“Governance and efficiency of fiscal institutions”

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Governance and efficiency of fiscal institutions

Abstract

The rationale for fiscal rules and institutions is explained by the existence of deficit and spending biases that arise due to political fragmentation within government or between governments that alternate in office. In common pool models fiscal outcomes are determined by the decision-making rule that is used to aggregate conflicting interests into a single budget and they can affect spending bias. Several institutional responses are possible for internalizing the overall costs of budgetary programs. These costs could be internalized by giving a strong mandate to the minister of finance, whose role is to consider the overall effects of policies. This paper analyzes a model in which the minister of finance internalizes the common pool budget's externality. First, we consider a model where all ministers play simultaneously, and MF acts as a spending minister. In order to capture the institutional framework, where MF takes in account the budget equilibrium, the authors have modeled the interaction in a sequential way. Under this assumption the minister of finance maximizes his utility function as a leader. In a sequential equilibrium, leader's expenditure choice is grater than in simultaneous result, while the deficit bias is lower due to agenda setting power over spending ministers.

Keywords: common pool, deficit bias, efficiency.
JEL Classification: E62, H50, H62.

Introduction

Traditionally, the rationale for fiscal rules and institutions has been explained by the existence of deficit and spending biases that arise due to political fragmentation within government or between governments that alternate in office. The basic argument is that fragmented decision making increases the perspective on concentrated benefits of fiscal decisions for specific groups or during a specific period of time, while dispersing the costs in the form of general taxation over other groups in society or in time.

Political fragmentation within governments (size fragmentation) − as reflected e.g. in the number of political parties or spending ministers within the cabinet − and between governments (time fragmentation) are generally seen as the principal political sources of fiscal biases. Many studies on the effects of fiscal rules or institutions choose to base their analysis only on one of these concepts. For example, Hallerberg et al. (2007) emphasize size fragmentation, while Tabellini and Alesina (1990) on deficit bias due to time fragmentation. Size fragmentation is expected to influence budgetary outcomes through the common pool problem. The more fragmented is the system of budgetary decision-making, the weaker are the incentives for each participant to internalize the full tax burden of its spending bids so that a suboptimal level of spending results. This argument has been applied to different settings. The original version of the common pool problem as in Shepsle and Weingast (1981) highlights geographically dispersed benefits of public spending.

Von Hagen and Harden (1994) model the role played by individual spending ministers, while the argument has also been applied to sub-national governments (e.g. Rodden, 2006); in fact it could be applied to any interest group that benefits from targeted expenditures. These static applications explain expenditure pressures, and not necessarily a tendency towards budget deficits. Velasco (1999) shows how the common pool problem may lead to deficits in the context of a dynamic model. In this model, the common pool of tax resources expands to future generations while these resources can be used by running deficits. In the two-period model, the incumbent government can influence policy choices of its successor through the intertemporal budget constraint: a higher deficit and debt will need to be repaid in period two.

In common pool models fiscal outcomes are determined, first, by the degree of political fragmentation and, second, by the decision-making rule that is used to aggregate conflicting interests into a single budget. The rules according through which the budget is prepared, approved and carried out − in short the fiscal institutions − may therefore act to counteract political biases that are rooted in political fragmentation.

Von Hagen (1992) is the first to investigate the impact of budgeting procedures on fiscal performance in EU countries. The idea is that the common pool problem may manifest itself during different phases of the budgetary process. When the budget is drafted within the cabinet, biases may arise due to the fact that spending ministers may recognize the full benefits of their own specific spending proposals, but fail to internalize the costs for the tax-paying population at large. During the decision-making procedure on the cabinet proposals in parliament, individual members of parliament may internalize the interests of specific

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constituencies within society but not the costs of their amendment proposals for society as a whole. Finally, biases may again show up during the implementation phase of the budget, in the way policy reacts to unforeseen events and the way supplementary budgets are drafted, decided upon and implemented.

Several institutional responses are possible for internalizing the overall costs of budgetary programs. These costs could be internalized by giving a strong mandate to the minister of finance, whose role is to consider the overall effects of policies. In addition, fiscal rules may be conducive to fiscal discipline given that they put a constraint on fiscal policy outcomes. Moreover, during the parliamentary stage, the role of amendments powers is expected to matter, especially when these powers are not complemented by the obligation to find adequate financing for new spending proposals. Finally, during the execution of the budget, the degree of flexibility as reflected for example in spending limits or no carry over provisions would be expected to play a role.

