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Measuring Compliance with the Golden Rule

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Abstract

The golden rule of public finance is based upon the notion that intergenerational equity requires that the cost of public expenditures be spread over time in a manner that reflects the intertemporal distribution of the benefits generated by those expenditures. This is often translated into a rule that the budget be structurally balanced in accrual accounting terms. This article considers the form of accrual accounting that is most suited to the task of measuring the consistency of fiscal policy with the golden rule. It recommends a combination of the real capital maintenance approach (also known as 'current purchasing power accounting') and annuity depreciation. Such an approach differs from 'current cost accounting', which has dominated public sector models of accrual accounting in recent years. The meaning of balance-sheet measures is also considered, and it is concluded that the golden rule is more appropriately expressed as an accrual balanced budget requirement than as a requirement for the maintenance of constant net worth.

JEL classification: H6, M40.

I. INTRODUCTION

Intergenerational equity is widely regarded as a key fiscal policy criterion. A key traditional conception of intergenerational equity is embodied in the so-called 'golden rule' of public finance. The golden rule asserts that taxpayers in each time period should as a group contribute to public expenditures from which they derive benefits in accordance with their share of the benefits generated by those expenditures. In doing so, they may be regarded as 'paying their way', without either subsidising, or being subsidised by, taxpayers in other time periods.

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The golden rule can be contrasted with the more familiar balanced budget standpoint, which calls for all expenditure to be financed by contemporaneous taxes. Many advocates of balanced budgets have taken the view that any use of debt amounts to an unfair imposition upon future generations (Kowalcky and LeLoup, 1993). Advocates of the golden rule (for example, Musgrave (1988) and Fitzgerald (1996, vol. 1, p. 25)) disagree with this. While they agree that intergenerational equity requires the contemporaneous tax funding of any expenditure the benefits of which are entirely enjoyed contemporaneously, they reject the proposition that expenditure that generates benefits over multiple time periods should, as a matter of principle, be tax-financed at the time it is undertaken. They note, for example, that assets such as schools, roads and bridges yield benefits over considerable periods of time, and suggest that there is therefore nothing equitable about requiring that their full costs be met by taxpayers at the time of construction. From the golden rule perspective, what intergenerational equity requires is, instead, that the costs associated with such expenditure should be spread over time in accordance with the distribution over time of the benefits that they generate. It defends, within limits, the use of debt for this purpose.

The golden rule is often portrayed as a principle pertaining to the intertemporal allocation of the tax burden of financing capital expenditure. This is understandable, given that expenditure that generates benefits over multiple time periods corresponds *approximately* to the conventional concept of capital expenditure. Indeed, in this paper, we shall for convenience treat the concepts as synonymous. Nevertheless, it should be borne in mind that capital expenditure is conventionally defined by reference to the physical durability of assets, rather than by reference to the timing of benefits. There are forms of expenditure that produce benefits over multiple time periods without producing a durable physical asset (a good example is the massive expenditure undertaken to finance the war effort during the Second World War, much of the benefit of which accrued to post-war generations).[1]

The balanced budget view has been fostered by the traditional public sector use of the 'cash' accounting system under which all expenditure (including all capital expenditure) is treated as a debit in the financial year it takes place. Cash accounting differs fundamentally from private sector practice, which employs accrual accounting. Accrual accounting replaces expenditure as a debit concept with the concept of *expenses* attributable to the current financial year. A key difference between accrual and cash accounting is that the former records depreciation as an expense, rather than capital expenditure itself. Expenses

[1]I am obliged to one of the anonymous referees for this example.

minus revenue may be referred to as the *accrual operating result*, by contrast to the conventional 'cash' budget balance, which is expenditure minus revenue.[2]

It is therefore natural for advocates of the golden rule to call for the use of accrual accounting ('resource accounting' in current British public sector jargon (UK Treasury, 1994 and 1995)) as the basis for public sector financial reporting. Concretely, they argue for a policy of balanced *accrual* budgets (i.e. a zero accrual operating result). In stock terms, this is taken to be equivalent to the maintenance of constant 'net worth'.

Fiscal policy serves macroeconomic policy purposes as well as intergenerational equity objectives. Some modification of the basic principle of balanced accrual budgets may therefore be required to reflect one's macro-theoretical standpoint. It is commonplace in this context for the golden rule to be viewed as requiring *structurally* balanced accrual budgets — where 'structural' refers to adjustment of the budget balance measure to eliminate the effects of the business cycle. The distinction between structural and cyclical budget balances, although by no means unproblematic in practice, is a widely accepted one. We abstract from business-cycle considerations in the analysis below.

