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On Budget Deficits and Capital Expenditure

by

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1. Introduction

It has almost become the conventional wisdom that there should be rules governing the size of budget deficits, without regard for the impact of such deficits on the macro economy. This is reflected in the push for a balanced budget in the United States and the 3 per cent deficit to GDP ratio convergence criteria in the Maastricht Treaty (and designed for observance by countries signing up for the single currency). The purpose of this paper is not to present further arguments against deficit reduction for its own sake or against the balanced budget for that has been done by others.^{1,2} The purpose is rather to consider the arguments which have been advanced in favor of a budget deficit limited by the capital expenditure of the State and in favor of a capital expenditure budget separate from the current expenditure budget.³ In our discussion we will focus on the budget positions averaged over a business cycle, and generally assume that the actual budget position would fluctuate with the business cycle, though clearly one of the dangers of implementation of balanced budget amendments or 3 per cent deficit rules is that deficits are not permitted during recessions, thereby adding to the recession.⁴ Some have labeled the equality between budget deficit and capital expenditure (and the corresponding notion that current expenditure should be covered by taxation) 'the golden rule'. In the UK, the Labour Party has claimed adherence to the 'golden rule of public finance' (Labour Party, 1996). In the United States, some of those skeptical of the prevailing obsession with balancing the budget have argued along similar lines. For example:

'... it is absurd to try to balance a budget that makes no distinction between government expenditures for current consumption and government expenditures of an investment nature--for physical infrastructure, basic research and development, the education of our children, and the health of our people. We might well wish to balance a current operating budget and restrict our borrowing to net investment, borrowing and investing enough, as a rule of thumb to have a total deficit that keeps the

ratio of debt to national income or GDP constant. But balancing the budget at the expense of our public investment in the future is one way that we really borrow from our children--and never pay them back.' (Eisner, 1996, p.89)

It may well be a good rhetorical device to link government borrowing with capital investment for it has resonance with many individuals' own experiences of borrowing through mortgages to purchase a house, and it brings a note of responsibility to government expenditure and avoiding the suggestion that borrowing is being used to finance frivolity. It would, though, be better to argue the positive case for a particular form of expenditure (whether current or capital) in terms of its social usefulness. Further seeking to distinguish between current expenditure (consumption) and capital expenditure (investment) does not avoid an essential difficulty, namely that if government expenditure exceeds revenue and if the post tax rate of interest is greater than the rate of growth, then the overall government deficit grows relative to national income continuously, as do the ratios of debt to income and of interest paid by government to income. The difficulty with the rule of thumb which Eisner appears to advocate, and which has been given the label of the 'golden rule' by others, is that any size of budget deficit can lead to a stable debt to GDP ratio provided that the post tax real rate of interest at which the government effectively borrows is less than the rate of growth of (real) output (which we will call the debt stability condition).⁵ If that debt stability condition does not hold, then there is *no* size of deficit which will lead to a stable debt ratio. The essence of the problem now faced by many countries is that the debt stability condition may no longer be satisfied. For much of this century, with real rates of interest of the order of 2 to 3 per cent, and hence post-tax rates of interest at which governments could borrow substantially lower, growth rates (especially as population was generally growing) were generally high enough for the debt stability condition to be met. But recent experience has been for significantly higher real rates of interest and lower rates of growth.⁶ At the time of writing, American long term nominal interest rates on government bonds are around 6 to 7 per cent, and nominal growth over the past year around 5 to 6 per cent. A tax rate of around 30 per cent on the nominal interest would mean that the stability condition is currently just

satisfied, but clearly any slow down in growth or hike in interest rates would mean that the stability condition would not be satisfied.

Capital expenditure by government usually involves the use of resources now.⁷ There is a question as to how that capital expenditure should be financed in respect of whether the taxpayers in the year when the expenditure is made should pay for that expenditure or whether future taxpayers (who will benefit from that capital expenditure) should pay. There are, of course, (rather substantial) practical difficulties of matching the stream of benefits from a particular capital expenditure with the stream of tax revenue from which the capital project is financed. It is also, of course, impossible to identify which tax dollar pays for which capital project. If it were accepted that the stream of benefits from a capital projects should be matched by a stream of tax liabilities in terms of the time pattern, then it would follow that bonds should be issued to finance the capital project whereby the interest stream from the bonds also matched the time pattern of the benefits. This would, though, still leave open two crucial questions. First, how far should the government run a deficit for demand management reasons ? Permitting capital expenditure to be financed by borrowing would permit a deficit of any size to be run for it says nothing about the volume of capital expenditure. Second, what counts as capital expenditure ?

