

Rapport till Finanspolitiska rådet  
2008/1

Long-term objectives for  
government debt\*

Alan J. Auerbach  
University of California, Berkeley

The views expressed in this report are those of the author and do not necessarily represent those of the Swedish Fiscal Policy Council.

---

\* This paper was presented at a conference on Fiscal Policy and Labour Market Reforms organized by the Swedish Fiscal Policy Council (Finanspolitiska Rådet), Stockholm, January 29, 2008. I am grateful to Bill Gale, Kent Smetters and conference participants, particularly Lars Calmfors and my discussant, Kjetil Storesletten, for comments on earlier drafts.

**Finanspolitiska rådet** är en myndighet som har till uppgift att göra en oberoende granskning av regeringens finanspolitik. Rådets uppgifter fullföljs framför allt genom publiceringen av rapporten **Svensk finanspolitik** som lämnas till regeringen en gång per år. Rapporten ska kunna användas som ett underlag för riksdagens granskning av regeringens politik. Rådet anordnar även konferenser. I serien **Studier i finanspolitik** publiceras fördjupade studier av olika aspekter på finanspolitiken.

Finanspolitiska rådet  
Box 3273  
SE-103 65 Stockholm  
Kungsgatan 12-14  
Tel: 08-453 59 90  
Fax: 08-453 59 64  
[info@finanspolitiskaradet.se](mailto:info@finanspolitiskaradet.se)  
[www.finanspolitiskaradet.se](http://www.finanspolitiskaradet.se)

ISSN 1654-8000

## Abstract

Governments use national debt and the budget deficit as measures of fiscal position. But what should government policy aim to achieve with respect to these measures? Are these the right summary measures at which to be looking? This paper considers what the government should use as its fiscal targets to achieve policies that are consistent with long-term fiscal objectives. Among its findings are:

1. Setting long-term targets for fiscal policy should start with a specification of fundamental policy objectives. There are at least three important long-term objectives associated with concerns about debt and deficits: intergenerational equity, economic performance, and fiscal sustainability. These objectives may conflict and their relative importance depends on both social judgments and the economic environment.
2. If governments have incentives not to adhere to fiscal policy targets, then restrictions on fiscal policy actions may be desirable, even though such restrictions reduce the scope for varying policy in response to changes in economic conditions. An independent entity such as a fiscal policy council can serve as an alternative mechanism for ensuring compliance, although a certification of non-compliance, alone, may not impose a sufficient penalty.
3. A collection of forward-looking measures, presented in conjunction with an assessment of their dependence on particular assumptions, can provide far more information than short-term deficit targets alone, although care must be taken with respect to the method of presentation to ensure that the multiplicity of measures does not hinder the ability to provide a clear message regarding the desirability of particular fiscal policy paths.



## 1 Introduction

Governments use current levels of national debt, typically scaled by contemporaneous GDP, along with the annual change in national debt – the budget deficit – as measures of fiscal position. But what should government policy aim to achieve with respect to these measures? And, are these the right summary measures at which to be looking? This paper considers what the government should use as its fiscal targets to achieve policies that are consistent with long-term fiscal objectives. When focusing on long-term objectives, though, one must keep in mind the interaction with shorter term objectives. A key issue that arises, for example under the Stability and Growth pact, is how long-term objectives should be modified to accommodate economic fluctuations and to maintain some flexibility with respect to fiscal stabilization policy.

The analysis proceeds in three parts. The next section of the paper discusses the underlying long-term objectives that lead to a focus on debt and deficits, and points out that these objectives may call for different fiscal targets, the relative importance of the different targets depending on both social judgments and economic behavior. Section 3 offers an analysis of the difficulties encountered when one attempts to use simple rules based on debt and deficits to produce policies that are consistent with these long-term objectives. In light of these difficulties, Section 4 considers a variety of alternative measures that might serve better the goal of aligning fiscal targets with underlying long-term objectives. Section 5 offers some brief concluding comments.

## 2 Long-term fiscal objectives

There are at least three important long-term objectives that appear to be associated with concerns about debt and deficits: intergenerational equity, economic performance, and fiscal sustainability. Unacceptably high levels of debt are seen as compromising all three objectives.

### 2.1 Intergenerational equity

A simple view of national debt is that it is an obligation that is passed from current generations to future generations. Thus, the higher the national debt, the more future generations will have to pay. Based on a view of social welfare that takes account of the relative well-being of current and future generations, one presumably determines the level of national debt at which the burdens being passed to future generations produce the most equitable distribution of resources among generations. Unlike the other underlying objectives to be discussed, intergenerational equity cannot be evaluated by economic analysis alone, because it requires judgments about how to weigh the welfare of different individuals.

## 2.2 Economic performance

There are several channels through which national debt is viewed as hampering economic performance. First, to the extent that it produces a perception of increased private wealth among those who hold it, national debt may reduce the accumulation of real assets through the “crowding out” process. This reduction in saving leads either to reduced domestic capital accumulation and higher interest rates, or to reduced foreign capital accumulation, i.e., an increase in net inbound capital flows and a corresponding worsening of the current account.

Second, allowing debt to accumulate may necessitate a future increase in revenues as a share of GDP and an associated increase in marginal tax rates on economic activity. Given that the economic cost of tax distortions rises roughly with the square of tax wedges, fluctuations or trends in tax rates are undesirable and a smoothing of marginal tax rates over time will generally minimize the deadweight cost of taxation (see, e.g., Barro, 1979).

Third, increased debt may ultimately force the government into a faster rate of money creation to meet its fiscal obligations, with the consequence of higher inflation and an increase in the associated distortions and disruptions (Sargent and Wallace, 1981).

## 2.3 Fiscal sustainability

Future government policies are tied to the current fiscal situation through the government’s intertemporal budget constraint, which says that the stock of current net liabilities must equal the present value of future primary budget surpluses. This budget constraint *must* hold, in the end, if we rule out permanent “Ponzi games” in which the government continually issues debt at a rate sufficient to avoid having to raise any resources for debt service. But *how* the intertemporal budget constraint is ultimately satisfied is not determined by the constraint’s mere existence.