The primary purpose of this article is to outline the key elements of an accounting methodology suitable for measuring compliance with the golden rule. This methodology differs in certain respects from the methodology that has tended to be favoured by governments that have adopted, or are in the process of adopting, accrual accounting within their budget-dependent departmental core (including the UK, Australia and New Zealand). The nature of these methodological differences is therefore discussed, with particular attention to the potential of the currently favoured accrual accounting methodology to distort somewhat measures of compliance with the golden rule.

The intention is to present the central issues in as accessible a manner as possible. As a consequence, the analysis below is very much simplified. It ignores, for example, accounting issues related to deferred expenditures such as civil service pensions, in order to concentrate on the crucial issue of the treatment of capital. It also ignores the presence of income-earning public sector operations, so as to focus squarely on the distribution through time of the tax burden of financing 'social' assets (i.e. assets that provide benefits to the community without earning revenue for the government). While readers should bear in mind that the story has been simplified in this manner, they may rest assured that these simplifications do not detract from the validity of the broad story that is told below.

It is important to acknowledge in passing that exponents of so-called 'generational accounting' have strongly challenged any focus upon deficits as measures of intergenerational equity. In their view, 'deficit numbers, no matter

[2]This simplifies by setting to one side analogous differences between cash and accrual accounting on the revenue side.

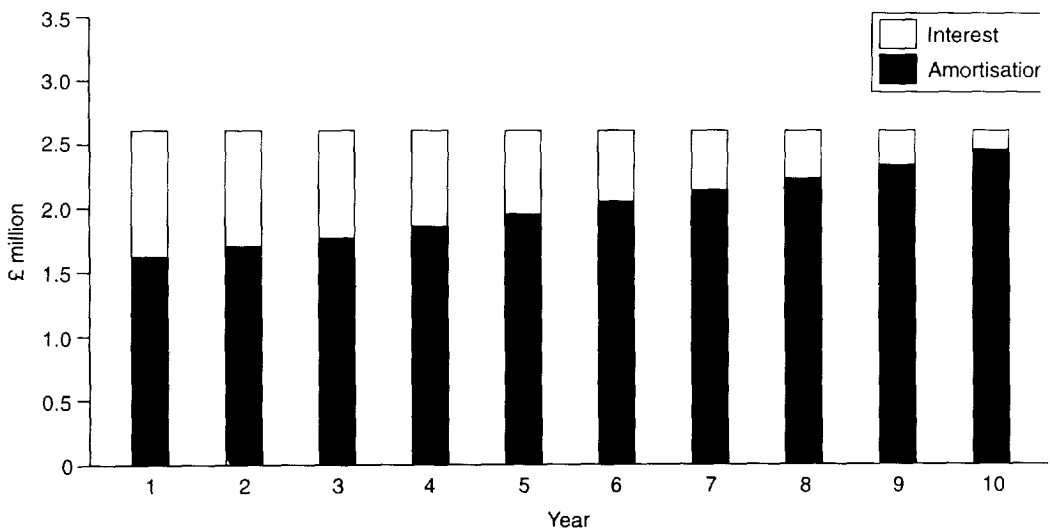
how they are measured, reflect nothing more than the rules of accounting used in their computation' (Auerbach, Gokhale and Kotlikoff, 1995, p. 1). From this perspective, accrual deficit measures are of no more use than cash accounting measures. I have evaluated the claims of generational accounting elsewhere, concluding that this rejection of the relevance of deficit concepts is unwarranted and that the case for the golden rule approach remains a strong one (Robinson, 1998a). A review of the complex issues involved is, however, beyond the scope of the present paper.

II. A SINGLE-ASSET MODEL

We start by considering what the golden rule would mean in terms of the costs of a single asset, viewed in isolation. Here we use a specific example. Imagine for this purpose that the government acquires a single facility with a defined lifespan of, say, 10 years. Suppose that the initial cost of the facility is £20 million and that the level of benefits generated for the community by the facility happens to be the same in each of its 10 years of life. Debt is used to achieve the objective of distributing the costs of the facility over the 10 years of its life in accordance with the distribution of the benefits that it generates for the community. To understand how the golden rule should operate, we therefore imagine that the £20 million initial cost is entirely borrowed. For simplicity, we assume that the rate of interest that the government pays on those borrowings is equal to the opportunity cost of capital and take both to be a constant 5 per cent.

