (U_G) is low, then the agent intensifies her political efforts to obtain large privileges. If m is high (i.e., the political-effort technology is extremely efficient), the agent may obtain large privileges.

The reaction function of z_1 is given as

$$z_1 = \beta(\bar{D}, w_1, T_1) \quad (5)$$

where

$$\beta_D \equiv \frac{\partial z_1}{\partial \bar{D}} = -\frac{1}{\Lambda} [U_{yG}^1 m - U_{GG}^1]$$

$$\beta_w \equiv \frac{\partial z_1}{\partial w_1} = -\frac{1}{\Lambda} [U_{yy}^1 m - U_{Gy}^1]$$

$$\beta_T \equiv \frac{\partial z_1}{\partial T_1} = -\frac{1}{\Lambda} [U_{yG}^1 m - U_{GG}^1]$$

and $\Lambda \equiv U_{yy}^1 mm + U_{GG}^1 - 2U_{yG}^1 m$. $U_{yy}^1 \equiv \frac{\partial U_y^1}{\partial y_1}$, $U_{GG}^1 \equiv \frac{\partial U_G^1}{\partial G_1}$, $U_{yG}^1 \equiv \frac{\partial U_y^1}{\partial G_1}$

From the second-order condition, $\Lambda < 0$. Then, if $U_{yG} \geq 0$, we have $1 > \beta_D > 0, \beta_w < 0, \beta_T > 0$. The higher the deficit ceiling in period 1, the larger is the amount of fiscal privileges. In other words, the weaker the deficit ceiling, the greater are the political efforts by the present generation. The intuitive explanation is as follows. When \bar{D} is high, G_1 is also large such that an increase in z_1 does not raise the cost of z_1 much, because the marginal utility of G_1 is initially low. In other words, the government may stimulate z_1 by raising \bar{D} . A smaller amount of disposable income w_1 or larger amount of tax T_1 results in a larger amount of political efforts by the present generation, z_1 .

3.2. First Stage

The present value of the government budget constraint is given as

$$T_1 + \frac{T_2}{1+r} = Z_1 + G_1 + \frac{G_2}{1+r} \quad (6)$$

An increase in \bar{D} corresponds to an increase in G_1 and a decrease in G_2 , benefiting the present generation while hurting the future generation.

How to specify the objective of the government is an important question. The objective function of the government is given as

$$W = U^1(y_1, G_1) + \frac{1}{1+\rho} U^2(y_2, G_2) \quad (7)$$

where ρ is the discount rate. The benevolent government considers the welfare of the present and future generations. The government maximizes (7) by choosing $\bar{D} \geq 0$ (effectively, G_1, G_2) subject to (6) and exogenously given T_1, T_2 , considering the response of private agents in period 1, given by reaction function (5).

Hence, the welfare effect of \bar{D} is given as

$$\frac{dW}{d\bar{D}} = U_G^1 [1 - \beta_D(n-1)] - \frac{1+r}{1+\rho} U_G^2 \quad (8)$$

From the envelope theorem, the effect of z_1 on U_G^1 through changes in \bar{D} vanishes.

However, the effect on U_G^1 of the spillover of z_1 from other agents does not vanish. The first term is the marginal benefit of raising \bar{D} (or the marginal gain for the present generation), while the second term is the marginal cost of raising \bar{D} (or the marginal cost for the future generation).

Since the sign of $1 - \beta_D(n-1)$ is ambiguous, the welfare impact of an increase in \bar{D} on the first generation is also ambiguous. However, the rise in G_1 directly leads to an increase in U^1 by an amount equal to U_G^1 . Indirectly, U^1 decreases by an amount equal to $U_G^1 \beta_D(n-1)$ as a result of an increase in Z_1 due to negative spillovers from other agents' political efforts.

Let us consider two cases.

Case (i): $1 - \beta_D(n-1) < 0$

When the negative indirect effect is greater than the positive direct effect in the first term, an increase in \bar{D} leads to a reduction in U^1 . However, raising \bar{D} is not desirable since a higher \bar{D} also lowers U^2 . As long as $\bar{D} > 0$, (8) remains negative, and we have a corner solution of $\bar{D}=0$.