1. The common pool problem of budget process

The idea that a common pool problem is intrinsically rooted in the typical public budget process can be traced back to the paper by Weingast, Shepsle and Johnsen (1981). Focusing on the parliamentary stage of the budget process, they consider a legislature made up by representatives with a geographically based constituency and explain why a cooperative legislature would stand for policies that are Pareto dominated. The legislature will oversupply those programs that concentrate the benefits in geographically specific constituency, while spreading their costs across all constituencies through generalized taxation. In other words, each representative will fail to internalize the full cost, in terms of deployment of the common pool of national tax revenues, of financing expenditure programs that benefit mainly his constituency. The divergence between real and perceived costs will be wider, and hence the common problem more serious, the more fragmented is the legislation. Taken at its face value, this model explains nothing more than the tendency for a parliamentary determined budget to exhibit a level of expenditure on pork barrel projects higher than it is economically warranted. In fact, the more recent literature has built on the same basic idea to provide a representation of the government stage of the budget process and to generate a bias toward excess deficits as well as excess public spending. One can reasonably replace the geographically based constituency of a representative in the legislature with the special-interest based constituency of a spending ministry in the government.

A good example is von Hagen and Harden (1995), who consider a government consisting of n spending ministers. The budget allocates public funds, raised through distorting taxation, to spending ministers, each of them pursuing its policy target. Collectively, the cabinet would wish to minimize the divergence between policy targets and actually allocated funds and, at the same time, to minimize the excess burden of taxation.

The common pool problem arises, as in Weingast et al. (1981), from the fact that each spending minister takes into account only a share of that excess burden: the portion that falls on his constituency.

There are two ways of reducing the spending and deficit bias arising from the coordination problem in the budget process: either delegation of authority to a fiscal entrepreneur (the finance minister) or commitment by the whole government to a set of binding limits on expenditure allocations collectively negotiated at the beginning of the budgeting process. The larger the finance minister's agenda-setting power, the closer the deficit comes to the collectively optimal outcome. Under the commitment approach, the multilateral nature of the negotiations on fiscal targets implicitly forces all participants to consider the full cost in terms of tax burden associated with additional spending.

Hallerberg and von Hagen (1999) note that both approaches require that the finance minister is vested with enforcement powers in the implementation phase of the budget (in short, there is an efficient system of public expenditure control and management), in order to neutralize the incentive that single spending ministers will have to defect from the approved budget.

2. Model and results

We consider a two-period model of budgeting in a cabinet government consisting of $i = 1,\ldots, n + 1$ agents: n spending ministers and the finance minister who is independent from interest groups (benevolent social planner).

Government expenditures consist of transfer x_i to groups i in society. Revenues are given by taxes levied on all groups of society and borrowing. In the first period borrowing must be repaid with interest in the second period. We assume that government can borrow or lend at a fixed real interest rate, r. In the second period, government receives an amount τ_2 of nontax revenue[1]. The resulting intertemporal budget constraint involves a trade-off between the benefit from paying out more transfers in the first period and the cost of taxation in second period. As in Hallerberg et al. (2007), the intertemporal utility function of each spending ministers is:

[1] By simplicity, we assume that first period tax revenue is equal to zero.

$$U(x_{t,i}) = \lambda_i Y - \frac{1}{2}\sum_{t=1}^{2}\delta^{t-1}\left[x_{t,i} - x^{*}_{t,i}\right]^2 - m_i\delta\Gamma(T),$$

with $i = 1,\ldots, n+1$, δ is the discount rate, $0 < \delta < 1$, $x_{t,i}$ is the level of spending allocated to minister i and $x^{*}_{t,i}$ is the ideal level of spending from perspective of a single spending minister. The closer the actual budget is to a player's ideal budget the higher is the player's utility, where closeness is measured by the distance. We assume that $x^{*}_{i} = x^{*}_{1,i} = x^{*}_{2,i}$.

Moreover, $\lambda_i Y$, with $0 \le \lambda_i \le 1$, represents the percentage of GDP attached to the ideal point. In general, each minister i has an ideal point distinct from that of all others. Several interpretations of ideal points are possible. For instance, for spending ministers in a coalition government, an ideal point represents the budget size and composition that a spending minister would like to see performed.

