WPS3860

Incentives for Public Investment under Fiscal Rules

By

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World Bank Policy Research Working Paper 3860, March 2006

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Abstract

The relationship between fiscal rules and capital budgeting is explored in detail. The current budgetary approach to limit deficits to a fixed portion of GDP or to balance budgets could undermine political incentives to invest in public capital with long-run returns since politicians concerned about electoral prospects would favor expenditures providing immediate benefits to their voters. An alternative budgetary approach is to separate capital from current revenues and expenditures and relax fiscal constraints by allowing governments to finance capital expenditures with debt as suggested by the Golden Rule approach to capital funding. However, the effect of capital budgeting would be to provide opportunities to politicians to escape the fiscal rule constraints by shifting current expenditures into capital accounts that are difficult to measure properly, thereby leading to increased borrowing. As an alternative, we consider the application of a constraint on debt financing of the capital budget to be limited relative to GDP or at a fixed debt-GDP ratio for public capital.

1. Introduction

In recent years, governments have been employing in greater degrees various fiscal rules to limit deficits or debt accumulation. The intent of such fiscal rules is to discourage "bad" politicians from spending programs and deficit finance to garner current political support while pushing the cost of raising taxes to future voters. However, a significant concern has been raised with the incentive to undertake public investments in the presence of such fiscal rules by governments. A relaxation of these rules could in fact improve economic performance if the bias against capital investments is lessened.

In particular, under cash accounting, governments expense investments that are fully charged to the current budget even though capital provides services to the owner over its life. Such capital expenditures therefore add to the current deficit, which requires greater debt finance. So if fiscal rules constrain deficits to a certain portion of GDP (as under the Maastricht Treaty in Europe), or to be zero as in a balanced budget or positive under a required surplus, public capital expenditures may push deficits or debt levels beyond the fiscal limits. Therefore, governments are arguably reluctant to invest in capital that yields social benefits for future voters compared to the immediate political benefits derived from spending on current programs and transfers. Cash accounting under fiscal rules that limit deficits is suggested to bias governments against capital spending, thereby running down public infrastructure.

To overcome any bias against public investment decisions under fiscal rules, some governments have adopted accrual accounting. While accrual accounting can be limited to a modified approach whereby capital is still expensed, the full accrual approach would result in public capital being depreciated over its service life. Deficits could appear smaller since new capital expenditures would be depreciated rather than being fully charged to the current budget. Governments could avoid the bounds imposed by fiscal rules by taking capital off the public operational accounts, except for depreciation, and by financing capital with debt that would not included in the deficit under the fiscal rule.

Over time, however, the depreciation of current and past capital investments could be larger than current capital expenditures, therefore worsening the deficit (and facing constraints imposed by the fiscal rules). However, in practice, governments have often initiated capital accounts to provide an opportunity to escape the impact of the fiscal rule in the short term. Alternatively, they may push debt finance off their own books to quasi-public agencies not consolidated in the budget or to the private sector under public-private partnership (PPP) arrangements. Under these scenarios, "bad" governments might rely on too much capital investment and debt finance.

The primary task of this paper is to consider how fiscal rules should be applied in the presence of capital budgeting under accrual accounting. Several issues are to be examined. How should a government determine the level of capital expenditure? How should such expenditures be accounted for on the government's books and to what extent should per se fiscal rules apply to capital costs? What governance institutions are

available for determining investment strategies in a politically imperfect world and how do such institutions interact with accounting standards adopted by governments?

The conventional wisdom in public finance is that capital budgeting is apt to do more harm to public decision-making than good. It involves accounting distinctions that have little economic meaning, it is prone to abuse by opportunistic governments, and it may often reduce rather than enhance transparency in government. For all these reasons, a focus on the cash budget as a unitary indicator of the state of public finances has much to recommend it. But, when fiscal rules are imposed (or self-imposed) on governments, a more subtle approach to capital may be called for as a matter of second-best policy-making. In this paper, we outline how such distinctions can and should be made, and we outline specific proposals for how a capital budget may be operated.

The plan of this paper is the following. In the next section, we lay out the main issues regarding fiscal rules and accounting practices, including an analysis of different fiscal rules in terms of their implications for debt finance and revenue requirements as well as a framework for long-run fiscal decision-making. The third section follows with a review of capital budgeting, its relation to debt policy and fiscal rules and incentives for governments to undertake capital projects. The fourth section surveys current practice with respect to fiscal and accounting rules, especially with respect to capital decision-making. Following this survey, we evaluate these practices in light of capital budgeting issues. Operating and capital budgeting and their interaction with fiscal rules are described. We then consider various nuts and bolts issues including the various approaches to capital management within government, the treatment of different types of capital projects, public-private partnerships, and contingent liabilities, and transition rules. The final section of the paper provides a critical assessment of various proposals for reform when fiscal rules are applied.

2. Fiscal rules and public investment

To begin, we provide some basic analysis to develop a framework for understanding the relationship between debt and various fiscal rules that have been recently discussed in the literature. We then outline principles related to long-run fiscal policy by which fiscal balance criteria and associated borrowing rules may be judged.

2.1 The basic analytics

We consider an accounting model of the government budget, cast in continuous time. Let B denote the stock of government debt, K the stock of public capital, and Y the level of GDP. Let t denote government current revenues less current spending and i denote government investment in capital, both as a fraction of GDP Y. Further, let r denote the real rate of interest on government debt and p the financial rate of return on government capital (the financial return are fees, other revenues and capital gains specifically earned from government capital investments). The government's budget constraint implies a level of current borrowing of $B' = rB - pK + (i - t)\,Y$ (B' denoting net

new bond issues). More usefully for our purposes, the budget constraint can be used to express current net revenues as

$$t = i - pk + rb - B'/Y \qquad (1)$$

where $k=K/Y$ is the public capital-to-GDP ratio and $b=B/Y$ the debt-to-GDP ratio.

Let n be the growth rate of GDP and δ the depreciation rate for public capital. Public net investment, K', is equal to the gross investment rate less depreciation on existing capital stock and can be expressed as a proportion of GDP as:

$$K'/Y = i - \delta k \qquad (2)$$

Our objective is to use (1) to examine fiscal rules and their implications for the level of taxes and public investment.

Cash Balance Rule: First, let us consider a restriction on the *cash deficit*, or public sector borrowing requirement B'. A *cash balance rule*[1] requires $B'=0$ so that, using (1) and (2), net current revenues under a cash balance rule must satisfy

$$t^c = (r + \delta - p)\, k + r(b-k) + K'/Y \qquad (3)$$

That is, under the cash balance rule, current net revenues must finance net additions to the capital stock K'/Y and the financial cost of debt that is not backed by capital $r(b-k)$, as well as the user cost of public capital $(r+\delta-p)k$.[2]

Operating Balance Rule: An alternative fiscal rule focuses on the *operating deficit* of the government, defined as minus the change in net worth $K-B$.[3] An *operating balance rule* permits borrowing to finance net investment in public capital, a principle known as the *golden rule of public finance* since the work of Pigou (1928) and Musgrave (1939). Under the golden rule we have $(B'-K')/Y= 0$ and thus a level of current revenues satisfying

$$t^o = (r + \delta - p)\, k + r(b-k) \qquad (4)$$

Evidently, the level of net revenues needed to achieve the deficit target is higher under a cash balance rule than under an operating balance rule whenever net investment is positive.

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[1] For simplicity, we consider only rules requiring zero deficit on a cash or operating basis. The extension to non-zero balance rules is straightforward.

[2] Note that the user cost for public capital is adjusted for the financial return that is subtracted from cost of financing to derive a net cost to the government (note the financial return does include capital gains that would be typically included in a user cost of capital estimate).