FIGURE 1

Applying the Golden Rule to the Financing of a Single Asset



Spreading the cost over the lifespan of the facility means that, over the asset's life, taxes must both cover ('amortise') the initial cost and meet interest commitments along the way. At the end of the asset's life, the debt incurred to cover the initial cost of the asset must have been fully repaid. In apportioning costs between each of the 10 years of the asset's life, it is necessary to take into account not only amortisation of the principal, but also the interest payments. In other words, what we have to apportion is the *total* taxpayer contribution in each time period towards the costs of the facility, whether in the form of interest or amortisation.

Because in our example we have assumed that the level of benefits generated by the facility is constant through its life, the golden rule requires that the tax contribution in each year be equal, yet sufficient over the 10 years to meet all interest and principal. Figure 1 shows what this implies.

Each year, a tax contribution of approximately £2.6 million is required. However, the breakdown of this between interest and amortisation payments changes over time, with interest payments declining and amortisation payments increasing. The approach that this embodies is essentially the same as that of a conventional housing mortgage, in which equalising the periodic payments made by the borrower over the term of the mortgage means that interest payments initially constitute the bulk of the periodic repayment, with amortisation of principal growing in significance over the term of the mortgage. The golden rule does not, of course, stipulate *equal* tax contributions in each year as a matter of principle. The general notion, rather, is that, if citizens in a given time period derive benefits from a facility that are n times greater than the benefits enjoyed by citizens in another specific time period, then it is consistent with intergenerational equity to require the former to make a collective tax contribution towards financing the facility that is n times greater than that of the latter. The equal annual payments that characterise the above example are simply the result of the simplifying assumption that the level of benefits generated by the facility is the same each year. If the distribution of benefits over time were different, so *in principle* would be the distribution of costs (principal *plus* interest) required by the golden rule.

This cost allocation methodology has a number of clear implications for a system of accrual accounting designed to serve a long-run fiscal policy based upon the golden rule.

First, when we record 'depreciation' in our accrual operating statement, we must use that term to refer to the amortisation of the initial cost of the asset. The term depreciation has a range of alternative meanings in accounting theory, and it is therefore imperative that we are clear about the sense in which we are using the term.

Second, if we want the contribution of taxpayers in each time period to reflect their share of the benefits generated by the facility over its life, it is their contribution in *real* rather than nominal pounds that is relevant. We therefore

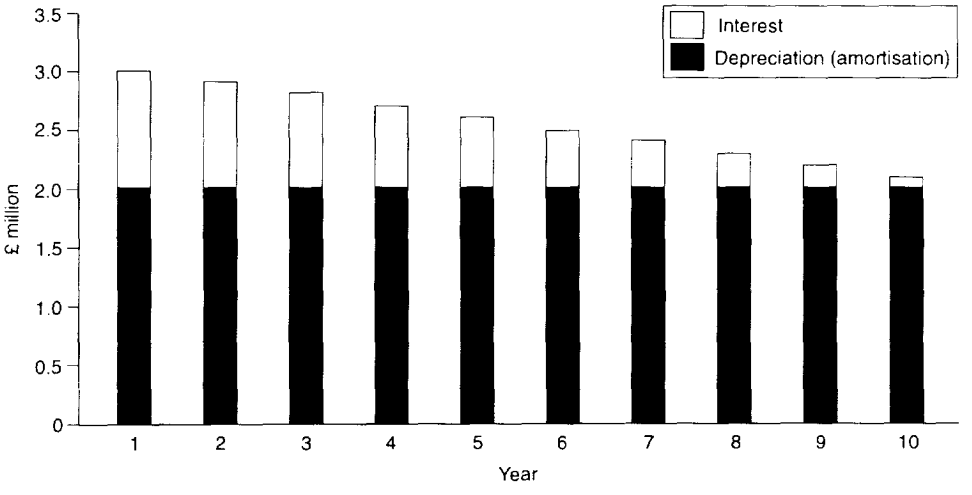
need to adopt the right form of accounting to take into account the impact of inflation. The appropriate methodology for this purpose happens to be what is known as 'current purchasing power accounting' (CPP). CPP must not be confused with 'current cost accounting' (CCA), which is discussed below. In brief, what CPP does is to amortise the initial *real* cost of the asset as depreciation. As the counterpart to this, it in effect records *real* (rather than nominal) interest payments as an expense.