If the level of government debt and the projected path of primary surpluses indicate that current fiscal policy is not sustainable, then a variety of things might occur to alter this path. There may be voluntary changes in monetary and fiscal policy, such as tax increases or money creation, which bring with them the undesired economic consequences just discussed. But changes in fiscal policy may also be precipitated by a fiscal crisis that brings with it considerable economic disruptions. There might even be increases in the price level prior to any monetary response, according to the “fiscal theory of the price level,” which posits that the price level, rather than fiscal policy changes, serves to balance the government’s intertemporal budget constraint (see, e.g., Woodford, 1995).

Thus, the issue of sustainability relates to that of economic performance, but with a focus on the additional economic costs, beyond those associated with fiscal policy itself, that may be experienced as a result of having to adjust fiscal policy precipitously away from an errant trajectory. That is, there may be

significant economic costs of adjusting policies that are far from being sustainable, in addition to whatever costs are associated with the new, sustainable path or the transition from one path to another. It is useful to treat these additional costs separately, as they depend on different factors than those already considered.

## 2.4 Weighing the different objectives

When debt and deficit targets are being determined, which of these different objectives are most important depends on characteristics of the economy. For example, under the polar case of pure Ricardian equivalence (Barro, 1974), with each generation taking the well-being of future generations fully into account in planning its saving and bequests, the level of debt is of no consequence to intergenerational equity. With private saving and bequests being adjusted to offset changes in debt, the level of debt conveys no information about the intergenerational distribution of resources, nor does the deficit provide any information about changes in this distribution.

Under the same assumption about generational connections, government debt loses some of its macroeconomic effects as well. In particular, the wealth effects that increase current consumption and induce crowding out of domestic or foreign asset accumulation vanish, because the increase in government debt carries with it an increased liability of some future generations which current generations treat as their own. In a Ricardian world, then, the main purpose of debt and deficit targets is to determine a path along which economic distortions can be kept to a minimum and which, if adhered to, can ensure a fiscal policy path that is sustainable.

The relevance of the Ricardian equivalence proposition has been discounted in the literature examining the consumption behavior of related family members (see, e.g., Altonji et al., 1992). Even if the proposition does hold to some extent, the implications for debt and deficit targets is not entirely clear, as the debt trajectory consistent with intergenerational equity (ignoring offsetting private transfers) may be similar to the debt trajectory that would provide a smooth path for tax rates. That is, we might want stable ratios of tax revenue to GDP to spread burdens fairly as well as to smooth marginal tax rates. Still, the objectives do not lead to identical target paths for debt.

For example, the objective of generational equity, when per capita incomes are rising over time, might call for rising revenue-GDP ratios, just as progressive taxation at any given time is viewed as an equitable response to within-cohort income differences. But a steadily rising revenue-GDP ratio would (without a change in the tax structure itself) lead to rising marginal tax rates and greater tax distortions than necessary if generational equity is unaffected by the policy and hence not relevant to the choice of an optimal debt path.

Likewise, the desire to maintain debt on a stable path has similar but not identical implications for debt targets as the objectives of intergenerational equity and economic efficiency. A rapidly exploding debt-GDP ratio is inconsistent with all three objectives, but one can imagine a stable fiscal policy

with steadily rising revenues as a share of GDP, again a path not consistent with the minimization of the deadweight loss from distortionary taxation through tax smoothing.

In summary, a desired path for debt depends on the objectives that path is supposed to achieve. It is difficult to imagine how one can arrive at debt targets without specifying these objectives and determining their relative importance.

## 2.5 Targets versus restrictions

Aside from specifying the objectives that underlie targets for debt, one must also indicate the purpose of specifying this path. At one extreme, the debt targets simply convey information in a complex setting to a benevolent government that seeks to achieve the objectives that underlie the targets. In this case, once the information is provided, no further mechanism is necessary – the benevolent government will implement the desired policies once their identity has been revealed, and private agents will possess an accurate forecast of government actions on which to base their own economic decisions.

A more likely situation, though, is that the government has conflicting objectives that may lead it to seek to deviate from the socially optimal path. There are different reasons why governments might wish to behave in a manner that is fiscally irresponsible when compared to the target. First, if voters are myopic as to the future consequences of current policies, it may be possible to manipulate election outcomes.<sup>1</sup> Second, a government anticipating a potential loss of power may seek to deny resources to future governments by making strategic use of its current ability to commit future resources (Persson and Svensson, 1989; Alesina and Tabellini, 1990).<sup>2</sup> In the first case, the provision of information may help, to the extent that informed voters may be less likely to be swayed by governments providing unsustainable transfers, tax cuts, etc. But in the second case, excessive deficits have little or nothing to do with imperfect information on the part of voters. Hence, depending on the source of a pro-deficit policy bias, it may be that provision of information must be accompanied by some sort of restrictions on fiscal decisions in order for the information to have the desired impact on fiscal policy.

The distinction between providing information and imposing restrictions has implications for the nature of the fiscal policy targets. Most importantly, it may be desirable to provide less flexibility to governments that might wish to avoid meeting the targets. For example, suppose that it would be optimal for the government to follow a policy that, on average, achieves a deficit equal to a certain specified percentage of GDP, with the deficit-GDP ratio varying with respect to certain economic conditions that may not be fully measurable

---

<sup>1</sup> The literature on the determinants of voting (e.g., Fair, 1978) suggests that voters base their decisions on very recent economic performance. Politicians may also deviate in attempting to provide signals to voters about their views or abilities (e.g., Rogoff and Sibert, 1988).

<sup>2</sup> Auerbach (2006a) discusses the design of budget restrictions in such a model.



immediately, such as temporary weakness in the earnings of high-income individuals that leads to a sharp drop in tax revenue. A government seeking to maximize the deficit might take advantage of uncertainty regarding economic conditions by offering a biased prediction with regard to the prevailing state of nature. Thus, a simple rule requiring a particular deficit-GDP ratio, while removing desirable flexibility from the government, might also eliminate a pro-deficit bias.<sup>3</sup>

As another example, suppose that it is deemed desirable to reduce the debt-GDP ratio by a certain amount over a ten-year period, with the exact path to depend on the strength of the economy. A government claiming it seeks to avoid fiscal contraction might simply announce a plan to accomplish the entire adjustment near the end of the ten-year period, so a specified path of adjustment might be preferred, even though this would reduce the government's capacity to adjust to variations in economic circumstances over the period. In short, if the government has superior information regarding the economic state of nature, then we would like to allow it to use this information if its incentives align with social objectives, but not necessarily if objectives diverge. The same conclusion applies even if the government simply can claim to have superior information, i.e., it can argue in a manner that is difficult to refute that its policies are consistent with the stated target.