[3] To focus on debt and public capital, we ignore for the time being changes in government non-debt liabilities and government financial assets.

Permanent Balance Rule: Alternatively, a fiscal rule may specify that the debt-GDP ratio remain constant over time: $b'=0$, implying a cash deficit-to-GDP ratio of $B'/Y=nb>0$, and current net revenues equal to

$$t^p = (r + \delta - p)\, k + r(b-k) + K'/Y - nb \qquad (5)$$

which Buiter and Grafe (1998) term the *permanent balance rule*.

Implications for Public Debt Financing and Net Revenue Requirements: To understand the long-run evolution of taxes under these various fiscal rules, we must consider their implications for the behaviour of the debt-to-GDP ratio. A *cash balance rule* implies $b' = B'/Y - nb = -nb$, i.e. a vanishing debt-to-GDP ratio in the limit of a growing economy. If the capital-to-GDP ratio is also constant, so that $K'/Y=nk$, then (3) in turn implies that required net revenues decline over time, reaching $(n+\delta-p)k$ in the limit as the debt is retired. Indeed, if $r>n$, the limit of net revenue lies below the user cost.

Likewise, an *operating balance rule* implies the debt-to-GDP ratio grows at rate $b' = k' - n(b-k)$. As stressed by Blanchard and Giavazzi (2003), this implies that b approaches k: government debt is in the limit issued to finance the full public capital stock, and only the public capital stock. Thus, under an operating balance approach, (4) implies that net revenues as a fraction of GDP approach a level that is just sufficient to cover the user cost of public capital $(r+\delta-p)$k. Even in the long run of a growing economy, a cash balance rule implies permanently higher taxes (and lower debt) than an operating balance rule, if $r>n$.

Evidently, in permitting positive current deficits in a growing economy, a *permanent balance rule* allows lower current net revenues than a cash balance rule. Furthermore, comparing (4) and (5), a permanent balance rule implies lower current revenues than an operating balance rule if and only if

$$K'/Y = k' + nk < nb$$

If the capital-to-GDP ratio is held constant, then, the permanent balance rule implies limiting tax revenues equal to that of the operating balance rule, since $b \rightarrow k$ under the operating balance rule. Along a transition path, taxes are lower under the permanent balance rule if the government initially has negative net worth $k-b<0$.

In summary, each of the fiscal rules considered here has particular implications for the evolution of government debt and the level of current revenues required to finance public investment plans. While each of these rules is consistent with some notion of fiscal sustainability, each has different implications for the pattern of taxation required in the short run and the long run. To evaluate the desirability of these rules, therefore, we turn next to a discussion of some principles of optimal fiscal policy.

2.2 Principles of long-run fiscal policy

Recently, as governments have become more concerned with debt reduction and fiscal sustainability in general, the cash balance has also become the metric by which sustainability is generally judged. The Excessive Deficits Procedure of the Maastricht Treaty is defined as a limit on the general government cash deficit as a percentage of GDP, and many countries define self-imposed fiscal rules with respect to the cash balance as well. (Section 4 surveys fiscal rules and accounting standards in a number of countries.) Multilateral lending organizations likewise tend to look at the cash balance to measure fiscal sustainability.

We may distinguish a number of perspectives on these issues, each with its own implications for the way fiscal balance should be calculated.

(a) Fiscal sustainability:

A primary role of any balance measure will be in judging the sustainability of the current fiscal stance and ultimately the solvency of the government sector as a whole. The preoccupation with sustainability leads some commentators to argue for the cash balance approach – only debt matters – and others for the operating balance approach – only net worth matters, and debt is unimportant per se if it is backed by assets. Both views are in their ways erroneous. The latter view in particular is based on a false analogy between private sector and government finance.[4] Unlike the private sector, government solvency depends less on the value of assets held than on the taxable capacity of the economy (Musgrave, 1963). The argument for incurring debt, therefore, is not that assets are to be held on the balance sheet, but that public investment will, directly or indirectly, lead to future increases in government revenues.

When the assets in question are associated with projects that are or may be commercialized, the analogy to business finance is more apt. Some types of public capital investments such as in the utility sector (power, transport and communications) could be sold to private investors, thereby providing funds to governments to pay back debt. Thus, debt is sustainable to the extent that asset disposals can assure lenders that their principal and interest will be covered.

(b) Tax Smoothing:

Because the static marginal cost of public finance is an increasing function of the government tax take, there is a prima facie case for borrowing to finance public investment, thereby smoothing the associated tax burden over future years and future generations. Optimally, tax burdens should be set to minimize dynamic efficiency costs.

That tax smoothing may be consistent with an operating balance rule for financing public investment can be seen by examining again the associated path for taxes given by equation (4): for a government with initial public debt fully backed by initial capital, (4)

[4] It is also, of course, a too-narrow view of corporate finance.

implies that current net revenues are everywhere equal to the user cost of capital $(r+\delta-p)k$. Musgrave (1939) argues that the tax smoothing argument in favour of borrowing makes most sense for investments in public infrastructure, which may be expected to increase future government revenues – and particularly for "self-liquidating" projects which are financed entirely through user fees, benefit taxes and capital gains (from asset disposals), for which therefore $p=r+\delta$. Benefit taxes and user fees place no excess burden on future generations, and in such cases (4) implies that current revenues can be held constant at each date, regardless of the path of accumulation of public capital.

Similar arguments, however, may be applied in the case of projects that are financed from general tax revenues, but for which there is a reasonable presumption that the project will enhance future revenues sufficiently to cover its costs. For example, an investment in public highways might generate sufficient gasoline tax and licensing revenues to cover capital costs. Likewise, other projects may increase revenue indirectly through their effects on private incomes – tending to decrease the excess burden of taxation in future. The argument for borrowing is however much weaker for other forms of public capital, such as environmental, military and cultural assets, with no direct link to future private incomes. Further, it must be remembered that public projects might create not just more revenues but also additional spending requirements for governments such as a new urban development increasing the need for social housing, schools and hospitals.

(c) Intergenerational Equity:

A more general argument for debt finance is that long-term capital investments benefit not only existing but also future generations. Given that debt finance provides an opportunity to postpone taxes the future, it provides a means for future generations to help contribute to the cost of public investment. The intergenerational equity perspective is related to the tax smoothing argument, but it is more comprehensive. It may be applied not only to infrastructure assets that are closely linked to future tax revenues, but to other public capital as well.

At the same time, it is much more problematic than the tax smoothing perspective. First, the intergenerational distribution of debt finance costs is difficult to determine in general, depending on whether debt is held domestically or externally, and on the extent to which current generations regard government debt as net wealth. Second, the valuation of such assets and the attribution of costs and benefits to future generations are difficult. Third, since future generations do not have an opportunity to express support for public decisions, current governments face a potential moral hazard problem, as discussed further below, whereby existing generations make decisions without taking into account net costs imposed in the future.

The contrast between the tax smoothing and equity perspectives emerges most clearly by considering the case for debt finance of *recurrent* government expenditures that enhance private sector assets – such as expenditures on teachers and health professionals that will increase private sector human capital. It is often argued that such

expenditures should be treated on the same basis as investments in tangible assets since they provide benefits to the economy beyond the current accounting year. However, the tax smoothing argument appears to offer no basis at all for borrowing in such cases. Labour costs are on-going expenditures that must be financed annually, and such investments are as likely to increase as decrease the future marginal excess burden of taxation; consequently, a policy of debt finance for recurrent expenditures must imply increasing tax rates over time, violating the tax smoothing principle. From the perspective of intergenerational equity, debt finance might still be warranted, since it permits the tax burden for recurrent expenditures to be levied on future generations that benefit from earlier investments in human capital that enhances productivity growth in the economy.