Third, the cost amortisation principle that is employed must be one that explicitly allocates *total* costs — interest as well as amortisation of principal — over time in the manner illustrated above. This depreciation method is known as 'annuity' or 'present value' depreciation (Myers, 1972; Baxter, 1981). It differs significantly from conventional depreciation, which considers the principal[3] in isolation and amortises it without taking into account the fact that interest payments are also being made.

To clarify the difference between conventional and annuity depreciation, consider once again our hypothetical facility. Given the equal distribution of benefits over time which has been assumed in this example, conventional depreciation would certainly employ a 'straight-line' depreciation schedule which apportions the principal equally over the 10 years of the asset's life (at £2 million per year). The implications of this for total taxpayer contributions in each year of the asset's life are shown in Figure 2.

FIGURE 2

Implications of Conventional Depreciation for the Expensing of a Single Asset



[3]Or some other measure of asset 'value'.

The important point is that, notwithstanding the fact that straight-line depreciation has been used, conventional depreciation 'front-loads' costs because it ignores interest. That is, it has the effect of allocating costs disproportionately to the earlier years in the life of the facility, with a commensurate reduction of cost allocation towards the end of the facility's life. This effect is greater, the longer the lifespan of the asset concerned.

The fourth key issue is the nature of the 'balance sheet' consistent with our preferred cost allocation model. The balance sheet in any accrual system records 'values' for assets and liabilities. Total assets minus total liabilities is referred to as 'net worth' (or by a variety of other terms, such as 'net equity'). If our hypothetical facility is the only public sector asset, and if we also assume that the golden rule has in the past been consistently applied, then there would be no outstanding public debt other than debt employed to finance the facility. The 'value' that our balance sheet would record for the facility at any stage in its life would simply be its remaining unamortised (real) cost at that time. This would correspond to the portion of the original borrowings employed to finance the facility that has not yet been repaid. Thus the result of the application of the golden rule would be that government assets (the 'value' of the facility) would equal government liabilities (the remaining outstanding debt), and net worth would be zero. This would remain true at each stage during the facility's life. For example, at the end of the facility's life, the remaining debt would be zero, the asset value would be zero and net worth would still be zero.

A crucial point to remember about such a balance sheet is that the 'value' recorded against the facility (the 'book' value) is not a measure of what it is worth. That is, it does not purport to represent the facility's 'economic' value.[4] The balance-sheet valuation is, instead, a record of unamortised cost. Having said this, it can be shown that one of the implications of employing present value depreciation in the manner advocated above is that the ratio of book value to economic value remains constant over the life of each asset. This means that depreciation in each time period is proportional to the change in the asset's economic value during that period. It nevertheless remains the case that book value and economic value are not the same, and it may therefore be said that the use of the term 'value' for fixed assets in balance sheets can be misleading. The same applies to the term 'net worth'. As is discussed below, this has certainly been the source of a number of serious misconceptions. It is, unfortunately, not practicable to invent a new set of terminology to avoid these misconceptions.

The above analysis assumes certainty and perfect information. Under such hypothetical conditions, a depreciation schedule could be set for each asset which precisely mirrors the time pattern of benefits that that asset generates. The real world, unfortunately, is not so tractable. There is, in practice, considerable

[4]Which may be defined as the greater of (a) the present value of the benefits that it provides to society and (b) the sum that the government might realise by selling it.

uncertainty about the time pattern of benefits (and future interest rates), so that depreciation schedules must inevitably be imperfect. Moreover, a policy of tailoring depreciation schedules to suit individual assets can be regarded as creating, under such conditions of uncertainty, unacceptable scope for opportunistic 'creative accounting'. Given this, the application of standardised depreciation schedules (for example, straight-line depreciation) has much to recommend it, notwithstanding the essentially arbitrary nature of such schedules. These realities do not constitute arguments against the application of the golden rule. They are simply reminders that, in the real world, any *practicable* fiscal rule can only represent an approximation of the underlying theoretical principles that it seeks to effect.

III. IMPLICATIONS OF MULTIPLE ASSETS

Shifting from a model based upon a single fixed asset to a model with multiple assets does not, in itself, change any of this — at least if we continue to assume, for the time being, that the golden rule as specified above has been consistently respected in the past. A number of useful further properties can, however, be drawn out.