Of course, if the problem with flexibility is due to the government's being able to take advantage of actual, or claimed, superior information, an alternative to reducing its flexibility is to establish an independent entity that is privy to the same information but has no incentive to have fiscal policies deviate from the target. This, presumably, is a central purpose of an independent fiscal policy council, particularly if the council has no separate decision-making role. In order to make this mechanism of independent fiscal evaluation work effectively, though, some sort of penalty structure may be required as well, assuming that simply announcing that the government has missed its target does not impose enough of a penalty on its own.

## 2.6 Long-term fiscal objectives: summary

There are at least three distinct objectives that underlie the determination of long-term fiscal policy targets: intergenerational equity, economic efficiency, and fiscal sustainability. Though these objectives tend to push policy in the same direction, they are distinct and can give rise to conflicts regarding optimal policies. Given the conflicts, it is relevant how important each of these objectives is, with relative importance depending not just on social attitudes (such as the strength of aversion to intergenerational inequality) but also on economic behavior (e.g., the strength of the bequest motive or the responsiveness of economic activity to high marginal tax rates).

---

<sup>3</sup> An alternative here might be to allow flexibility but to impose an average target for the deficit-GDP ratio that is smaller than optimal to correct for the anticipated bias in policy.

If governments have incentives not to adhere to fiscal policy targets, then restrictions on fiscal policy actions may be desirable, even though such restrictions reduce the scope for varying policy in response to changes in economic conditions. An independent entity such as fiscal policy council can serve as an alternative mechanism for ensuring compliance, although a certification of non-compliance, alone, may not impose a sufficient penalty.

### 3 The inadequacy of simple deficit targets and budget rules<sup>4</sup>

The current level of the national debt measures the existing obligations that must be met through future taxes in excess of future spending. The current budget deficit provides a measure of where national debt is going. But neither the debt nor the deficit is an adequate or unambiguous measure of the current state of fiscal policy, in terms of the objectives discussed above, and hence neither is an ideal tool to use in establishing fiscal policy targets.

#### 3.1 Government assets

Governments accumulate assets as well as liabilities, and it has been argued for a long time (see, e.g., Eisner and Pieper, 1984) that a measure of a government's debt or deficit that does not net out assets and asset accumulations provides an incomplete and biased measure of the government's fiscal policy position. Indeed, there are fiscal policy rules, for example for most state governments in the United States (see, e.g., Poterba, 1994, Bohn and Inman, 1996), that reflect this position, restricting or entirely prohibiting deficits for current spending but allowing deficits for capital spending. The logic of subtracting assets from debt and focusing on net debt is straightforward: just as debt is a burden on future generations, assets are a benefit.

But there are at least two considerations that attenuate this symmetry. First, even if the assets are owned directly by the government, they may not provide a revenue stream to the government to offset the cost of servicing liabilities. Ownership of energy reserves may promise revenues in the form of future royalties, but the situation differs for many other public assets. Borrowing funds to build a public park, for example, may have offsetting effects on future generations, but unless there is an admission charge assessed by the park, tax revenues and, presumably, tax rates will still need to rise to service the debt. Thus, assets might be properly netted against debt in constructing a measure used to assess intergenerational equity, but this might be the wrong approach for considering whether efficient tax smoothing is being achieved. Second, when does an expenditure item qualify to be treated as an asset acquisition rather than a current expenditure? Much of what the government spends

---

<sup>4</sup> Some of this analysis relies on the discussion in Auerbach and Kotlikoff (1987), chapter 4 and Auerbach et al. (1992).

money on, for health, education, etc., is intended to benefit individuals beyond the current year. To the extent that such expenditures convey no future tax revenue, one may wish to exclude these expenditures when computing assets, at least when thinking about tax smoothing.

Note, though, that even if an expenditure generates no government revenue directly (through admission charges, road tolls, sales by government enterprises, etc.), it may do so indirectly. For example, an expenditure on education (or health) may increase the earnings capacity of workers who, as a consequence, pay higher taxes in the future. The expenditure may therefore represent an asset to the government even if the scope is limited to assets that generate revenue.

This example provides an illustration of what has been referred to as “dynamic scoring” in the debate about measuring the fiscal effects of taxes and spending (see Auerbach, 2005; Altshuler et al., 2005), although the more common application has been in considering the net impact on tax revenue of provisions that raise or lower taxes. For example, reductions in marginal tax rates may spur economic activity and allow the government to recoup some of the revenue lost as a consequence of the initial tax cut. If a component of government spending is treated as an asset because it generates revenue in this indirect manner, then the indirect revenue effects of tax provisions need to be counted as well in order to make the calculation consistent.

In summary, although accounting for government assets makes sense, doing so is more difficult than accounting for explicit government liabilities, because there is no precise method of distinguishing assets from current expenditures and because assets, however defined, vary in the extent to which they provide revenues that can be used to offset the interest payments on the national debt. Counting the tax revenues that result indirectly from expenditures may make sense, but only to the extent that the same treatment is given to tax revenues that result indirectly as a consequence of changes in tax policy.

### 3.2 Implicit liabilities

The government liabilities that enter into the calculation of government debt are explicit liabilities of the government. We think of these debts as requiring future revenues because we assume that the government will not default. Using this criterion, though, there are many other government liabilities as well. Essentially all developed economies have unfunded public pension schemes, meaning that future revenues will be needed to cover the benefits that have already been promised to existing workers and beneficiaries. Likewise, given public provision, the need to pay for health care represents a large government liability.

Some might argue against treating such future expenditures as current liabilities, on the ground that they do not represent legal claims in the same way that explicit government debt does. But it is an essentially empirical question whether the government is likely to meet its future liabilities, and if so to what extent. Indeed, the explicit liabilities of countries at risk of default often trade

at a considerable discount while some public pension commitments have proved difficult to adjust, so the idea that we should count explicit liabilities fully and ignore other commitments entirely seems at odds with reality.