In summary, tax smoothing and equity considerations imply a prima facie case for borrowing to finance (some) public capital expenditures, but the arguments are conceptually distinct. Because of the practical and normative difficulties with intergenerational equity principles, the tax smoothing perspective seems like a practical better guide to policy, and it forms the basis for our approach below.

3. Capital budgeting, accounting, and debt finance

To understand how public investment decisions interact with fiscal rules that limit deficits or debt, it is useful to outline how public capital decision-making and budgeting operates in the absence of such rules. Public investment decision-making is a complex subject, depending on the governance process, accounting practices, the types of capital being considered, the sources of finance and the fiscal limitations in place.

Public capital can be defined along similar lines to the notion of capital used in the private sector. Public capital is an outlay of expenditures on assets that provide longer run benefits going beyond the current period. The yield to public capital could be financial (user fees and related taxes) or social benefits (of which no charge can be assessed) such as in the cases of investments in security, defence and social services. Public investments that provide a long-run benefit may be commercial in that fees and benefit taxes charged would fully recover economic costs and therefore, self-liquidating in the sense the assets may be disposed at a later time by being sold to private operators. Examples of commercial-type public investments, common in many less developed economies include state-owed investments in resource, manufacturing, utilities, communications, and other services. Alternatively, public assets may have no commercial value (since the market cannot provide the service on its own) and could not be sold to private operators as in the case of defence outlays and residential roads (except for contracting-out arrangements). Some public investments are at best only partly recoverable through charges – museums and parks – with a significant public subsidy involved even it were commercialized to the extent possible.

Capital expenditures tend to be lumpy so that public investment would not be expected to be constant relative to GDP at each point of time. Further, it cannot be presumed that public investment should grow with GDP at constant rate, which would be typically

assumed if public services are produced under constant returns to scale (more output requires a similar proportionate increase in factors of production). It is sometimes argued that, with economies of scale, public investment could decline over time relative to GDP as people become more urbanized (thereby making more efficient use of roads, water treatment facilities and waste management facilities). Further, investment expenditures provide opportunities to adopt new technologies that make more efficient use of capital and labor inputs. Alternatively, with congestion costs, public investment might need to grow faster than output in order to maintain the same services. In some of our discussion (as in section 2.1), we implicitly assume that optimal level of public investment would grow with the economy.

A budget is indicative of the revenues and costs incurred by governments to provide goods, services and transfer payments. These costs are associated with labor, capital, materials, interest expenses and other costs used in the public production process. In defining capital costs, one need not express them solely in terms of the investment expenditure incurred in purchasing or constructing an asset. Instead, the capital asset could be leased, by which the annual lease price is equal to the economic depreciation and financing costs incurred to maintain a capital asset. Thus, to make clear what is meant by a capital budget, we define two notions of government budgets – operations and capital. In principle, one could imagine the capital budget being administered by an agency that would be responsible to charge a fee for the leasing of public capital to the operational side of government although this is not a common practice.

> **The operational budget** would be the accrued revenues (taxes and non-tax revenues) and current expenses associated with programs. In principle, current expenses could include a charge for "leasing" capital from the capital budget agency. The lease costs would be the annualized value of depreciation and financing costs associated with maintaining capital. Often, operational budgets may only be assessed the depreciation charge, which would be less than the true cost of leasing capital.
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> **The capital budget** is associated with the assets and liabilities held by the government. Assets would be tangible (buildings, machinery, inventory and land, for example) and intangible (such as goodwill and non-renewable resource reserves). Liabilities would be debt and other contingency claims on the government. In principle, the capital budget, on an accrual basis, would be equal to lease income (payments made to it from the operational budget), financial returns on assets, any taxes dedicated to capital budgets net of interest expenses on debt.

The sum of operational and capital budgets under accrual accounting is simply accrued revenues net of program expenditures, depreciation and interest on debt since the transfers made from the operational to capital budgets for leased capital are netted out. However, when considering fiscal rules, it will be important to keep the in mind these distinctions since the fiscal rule may only apply to the operational side of government.

Economic Criteria for Determining Debt-Financed Public Investment

The normative economics literature (see Atkinson and Stiglitz [1980]) stresses the use of cost-benefit analysis to guide whether a public investment project should be undertaken. Governments, seeking to maximize net social benefits, should invest in capital so long as the present value or annualized value of social benefits, net of operating and other social costs, is more than the social cost of funds used to finance capital expenditures. For debt finance, the social cost of funds is determined as the weighted average of the cost of displacing private sector investment projects and private consumption (derived from either domestic or foreign savings). The crowding out of private investment projects would be valued at pre-tax rates of return to capital while the crowding of domestic savings would be valued at the after-tax rate of return on capital. The opportunity cost to society of borrowing from international sources is the world rate of return earned by international investors. For a small open-economy, the opportunity cost of financing capital investment is simply the world financial cost of funds since public investment projects would be financed solely from international markets.

While, in principle, the normative approach to public investment decision-making has well-defined economic criteria for project valuation, it is not easy to apply in non-commercial situations. Clearly, a commercial project is simple to value since the net benefits would be the same as the profitability earned by the project. However, many public investment projects, including dams, public transport, airports, education and research and development might may earn some financial income but have significant external impacts on the economy. To conduct cost-benefit analysis, one would need to value the gains derived from the project that households and businesses might be willing to pay for (but are not asked to do so to cover costs). This might be estimated by examining economy prices, land rents and other variables to measure such benefits and costs, for example, those associated with improved productivity and pollution. None of these are easy to estimate. However, the cost-benefit approach does provide an appropriate benchmark to measure the acceptability of a public investment project.

Accounting principles

Government budget and accounting statements serve the dual purposes of governing the revenue-expenditure process and facilitating oversight and accountability of government finances. From either perspective, general accounting principles must be determined, and some measures of the overall balance of government finances must be reported. Traditionally, most governments have adopted as their main "headline" measure of fiscal stance the **cash balance** for the government sector, defined simply as the excess of receipts over outlays for the general government sector. Under full cash accounting, public program expenses and debt interest charges are subtracted from revenue receipts, all defined on a cash basis. Cash accounting therefore treats public investment expenditures similarly to other programs expensed and charged fully to the current year.

The cash balance is perhaps natural given most governments' historical preoccupations with cash accounting and budgeting systems. It is also the most appropriate measure of balance if one is concerned with the fiscal stance of short-run stabilization policy, or with the public sector's overall demands on capital markets, or with the aggregate level of tax revenues that are being postponed to future dates (Boadway, 1993).

In recent years, many governments have adopted accrual accounting principles in place of traditional cash accounting. Under accrual accounting, expenditures and revenues are charged to the year in which are incurred not when actually paid. Thus, any accounts receivable but not yet paid are treated as revenue received during the year and any accounts payable are treated as expenses even though the payment may take place in a different year. Unfunded pension liabilities owing in the future to civil servants under defined benefit programs are treated as a liability, and new pension liabilities would be an accrued expense to the current budget even though the payment would be many years hence.

Greater use of accrual information in government has led naturally to greater focus on operating balance as a measure of fiscal stance, in place of cash balance. The **operating balance**, which can be defined as (minus) the change in net worth of government, differs formally from the cash balance by the addition of net investment in capital, the change in the value of government financial assets less non-debt liabilities, including "implicit debt" associated with public pensions, government business enterprises, and the like.

When accrual accounting is adopted for the capital budget, capital expenditures are no longer expensed to the current year's operations. Instead, they are depreciated over time reflecting an estimate of the capital good's service life (the years by which the capital good provides benefits in the future). Thus, capital depreciation on current and past investment expenditures is charged as a current expense to the operating budget.

Naturally, a measure of fiscal balance that includes net investment in capital may be calculated whether the government has adopted accrual accounting principles or not; however, accrual accounting is most suited to the operating balance approach. Several governments, including Canada and Italy, have adopted accrual on a modified basis, in that accrual methods are not used for the capital budget. Table 1 provides a survey of public sector accounting practices in a number of countries.