One important point is that the golden rule principle of balanced accrual budgets has an approximate counterpart in terms of the conventional 'cash' budget balance. The golden rule stipulates that, each financial year, repayment of debt incurred to finance past capital expenditure should take place according to the amortisation principles outlined above. However, at the same time, new capital expenditure is notionally funded entirely from new borrowings. Borrowing to finance current expenditure is not permitted. This means that actual net borrowings must equal new capital expenditure minus depreciation, which is the change in the stock of capital (also referred to as 'net' investment). Net borrowing is what the 'cash' accounting deficit measures,[5] so what this means is that the golden rule implies, approximately, that the cash budget deficit must equal net public investment. Given, further, that the cash deficit equals the sum of current and capital expenditure minus revenue, this is equivalent to a requirement that revenue should equal current expenditure plus depreciation. Yet another way of expressing the same point is to say that there should be a fiscal *current account surplus* — defined as revenue minus current expenditure — equal to the amount of depreciation in the relevant time period. The current account surplus is, obviously, a cash accounting concept.

The golden rule also has direct implications for the relationship between the public debt and the capital stock. Net borrowings equal the change in debt

[5]We ignore asset sales revenue. The term 'underlying' deficit is commonly used to refer to the cash budget deficit adjusted to eliminate the effect of any asset sales revenue, so the remarks in this paragraph should properly be construed as applying to the underlying deficit.

(subject to the qualification discussed below). The golden rule therefore means that the change in debt must equal the change in the capital stock. If the capital stock is growing, with new capital expenditure exceeding depreciation, debt will be growing at the same rate. If the capital stock is declining, debt also will decline.

A final point worth drawing out is that, in a multiple-asset context, the front-loading properties of conventional depreciation will have the effect of

- artificially worsening the accrual operating result under circumstances where the fixed asset portfolio is weighted towards relatively new assets (as a result of, say, relatively high levels of capital expenditure in recent years), and
- artificially improving the operating result if assets tend on average to be rather old, reflecting a dearth of recent capital expenditure.

Conventional depreciation tends to be used in the public sector accrual accounting models developed to date, although there is some interest in annuity depreciation. The more irregular are patterns of capital expenditure, the more this use of conventional depreciation can be expected to distort the reported accrual budget outcome.

IV. IMPLICATIONS OF PAST BREACHES OF THE GOLDEN RULE

In a multiple-asset context, it remains the case that *consistent* application of the golden rule will mean that public sector net worth will equal zero. However, one cannot expect it to be the case that governments have in the past consistently abided by the golden rule. If they have not, then inherited net worth levels may be significantly different from zero. If, for example, past generations have disproportionately contributed to the cost of the existing stock of assets, net worth may be positive. Conversely, net worth might be significantly negative if people in the past failed, overall, to pay their way. One way of viewing this negative net worth is as an 'excess' level of public debt — that is, an amount by which debt levels have come to exceed asset values in the balance sheet.

If there is an inherited 'excess' level of debt, then there will, as a consequence, be a greater interest burden than would be the case if net worth were zero and debt therefore equalled assets.[6] Taxes would need to be higher as a consequence. If they were not, public debt levels would, under normal conditions, grow at a faster rate than GDP — and therefore faster than the capacity of the community to pay taxes to meet interest obligations — and there would sooner or later be a 'fiscal sustainability' problem (Feldstein, 1976; Boskin, 1982). It should be noted in this context that the standard accrual

[6]The analysis that follows is, of course, equally applicable if present taxpayers were fortunate enough to inherit positive net worth (i.e. negative 'excess' debt). In this case, it would be public asset levels that might grow faster than GDP, threatening fiscal sustainability. The solution proposed remains equally applicable.

approach treats all interest costs as an expense in the current time period — without any attempt to distinguish between, and treat differently, interest commitments arising from legitimate asset financing and interest commitments arising from the inappropriate past use of debt to fund current expenditure. Therefore, to implement the golden rule in the form of a requirement for balanced accrual budgets, while conforming with this standard accrual treatment of interest costs, is implicitly to adopt a particular solution to the problem of inherited excess debt: namely, that taxpayers in each period shoulder the whole of the extra interest burden from that excess debt. If they do this, then the amount of excess debt will remain constant, and so consequently will the inherited level of net worth.

Given this approach, the golden rule can, regardless of the inherited net worth position, continue to be expressed as a requirement that the budget be balanced in accrual terms. The cash accounting approximation of this remains, moreover, the rule that the current account surplus should equal depreciation.