It is important to clarify that it is not the expenditures themselves, but the way in which they are financed, that leads to the existence of implicit liabilities. Consider, for example, a health care system that promises health care benefits to the elderly. If the elderly are assessed user fees for these benefits, there is no reason to treat these future expenditures as a current liability – there is no obligation to raise future taxes to cover them. If, on the other hand, the expenditures are financed, say, through payroll taxes, then key elements of national debt are present: the need for distortionary tax finance, coupled with a shift in the burden to future generations. In this case, the only remaining question is the extent to which the government has a commitment to make the future expenditures.

This logic largely applies even to systems that are self-financing, such as true pay-as-you-go public pension schemes under which taxes or benefits are by law adjusted annually to maintain cash-flow balance.<sup>5</sup> Such systems still incorporate a liability to older generations that must be financed by distortionary taxes on younger generations. The only aspect of national debt apparently missing is the prospect of being on an unsustainable fiscal path, given that taxes and/or benefits are continually adjusted to ensure sustainability.

But similar provisions can be introduced even to deal with explicit national debt, requiring automatic cuts in spending or increases in taxes should the debt or deficit exceed some acceptable level.<sup>6</sup> Having such provisions in place does not make the debt itself disappear. Also, having in place an automatic provision to adjust revenues or benefits does not guarantee that such adjustments will be feasible. A public pension system with an increasing dependency ratio could, in principle, get to a point where the maximum revenues achievable, given labor supply responses to increasing payroll taxes, fell short of the benefits to be financed, or where such high taxes were politically impossible to sustain.

In summary, the government has many implicit liabilities that have some or all of the important characteristics of explicit debt liabilities: commitment, intergenerational transfer, the need for distortionary tax finance, and the possibility of being unsustainable. A key difference between explicit and implicit debt, though, is the heavy dependence of the latter on demographics.

Whereas explicit liabilities have a specified value, implicit liabilities are created by government programs that typically specify levels of benefits and taxes rather than of liabilities. As dependency ratios change over time due to changes

---

<sup>5</sup> While many pension schemes are characterized as being of the “pay-as-you-go” type because taxes pay for current benefits, the reference here is to a system in which taxes and benefits are also equal. Such a system is currently in place in Germany, whereas Sweden’s system of Notional Defined Contribution accounts incorporates a balancing mechanism to implement adjustments over time should revenues and expenditures begin to diverge. See Auerbach and Lee (2006) for further discussion.

<sup>6</sup> Such a system was in place in the United States in the late 1980s under the Gramm-Rudman-Hollings legislation, which called for a process of “sequestration” under which automatic budget cuts would occur if a year’s deficit target were missed.

in labor force participation, fertility, mortality and morbidity, implicit liabilities change as well. Measuring the value of implicit liabilities, therefore, requires making predictions of the future values of these variables. While these predictions are subject to considerable uncertainty, the range of possible outcomes can still be combined to produce a single liability estimate. A related question is over how many generations the implicit liabilities should be computed, in particular whether to include liabilities to all generations (so-called “open-group” liabilities) or liabilities just to existing generations, or to existing generations above a certain age (so-called “closed-group” liabilities). If a measure of the liability being passed on to future generations is the objective, then the closed-group liability may be the most natural to use. But the open-group measure may be of use as well, particularly concerning the question of sustainability.

### 3.3 Tax structure

In constructing a measure of the budget deficit, we subtract revenues from expenditures. But not all revenues have the same impact on economic efficiency or the same generational burden. Just as one may identify implicit liabilities in spending programs that have the same attributes as explicit national debt, there are differences among tax systems that amount to the establishment of implicit assets and liabilities. Ignoring these differences makes no more sense than ignoring explicit government liabilities.

Consider, for example, the difference between payroll taxes and consumption taxes, such as the value added tax (VAT).<sup>7</sup> From the perspective of any given taxpayer, the consumption tax differs from the payroll tax in two important respects. First, it is collected later in life. Second, it has a broader base, from a lifetime perspective, because it falls not only on consumption financed by employment earnings, but also on consumption financed by previous accumulations of wealth. Thus, at any given time, if one looks forward, the taxes that will be collected from any individual will differ under the two tax bases. Consumption taxes will be higher than payroll taxes, for two reasons. First, taxes associated with consumption financed by wages will be collected when the consumption occurs, rather than when the wages were earned. Second, taxes will also be collected when consumption financed by prior asset accumulation occurs. Thus, if we use the payroll tax as a benchmark, the consumption tax incorporates an implicit government asset in the form of a right to receive future tax payments.

To make this analysis concrete, consider the important case of the taxation of private pensions. Typically, when funds are set aside for private pensions, the contributions to pension funds are deducted from wage compensation, so that they are not subject to current taxes on wage income. After these funds accumulate and are paid out to retired workers, they may be taxed. This treatment of deferring taxes on pensions amounts to converting labor income

---

<sup>7</sup> This discussion follows that in Auerbach (2006b).

taxes into consumption taxes, in that withdrawals from pension funds by retirees are for the purpose of consumption.

Even if this effective conversion of labor income taxes into consumption taxes has no impact on the present value of taxes collected, it does defer their collection. Thus, we might say that the government has a claim on a portion of pension fund accruals, as it expects to receive a portion of such accruals once they are distributed. This makes sense because, relative to a system under which the initial pension contributions rather than the distributions were taxed, there is no difference in the generational burden of taxation, and no difference in the economic distortions associated with taxation. Indeed, if we placed a market value on the pension fund from the beneficiary's perspective, the fund would carry a discount equal to the present value of the deferred taxes, the government's deferred-tax asset.