Each m_i denotes the share of the excess burden from taxation falling on the minister i's constituency, with $m_i < 1$ with $m_i = 1/(n+1)$. The excess burden of taxation, i.e. the cost of taxation, is given by a C^2 and convex function:

$$\Gamma(T) = \frac{1}{2}\theta T^2, \tag{1}$$

and the marginal cost of taxation increases with the level of taxation with $\theta > 1$.

The intertemporal government budget constraint over the two periods is:

$$T(x_{t,i}) = rB_1 + B_2 - \tau_2,$$

where $B_t = \sum_{i=1}^{n+1} x_{t,i}$ for each period $t = 1,2$ is the total expenditures in period t, r is the real interest factor for the government and τ_2 is the exogenous nontax revenue in second period.

2.1. Decentralized budget process. We first consider the case in which all the spending ministers maximize their individual utility function subject to the intertemporal budget constraint, taking the other ministers' bids as given.

Spending ministers are left to determine their own budgets and we show that the structure of the bargaining process within the cabinet affects the size of the budget.

Each minister maximizes his utility function subject to the intertemporal budget constraint.

$$\max_{x_{t,i}} U(x_{t,i}) = \lambda_i Y - \frac{1}{2}\sum_{t=1}^{2}\delta^{t-1}\left[x_{t,i} - x^{*}_{t,i}\right]^2 - m_i\delta\Gamma(T)$$

$$\text{subject to } T(x_{t,i}) = r(x_{1,1} + \sum_{i=1}^{n} x_{1,i}) + (x_{2,1} + \sum_{i=1}^{n} x_{2,i}) - \tau_2.$$

Summing up over all agents first order conditions gives the government spending level in period $t = 1$ and $t = 2$.

$$\hat{B}_1 = \frac{\left[1+\delta\theta(1-r)\right]B^{*} + \delta\theta r\tau_2}{1+\delta\theta(1+r^2)}, \tag{2}$$

$$\hat{B}_2 = \frac{1}{1+\delta\theta}\left[B^{*} + \delta\theta\tau_2 - \delta\theta r\hat{B}_1\right].$$

Using (2), we obtain the level of taxes in period $t = 2$ as:

$$\hat{T} = \frac{(1+r)B^{*} - \tau_2}{1+\delta\theta(1+r^2)}. \tag{3}$$

The optimal levels for each individual spending ministers from the simultaneous equilibrium are:

$$\begin{aligned}\hat{x}_{1,i} &= x^{*} - m_i\delta\theta r\hat{T},\\ \hat{x}_{2,i} &= x^{*} - m_i\delta\theta\hat{T}.\end{aligned} \tag{4}$$

Minister i obtains a utility level given by

$$\hat{U}_i = \lambda_i Y + \frac{m_i\delta\theta}{2}\frac{((1+r)B^{*} - \tau^2)^2}{(1+\delta\theta(1+r^2))^2}\times \tag{5}$$
$$\times(1 - m_i\delta\theta(\delta + r^2)),$$

for each $i = 1,\ldots, n+1$.

2.2. A strong finance ministry. Hallenberg et al. (2007) consider three cases: first a single planner with a fixed weight of taxation in the budget; second, the budgeting decision over the n spending ministers which in bidding for funds take into account only that part of the excess burden of taxation levying on their constituency; finally, a delegation model with a strong finance minister with a weighted utility function. In their analysis, the parameter m plays a central role in order to capture the size of the common-pool problem. Finance minister's interest generally coincides with the general interests. He has the responsibility to coordinate the formation of the budget and his goal is the size of the budget deficit. Formally, in the main literature the finance minister will submit proposal for transfers that maximize his utility function under the constraint that each spending minister obtain sufficient utility, i.e. finance minister maximizes a weighted utility function. Spending ministers support a strong finance minister, as they obtain greater utility.

However, given that $n - 1$ spending ministers adhere to strong minister's budgeting decision, the n-th minister has incentive to deviate, as he disregard the externality resulting from the common revenue fund and will increase is spending. In this way, the finance minister needs, in addition to agenda setting power, an enforcement power to ensure his

decision holds. In conclusion, Halleberg et al. give an example of enforcement power as the control device, like the requirement to obtain authorization for disbursing public funds during the fiscal year. In Italy, such instrument in the form of linear cutting spending power was given to the Department of General State Account.