Case (ii) $1 - \beta_D(n-1) > 0$

When the direct effect is greater than the indirect effect in the first term, we have an interior solution of $\bar{D} > 0$, where (8) equals zero. An increase in r or a decrease in ρ leads to a rise in the cost and, in turn, a decline in the optimal level of \bar{D} , which appears over time as the smoothing condition of public spending.

4. Soft Budget

4.1. Second Stage

We next consider the soft budget game, which we have in the case of a deficit ceiling without commitment. Here, the optimal deficit ceiling increases with fiscal privileges. This positive response stimulates the interest groups' political efforts to obtain more privileges. When fiscal consolidation is not quite credible, this game is more relevant than the hard budget game. In the 1990s, for example, many rural-based interest groups in Japan sought pork-barrel projects as part of their political efforts to obtain fiscal privileges. The Japanese government responded by raising the deficit

ceiling (Doi and Ithori, 2009). The status of consolidation rules has changed over time in the EU as well, as explained by Nerlich and Reuter (2012), and hence, the credibility of the rules is questionable.

The soft budget game is structured as follows. In the first stage, the present-generation interest group initiates political efforts to obtain fiscal privileges. In the second stage, the government determines the deficit level and debt issuance in period 1.

Let us first investigate the second-stage problem where the government chooses the deficit level to maximize social welfare (7) at the given level of z_1 . The optimality condition is given as

$$U_G^1 = \frac{1+r}{1+\rho} U_G^2 \quad (9)$$

From (9), the reaction function of the government is given as

$$\bar{D} = \delta(nz_1, w_1, T_1) \quad (10)$$

where $\delta_z \equiv \frac{\partial \bar{D}}{\partial nz_1} = -\frac{1}{n} \frac{-nU_{GG}^1 + U_{Gy}^1 m}{(1+r)^2 U_{GG}^2 + U_{GG}^1}$.

Then, if $U_{Gy} \geq 0$, $n\delta_z = \partial \bar{D} / \partial z_1 > 0$. It is interesting to note that \bar{D} increases with z_1 . The intuitive explanation is as follows. An increase in z_1 reduces G_1 at a given level of \bar{D} , raising the marginal utility of G_1 . Hence, the government responds by raising \bar{D} and G_1 to restore the smoothing allocation of public spending between the present and future generations. Since the marginal utility of G_1 for the present agent rises, the government may increase total welfare by raising G_1 and decreasing G_2 when z_1 increases.

This loose response comes from the formulation that the government's objective is the discounted sum of welfare for all generations. However, the government can only control the allocation of G_1, G_2 by choosing \bar{D} , but cannot control either T_1, T_2 or y_1, y_2 . This response produces the soft budget outcome since the rent-seeking agent of the present generation has an incentive to exert intense political efforts.

4.2. First Stage

In the first stage, each agent in period 1 non-cooperatively determines z_1 by considering the response functions of the government in the second stage (10). Thus, the optimality condition with respect to z_1 is rewritten as

$$U_y^1 m = U_G^1 (1 - n\delta_Z) \quad (11)$$

As in the hard budget game, a smaller amount of disposable income w_1 results in a larger amount of political efforts by the present generation. That is, when the economy is in a recession and wage incomes are low, political efforts to obtain privileges increase. In contrast to the hard budget regime, we now have the negative term $-U_G^1 n\delta_Z < 0$ in the right-hand side of (11). Since this negative term $-U_G^1 n\delta_Z < 0$ reduces the marginal cost of obtaining z_1 , the right-hand side of (11), it stimulates z_1 more than it does in the hard budget game. This is an intuitively plausible result.