Just as with implicit liabilities, the size of deferred tax assets depends on demographic factors. For example, a country with an aging population and a maturing public pension scheme might have a rapidly accumulating claim to taxes on pension fund withdrawals. Indeed, some analyses of budget sustainability have pointed to this dependence on demography in arguing that such deferred tax assets may help to offset the rising implicit liabilities of old-age transfer programs.<sup>8</sup>

While the example of deferred taxes on pension saving is particularly straightforward, the analysis generalizes to the tax system as a whole. Once we have established a baseline tax structure, we can identify deviations from that tax structure that give rise to deferred tax assets and calculate what these assets are. Using a payroll tax as a benchmark, for example, we would include the deferred taxes on saving, as just described, and add the taxes on consumption from previously accumulated wealth. Similarly, business level taxes that hit the returns to existing assets more heavily than returns to new assets effectively impose deferred tax liabilities on existing assets that will be capitalized into existing asset values and can be quite large under existing tax systems.<sup>9</sup>

As with implicit liabilities, deferred tax assets share key properties with explicit government liabilities, although in the case of deferred tax assets the effects are in the opposite direction. First, deferred tax assets represent a generational transfer: the taxes due from future pension recipients reduce that need for contemporaneous collections from other future taxpayers. Second, in reducing the need for tax collections, deferred tax assets reduce the need for further tax distortions. Third, the existence of deferred tax assets makes fiscal policy more sustainable. And, as in the case of implicit liabilities, the existence of deferred tax assets depends on the strength of government commitments, in this case to maintain the expected tax structure. By analogy to the case of implicit liabilities, though, we can take account of the range of possible future tax rates in computing the current value of deferred tax assets.

---

<sup>8</sup> See Auerbach et al. (2004), who argued that, at least for the United States, the value of deferred-tax assets falls far short of the value of implicit liabilities.

<sup>9</sup> See, for example, the calculations in Auerbach (1983, 1996) for the US corporate tax.

The calculation of deferred tax assets must start, though, from the specification of a baseline tax structure. Relative to a payroll tax, a consumption tax incorporates deferred tax assets, as does the partial consumption tax treatment introduced by the deferral of taxes on private pension accruals. However, if one chose a consumption tax as the benchmark tax system, then a consumption tax would incorporate no additional deferred tax assets, and a payroll tax would instead involve deferred tax liabilities – the prepayment to the government of taxes on future consumption, with the government liabilities coming due when consumption occurs in the future without any additional taxes being paid.

The same need for a benchmark can be seen in the case of implicit liabilities. If we take the existence of a public pension system of a given size as part of the “standard” tax-transfer system, then only increases or decreases in commitments will give rise to implicit liabilities (or implicit assets, in the case of a reduction in commitments). In both cases, deferred tax assets and implicit liabilities, there may be a natural or useful benchmark from which to start (for example, one in which fiscal policy involves no intergenerational transfers, with taxes and spending aligned), but the benchmark must be specified before the asset and liability adjustments can be made.

### 3.4 Changes in the desired path of deficits

Leaving aside the difficulty of measuring assets and liabilities, there are a number of reasons why the desired path of debt and deficits may change over time. One, already mentioned, is the need for short-term stabilization policy. Due to the automatic stabilizers built into the tax and expenditure system, the deficit will react to the state of the economy, even with no explicit change in policy. Offsetting these changes would amount to pro-cyclical fiscal policy that could exacerbate economic cycles.

But even a passive response may be viewed as inadequate, to the extent that the government believes it can adjust taxes and spending quickly enough to lessen economic fluctuations through variations in fiscal stimulus. If active fiscal policies are seen as desirable, then a deficit target will need to reflect this, being sensitive enough to the cycle not simply to permit automatic stabilizers to work, but also to make room for new policy actions. As discussed above, though, providing this flexibility may be difficult when there is imperfect information about the state of the economy, particularly if a government’s incentives push in the direction of increased deficits.

It is a standard and uncontroversial argument, of course, that debt should be allowed to accumulate during times of war or when other conditions exist that cause the need for resources to be temporarily high. While wars are easily observable, though, it may be more difficult to judge the extent to which other

circumstances present an argument for debt accumulation.<sup>10</sup>

Formally, the rationale for allowing increased deficits in times of war or other emergencies is that the valuation of spending during these periods is unusually high; thus, higher spending may be justified. From a tax-smoothing perspective, it is better to let debt accumulate rather than to have tax revenues keep pace with the sudden surge in spending. From a generational equity argument, too, it is easy to justify debt, given that the added spending typically does not diminish the value of providing resources to cohorts present when the added spending occurs. That is, individuals experiencing wars or natural disasters do not have a higher ability to pay than other generations as a consequence of the surge in public spending that accompanies such events. Indeed, a government seeking to smooth the marginal valuation of resources among generations may wish to direct even more resources in the direction of such generations.

While wars and emergencies are obvious occasions to modify debt targets to allow increases in spending, any variations over time in the value of marginal spending should have the same effect. These variations can be due to changes in technology, for example with the increase in automobile usage increasing the value of additional road construction. But an important factor, particularly as one looks ahead, is demographic change. An increase in the population of school-age children increases the social value of additional spending on education, while an increase in the share of the population that is elderly may increase the value of additional spending on medical care. A simple rule, consistent with the fiscal response to emergencies, might be to adjust deficit targets to keep age-related spending constant in per capita terms as the population's age structure changed, thereby keeping the valuation of additional spending constant. But this rule would not be optimal if such changes were of a permanent nature, for there would be no mechanism for offsetting the resulting change in spending over time. For example, an increase in the deficit in response to a permanent increase in the elderly share of the population would simply result in an unsustainable path of accumulating debt.

### 3.5 Deficits versus spending

The deficit equals the difference between spending and revenue. A question that often arises in establishing fiscal targets is whether the targets and/or restrictions should apply to deficits, to spending, or perhaps to both. There seem to be at least two arguments in favor of applying restrictions to spending.

The first argument for focusing on spending relates to the notion of an asymmetry between spending and revenue. Whereas an increase in the deficit due to an increase in spending represents an exhaustive use of resources by the

---

<sup>10</sup> During the late 1990s in the United States, the Budget Enforcement Act then in effect placed limits on discretionary spending by the federal government. The law provided an exception for emergency spending. As budget surpluses accumulated, so did political pressure to increase spending, with the result that there was a surge in what was classified as emergency spending, including many expenditures that were of a recurring nature and easily anticipated. See Congressional Budget Office (1998).



government, a reduction in taxes that has the same impact on the deficit does not. Thus, so the argument goes, a spending target is needed to ensure that resources used for marginal public spending provide a social value no lower than in private use. A second, related argument is that spending is a measure of the size of government, whereas the deficit is not. A deficit of a given size can correspond to high or low levels of spending and tax revenues, so a desire to maintain a small government, perhaps to maintain the strength of individual liberties, cannot be accomplished through deficit control alone. For these two reasons, some argue that spending targets are needed in addition to deficit targets, with an extreme position being that only spending targets are needed. The logic of this position appears to stem from an acceptance of the Ricardian equivalence proposition that deficits per se have no impact on generational equity and do not crowd out private activity, but even then separate deficit targets would play a role in ensuring an efficient pattern of tax revenues over time. More generally, setting spending targets without specifying a path for deficits or revenues may encourage spending growth, for it reduces the need to specify how additional spending will be financed.