In order to model the interaction between Finance Minister and spending ministers, we consider a sequential mechanism in which the Finance Minister precommits fiscal policy and observes the *n* spending ministers' optimal choices. This means that Finance Minister acts as a leader and the *n* spending ministers as followers.

Leader ministry can commit itself to a spending level that the followers are forced to take as given when making its own spending decisions. Finance Minister acting first, will choose a higher level of public spending and will distribute it in favor of spending ministers at the end of the second period. In such way, (a) we model a *benevolent* Finance Minister whose agenda setting power limits the deficit spending bias, and (b) we obtain a mechanism of power enforcement for the second period.

The timing is the following: in the first stage, Finance Minister chooses his spending level for both period maximizing his utility function; in the second stage, spending ministers observe Finance Minister choices for each period, and maximize their utility function simultaneously.

Each spending ministers share the excess of the burden taxation as the parameter $m_i = \frac{1}{n}$, while Finance Minister's parameter *m* measures the common pool externality and represents the perception of burden taxation. In such way, different from spending ministers, Finance Minister internalizes the cost of taxation. In the sequential approach, spending ministers continue to take into account only the portion m_i of the cost of taxation when making the budget bids, while the Finance Minister takes the entire cost of taxation into account.

2.2.1. Sequential mechanism. Finance Minister's optimal choices are the solution of the following utility maximization:

$$\max_{x_{t,1}} U(x_{t,1}) = \lambda_i Y - \frac{1}{2}\sum_{t=1}^{2}\delta^{t-1}\left[x_{t,1} - x_{t,1}^{*}\right]^2 - m\delta\Gamma(T),$$

$$\text{subject to } T(x_{t,i}) = r(x_{1,1} + \sum_{i=2}^{n+1} x_{1,i}) + (x_{2,1} + \sum_{i=2}^{n+1} x_{2,i}) - \tau_2.$$

As usual, we solve the problem in reverse. Supposing that Finance Minister is the leader and spending ministers are the followers, then given leader choices, spending ministers acting simultaneously want to solve:

$$\max_{x_{t,i}} U(x_{t,i}) = \lambda_i Y - \frac{1}{2}\sum_{t=1}^{2}\delta^{t-1}\left[x_{t,i} - x_{t,i}^{*}\right]^2 - m_i\delta\Gamma(T),$$

$$\text{subject to } T(x_{t,i}) = r(x_{1,1} + \sum_{i=1}^{n} x_{1,i}) + (x_{2,1} + \sum_{i=1}^{n} x_{2,i}) - \tau_2,$$

for all $i = 2,...,n+1$.

Spending ministers play simultaneously each other, and the optimal choices are

$$\begin{aligned} \tilde{x}_{1,i} &= x^{*} - m_i\delta\theta r\tilde{T}, \\ \tilde{x}_{2,i} &= x^{*} - m_i\delta\theta\tilde{T}. \end{aligned} \tag{6}$$

The Finance Minister problem now is:

$$\max_{x_{t,1}} U(x_{t,1}) = \lambda_i Y - \frac{1}{2}\sum_{t=1}^{2}\delta^{t-1}\left[x_{t,1} - x_{t,1}^{*}\right]^2 - m\delta\Gamma(T),$$

$$\text{subject to } T(x_{t,i}) = r(x_{1,1} + \sum_{i=2}^{n+1} \tilde{x}_{1,i}) + (x_{2,1} + \sum_{i=2}^{n+1} \tilde{x}_{2,i}) - \tau_2.$$

Summing up over all agents f.o.c. conditions gives the government spending level in period $t = 1$ and $t = 2$, and let $h = 1 + m - m\theta(1 + \delta r^2)$:

$$\tilde{B}_1 = \frac{\left[1 + \delta\theta h(1 - r)\right]B^{*} + \delta\theta rh\tau_2}{1 + \delta\theta h(1 + r^2)}, \tag{7}$$

$$\tilde{B}_2 = \frac{B^{*} + \delta\theta h\tau_2}{1 + \delta\theta h} - \frac{\delta\theta hr}{1 + \delta\theta h}\tilde{B}_1.$$

Using (7), we obtain the level of taxes in period $t = 2$ as:

$$\tilde{T} = \frac{(1 + r)B^{+} - \tau_2}{1 + \delta\theta h(1 + r^2)}. \tag{8}$$