4.3. Remarks

4.3.1. Fiscal Crisis

Agents may somehow lose if the fiscal situation becomes worse. Although we have not explicitly considered the possibility of fiscal crisis in this study, we have incorporated the ceiling constraint to avoid excessive debt accumulation. In the hard budget game, such a constraint causes the interest groups to recognize the cost of fiscal deterioration. In the soft budget game without commitment, since the interest groups of the present generation move first, an increase in z_1 raises \bar{D} . Nevertheless, $z_1 - \bar{D}$ increases, leading to a decline in useful public spending G_1 . Hence, they may also recognize that their political efforts reduce the public good G_1 . This is a simple formulation to incorporate political efforts in a fiscal consolidation issue. There could be many ways to model fiscal crises and fiscal consolidations in a political economy (e.g., Alesina and Tabellini, 1990; Auerbach, 2006, 2009; Woo, 2005; Velasco, 2000).

4.3.2. Benevolent Individuals and Altruistic Preferences

There might be benevolent individuals in the present generation. Suppose some individuals ($n > 0$) of the present generation are general voters and do not conduct political efforts but have altruistic preferences over the future generation.

$$V^1 = U^1(y_{1k}, G_1) + \frac{1}{1+\rho} U^2(y_2, G_2)$$

where V^1 is their welfare, y_{1k} is their own consumption, and ρ is now the discount rate of altruistic preferences. Since their political effort is zero, y_{1k} is exogenously given.

In such a formulation, the government must consider the welfare of benevolent voters, who would concern themselves about the future generation. Hence, if politicians concern themselves only about rent-seeking interest groups, the resultant rent seeking would be of the highest degree. However, if politicians concern themselves only about purely benevolent agents, they would seek to maximize the welfare of benevolent voters. We may assume that the government would choose the optimal deficit ceiling based on the relative bargaining power λ of interest groups and benevolent voters.

$$W = n\lambda U^1(y_{1p}, G_1) + n(1-\lambda)[V^1(y_{1k}, G_1) + \frac{1}{1+\rho}U^2(y_2, G_2)] \quad (12)$$

Now, y_{1p} denotes the private consumption of rent-seeking individuals. Thus, we may qualitatively derive the same analytical results as in the text.

4.3.3. The government's Alternative Objective

Alternatively, we could assume that the government intends to maintain the given level of welfare for the future generation. In other words,

$$U^2 = \bar{U}^2 \quad (13)$$

is the required condition. In such a case, since G_2 is fixed, the optimal deficit ceiling \bar{D} is also fixed, and is independent of z_1 . Then, the soft budget outcome is identical to the hard budget outcome since we have $\delta_z \equiv \partial \bar{D} / \partial (nz_1) = 0$ even in the soft budget game.

5. Welfare Comparison between Two Games

5.1. Plausible Conjecture

As explained above, the soft budget game is characterized by more political effort than the hard budget game because of the loose government response in period 1. The present generation normally benefits from an increase in personal privileges at the cost of the future generation.

An increase in political efforts by any agents of the present generation would hurt the other agents of the present generation by reducing G_1 . Interestingly, the welfare effect on the present generation becomes ambiguous if we consider the negative spillover effect on G_1 . If this negative spillover effect from the deteriorating fiscal situation outweighs the direct income effect achieved by the agent from an increase in her privilege, the income increase may hurt all agents of the present generation.

Paradoxically, the privilege increase could reduce the welfare of the present generation. Each agent receives a positive welfare effect only from her own increased privilege, even as she remains exposed to the negative welfare effect from the sum of all agents' additional privileges, resulting in a large decline in useful public goods. The number of interest groups of the present generation is important here since it corresponds to the magnitude of the negative spillover effect. With an increase in the number of rent-seeking agents, each of whom is more successful in increasing privileges than in fiscal consolidation, the aggregate privileges crowd out useful public goods.

5.2. Analytical Results

We now analytically explore the seemingly paradoxical outcome of a welfare decrease. Suppose z_1 is initially given at the hard budget solution $z_1 = \beta(\bar{D}_H)$, where $\bar{D}_H = 0$ in case (i) and $\bar{D}_H > 0$ in case (ii). If $\frac{dU^1}{dz_1} < 0$ at either point, a further increase in z_1 reduces U^1 . Then, U^1 is smaller in the soft budget game than in the hard budget game since z_1 is larger in the former than in the latter.