When governments are constrained by fiscal rules, the operating balance may be preferred over the cash balance approach to limit "creative accounting" (Milesi-Feretti, 2003). Under cash accounting, governments may, for example, substitute unfunded liabilities (such as those related to contingent liabilities) for market debt as a means of satisfying constraints on borrowing. The operating balance approach, taking a broader perspective of fiscal sustainability, restricts the use of this and many other such

practices. On the other hand, by shifting focus from cash to less verifiable accrual measures, the operating balance approach creates potential for new accounting games.[5]

Moral hazard in government

Government decision-making – and one more easily applied to understand the reasons for adopting fiscal rules to limit government deficits – can best be characterized using a political economy analysis. Government politicians are interested in re-election or maintaining power since they derive monetary or non-pecuniary benefits from being in power and therefore undertake actions to maximize political support. Nevertheless, the nature of the distortion created by the existence of such "bad" governments is unclear.

In one perspective, "bad" governments are those with short-term horizons, which value the political and social benefits from current spending, while the discounting the associated costs, to the extent they may be deferred to the future. Such governments may receive political support from voters who either misperceive future costs or who discount the future more highly than is deemed ethically acceptable. Evidently, such myopic behaviour in government creates a prima facie case for restrictions on government borrowing. Notice, however, that myopic governments will discount too heavily the future *benefits* derived from public investment, as well as the future tax costs of debt finance. In such cases, myopic decision-making would result in too few public investment projects, with net long run benefits, being taken. A fiscal rule that imposed tighter restrictions on borrowing for the operational budget, while treating capital projects more leniently, would therefore constitute an appropriate "screening mechanism" – since good governments are more patient than bad governments – so that the behaviour of bad governments is restricted and good governments have more leeway to pursue appropriate spending policies.[6]

On the other hand, given the difficulties in defining and measuring capital and its net benefits, fiscal rules that accord preferential treatment to investment may be prone to abuse by bad governments. This can especially arise when long run benefits are negative, imposing a cost on future taxpayers, even though the expenditures are perceived to be of benefit to supporters of the current government. Evidently, fiscal

[5] In this respect, the tendency of some governments to adopt the capital budgeting principle only for *new* investments provides incentives to escape fiscal rules imposed on operational budgets since old capital is not depreciated at time of transition. Under this approach, a government only charges to the current budget depreciation on new new capital purchases, which is far smaller than the actual capital outlay that must be financed. For example, the Government of Saskatchewan in Canada introduced capital budgets in order to shift investment expenditures off the budget. The government could then borrow against the investments and only depreciation of current capital expenditures would be charged to the operational accounts that would be subject to a balanced budget fiscal rule. See Boothe [2004].

[6] A different but related view is that the potential for corruption is greater in public investment projects than for current spending; see Tanzi and Davoodi (1998). If so, then "bad" governments may prefer investment to operational spending, and the case for debt-financed investment is weaker.

rules are less likely to be effective when transparency in government accounting is limited (Milesi-Feretti, 2003), and when institutions for public decision-making are prone to manipulation (Von Hagen and Harden [1995]; Alt and Dreyer Lasssen [2003]). For these reasons, Eichengreen (2004) has suggested, in the context of Europe's SGP, that fiscal rules should be applied differentially to countries, depending on the quality of the political institutions and the extent of structural reforms to public finances.

The scope of capital budgets

Capital budgeting for public accounting purposes is a theoretically well understood concept, as described above. However, the notion of "public capital" is less well defined and raises a number of tricky issues. As discussed, public capital can be commercial nature in that, if disposed to private hands, would earn a yield sufficient to cover the its cost of depreciation and financing. It can therefore in principle be valued. In general, however, public capital may yield, at least partly, social benefits that go beyond what would be earned in the private market and therefore, have no commercial value.

It would also be useful at this juncture to make a further observation that public investments can be decomposed into two components: capital used in the process of producing public goods and services and capital as a form of output produced by governments. Much confusion in the literature arises by not making these differences clear. A parallel example typical in the private sector is used initially to clarify the concepts.

Suppose a developer is constructing a building for rental purposes. Two stages of production are involved: the construction of a building followed by leasing to tenants. The inputs used in producing the building are current (labor and materials) as well as capital (such as heavy construction material). The output being produced is "capital" which is a structure that will be available for use at a later time. Two forms of capital budgeting are required in this context. First, the capital used in constructing the building should be amortized. The annual depreciation and financing costs are added to current inputs (such as labor) to account for the annual cost of producing the building. Second, once the building is constructed, the total construction costs incurred to create the asset (or the observable market value of the asset when construction is completed) is amortized to determine the lease costs. Typically, accounting practices would require amortization of capital goods by the company building a project (which could then be disposed or put to use) as well as amortization of capitalized costs by the building's owner.

In the public sector, a similar distinction should be made between capital inputs used to produce public goods and services directly and capital being constructed by the public sector that provides longer-term benefits to society over time.

For example, take health care. To produce health services, governments employ doctors and nurses and construct hospital buildings. The hospital buildings are clearly capital inputs used in producing health services and should be amortized under capital budgets and doctor and nurse salaries should be expensed. The health services, however, are arguably consumption goods to reduce pain and suffering even though an element of public capital might be entailed if current health services improve the long-run productivity of workers (who later remit taxes to the government). Some judgment is needed to determine whether any health service expenditures should amortized under public accounts since a majority of health expenditures tend to be focused at the end of a person's life.

Other examples of public capital expenditures that lead to tricky valuation issues can be given in this context.

- Education services, as discussed above, use labor (teachers) and school buildings to produce the services. Although education is in part consumption, such services are largely human capital investments that yield returns in the future through higher incomes paid to those who become educated. Although education could be self-financed through tuition fees with students obtaining student loan, the financing expense is more expensive compared to collateralized lending as in the case of housing since lenders may not be able to fully collect repayment of interest and principal if the student fails to become employed at expected wage levels. Would the same apply to the public sector? Kelly [1993] argues that education expenditures should not be treated as a capital expenditure since they are not made to acquire property. This is evidently an accounting distinction rather than an economic one. School buildings should be accounted for on a capital basis but what about spending on current inputs like teaching salaries? A justification might be given to treat education spending on teachers as capital but instead these current inputs are being used to produce capital and should be deducted as an expense to build capital. The whole cost of the education system could be treated as capital but it is unlikely to be valued precisely since the returns are difficult to estimate. Thus, it is far from clear that education expenses should be capitalized and, even if an attempt is made to do so, it would be a challenge to measure the true value.

- Infrastructure expenditures on roads, highways, bridges, airports, ports, water treatment facilities, electricity, heating and communications result in the creation of public capital that should be amortized. However, some infrastructure expenditures such as heritage assets, defence capital goods and parks or museum assets are difficult to value and amortize (Blöndal [2003] and Kelly [1993]). Accountants have taken a view that if amounts cannot be measured then they should not be included in capital budgets.

- Pay-as-go (defined benefit) social security programs create future liabilities for governments (Blöndal 2003). In principle, current resources are needed to cover these liabilities – both intergenerational equity and tax-smoothing arguments

would buttress the argument that funds should be set aside by current populations to cover benefits received in the future.

- Some revenue sources are of a non-recurring and capital nature (asset disposals, auctioning of licenses, resource royalties and death duties). One could argue that receipts should be included in a capital budget and be used to reduce the need for debt finance (Boothe 1993).

The application of "capital" to budgets of governments is therefore not a simple manner and judgement is needed to classify expenditures as public capital. Given that this exercise could involve value judgements, a concern could arise that far too many public expenditures might be classified by governments as capital in order to justify debt financing as later discussed in the next section on fiscal rules. In part, this is related to motives for debt financing of capital as discussed above.