The structure of the paper is as follows. We first consider some possible rationales for the so-called 'golden rule' that current expenditure by government should be covered by taxation and capital expenditure may be financed by borrowing. The next section points out the ways in which the government sector should be treated differently from the private sector in matters of deficits and their financing. The application of any 'golden rule' is dependent on how capital expenditure is conceptualized and measured, and that is discussed in section 4. The next section suggests ways in which the 'golden rule' may lead to some problems. Section 6 provides some further discussion on the debt stability condition, and section 7 is a brief conclusion.

The central point which is at the heart of this paper is that current expenditure and capital expenditure by government have the essentially similarities that they use current resources, have to be financed

but do not yield a direct monetary revenue for the government.

2. What are the rationales for the golden rule ?

In this section we consider some possible rationales which seem to underlie the idea that capital expenditure can be financed through borrowing whereas current expenditure should not be. Unless it is clearly stated otherwise, capital expenditure is in line with current usage (however inappropriate that may be) and hence is largely the acquisition of physical assets and (in some countries) capital transfers which permit other tiers of government to acquire physical assets.

(a) capital expenditure is 'one-off'

The rationale here is that the capital expenditure undertaken in a particular year should not be financed by tax revenue in that year (though it leaves open the question of whether current expenditure should be financed by tax revenue) since that would lead to a 'lumpiness' in the raising of tax revenue when capital expenditure itself varies markedly from year to year. There is the obvious analogy with an individual's purchase of a house. When the requirements for capital expenditure vary sharply from year to year, it would seem reasonable to smooth the costs of that capital expenditure over several years through borrowing. However, capital expenditure as presently defined is not unique in this respect, and many expenditures which would usually be classified as current could be viewed as 'one-off'. At the government level, disaster relief, celebration of the millennium would come to mind; at the individual level, paying for children's education, the occasional exotic holiday would be examples.

Whilst the capital expenditure of general government varies from year to year, it does not have the 'one off' nature suggested by the analogy with an individual's house purchase. There may be some reason to seek to have the (financing) costs of capital expenditure follow a smoother time pattern than capital expenditure itself. But that would imply that, for any particular year, borrowing would cover capital expenditure in that year over and above some 'base' amount.

This line of argument would suggest that borrowing to cover capital expenditure would be more appropriate at local levels of government to the extent to which capital expenditure may have a much

'lumpier' pattern (perhaps the best illustration of this would be borrowing at the School Board level). At the level of the individual or at a local tier of government, there are clear arguments for borrowing and lending to smooth expenditure over time.

(b) rate of return on the capital expenditure is greater than the cost of finance

For a business enterprise, borrowing to cover capital expenditure appears justified (from a profit prospective) when the anticipated rate of return exceeds the corresponding cost of finance :in practice, the uncertain nature of returns on any capital expenditure would also need to be taken into account. With due regard for risk and uncertainty, the rule may well be invest to the point where the anticipated (incremental) rate of return is equal to the cost of finance.

It may well be argued that government should follow some similar decision rule, and to undertake those capital projects where the associated stream of social benefits will (on a discounted basis) exceed the stream of social costs. Whatever the theoretical merits and the practical problems of implementing such a decision rule, it must be emphasised that the streams of social benefits and costs will be only loosely related to the streams of financial benefits and costs for the government. In particular, the social benefits do not generally yield *any* direct financial benefit to the government, except in the few cases where government makes a charge for the social benefit (and then the charge made need not be closely related to the benefit received).⁸ There may be indirect financial benefits to the government when the capital project stimulates the generation of income and expenditure from which the government received tax revenue.