Further, while there may be some merit to establishing spending targets in addition to targets for deficits, there is also a very serious potential problem of classification: whether a particular budget item represents an increase in spending or a reduction in taxes may be largely a matter of form rather than of substance. This ambiguity has been recognized at least since the concept of "tax expenditures" was introduced (Surrey, 1974), illustrating how programs to accomplish particular objectives could be organized through the tax system via reductions in the tax base rather than as direct spending programs.

While this ambiguity is perhaps most evident in the case of transfer payments, which are sometimes netted against taxes and in other cases added to spending, tax policies that encourage home ownership, charitable contributions, and other private activities could also be accomplished through direct government subsidies, and direct spending by government on items such as education could be replaced by private spending encouraged through the provision of tax incentives.

If government spending is not a well-defined concept, then a mechanism targeting the control of government spending (or, for that matter, the control of government revenues) is poorly conceived. A government that uses the tax system to accomplish its objectives can be just as intrusive as one using direct spending, and the use of the funds may be identical. However, it may be that some elements of government spending are difficult to accomplish through the tax system, and if so it may be appropriate to include a combination of certain spending measures along with the deficit in the portfolio of fiscal targets.<sup>11</sup>

---

<sup>11</sup> This was the approach taken under the previously cited US Budget Enforcement Act, which placed annual limits on discretionary spending but also limited the extent to which legislation could increase the overall budget deficit.

### 3.6 Deficits and generational distribution

A final difficulty of using annual fiscal measures, whether deficits or spending, to assess the change in fiscal climate is that such measures do not provide enough information in relation to the fundamental objectives of fiscal policy. Adjustments for government assets, implicit liabilities, or deferred taxes all represent attempts to achieve a measure that comes closer to what we want, but these adjustments do not perfectly address the problem. An example will illustrate why problems remain.

**Table 1. The impact of changes in a public pension system**

Experiment	(1) Current debt and deficit	(2) Short-term debt and deficit	(3) Implicit liabilities
1. Increase payroll taxes and associated benefits by same present value, starting in five years	0	↓	0
2. Reduce future benefits following same annual pattern as tax increases in experiment no. 1	0	↓	↓
3. Reduce future benefits by the same present value as in experiment no. 2, starting in 20 years	0	0	↓
Experiment	(4) Older generations	(5) Younger generations	(6) Future generations
1. Increase payroll taxes and associated benefits by same present value, starting in five years	0	0	0
2. Reduce future benefits following same annual pattern as tax increases in experiment no. 1	↓	↓	↑
3. Reduce future benefits by the same present value as in experiment no. 2, starting in 20 years	0	↓ ↓	↑

Suppose that the government is considering three changes in its existing unfunded public pension system, which we will assume to be run with annual cash-flow balance and financed by payroll taxes. Table 1 summarizes these three policy changes and their various effects. The first policy would increase the size of the pension system by increasing payroll taxes beginning in five years and increasing the subsequent benefits of those paying higher taxes by an amount equal in present value. The second policy would reduce pension benefits for all recipients beginning in five years, by the same aggregate annual amount as the tax increase under the first policy, with no change in payroll taxes. The third policy would begin reducing benefits starting in twenty years, with the same present value reduction in benefits to current generations as the second plan, i.e., reducing benefits by less initially but eventually by a greater amount.

None of these plans would have any impact on the current national debt or deficit, as shown in the column 1 of the table. The first two plans would also have the same impact on the annual budget deficit five years out and for several years in the future and hence the same trajectory of explicit national debt (column 2), providing the picture that both eventually reduce the national debt. But these two plans would have fundamentally different economic consequences.

The first policy has no impact on current generations, old or young (columns 4 and 5) for it would maintain the benefits of older generations and would increase benefits in line with taxes for younger generations. Hence, despite its reducing the budget deficit over the short term, this policy would have no impact on the system's implicit liabilities to existing generations (i.e., the closed-group liabilities, column 3) and hence no change in the debt being passed on to future generations (column 6).

The second policy, by reducing benefits of current generations, both old and young, would reduce the burden being passed on to future generations. Including the pension system's implicit liabilities to current generations in a measure of national debt would account for the difference between the first and second policy, recognizing that the first policy results in higher implicit liabilities and higher future marginal tax rates than the second.

The third policy has no impact on the budget deficit, even over the first twenty years but, like the second policy, it reduces the burden being passed to future generations. Accounting for implicit liabilities to existing generations reflects this reduction accurately. But this fiscal policy has different effects on existing generations than does the second policy, even though they produce the same reduction in implicit liabilities. By delaying implementation, it allows current retirees to escape benefit cuts, which then must fall harder on younger generations, given the assumption that the benefit cuts have the same present-value impact on current generations under the two policies. The liabilities to existing generations are the same in the aggregate, but the distribution among existing generations differs, potentially significantly. The differences in generational burdens can also have macroeconomic consequences if, for example, the consumption patterns and marginal propensities to consume differ between the old and the young.

Similarly, government assets may have very different generational consequences, some benefiting generations in the near term, others (for example, expenditures to reduce greenhouse gas emissions) providing benefits in the distant future. If assets are included to provide a more accurate picture of the generational consequences of fiscal policy, simply including the value of assets does not provide a clear picture of the generational distribution of benefits. Likewise, if we take account of the change in deferred tax assets associated with a change in the tax structure, we will pick up the change in the deferred tax liabilities of current generations, but not the distribution of that burden among these generations.

### 3.7 Deficit targets and budget rules: summary

Given what national debt and the budget deficit are presumed to tell us about the state of fiscal policy, making adjustments to include government assets, implicit liabilities, and deferred tax assets may be steps in the right direction, but these adjustments depend on the specification of a benchmark fiscal system as well as additional assumptions and estimates, given that legislation can change and that the assets and liabilities in question generally are not traded and hence do not have established market values.