The stock equivalent of these rules, however, is now no longer the maintenance of zero net worth, but rather the maintenance of *constant* real net worth. No longer will it necessarily be the case that the level of debt will equal the capital stock. However, it will remain true that *changes* in the level of public debt will equal *changes* in the public capital stock. Or rather, this would be literally true if it were not for further complicating factors, to which we now turn.

V. BALANCED ACCRUAL BUDGETS VS. CONSTANT NET WORTH

The simple model employed so far has embodied an exact 'articulation' between the accrual operating statement and the balance sheet. That is, any accrual operating deficit means a precisely equivalent reduction in net worth, and vice versa. And any operating surplus will mean an increase in net worth.

In the real world, however, this pleasing picture is marred by a complication that cannot be overlooked. In accrual balance sheets, debt is usually subject to 'market' valuation, and the market value of debt fluctuates with changes in expectations of future interest rates. This means that it is not precisely true that net borrowings (i.e. the cash deficit) equal the change in debt. Rather, the change in debt equals new borrowings *plus* the impact of market revaluations on the pre-existing stock of debt (known as 'valuation effects').

This imparts a degree of volatility to the net worth measure. To maintain net worth precisely constant would, under these circumstances, require that current-period taxes be raised or lowered at short notice to offset fluctuations in the market value of debt. Such an approach would be impracticable and have little to recommend it in terms of principle.

The pragmatic solution to this problem is to insulate the accrual operating result from the impact of these fluctuations. This may be achieved by choosing

not to recognise capital gains or losses from fluctuations in the real market value of outstanding government debt as revenue or expenses in the operating statement. This is more or less what standard versions of CPP or CCA accrual methodology do. Crucially, however, this breaks the precise 'articulation' between the operating statement and the balance sheet to which we referred above. It is no longer the case that the operating result and changes in net worth precisely mirror each other. As a consequence, the golden rule is expressed more exactly as a requirement for balanced accrual budgets than as a requirement for the maintenance of constant net worth. The 'maintenance of constant net worth' may, nevertheless, be regarded as a reasonable approximation of the rule.

These valuation effects on the liabilities side of the balance sheet arise as a consequence of uncertainty. Uncertainty can also have analogous effects upon the assets side of the balance sheet. This issue cannot be properly dealt with here. However, as an example, changed community needs or technologies might mean that what was thought to be a valuable asset unexpectedly becomes essentially useless. Under these circumstances, it might be appropriate to write off the asset entirely, in which case it would once again make sense to insulate the operating statement from the effects of the consequent balance-sheet discontinuity.

VI. CURRENT COST ACCOUNTING

Current cost accounting currently enjoys considerable favour amongst those who make public sector accounting policy in countries that have been moving to accrual accounting (Byatt, 1986; UK Treasury, 1994, p. 35; Australian Accounting Research Foundation, 1995, pp. 7 and 25; Steering Committee on National Performance Monitoring of Government Enterprises, 1994). There are two related forms of CCA. The first is what we might call 'replacement cost' CCA. Essentially, whereas CPP values fixed assets on the basis of initial real cost, replacement cost CCA values them in terms of the real cost of replacing the asset with a new asset with the same productive capability (Whittington, 1983).

The essential principle underpinning replacement cost CCA is that of 'operating capital maintenance'. This contrasts with the alternative principle of 'financial capital maintenance', which is implicit in the methodology recommended in this paper. Financial capital maintenance means that, at the end of the life of a fixed asset, cumulative depreciation charges will have 'covered' the full initial (real) cost. Thus the financial position of the public sector will have been maintained. By contrast, under the replacement cost approach, cumulative depreciation charges will sum instead to an amount sufficient to purchase an 'equivalent' replacement asset. This replacement cost will frequently differ from the initial cost of the asset. In the presence of technical progress, for example, the replacement cost of an asset might be less than its initial real cost. Under these circumstances, if the initial cost of the asset were

entirely borrowed, and it were not intended to replace the asset at the end of its life, depreciation charges would be insufficient to amortise the initial debt, and a residual debt would remain. Those who had benefited from the asset during its working life would not, in other words, have paid the full costs incurred in generating those benefits. Conversely, if replacement cost for some reason exceeds initial real cost, employing replacement cost CCA would involve beneficiaries being charged more than required by intergenerational equity.