The welfare impact of a larger z_1 may be investigated through two channels, the direct effect and the indirect effect, with a higher \bar{D} . First, let us consider the direct effect on U^1 at a given \bar{D} . On the one hand, the direct effect always benefits the agent—she gains from her own privilege increase. On the other hand, the overall level of privileges, Z_1 , increases as well, reducing the useful public good G_1 . This would hurt the present generation.

Analytically, from the government budget constraint (1-1), we have

$$dG_1 = -\frac{ndy_1}{m} \tag{14}$$

Substituting (14) into

$$dU^1 = U_y^1 dy_1 + U_G^1 dG_1, \quad (15)$$

we have

$$dU^1 = \left(U_y^1 - \frac{nU_G^1}{m} \right) dy_1 \quad (16)$$

The sign is generally ambiguous but negative at the optimal level of z_1 . Substituting the first-order condition (4) into (16), we obtain

$$\begin{aligned} dU^1 &= \left(U_y^1 - \frac{nU_G^1}{m} \right) dy_1 \\ &= \frac{1}{m} U_G^1 [1-n] dy_1 \end{aligned} \quad (17)$$

The sign of (17) is negative since $n > 1$. This is due to the negative spillover effect of an increase in z_1 on other agents in the present generation. This negative spillover effect hurts all the agents of the present generation. Then, we have $dU^1 < 0$ at a given \bar{D} .

Next, let us investigate the impact of an increase in the deficit ceiling. An increase in \bar{D} always hurts U^2 , while benefiting the rent-seeking agent in period 1 by raising G_1 . Analytically, we have

$$\frac{dU^1}{d\bar{D}} \frac{d\bar{D}}{dz_1} = \frac{dU^1}{dG_1} n \delta_Z \quad (18)$$

As shown in section 3.1, if $U_{Gy} \geq 0$, the sign of δ_Z is positive. An increase in \bar{D} benefits the rent-seeking agent. If $|U_{GG}^1|$ is large, δ_Z becomes large, too. In other words, when the marginal utility of public goods increases significantly at a small level of G_1 , an increase in z_1 raises the marginal benefit of increasing \bar{D} by a large margin, and hence, the government responds by raising \bar{D} significantly.

Combining both effects, the overall impact of an increased z_1 in the soft budget case could hurt the present generation, compared with the hard budget case, if the (absolute) magnitude of (17) is larger than that of (18).

Adding up (17) and (18), we finally have

$$\begin{aligned} \frac{dU^1}{dz_1} &= \frac{\partial U^1}{\partial \bar{D}} \frac{\partial \bar{D}}{\partial z_1} + \frac{\partial U^1}{\partial z_1} \\ &= U_G^1 n \delta_Z + U_G^1 [1-n] \\ &= U_G^1 \{ [\delta_Z - 1]n + 1 \} \end{aligned} \quad (19)$$

Since $1 > \delta_z$, $\{ \}$ of (19) decreases with n . It follows that the sign of (19) becomes negative for a large n (i.e., if $n > \frac{1}{1-\delta_z}$) and we have a paradoxical case. If δ_z is large, the effect of an increase in \bar{D} on U^1 is also large. In such a case, we need a large value of n , or a large amount of negative spillovers, to obtain the paradoxical case.

In case (i) of $\bar{D}_H = 0$, the paradoxical case occurs if

$$n > \text{Max}\left[\frac{1}{1-\delta_z}, 1 + \frac{1}{\beta_D}\right] \quad (20)$$

When n is large, we may well have this case.

In case (ii) of $\bar{D}_H > 0$, the paradoxical case occurs if

$$1 + \frac{1}{\beta_D} > n > \frac{1}{1-\delta_z} \quad (21)$$

This case could hold when n is moderately large and/or β_D is relatively small.

Considering both conditions (20) and (21), if

$$n > \frac{1}{1-\delta_z}$$

holds, we have the paradoxical result of either (20) or (21).