4. Survey of current practice

4.1 Fiscal rules

Fiscal rules and capital budgeting has impacted on a number of practices – European fiscal targeting, golden rules for debt accumulation, public infrastructure agencies and public-private partnerships. Below, a brief review of the issues related to these practices is provided.

Europe and the SGP.

The Maastricht Treaty contains a provision requiring member states to avoid running "excessive" deficits, whether or not they have adopted the euro. A protocol to the treaty specifies in turn that members' fiscal stance is to be judged by two criteria: whether the budget deficit is less than 3 percent of GDP, and whether total government debt exceeds 60 percent of GDP. If the Council determines a deficit is excessive, there is a procedure to encourage its elimination. The Council may issue warnings and impose deposit requirements and, eventually, fines.

The SGP corresponds to the provisions of the Maastricht excessive deficits procedure, but it clarifies the terms, introduces monitoring procedures, and it gives the Council greater teeth in the event of violations. Under the SGP, deficits may exceed the 3 percent level if the excess is "exceptional, temporary, and limited in size". Some discretion is accorded to the Council in determining whether this provision should apply.

The Pact also requires members have medium term budgets that are "close to balance or in surplus". Again, the definition of fiscal balance treats government investment expenditures on a cash basis. Importantly, the ECOFIN Council adopted a revised Code of Conduct in 2001, requiring that member states use common assumptions in their

forecasts of the main variables, and encouraging countries to use cyclically adjusted budget balances in their medium-term forecasts.

Recent events have however put the operation and effectiveness of the SGP in doubt. In 2003, the ECOFIN Council declared three members, France, Germany and Portugal, to be in an excessive deficit position (Portugal for the second consecutive year). Because the first tests of the procedure have occurred at a time of economic slowdown, considerable debate about the appropriateness of the rules has been engendered, and several major reforms to the procedures have been proposed.

In March 2005, the European Union governments have agreed to a relaxation of the fiscal rules, leading some to suggest that the budget limitations are far less effective. New country-specific limits would be instituted reflecting growth and debt levels (higher debt and low growth would have less stringent targets) and be cyclical-adjusted to meet the normal deficit and debt limitations. Those failing to achieve the budget fiscal targets would need to undertake fiscal actions to reduce deficits by at least 0.5 percent of GDP per year until their targets are reached. The 3 percent limit on fiscal deficits and 60 percent debt/GDP ratio can be breached if a country is undertaking significant structural reforms, including pension reform. Other changes including a relaxation of the definition of a severe recession (that allows for temporarily missing the target) and the consideration of other relevant factors such research spending, public investment and foreign aid only to be used in assessing short-term compliance with the Maastricht Treaty. The EU is also examining the incorporation of unfunded liabilities (such as those related to pensions and health care) in the measure of fiscal deficits.

Golden rules

A number of countries in Europe and elsewhere have adopted alternative procedures as "self-imposed fiscal rules". These tend to differ in important ways from the rules promulgated under the SGP. Here we offer a selective survey of some alternative rules governing public investment decisions.

Since 1997, the UK government has been subject to two self-imposed fiscal rules:

- The "golden rule": over the cycle, the government is to borrow only to finance capital and not current expenditures.

- The "sustainable investment rule": over the cycle,[7] the net-debt-to-GDP ratio is not to exceed 40 per cent. Note that net debt is defined as gross government debt less liquid assets.

[7] In practice, this means that the current balance (that is, before deducting net investment) is constrained to be non-negative either on average over an estimated full economic cycle, or at each point in time in cyclically-adjusted terms, using government estimates of output gap and of the output elasticity of government revenues and expenditures.

The UK has also moved to accrual accounting for financial reporting. For budgetary purposes, the UK government focuses on two main "flow" measures of the fiscal stance: (i) adherence to the golden rule is measured by the current budget surplus, defined as difference between tax revenues and current public spending (including depreciation); (ii) the government also reports public sector net borrowing (PSNB). Both measures are accrual-based concepts: the PSNB can be contrasted with the previous use of the Public Sector Net Cash Requirement (PSNCR), which was essentially the cash deficit. In particular, proceeds from privatization and other asset sales are excluded from the PSNB, but not the PSNCR.[8] Both the current budget surplus and the PSNB are cyclically adjusted before the fiscal rules are applied.

These rules impact on public investment spending. The UK for example is well within the 60 percent gross debt limit specified in Maastricht Treaty (its own 40 percent net debt limit is surely more binding). Net borrowing in the UK is currently about 1.8 percent of GDP, and substantially less on a cyclically adjusted basis. While an increase in investment there is planned, it may be that the UK government's reliance on largely off-budget Public Finance Initiatives means that the Maastricht deficit limit is unlikely ever to be more binding than the golden rule policy.[9] The UK Chancellor has argued that it would not, apparently based on statements from the European Commission.

Germany likewise has a constitutional restriction that the budgeted deficit of the federal government cannot exceed *gross* investment spending; most Laender face similar constitutional restraints. Evidently, this rule places less restraint on spending and borrowing compared to the Maastricht rules. On a national accounts basis, the general government deficit has often exceeded gross public investment since reunification (OECD, 2003).[10] Norway's approach is relevant to its recent increase in energy revenues: the structural non-oil central-government budget deficit is constrained not to exceed 4 percent of the Government Petroleum Fund over the cycle. The Norwegian approach follows a principle in which non-recurrent royalties from non-renewable resources would be placed in an investment fund held in perpetuity with a distribution of the fund's income being used to finance current public services so long as the real value of the fund's assets are maintained.

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[8] More precisely, the two measures are similar in the coverage of the whole public sector of both current and capital spending, but PSNB differs from PSNCR in: (i) its adoption of internationally accepted national accounting standards (SNA93 and ESA95); (ii) its measurement of revenues and expenditures on an accrual rather cash basis; and (iii) its exclusion of transactions in financial (though not physical) assets, such as sales of shares in public corporations. Note in particular that the last point means that, under the PSNB, the sale of equity securities is treated in the same way as the sale of government debt securities for the purposes of computing fiscal balance.

[9] However, Robinson (2001) notes that net investment through PFIs has been a relatively small fraction of total net public investment in the UK, so that the controversy over accounting treatment of such projects is of little import for the operation of the fiscal rules. It seems likely that the government's stated commitment to PFIs reflects a belief in their efficacy as a means of delivering public services, rather than as a device for evading fiscal rules.

[10] The basic law permits deficits in times under extraordinary circumstances. On several occasions, the Constitutional Court has permitted borrowing in excess of investment in order to preserve the stabilization function of fiscal policy.

Australia, a country that has pioneered the use of accrual accounting and capital charges in budgeting, continues to rely largely on cash measures to assess its fiscal policy stance. When accrual accounting was introduced in 1999, the Australian government introduced a new "headline" measure of fiscal balance, defined as the operating balance (the accrual accounting concept) minus net investment. Hence, while Australia (like New Zealand) reports operating balance information, it continues to target a measure that replicates the earlier focus on the cash balance position (Robinson, 2002). The government is committed to pursue a policy of fiscal balance over the economic cycle, and net government debt has been reduced markedly in recent years.

In 2001, the government of Chile committed itself to maintain a structural surplus equal to one per cent of GDP. The structural balance indicator is computed on a modified accrual basis, with adjustments to bring the measure close to representing the change in net financial assets of the central government; the fiscal balances of public enterprises, the military, and lower-level governments are excluded (Fiess, 2004). This renews the government's commitment to a fiscal retrenchment program that has brought substantial reductions in the debt-to-GDP ratio since 1990, while going some distance to increase social expenditures and public investment. Recent reforms are designed to strengthen the use of accrual information in budgeting, while maintaining the strong role of central agencies, including MIDEPLAN, in expenditure review and control (Marcel and Tokman, 2002).