Even if these additional challenges are overcome, the resulting, more comprehensive measure of national debt provides less information than we might wish about the full generational consequences of fiscal policy. And, even with full information about the distribution of benefits and the level of distortions, economic and demographic changes present a challenge to determining what the optimal path of fiscal policy should be, because the value of additional resource commitments changes over time.

Just as the appropriate measure of debt or the deficit is ambiguous because of these various possible adjustments, the line between spending and revenues is defined, in the best of circumstances, only by customary practice, and in many other cases is much less clear. This presents a forceful challenge to the logic that spending targets are superior to deficit targets, but leaves open the possibility of using both in the context of setting multiple targets for policy.

## 4 Setting long-run targets for fiscal policy

In light of the discussion in Sections 2 and 3, what targets should be used to assess the government's performance in relation to long-term fiscal policy objectives? It is useful to distinguish the underlying objectives of policy, in terms of generational burdens, tax smoothing, and sustainability, from the measures used to determine the performance of policy with respect to these objectives. Presumably, the objectives should be set first, and the values of the corresponding measures then determined. As stressed earlier, it is hard to see how one can choose the desired path of a summary measure, such as the budget deficit, without first determining the fundamental objectives of policy.

## 4.1 An optimal path for debt and deficits

Suppose, for the moment, that the structure of taxation and the structure of government expenditures are fixed. This rules out policy changes that influence the composition of expenditures or taxes, or that replace certain expenditure items with tax expenditures or vice versa. This is the world implicitly assumed by many who assess fiscal policy using the deficit as a summary measure and, while it represents a considerable abstraction from reality, it is a good place to start. Let us also assume, initially, that there is no uncertainty about the economy's future path, once policy variables are chosen. What would optimal policy be in a world like this, and how would optimal policy be characterized in terms of summary fiscal targets?

Presumably, one would start with projections of cohort size and other demographic characteristics relevant for assessing the valuation of government spending and tax payments (e.g., birth rates, mortality profiles, morbidity, immigration rates, distribution of underlying abilities, etc.). Using this information, one would then consider all variations in annual spending and annual taxes (the only two variables subject to choice in each year) that satisfied the government's intertemporal budget constraint, in each case assessing the generational equity and economic efficiency of each combination to determine the resulting level of social welfare. The dependence of social welfare on the intergenerational fiscal burden would depend, of course, on one's assumption about the strength of offsetting private intergenerational transfers, and the impact of tax distortions would depend on both the tax structure and the assumed behavioral responses to these distortions. The optimal fiscal policy path would be the combination of annual spending and revenues yielding the highest level of social welfare.

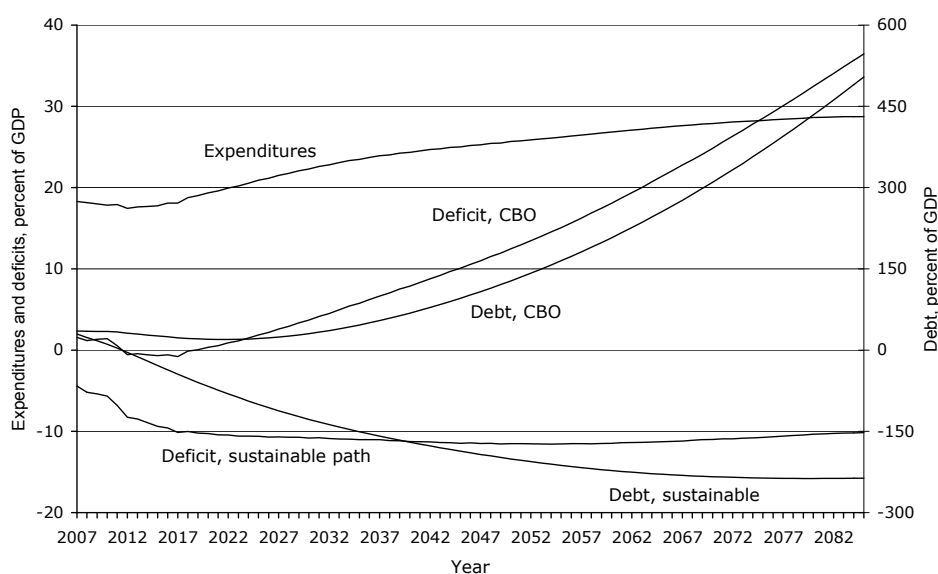
This optimal path could be fully characterized by a path of revenues and spending, or alternatively by a path of deficits and spending (or by one of deficits and revenues). It could not be fully characterized by the path of deficits alone, under the realistic assumption that increases in taxes and reductions in spending do not have equivalent economic effects. Based on a utilitarian principle that gives more weight to larger generations, it might be that spending would be higher during periods when such generations were affected by policy. To the extent that spending is more age-related than taxes, variations in spending might more effectively accomplish this targeting of large generations, for example causing a rise in old-age pension spending when large cohorts retired. And responses of spending and deficits to changes in the population age structure would depend on the permanence of demographic and economic changes. As discussed above, a permanent change in the share of the population that is elderly would occasion a smaller increase in old-age spending than a temporary change in the share, in order to provide for large future generations of elderly as well.

Thus, we might see increases in spending and deficits as optimal when there are large cohorts that benefit, with "large" being judged relative to the future rather than the past. On the other hand, if spending related to large cohorts is anticipated only for the future, we would expect lower current deficits, for the

smoothing of taxes and burdens would require that the cost of providing for these large cohorts be spread over all other cohorts, both before and after.

What would this path of spending and deficits look like, given actual spending and revenue patterns and demographic developments? Figure 1 provides an illustration for the United States, based on calculations done by Auerbach, Furman and Gale (2007) using recent long-term CBO projections.<sup>12</sup> Auerbach et al. estimated, given CBO projections of revenues and expenditures (excluding debt service) through 2085, and assuming constant revenue and primary expenditures as a share of GDP thereafter, that the United States would require increases in its primary surpluses equivalent to 6.01 percent of GDP annually in order to satisfy the government's intertemporal budget constraint. Without any change in policy the deficit and debt would explode over time relative to GDP, as shown by the solid and dashed upward sloping lines in Figure 1, with the debt-GDP ratio reaching over 500 percent by 2085.