Financial capital maintenance and operating capital maintenance arose in private sector accounting theory as the basis for alternative conceptions of profit. Supporters of the latter doctrine have argued that, as long as a manufacturer of, say, cardboard boxes retains sufficient funds to be able to replace its existing plant with another plant of the same output capacity at the appropriate time, earnings over and above such retained amounts could be viewed as profit. Supporters of financial capital maintenance respond that one cannot base a concept of profit on the potentially unwarranted assumption that such a company will choose to continue producing cardboard boxes for ever and a day, eschewing any change in the nature or mix of its business activities. They also point out that financial capital maintenance is consistent with the economic concept of profit as the increment in real financial wealth. These are persuasive points. Overall, it would appear that the operating capital maintenance principle has little to recommend it in a commercial context, and even less to recommend it in the context of non-commercial core government.

What are the implications of the use of replacement cost CCA for the usefulness of the accrual operating balance as an intergenerational equity measure? When replacement costs are less than the initial real cost of the asset, the result is an artificial improvement in the accrual operating result. Conversely, when replacement costs exceed initial real cost, the accrual operating result will be made to look worse than it should from an intergenerational equity perspective. The direction and magnitude of the net effect are empirical questions. However, it may be guessed that the impact is unlikely to be so great as to prevent the CCA operating results from serving as a reasonable proxy indicator of compliance with the golden rule — at least if corrected for distortions arising from the failure to employ annuity depreciation.

As noted above, there are two related forms of CCA, the 'replacement cost' variant being the first. The second, somewhat more complicated, version of CCA is what is known as 'deprival value' methodology. It is this version of CCA that has generally been widely favoured in the public sector in recent years. The intention of deprival value CCA is to value fixed assets at the lesser of replacement cost and economic value (as defined above). In practice, economic values are difficult to measure, so replacement cost tends to be used by default even when economic value should by rights be used (see, for example, Heald and Scott (1995, p. 62)). Consequently, the distinction between 'deprival value' and 'replacement cost' CCA tends to be greater at the conceptual than at the practical

level. The distinction should not, however, be overlooked, because advocates of the deprival value methodology have supported their case with a set of arguments quite distinct from the 'operating capital maintenance' doctrine summarised above. They assert the relevance of deprival value CCA for managerial decision-making, flowing from what they see as its basis in decision-relevant 'economic' concepts of cost and value (for example, Edwards, Kay and Mayer (1987), Byatt (1986) and Rowles (1992)). It is primarily because of these purported managerial benefits that deprival value CCA has attracted support within the public sector. I have critically evaluated these issues elsewhere, arguing that the managerial value of CCA has been *greatly* exaggerated and that it is a mistake to base public sector financial reporting systems on supposed managerial accounting applications (Robinson, 1998b). The implication of this view is that, unless one is to run two accrual systems in parallel in order to derive limited managerial benefits from the CCA system, the choice of accrual methodology should be determined by the need to properly measure compliance with the golden rule.

VII. FURTHER COMMENTS ON THE BALANCE SHEET

As noted earlier, the valuation of 'social' assets in our preferred balance sheet does not purport to be a measure of what assets are worth. The economic value of a social asset is not what is recorded in the balance sheet. The same point applies to commercial assets: balance sheets, irrespective of the methodology upon which they are based, generally do not recognise government business enterprises at their economic value. The same is true for similar assets in the private sector. If one wants a measure of economic value, one is better off looking at capital market valuations.

The fundamental reason for this is that the estimation of the economic value of such assets — which yield an inherently variable return and for which there is no well-defined market price — is so much a matter of judgement that economic valuations are simply too subjective and manipulable to serve as the basis for a balance sheet.

This is one of the reasons why net worth is not a measure of solvency. Another reason is that the power to tax (of which there is no private sector counterpart) is an 'asset' that is not part of the balance sheet. To put the point differently, negative net worth indicates nothing about the government's capacity to meet its financial obligations as long as it is in a position to increase taxes. In New Zealand in the early 1990s, the presentation to the public of a public sector balance sheet purporting to show substantial negative net worth led government leaders and the media to claim that the government was in some sense insolvent, and that it was essential to take firm fiscal measures to rapidly restore solvency. This was a sensationalist misuse of the notion of solvency. All that negative net worth indicates is that, at some stage in the past, taxpayers probably failed to

'pay their way' in the manner required by the golden rule. It does not, moreover, necessarily mean that immediate measures should be taken to 'restore' the balance sheet by making present taxpayers bear the full cost of the sins of the past.