In Canada, the federal government has balanced its budget since 1997 and has begun to reduce its debt substantially from roughly two-thirds of GDP in 1994 to about two-fifths of GDP today. Although many provinces have balanced budget legislation, provincial debt loads have only decreased somewhat in aggregate – the largest province, Ontario, is operating with a large deficit after suspending its balanced budget rules used for several years since 1999. One province, oil-rich Alberta, has just eliminated all of its gross debt after a period of surplus budgets, strong growth in resource prices since 1998 and a program to cut expenditures in the mid-1990s (Alberta had the highest debt per capita of all provinces in 1994). Recently, the federal government has announced that it would move towards a 25 per cent debt/GDP ratio, which will be primarily achieved by economic growth while maintaining balanced budgets.

Public Infrastructure Agencies

Another phenomenon has been the development of separate agencies for infrastructure spending. The use of a separate agency arguably improves management of large-scale public investment projects that need to be administered and financed with considerable specialized expertise, especially since contracting-out is quite common. However, centralization can result in a potential cost of inhibiting line departmental managers from choosing the best combination of capital and operating inputs to produce program

services since the capital decisions become divorced from operating ones without full co-ordination. [11]

However, another reason for creating infrastructure agencies may simply avoid debt limitations associated with the SGP and similar fiscal constraints on debt, especially if these agencies are off budget.

Within the Euro zone, public investment in Italy appears to have been among the most affected by fiscal restraints. The 1999 Internal Stability Pact imposes deficit restraints on subnational governments. The regulated deficit is defined on a cash basis, but excludes capital spending and interest payments. Global cuts in public spending in the early 1990s had their most marked impact on the capital budget. As a result, Italy's share of the public sector in total fixed capital formation is now well below the OECD average.

Recent initiatives in Italy are designed to address the perceived shortfall in public investment, while respecting the strictures of the SGP. To this end, the government has formed an off-budget agency responsible for new infrastructure, Infrastrutture Spa (Ispa). Ispa seeks private-sector partners for investment, and can raise capital by issuing revenue bonds, which are in turn guaranteed by the state. The government's "Tremonti plan" for reforming the SGP essentially calls for infrastructure spending throughout the Euro zone to be financed through off-budget agencies modeled on Ispa.

Public Private Partnerships (PPP).

In recent years, governments have embraced public-private partnerships that are expected to achieve efficiencies in the delivery of public services. Since governments rarely have the management capability of handling large-scale investment projects, the use of private sector participants in the design, operation and management of projects are expected to reduce costs.

Significant issues are involved with PPPs. Contract design requiring the appropriate sharing of returns and risk is critical to provide incentives to achieve objectives such as quality and accessibility to program services while at same time minimize costs. Bad contract design can result in excessive costs and poor implementation (Poschmann [2003]).

[11] The Province of Ontario in Canada created two agencies to manage assets (an agency Superbuild which is now the Ministry of Public Infrastructure and Renewal – nicknamed EMPIRE) and debt (Ontario Financing Authority (OFA)). All capital projects are approved centrally rather than by departments under EMPIRE. The OFA is responsible to manage debt to achieve the lowest cost of funds for the Ontario government as well as provide advice on public-private partnerships and some other specific financing policies of the government. The capital budget is generally consolidated with the overall Ontario budget except for significant debt that was related to investments in the government-owned power companies. Recently, however, such debt, which is managed by the OFA, is now consolidated with the Provincial budget. The Province is also consolidating other investments and debt with the Ontario budget including hospitals and schools.

However, the fiscal restraints provide another motive for PPP – namely to have the private sector finance commercial capital projects rather than rely on debt that would be constrained by fiscal rules. If the motive of governments is to form PPPs, not for the desire to improve management of capital projects, but to escape debt limitations, governments may not take the care to properly design contracts to ensure that appropriate incentives are in place. Certainly, any contingent claims upon governments (such as environmental liabilities or payments if the project does not earn sufficient profitability) should be valued and included in government debt.

4.2 Impacts on public investment

A number of observers have suggested that the application of fiscal constraints to the government budget on a cash basis have contributed to the decline in public investment ratios in many countries in the past two decades. The above accounting model shows that a deficit limit defined on the basis of cash balance is more stringent than one based on operating balance if net investment is positive. (Of course, the opposite is true when net investment is negative which arises when public gross investment is less than capital depreciation.)

Related, but conceptually different, there is reason to believe that fiscal restraints in general tend to result in disproportionate reductions in government capital expenditures, compared to current expenditures. A number of factors have been adduced to explain this:

(i) *Short run adjustment factors*: Many critics of the European Union's Stability and Growth Pact (SGP) in particular have suggested that, when governments undertake fiscal adjustment programs in the face of adverse shocks, cuts in spending tend to fall disproportionately on investment rather than current expenditures. While it may be possible for governments to defer some capital projects without much cost during economic downturns, interrupting ongoing projects may raise their completion cost substantially.

(ii) *Transitional factors*: These issues are likely of greater concern, however, in emerging economies, where the public capital-to-GDP ratio is considered to be below desirable levels. In such cases, high levels of lumpy net investment may be called for in the medium term, and borrowing may therefore be appropriate.

(iii) *Long-run factors*: The above model suggests that in a growing economy, positive net investment is required if the economy is to maintain a constant public capital-to-GDP ratio, which is likely appropriate. In such cases, both considerations of tax smoothing and intergenerational equity suggest that application of a "golden rule" may be more appropriate.

Evidence on the actual effect of fiscal rules on public investment is mixed. Over short run horizons, there is considerable evidence that fiscal adjustment result in a decline in

public investment. Roubini and Sachs (1989) observe that public investment typically responds sharply to restrictive fiscal policies in OECD countries – and much more than current expenditure. Similarly, the *World Development Report* of 1988 reported that cuts in public investment were on average three times greater than cuts in current expenditures during fiscal adjustment exercises during the 1980s. Lane (2002) finds that government investment is the most cyclical component of government spending.

Likewise, fiscal adjustments have had discernable negative impacts on public investment in Latin American countries. Calderon, Easterly, and Serven (2003) argue that about half of the fiscal adjustment in LAC during the 1990s was achieved through cuts to infrastructure investment.

Gali and Perotti (2003) offer a detailed examination of the effects of the SGP on investment in the euro zone. They find that government investment as a share of potential GDP fell in the euro zone by 0.47 percentage points on average following implementation of the Maastricht Treaty. But investment also fell by comparable amounts in a comparison group of other EU and OECD countries. Thus, while there is a clear downward trend in public investment in developed countries, it is not unique to the SGP. They further argue that the downward trend substantially predates the Maastricht Treaty: the investment decline from 1978 to 1992 was of a similar magnitude to that of the later period in both the euro zone countries and the OECD comparison group.

As argued above, fiscal rules often have stronger cyclical compared to trend effects on public investment. Gali and Perotti, however, argue that, while public investment expenditures are pro-cyclical in the euro zone, there is no evidence that cyclical behaviour has changed since implementation of the Maastricht rules.

As well, trends in public investment in Europe and elsewhere may reflect accounting and institutional changes, in addition to fundamental changes in policy. In particular, changes in the treatment of public utilities, the effects of privatization, and the development of public-private partnerships for infrastructure may be reflected in the public accounts. For the United Kingdom, Balassone and Franco (2000) suggest that up to one-third of the decline in public investment may be attributed to changes in project financing regimes.

5. Recent proposals for reform

As outlined in section 2.1, two approaches have been suggested to provide greater incentives for public investment in the presence of fiscal rules related to debt constraints: the Golden Rule and Permanent Balance Rule.