There is a clear argument here for the separation between the financing of capital expenditure within the public sector where there will be a stream of monetary revenues (which reflect the stream of social benefits)⁹ and where there will not be any such direct monetary revenues. The former category (the major examples of which would be investment by nationalized industries but would also include toll roads etc..) can be financed through borrowing in a manner which does not affect the government's net financial position with the financial revenues potentially matching the financial charges.

(c) borrowing for consumption is wrong

This is the general feeling that it is dangerous to borrow for consumption purposes: the connotation that borrowing is being used for 'wild living', and that the bills for current consumption will have to be paid in the future but with no increase in income to be able to do so. Observing current political rhetoric does suggest that there is a positive connotation to 'investing in the future' which would not apply to 'consuming in the present'. But the issue should be the social usefulness or otherwise of the expenditure, rather than whether it is classified as current or capital expenditure. However the more significant aspect is that borrowing for current consumption cannot usually continue indefinitely as the ratio of outstanding debt to income rises and hence also the interest payments on the outstanding debt.

Whatever the merits of applying a rule such as: current expenditure no more than current income at the level of the individual, it has much less appeal at the level of government, and this is further explored in the next section.

3. The government is different

There is the temptation, to which many succumb, to treat the government as merely a rather large individual, and to apply to the government the rules of finance which an individual may wish to apply and/or view as prudent. There are at least three sets of reasons as to why treating the government by analogy with the individual is inappropriate. First, whereas individuals may more or less act in their own interests, and though bureaucrats and politicians within government may act in their own interests, the government acts to some degree in the interests of the broader society. Hence, we can advocate that government runs deficits or surpluses on its own account, not because it is in some sense in the interest of the government to do so but because of the broader impact which a deficit or surplus has on the economy. The government operates on a much larger scale than any private organization, and should take account of the impact which its activities has on the macroeconomic scene.

Second, government can borrow at much lower interest rates than individuals, which in part reflects

its ability to secure borrowing on its tax raising powers. The government can borrow continuously without an explosive debt position provided that the rate of growth of national income exceeds the post tax real rate of interest paid by the government. An analogous condition would also apply at the level of individual but with the significant difference that the condition is much easier to satisfy for the government than for the individual. The government can generally borrow at more favorable rates of interest than individuals, and the government benefits from only incurring the post-tax rate of interest as its net cost of borrowing.

Third, the bulk of goods and services supplied by government are on a non-market basis, so that the government does not receive direct revenue for what it supplies. Since those activities of government which are intended to be marketable with the monetary revenue covering monetary costs (e.g. nationalized industries, toll roads) have quite different implications for the government's future budget position, they are not explicitly further discussed. Most government activity is non-market in the sense that the output from the government activity is not sold for cash (and in the discussion below we will focus on the non-market activity and leave any market activity, as through a nationalized public utility, on one side). The fact that government activity is non-market obviously means that there is no direct and immediate cash flow back to the government as a result of its expenditure activities. There may be indirect ones, whether from multiplier effects on the level of economic activity (and thereby on tax revenues) or from the supply-side effects of public expenditure (e.g. education and training). It could be said that government expenditure often gives rise to intangible assets and/or assets over which the government cannot exercise ownership (the most obvious one being the creation of human capital through education, but extending into security for example). In the latter case, the government cannot appropriate the benefits generated by its own activities except in so far as they give rise to higher levels of tax revenue.

4. What is capital expenditure ?

In the present form of government accounts the distinction is made between capital expenditure and current expenditure, though with subsequent consolidation of the two forms of expenditure in the

accounts. Under the heading of capital expenditure, the focus is on expenditure on gross capital formation : in US government terminology capital outlays. The capital account can also include capital transfers, and for some countries this item can loom quite large in terms of transfers from one level of government to another. But since those transfers finance capital expenditure at another tier of government, they do not raise any further issues, and our discussion is aimed at the general government consolidated accounts.

One notion of capital expenditure, which is prevalent in most accounting conventions, is that capital expenditure relates to gross capital formation (fixed and change in stocks), and as such corresponds to tangible investments. This 'hardware' view of capital equipment corresponds to national income account usage and the way in which capital expenditure is treated in government budget accounts. Noting that most figures on capital expenditure by government refer to the gross concept, and that advocates of the 'golden rule' or similar are rarely explicit on the matter, attention should be drawn to the difference between gross and net (of depreciation) capital expenditure and we return to this distinction below. But most of our discussion in this section applies equally to the net concept as to the gross one.