Some economists have conceptualised partial or comprehensive public balance sheets which are based consistently upon economic valuation concepts. A comprehensive balance sheet on, say, the model put forward by Buiter (1990) would in principle provide a solvency measure.[7] This type of balance sheet is, however, a purely theoretical tool rather than a practicable proposition.

While the development of a balance sheet does not provide a measure of solvency, it nevertheless does provide some improvement in measures of fiscal sustainability. An important determinant of fiscal sustainability is the magnitude of the financial obligations passed on by government to future taxpayers. A by-product of traditional cash accounting was a tendency to measure those future obligations in terms of debt alone.[8] The trouble with this is, of course, that debt is by no means the only financial obligation passed on to future taxpayers. There are other important obligations (such as lease obligations and employee entitlements such as pensions), and there are offsets such as the future revenue stream of government business enterprises. The benefit of a balance sheet here is that it provides a wider perspective on future financial obligations by including many of these non-debt financial assets and liabilities. Thus a typical balance sheet will include an augmented measure of net financial liabilities[9] that includes not only debt but some of the other relevant assets and liabilities including, in particular, future pension obligations. This net financial liabilities measure is the best available *robust* measure of fiscal sustainability.

The net financial liabilities measure is not to be confused with net worth. What it is, in approximate terms, is net worth *minus* the balance-sheet 'values' of the social assets and government business enterprises. There are two reasons why the latter balance-sheet values are best left to one side in an indicator of future financial obligations. The first is that, as noted above, these 'values' do not measure economic value. The second is that social assets yield no revenue, so that even a measure of their economic value would arguably muddy any indicator of fiscal sustainability.

The conclusion to which this points is that net worth should be regarded as an indicator of intergenerational equity rather than as an indicator of fiscal sustainability. This is consistent with the tendency of policymakers to combine the golden rule with a rule designed to guarantee fiscal sustainability, such as a rule that the ratio of debt to GDP (or, better still, net financial liabilities to GDP)

[7]This is because it would extend the concept of assets to include the present value of future taxes and extend the concept of liabilities to include the present value of future expenditure.

[8]Or, more precisely, in terms of *net* debt, which is debt owed by the government to others minus financial assets such as debt owed by others to the government.

[9]Perhaps termed something like 'excess of total liabilities over financial assets'.

should not exceed some specified maximum (see, for example, UK Treasury (1997, p. 10)).

Some advocates of CCA appear to believe that CCA can cure this deficiency in the information provided by a public sector balance sheet, by creating a balance sheet based upon the consistent application of the economic concept of value to all assets and liabilities. This is, however, not the case. Fixed asset valuation in a CCA balance sheet is, as pointed out above, predominantly based upon cost-based 'valuation' rather than economic valuation. This is true in theory and even more true in practice. The crucial point is that, as Whittington (1983, p. 116) puts it, 'replacement cost is a cost rather than a value'.

The growing use of public sector balance sheets can be expected to produce new types of misconceptions in coming years. A case in point is the treatment of asset sales. Under cash accounting, governments have frequently used asset sales revenue to artificially reduce the reported budget deficit. A claim frequently made by exponents of accrual accounting is that 'accrual budgets would eliminate distortions in the cash based budget deficit or surplus caused by asset sales' (National Commission of Audit, 1996, p. 224). This view is based upon a belief that 'asset sales have no effect [upon net worth] when the asset is sold for its real value' (Australian Bureau of Statistics, 1995, p. B-3). The problem with this is that it falsely assumes that a public sector balance sheet will value relevant assets at their 'real' (i.e. economic) value. To the extent that asset values recorded in the balance sheet will tend, in many instances, to be less than economic values, it will remain open to dishonest governments to employ asset sales to perpetrate electorally motivated fiscal 'smoke and mirrors' tricks, albeit that the scale of the deceit involved will at least be reduced significantly.

VIII. CONCLUSION

A commitment to the golden rule calls for the adoption of a specific form of accrual accounting, based upon the principles of real financial capital maintenance and annuity depreciation. Such a version of accrual accounting differs in certain significant respects from the combination of current cost accounting methodology and conventional depreciation which at present dominates public sector accrual accounting policy. Use of the latter may materially distort measures of intergenerational equity.

Although the golden rule has often been expressed as a requirement for the maintenance of constant net worth, it is more precisely embodied in the principle of structurally balanced accrual budgets.

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