The **golden rule** (Blanchard and Giavazzi [2003]) would exclude net public investment (managed by an agency) from the fiscal deficit target and placed in a separate category as expenses to be financed by debt. The fiscal budget would be balanced for operational purposes. The golden rule in the long run would imply that public debt is fully backed by capital, which would certainly be the case when capital has worth equal to the present value of taxes and other revenues generated by projects and revaluations to reflect their disposal value. If capital provides only social benefits (not commercial benefits), then it would not be included in the capital account but instead be subject to deficit and debt aggregate limitations due to the lack of valuation.

The rule would also imply that if public net investment and debt optimally grows with the economy, debt will be constant to GDP. As mentioned above, capital expenditures need not optimally grow with the economies if there are economies to the use of capital. Further, in practice, however, there is no reason to believe this to be the case if services are turned increasingly over to the private sector to operate (in other words the public-private capital to GDP ratio might be constant depending on how capital investments are organized).

The golden rule for public investments – budget balance for operational accounts, including depreciation and interest expense, and debt finance for public investment – potentially imposes several distortions in public decision-making. Specifically, they include the following points of criticism:

(i) *Remaining distortions in the choice of capital projects*: Under the golden rule, debt finance could be used for capital expenditures that can be commercially valued so that asset disposals can sustain debt levels. Those investments that cannot be valued would be subject to the balance-budget constraint. While compared to the cash balance rule that discriminates against pubic investment spending, several distortions in public decision-making remain, in some cases potentially leading to too much public investment expenditure.

- The sustainable debt view for deficit financing would limit capital budgeting to assets only sold in markets (building and perhaps roads and bridges that can be tolled and privately run) or operated as a public-private partnership. When debt finance is limited to commercial capital assets, other types of public capital expenditures would be included in the operational budget. If fiscal constraints such as balanced budgets apply to only the operational budget, then public sector investments decisions are distorted to the extent that only commercial activities are left off the operational budget and can be debt financed.

- If capital expenditures are taken off the budget (e.g. school buildings) but other inputs used in production are subject to fiscal limits (e.g. teacher salaries), production techniques could be distorted in favor of capital-intensity (teaching by computer rather than by people).

- Capital expenditures that have unknown depreciation rates are typically expensed (such as employee training and perhaps research and development in the private sector unless a patent is provided). If public intangible expenditures such as employee training is expensed and subject to the fiscal limitation, then investments in other assets such as tangible capital like military equipment is more favoured if financing is not subject to fiscal rules for the operational budget.

Yet, debt-financed capital expenditures that would be subject to fiscal constraints may be important for inter-generational equity and tax-smoothing objectives as discussed above. Clearly, a trade-off arises from the need to ensure the financing of public investments with the desire to limit "bad" government behavior that might result in excessive spending and debt. The type of fiscal rule used becomes important in this context.

(ii) *Moral Hazard Problems*: Governments facing limitations on debt financing for operational accounts would hope to shift expenditures to capital accounts with no limitation on debt finance. This raises moral hazard problems. Governments seeing that it would be easier to take on pubic investments that escape the fiscal rules will favor such expenditures over other program expenditures. With debt-financed capital expenditures, governments can shift the cost of financing public investments to future generations that would have to pay additional taxes. Although future generations benefit from such expenditures, it is also the case that they do not have the opportunity to express support for capital decisions taken in earlier years. Thus, there is an incentive for governments to take on public investments not subject to fiscal limits in order shift tax burdens to the future. Further, typically, a concern is raised that a liberal definition of "capital" would result in excessive debt levels taken on by "bad" governments to finance investments that may not truly be capital, but labelled such, so the application of fiscal rules is relaxed.

(iii) *Valuation Distortions*: Even if public capital can be measured using typical valuation techniques used in the private sector, the valuation may still be distorted. First, governments might try to book some assets that are unlikely to be collected such as unpaid taxes. Second, the use of historical prices (such as equipment, land and buildings) would imply that depreciation of capital goods is underestimated. With debt finance limited to the estimated value of capital, historical valuations would put some additional constraint on investments especially in countries with high rates of inflation. Finally, in principle, contingencies such as those related to public-private partnerships would be valued as debt (as in the case of financial derivatives such swaps and options[12]), and hard to estimate leading to incorrect valuation of a government's asset and liability position.

[12] Financial derivatives are treated on a mark-to-market basis resulting in some potentially large swings in valuations that would affect the size of fiscal deficits.

Given these difficulties it is not surprising that some other potential fiscal rules should be considered to provide an opportunity to limit "bad" government behaviour but provide better incentive for public investment decision-making.

The second alternative is the **permanent balance rule** (Buiter and Grafe [2003]), which would allow public investment to be debt financed so long as government solvency is respected. In particular, any expenditure financed in the current period with debt would need to be offset by future surpluses generated in later years. Under the permanent balance rule, the tax/GDP ratio on a cyclically adjusted basis would be held constant over time. Taxes would need to rise over time to hold debt/GDP ratios constant. No specific capital account is needed.

The advantages of the permanent balance rule over the golden rule is that could be less distorting with respect to different types of public sector decisions since any type of capital investment could in principle qualify for the approach. The adjustment on a cyclical average has so far worked well in the UK. However, the moral hazard and valuation issues could remain in predicting future surpluses and, to the extent that care is not taken to address them, could in one sense be more problematical under the permanent balance rule compared to the Golden Rule. Unlike the Golden Rule, the permanent balance rule would put little sanction on a government that does not back up debt finance with capital. If the expected fiscal surpluses from public investments fail to generate, resulting in large future fiscal deficits, future governments, not responsible for the poor decisions of the previous governments, will look to relax the rule to avoid its application (this would be a problem of time inconsistency).

6. An alternative approach to fiscal rules

The effect of fiscal rules that limit debt finance is meant to curtail "bad" behavior of governments that push costs to future generations who have little option but to pay them (or renounce some or all of the debt owing to foreign lenders as in the case of Argentina in recent years). However, the effect of such rules is to reduce the role of debt finance to redistribute tax burdens across generations and to smooth tax burdens. Clearly, tradeoffs are encountered in determining a fiscal rule that provides incentives for public investment while discourages excessive debt finance by "bad" governments. Any rule must balance these considerations.

Our proposal is to incorporate two "covenants" on debt-financed public investments that would otherwise apply to the Golden Rule. Similar to the Golden Rule, commercial or self-liquidating assets could be placed in a capital account but, unlike the normal Golden Rule, only a portion of them would be debt financed. Other capital assets would remain expensed and included in operational accounts but an overall debt limitation (to GDP) would then apply to restrict debt finance of other forms of capital.

Based on sustainability and tax smoothing considerations, a strong case can be made for debt financing of capital projects that generate commercial or self-liquidating assets, or which will generate revenues from user fees or other taxes that will ultimately recoup

initial outlays. While capital budgeting is therefore appropriate for such "self-liquidating" assets, other types of public capital expenditures should be included in the operational budget.

By implication, this does not mean that commercial capital investments should be financed fully by debt. On the contrary, some portion of capital expenditures should remain tax-financed for financial reasons. With economic uncertainty, asset values change according to circumstances. Typically, lenders are willing to provide debt financing for only a portion of investment costs to ensure that their principal and interest will be repaid over time. This suggests that a limitation may be imposed on the portion of commercial capital assets that can be debt financed – such as those rules of thumb for financing and liquidity ratios that reflect risk considerations.

The advantage of a limitation for the debt-asset ratio is to reduce some of the distortions inherent with a Golden Rule that allows only commercial or self-liquidating investments to be backed by debt finance. By requiring some capital expenditures to be tax-financed, the government has a choice of placing the capital expenditure into the general basket (subject to a maximum debt/GDP ratio) or into a special capital account that allows for debt finance up to a margin of asset values. Compared to the Golden Rule, the modified approach would reduce some of the incentives discussed above to invest in public capital that could be fully debt-financed.