Another, and broader notion, of what constitutes capital expenditure is that it relates to any expenditure which will bring a stream of future benefits, whether or not those benefits are fully appropriated by the organization or individual which undertakes the expenditure and whether or not the expenditure creates tangible or intangible assets. In this vein, there has been much discussion in the industrial economics literature as to how far expenditure on advertising and research and development should be treated as capital expenditure (even though accounting conventions would treat them as current expenditure). From this perspective, capital expenditure would cover both tangible and intangible investments. Intangible assets are generally difficult to sell to others, at least on a piece meal basis (a company cannot sell the benefits of an advertising campaign by itself, though it can sell the rights to a particular brand where the value of those rights may reflect the benefits of advertising campaigns, or the present owners can sell the whole company). Significant

attributes of much of government expenditure is that it gives rise to intangible assets and it generates benefits which the government cannot appropriate.

For a business enterprise it could be argued that the appropriate definition of capital expenditure (even if it is not one that is followed in business accounts) is expenditure which is intended to generate future benefits for the enterprise. One difference between tangible investment and intangible investment (which is a matter of degree rather than of kind) is that the former may be saleable in a secondhand market (of varying quality) whereas the latter is less likely to be so. For a business, the relevant future benefits would be seen as those which are appropriable by the business. Three features of features of government capital expenditure defined in this broader way stand out. First, the government appropriates a relatively small fraction of the benefits generated by the capital expenditure, and that fraction is subject to a great deal of uncertainty. Expenditure on education provides a good example: estimating the rate of return on (public) education is fraught with difficulties, and the government only appropriates those returns which show up in higher tax revenue. Second, much of the capital value created by such capital expenditure are not owned by the government, and hence the government has no resale interests in those assets. Indeed most of the assets themselves are not saleable : the market in second hand roads is rather limited. Third, a high proportion of government expenditure would be of the intangible rather than the tangible form. In this government expenditure may not differ qualitatively from private investment expenditure since some informal estimates suggest that intangible assets of private companies are of the same order of magnitude as tangible assets.

The other aspect here is the extent to which current expenditure can be capitalized into capital expenditure (and vice versa). Most income transfers could be capitalized : the obligation to provide future transfer payments represents a liability for the government. That liability can be met (as now) through a stream of current transfers or it could be met through the purchase of an annuity as a capital expenditure. It is often noted that people with an entitlement to a pension (social security or otherwise) have a capital asset based on the discounted expected future pensions, and whether such

assets are included in the concept of wealth can have a significant impact on the measured distribution of wealth. Since there is no major distinction made between current and capital expenditure for budget decision making purposes, there is little incentive for shifting items between current and capital account. But the imposition of a 'golden rule' would create such incentives, and whilst the movement from current to capital expenditure may not be as blatant as the examples given above, there would be some room for such shifting.

5. Problems of using the 'golden rule'

The first problem from an acceptance of the 'golden rule' can be forcibly illustrated by the following comparison. The purchase of military hardware counts as capital expenditure and as such would be financed by borrowing according to the golden rule. In contrast, expenditure on education (other than buildings) would count as current expenditure and could not be financed by borrowing according to the golden rule. Whatever military hardware may do, it does not generate increased tax revenue to the government (other than that which comes from any government expenditure through multiplier effects on income and thereby on tax revenue). Expenditure on education in so far as it raises the skills of the recipients can lead to higher income (of the individual and of society) and thereby to higher tax revenue.

The 'golden rule' applied to the present definition of capital expenditure lacks any firm basis. It clearly does not meet the rationale that capital expenditure is 'one-off' so that borrowing is cost spreading over time, and it does not satisfy the criteria that the appropriated rate of return is expected to exceed the cost of borrowing.