We have assumed that G is a pure public good. Instead, let us now suppose that G is an impure public good. Then, we have

$$U^{ij} = U_{ij}(y_{ij}, \varepsilon G_i)$$

where $0 < \varepsilon \leq 1$ denotes the degree of spillovers of the public good. In this case, (19) may be rewritten as

$$\frac{dU^1}{dz_1} = \varepsilon U_G^1 \{[\delta_z - 1]n + 1\} \quad (19)'$$

For a small ε , the magnitude of $\frac{dU^1}{dz_1}$, and hence the size of negative spillovers,

decreases. On the other hand, the sign of $\frac{dU^1}{dz_1}$ depends on the size of n as in the pure public good case.

To sum up, the future generation definitely loses by the privilege increase in

the soft budget game. In contrast, the privilege increase seemingly benefits the private agent of the present generation since she can enjoy more private consumption at the soft budget solution. This is a plausible conjecture. However, with a large number of agents, the damaging effect of a privilege increase on the fiscal situation might outweigh the positive income effect even for the present private agent. In such a paradoxical case, the rent-seeking present generation could also lose from excessive privileges in the soft budget game compared with the hard budget game. Hence, the hard budget outcome would be beneficial for the present private agent. This is because she cannot internalize negative spillovers due to the non-cooperative behavior of rent seeking. However, when interest groups cooperatively engage in political efforts, and thus, the negative spillover effect is internalized ($n = 1$), the soft budget outcome would be more beneficial for them. In this sense, the magnitude of negative spillovers may reflect the efficiency of political efforts.

6. Conclusion

For successful fiscal consolidation, a deficit increase must be in tune with fiscal consolidation. A deficit ceiling is an important and powerful tool. This study considered the political efforts of rent-seeking private agents and examined how the government imposes a deficit ceiling in a hard as well as a soft budget regime. When a fiscal deficit ceiling is employed, an increase in fiscal privileges results in a decrease in useful public goods. Each agent's fiscal privileges have negative spillovers of reducing useful public goods—by nature, bad for the public.

We first showed that the weaker the deficit ceiling, the greater is the amount of political efforts by the present generation. Likewise, the higher the amount of disposable income, or the lower the amount of tax, the lesser the political efforts by the present generation's interest groups. We also showed that the optimal level of deficit ceiling might be determined by an intertemporal smoothing condition of the public goods. In the hard budget regime, the government may set the optimal deficit ceiling at either zero or a positive level, depending on the magnitude of the negative spillovers of political efforts. The optimal level at an interior solution decreases with the interest rate, but increases with the discount rate.

We then showed that the commitment to a deficit ceiling is important. Expectedly, the soft budget constraint without commitment stimulates fiscal privileges since the government reacts by raising the deficit ceiling when the rent-seeking present generation increases its political efforts. This positive response would produce

a soft budget outcome since the present generation has an incentive to increase their political efforts. An increase in disposable income due to additional privileges in the soft budget game normally enhances welfare for the present generation. Although the present generation may prefer the soft budget game, it could be welfare deteriorating even for the present generation by depressing useful public goods. With a large number of interest groups, the commitment to a deficit ceiling in the hard budget game could benefit even the present generation. This paradoxical result occurs because non-cooperative rent-seeking behavior cannot internalize negative spillovers.

Recently, Janeba (2012) investigated the interesting outcome of constitutional constraints on future fiscal policy when voters and politicians disagree on the timing of government spending. He highlighted the importance of investigating delays in a fiscal consolidation problem. By contrast, we focused here on intra-generational and intergenerational spillovers of political efforts on fiscal consolidation. Our model is, admittedly, highly stylized and abstracts from several possible directions of generalization, such as game-theoretical analyses of political efforts and privileges in a dynamic framework, different formulations of fiscal consolidation, and the roles of bureaucrats and politicians. Nevertheless, we hope this study has highlighted the importance of efficiency in political efforts and commitment to a deficit ceiling in a political economy.

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