The finance minister's optimal choices are:

$$\begin{aligned} \tilde{x}_{1,1} &= x_1^{*} - m\delta\theta r\tilde{T}(h - 1), \\ \tilde{x}_{2,1} &= x_2^{*} - m\delta\theta\tilde{T}(h - 1). \end{aligned} \tag{9}$$

With these allocations, Finance Minister obtains an utility level given by

$$\tilde{U}(x_{t,i}) = \lambda_i Y + \frac{m\delta\theta}{2}\frac{((1 + r)B^{*} - \tau^2)^2}{(1 + \delta\theta h(1 + r^2))^2} \times \times\left(1 - \delta\theta(\delta + r^2)\frac{(h - 1)^2}{m}\right), \tag{10}$$

and each spending minister *i* obtains a utility level given by:

$$\tilde{U}(x_{t,i}) = \lambda_i Y + \frac{m_i\delta\theta}{2}\frac{((1 + r)B^{*} - \tau^2)^2}{(1 + \delta\theta h(1 + r^2))^2} \times \times\left(1 - m_i\delta\theta(\delta + r^2)\right). \tag{11}$$

Conclusion

In a completely decentralized budget process, each spending minister bids for and obtains the funds maximizing their utility given the bids of the others spending ministers. In this approach also the Finance Minister is a spending minister without any special strategic power that allows him to coordinate budget decisions. Finance Minister in bidding for funds takes into account only that part of excess burden of taxation. In the main literature, is well known that all ministers disregard the externality resulting from the common revenue fund and, hence, spend and borrow more than a single benevolent planner would.

In this work, we consider an institutional mechanism to achieve budget decisions that are closer to the one that is collectively optimal for the government. One member of the government, i.e. the Finance Minister, has the function to monitor the others using selective incentives. His interest generally coincides with the general interests and has the responsibility to coordinate the formation of the budget. In such way, the size of the budget deficit is often the principle indicator of his effectiveness. The Finance Minister's staff gives him the instruments to monitor the actions of the other ministries. The Finance Minster's enforcement and agenda setter powers are strictly linked with the parameter m: the larger m is, the higher the perception of the common pool problem and the closer the spending comes to the optimal outcome.

Comparing spending levels in (2) and in (7), we obtain the expected result:

$$\tilde{B} - \hat{B} > 0. \quad (12)$$

The greater are m and θ, the bigger is the difference in (12). Increasing the marginal cost and the internalized burden of taxation, the common pool problem as regarded by the Finance Minister increases. This discussion can be summarized in the results. We consider the total tax burden in (3) and (8), and being $0 < h < 1$, we have that the tax burden in sequential model is bigger than in simultaneous. A bigger m when Finance Minister internalizes more tax burden, i.e. he perceives the importance of the common pool problem, implies a greater value of h and he decides a greater level of taxes levied on the entire society, $\tilde{T} - \hat{T} > 0$.

Considering optimal spending level of Finance Minister in (4) and (9), we obtain that in decentralized model the optimal choice is smaller than in sequential. Leader ministry can commit itself to a spending level that the followers are forced to take as given when making its own spending decisions. Finance Minister acting first, will choose a higher level of public spending and will distribute it in favor of spending ministers at the end of the second period. In such way, we have modeled a *benevolent* Finance Minister whose agenda setting power limits the deficit spending bias, and we have obtained a mechanism of power enforcement for the second period.

On the other hand, the results for spending ministers' optimal choices are:

$$\tilde{x}_i < \hat{x}_i,$$

for all $i = 2,..., n+1$. We obtain a smaller deficit bias related to delegation of decision and monitoring power to a strong finance minister.

With these allocations, utility levels for both Finance Minister and spending ministers are:

$$\tilde{U}_i > \hat{U}_i,$$

for all $i = 1,\ldots, n + 1$. Thus, each spending minister benefits from centralizing the budget process in a strong Finance Ministry. Our centralized solution yields higher utility for each spending minister and also for Finance Minister, and it is a Nash equilibrium. This implies that Finance Ministries have strong enforcement powers to implement their budget. This result is strongly affected by the value of λ_i. In the simultaneous model $\lambda_i = 0$ for all agents due to omogeneity on players' preferences. In the sequential model spending ministers λ_i is close to 0 and λ_i tends to 1 for the MF because only MF fully internalizes the social welfare given by Y.

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