A key feature of government capital outlays is that they are largely expenditures which do not generate corresponding revenues, unlike capital expenditure in the business sector. In that regard, government capital outlays are no different to current expenditure : it is expenditure which has to be financed, whether through taxation or borrowing. There will generally be an associated flow of social benefits, but these lead to a cash flow for the government only in so far as the government directly charges for those benefits (which is infrequently the case) or the benefits give rise, directly

or indirectly, to taxable income or expenditure. The monetary return to the government depends on the degree to which the benefits of government capital expenditure lead to enhanced cash flows, and the rate of taxation on those flows. But since the rate of taxation is likely to be of the order of 30 per cent, the ratio of cash flow to benefits would have to be of the order of 3 or more for the government to make a 'profit' on its capital expenditure.

From this we argue that the criteria for public expenditure should be the same and not dependent on whether that expenditure can be classified as current or capital. The first criterion should be the net social usefulness of the expenditure, and the second should relate to the macroeconomic effects of the balance between taxation and total government expenditure. It would seem to be the case that capital expenditure by government is easier (technically and politically) to adjust than current expenditure. Current expenditure largely means transfer payments, education and health etc., and adjustments to these (especially reductions) have significant effects on living standards, life opportunities etc.. In contrast, capital expenditure does not usually appear to have a direct impact on living standards in terms of the supply effects (though capital expenditure will have similar demand effects to those from current expenditure). This led Keynes to say that he doubted "if it is wise to put too much stress on devices for causing the volume of consumption to fluctuate in preference to devices for varying the volume of investment" (Keynes, 1980, p.321). It can also be seen that much of the effect of general 'belt tightening' on public expenditure over the past two decades or so has fallen on capital, rather than on current, expenditure, and has raised concerns over the current levels of capital expenditure.

Using the 'golden rule' averaged over a period of years (and hence assuming that the budget position varies over the business cycle) is incomplete unless the size of capital expenditure (and hence the budget deficit) is determined (leaving aside issues of the definition of capital expenditure). Now if current government expenditure is covered by taxation over the business cycle, then the following identity would hold (on average over the business cycle) : $(S - I) + (M - X) = \text{Government capital expenditure}$ where S and I are private domestic savings and investment respectively, M and X are

imports and exports (and $M - X$ is equal to capital inflow). This would indicate that in order to ensure full employment, government capital expenditure should be adjusted to mop up the excess of private savings over private investment which would ensue at full employment plus any capital inflows. Now, provided that the public investment which would be necessary to underpin full employment is useful, then there would seem to be a convenient way to reach full employment (or whatever level is desired). But it still leaves the problem of how the debt interest is to be paid since the public investment does not yield a direct financial flow from which the interest could be paid (hypothecated). Further, it introduces an unnecessary constraint into the procedure. If total government expenditure is to be say $\$X$, why constrain the division of that expenditure to be that current expenditure of $\$X_1$ is equal to taxation, and remaining $\$(X - X_1)$ is financed by debt, no matter what the merits of the (incremental) additions to current and to capital expenditure.

6. Back to the debt stability condition

It can readily be shown that, for any constant primary budget deficit (that is excluding interest payments on the government debt), whether the ratio of the government debt to national income (and hence the interest on the debt relative to national income) stabilizes or rises without limit depends on whether the post-tax rate of interest is less than or greater than the growth rate of national income. We have argued that, from a financing perspective, there is no essential difference between current and capital expenditure by government.

It is useful to distinguish three cases with respect to the debt stability condition. First, when the condition is readily satisfied, and when the resulting debt to income ratio and the interest flow to income ratio are broadly acceptable. The litmus test of acceptability here is a political one, and there are no hard and fast rules. But we could suggest the following type of configuration may well be broadly acceptable. If $(g - r)$ is of the order of 0.04 (with say real growth of 5 per cent, inflation of 2 per cent, nominal interest rates of 5 per cent, with a tax rate of 40 per cent would give post tax nominal rate of 3 per cent and a real rate of 1 per cent) and the primary deficit to income ratio is 3 per cent, then a (stabilized) debt to income ratio of 75 per cent, with interest payments equivalent

in nominal terms to 3.75 per cent of GDP but to 2.25 per cent after payment of tax, and 0.75 per cent in real terms. Those figures would be not too far removed from the experience of many European economies during the 'golden age'.