If fiscal constraints such as balanced budgets apply to only the operational budget, then public sector investments decisions are distorted to the extent that only self-liquidating or commercial activities are left off the operational budget and can be debt financed. Such an outcome may be undesirable in the light of both inter-generational equity and tax-smoothing objectives discussed above, although less pressing than for assets of the self-liquidating type. Clearly, a trade-off arises from the need to ensure the appropriate financing of public investments with the desire to limit "bad" government behavior that might result in excessive spending and debt. The type of fiscal rule used becomes important in this context.

In practice, the debt-to-GDP limitation would be conditioned on what is included in capital accounts. The more those investments are placed in the capital account, the stricter will be the overall limitation. For example, government ownership of natural resources (oil and gas deposits, for example) could be included in the capital account, therefore requiring the overall debt to GDP limitation to be similar to those countries without natural resources.

Several other implementation issues would need to be considered such as the procedure used to determine when assets are eligible for inclusion on the capital account and at what level they can be debt financed (typically businesses are only 40 percent financed by debt). These technical issues should be resolved using an objective approach for capital budgeting such as relying on independent valuations made by accountancy firms in some countries.

7. Concluding remarks

Fiscal rules are commonly followed to limit deficit financing. While such rules are intended to protect future taxpayers from governments currying favor with existing populations, the effect of such rules is to reduce the incentive for public investment since such expenditures tend to provide benefits in the future. To correct the bias against public expenditures, governments have looked to creating capital budgets that would require capital expenditures to be depreciated rather than expensed.

For governments looking to avoid binding fiscal rules on debt financing, the capital budget provides an opportunity to take new capital expenditures off the books and therefore increase debt financing. This is especially problematic, given that many assets in the public sector are not easily amenable to commercial valuation. Therefore, recent proposals to allow governments to borrow against their net worth under a Golden Rule are prone to abuse if some governments take advantage of a liberal definition of net worth to rely excessively on debt-financed capital. Conversely, a too-restrictive ambit for the capital account, while it would limit government borrowing, could lead to undesirable distortions in governments' choice of capital projects and organizational forms.

We propose a modified Golden Rule balancing the incentives for efficient public capital spending and limitations on "bad" behavior of governments. We suggest that two limitations could be employed. First, those commercial capital assets placed in the capital account would be subject to financial covenants implying that capital only be partly debt-financed according to appropriate financial criteria. Second, an overall debt to GDP limitation would be placed on other debt; when the limit is reached, tax financing of those residual public capital expenditures would be required.

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Table 1. Survey of accounting practices[a]

	Accruals applied in financial reporting	Accruals applied in budgeting
Australia	Yes	Yes
Austria	No	No
Canada	Yes[c]	Yes[c]
Denmark[b]	No[c]	No[c]
Finland	Yes	Yes[c]
France	No[c]	No
Germany	No	No
Greece	Yes	No
Ireland	No	No
Italy	Yes[c]	Yes[c]
Japan	No	No
The Rep. of Korea[b]	No	No
Mexico	No	No
New Zealand	Yes	Yes
Norway	No	No
Poland	No[c]	No
Portugal	No	No
Sweden[b]	Yes	No
Switzerland	No	No
United Kingdom	Yes	Yes

a) Countries are classified as "full accrual basis" irrespective of whether certain heritage assets and military systems are recognized. Countries are classified as "full cash basis" irrespective of whether a system of commitments or obligations is in place.
b) Plans to introduce accruals in financial reporting and/or budgeting.
c) Modified.

Source: OECD (2004).

Table 2. Survey of fiscal rules in the OECD

Country	Year of implementation	Summary
Australia	1998	Charter of Budget Honesty • No legislated numerical rules. The Charter requires the government to spell out objectives and targets but places no constraints on their nature.
Austria	2000	Domestic Stability Pact Law • Negotiated floors on the budget balance for each government level (a surplus of 0.75 per cent of GDP for the Länder, zero for municipalities and the federal government balance should be such that the Stability Programme target is met). Outcomes are assessed by an independent auditor. The law embodies financial sanctions in case of non-compliance.
Belgium	1999	Co-operation agreement • Permissible deficits are established for the federal government plus Social Security on the one hand, and for the regions and the local governments on the other.
Canada	1998	Debt Repayment Plan • There are no legislated rules at the federal level but the government has a "balanced budget or better" policy. Most provinces have some form of balanced budget legislation.
Denmark	2001	A medium-term fiscal strategy for the period until 2010 • Structural general government surpluses of around 2 per cent of GDP. • A "tax freeze" covering both central and subnational governments (introduced in 2002).
EU	1992	Maastricht Treaty; extended in 1997 under the Stability and Growth Pact • 3 per cent of GDP ceiling on general government net borrowing. • "Close to balance or surplus" target applying in cyclically-adjusted term each year. • 60 per cent of gross government debt-to-GDP ratio norm.
Finland	2004	Medium-term objectives • Balanced central government finances in structural terms by 2007. • Central government expenditure (excluding interest payments, unemployment benefits and a few other items) is subject to a cap over the period 2004 to 2007.
Germany	2002	Domestic Stability Pact • Golden rule: the budgeted deficit of the federal government must not exceed federal investment spending. Most Länder constitutions have a similar law. • Both the central government and subnational governments should aim at balanced budgets.
Japan	2002	A Reform and Perspective Programme (revised in 2003) • Maintain general government expenditures at or below the 2002 level of 38 per cent of GDP. • Achieve primary budget surplus by early 2010s.
Netherlands	1994	Multi-year expenditure agreements • Separate expenditure ceilings on central government, social security, and labour market and health spending. • Automatic stabilisers are allowed to work fully on the revenue side, except if the deficit came close to the Maastricht Treaty's 3 per cent ceiling.

New Zealand	1994	Fiscal Responsibility Act • Maintain debt and net worth at "prudent" levels and run operating surpluses on average over a "reasonable" period of time. The government sets its own numerical targets consistent with these principles.
Norway	2001	Fiscal Stability Guidelines • Structural non-oil central-government budget deficit should not exceed 4 per cent of the Government Petroleum Fund over the cycle. • In the event of major revaluations of the Fund's capital or statistical revisions of the structural deficit, corrective action should be spread over several years.
Poland	1999	Act on Public Finance • The Constitution sets a limit of 60 per cent of GDP for total public debt.
Spain	2003	Fiscal Stability Law • Accounts should balance or show a surplus at all levels of government (central, social, territorial and local) as well as for public enterprises and corporations. • A cap is put on central government expenditure expenditure and a contingency fund (2 per cent of expenditure) is set up to cover unscheduled non-discretionary expenditure.
Sweden	1997	Fiscal Budget Act • Set nominal expenditure limits for the subsequent three years on 27 expenditure areas (including social security). • Maintain a general government surplus of 2 per cent of GDP on average over the business cycle.
Switzerland	2003	Debt Containment rule • Sets a ceiling for expenditures which is equal to total revenues adjusted for the cycle and for ex postdeviations of out-turns from the norm laid out in the rule.
United Kingdom	1997	Code for Fiscal Stability • Golden rule: over the business cycle, the Government will borrow only to invest and not to fund current spending. • Sustainable investment rule: net debt as a proportion of GDP must be held stable over the business cycle at a prudent level (defined so far as net debt below 40 per cent of GDP).
United States	1990 to 2002	Budget Enforcement Act • Medium-term nominal caps for discretionary spending. • Legislated changes to revenues or mandatory spending programmes should be budget neutral over a five-year horizon.

Source: OECD (2004) .