Second, there is the case where although the debt stability condition is met, it leads to what would be deemed very high debt (and interest payment) to income ratios. A difference of 0.01 between the growth and interest rates leads to a debt to income ratio 100 times the primary deficit to income ratio, and if that is combined with high nominal interest rates, then in some sense a particularly high ratio of interest payments to income would result.¹⁰ There may be a sense in which a ratio of say 50 per cent or 60 per cent would be politically acceptable, but one of 500 or 600 per cent would not.¹¹ It should be noted that given the way the problem has been set up here (namely with a constant primary deficit), the rising interest payments (until they stabilize relative to national income) does not involve rising taxation, but rather involves a degree of 'Ponzi' finance, that is further borrowing to meet the interest payments on previous borrowing.

The third case is where the debt stability condition is not met, and hence the debt to income ratio would rise if there is a primary budget deficit of whatever magnitude. Depending on the size of the budget deficit (relative to national income) and the excess of the post-tax rate of interest over the growth rate, it may take many years (of the order of decades) before the rising debt to income ratio is perceived to be a problem. The key point for this paper is that if the stability condition does not hold and if a rising debt to income ratio is considered a 'problem', then it is irrelevant whether the deficit arises from capital expenditure or current expenditure. .

We take the view that industrialized economies are currently not operating under the first case but often on the borders of the second and third cases. If that is so, and bearing in mind the point made above on the lack of monetary flows to government arising from capital expenditure, then a rule to only borrow to cover capital expenditure still runs into problems of a high or continuous rising debt (and hence interest payment) to income ratio. It only modifies the problem in so far as the deficit is perhaps smaller, and it make take many years before the perception of the problem becomes

apparent.

7. Conclusions

We have argued that current and capital expenditure by government share the essential features that both have to be financed yet neither give rise to direct financial inflows to the government. From that perspective, in deciding upon the level of expenditure and of budget deficit, there is little reason to make the distinction between current and capital expenditure, and in particular there is little merit in the adoption of rules such as only capital expenditure can be financed through borrowing.

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Endnotes

1. See, for example, Eisner (1994, 1996), Palley (1997)
2. We say budget deficits for their own sake : we mean here that if budget deficits should be run, that should be done for some defensible purpose such as maintaining an adequate level of aggregate demand or ensuring that valuable public services are provided.
3. The two elements are not logically linked though there has been a tendency for the advocates of the latter to favor the former.
4. Another consideration here, as Hy Minsky and others have pointed out, is that balanced budget in the United States and the non-monetisation of the deficit in European Union countries would mean that no high powered money (cash and bank reserves with the Central Bank) would be

created. This would entail some combination of growth of money supply even below the growth of real output and of declining reserve ratio of the banking system.

5. With a primary deficit of $B = b Y$ (where Y is national income and b is the constant deficit to income ratio), the debt-income (D/Y) will increase when $(1/D) dD/dt > (1/Y) dY/dt$. The increase in debt comes from the primary deficit and interest payments, i.e. $dD/dt = B + r D$ (where r is the post-tax rate of interest). The debt-income ratio rises when $(B/D) + r > g$, and hence the condition for a stable debt-national income ratio becomes $D/Y = b/(g-r)$ which requires $g > r$ for a meaningful solution.

6. To the extent to which the government debt is held by foreign residents and domestic tax not levied on interest paid to them, the effective borrowing cost to the government is raised.

7. Clearly some capital expenditure by government may involve the acquisition of existing assets. It may also involve capital transfers, especially when central or Federal government is involved where they can be substantial transfers to other tiers of government. For example, in the UK, around half of the capital expenditure by central government are transfers to local government, which in turn uses the transfers to finance capital expenditure. With respect to this point, the paper should be read as dealing with a consolidated general government budget position.

8. This should not be seen in any way as advocating that there should be more charging by government.

9. We say reflects here because we could rarely expect that there was a complete identity between financial returns and social benefits. There may well be cases where a project generates financial returns which are less than the associated financing charges but the project is worthwhile because of social benefits not reflected in the financial returns.

10. It could be argued that government accounts should be drawn up in real terms, and due allowance made for the depreciation of the real value of the government debt arising from inflation. But there has been a marked reluctance by governments to operate in this manner.

11. It could though be noted that concern over the size of the budget deficit appears greater in the UK and the USA at the present time when the debt to income ratios are much lower than those experienced in the early post-war years.