**Figure 1. US expenditures and deficits**



Source: Auerbach, Furman and Gale (2007).

The measured “fiscal gap” – in this case 6.01 percent of GDP – is, in itself, a useful tool for summarizing the extent to which the current policy trajectory is unsustainable. Some (e.g., Gokhale and Smetters, 2003) have suggested expressing this fiscal gap as a present value, to put it into the same units as the national debt. Doing so here results in a present-value fiscal gap of USD 67.3

<sup>12</sup> An update of these projections may be found in Congressional Budget Office (2007).

trillion, or about five times current GDP and about 14 times the net outstanding national debt.

A major reason why the existing policy path is unsustainable is that, as the population ages, old-age transfer programs for pensions and health care will absorb a greater share of GDP. In addition, health care spending per beneficiary is projected to grow faster than GDP, as it has in the past. The impact of these trends is evident in the increase of over 10 percent in the expenditure-GDP ratio over the period.

Let us assume, for the sake of argument, that this pattern of expenditures is optimal, i.e., that the increasing projected expenditures reflect increased valuation due to an older population and a high value of marginal spending on health care. Then the optimal sustainable path would be one in which revenues were raised by the equivalent of 6.01 percent per year. The solid and dashed lines labeled “sustainable path” in Figure 1 show the resulting path of the deficit-GDP and debt-GDP ratios, under the assumption that the optimal tax increase would occur through a level increase in the revenue-GDP ratio, as might make sense based on both tax-smoothing and generational incidence arguments. The revised policy calls for large budget surpluses over the next several decades, in order to establish a fund to pay for subsequent sustained high expenditures. As these surpluses accumulate, the national debt would quickly vanish, with the debt-GDP ratio becoming more negative until just before the end of the period shown in the figure.

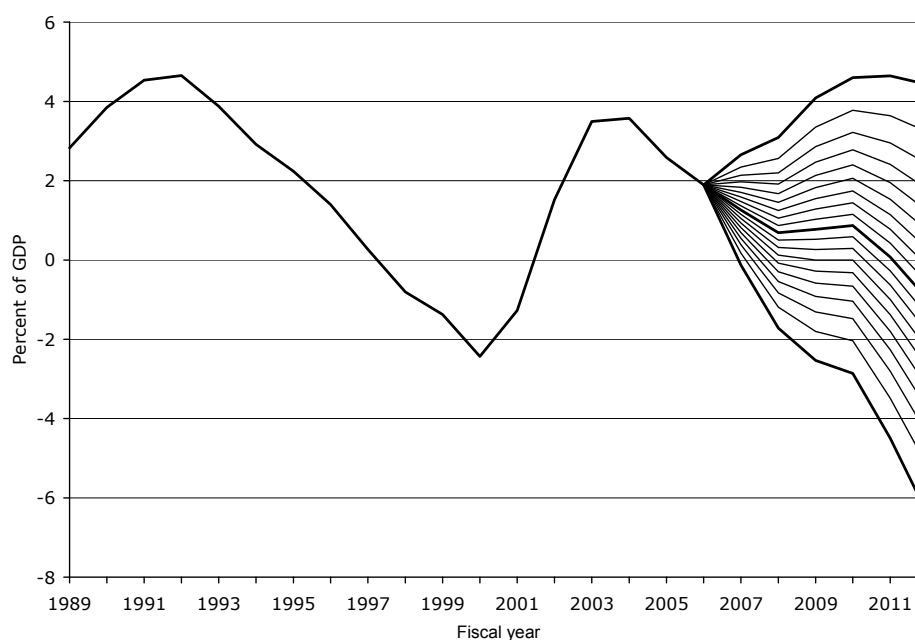
Although this revised, sustainable path is based on apparently reasonable assumptions regarding spending and revenues, it calls for a path for debt and deficits far from historical values. Corresponding values for the primary surplus would reach as high as 8 percent of GDP in the short term and would go negative starting only in 2050. Aside from whether the path of expenditures and deficits really is optimal, this policy raises other economic and political issues. First, how would a policy of retiring the national debt and accumulating government assets be implemented, i.e., what assets would the government hold? This question arose briefly in the United States early in 2001, when the forecast (prior to a series of tax cuts, an acceleration of spending growth, and a recession) was for the national debt to disappear. At that time, though, the forecast was for a rather short period without government debt, so the question was less pressing than it would be if several decades of government asset accumulation were in prospect. Second, how sustainable, politically, would a policy of debt retirement followed by asset accumulation be? The presumption here is that the underlying fiscal policy path is optimal, in which case the path of deficits and spending would be, as well. But with policy traditionally using the annual deficit and debt-GDP ratio as a signal of performance, substantial learning on the part of political actors and voters might be required to accept large tax increases to pay for future benefits.

Finally, the policy path described, extending far into the future, corresponds to point estimates of the relevant economic variables. But uncertainty with regard to these variables is substantial and increases as the forecast horizon lengthens. For example, Figure 2 shows the estimated five-year confidence intervals (with 95 percent confidence intervals in bold) for deficit projections made by CBO

in January, 2007, with projections five years out having a 95-percent confidence interval exceeding 10 percent of GDP. Clearly, point estimates of policy paths convey only some of the relevant information when there is so much uncertainty about the future.

With uncertainty present, the optimal fiscal policy path consists of a “tree” that branches out over time rather than a single path. As new information arrives each year about which branch the economy is on, the optimal path from that date forward must be computed. But uncertainty also may affect the initial policy direction. For example, given the future expenditure forecast in Figure 1, how much should the initial tax increase depend on the degree of uncertainty attached to the expenditure forecast? One might have the intuition that greater uncertainty, and in particular the possibility that the fiscal path can be sustained with smaller or no tax increases than those based on point estimates, should lessen the need to adopt deficit-reducing policies immediately. But such intuition is faulty because under usual assumptions about household preferences, risk aversion pushes in the other direction, toward societal precautionary saving, especially when there are constraints on policy changes and even when there is a prospect that uncertainty will be resolved by waiting.<sup>13</sup>

**Figure 2. Deficit confidence intervals, January 2007**



Source: CBO (2007a).

<sup>13</sup> For further discussion and simulations, see Auerbach and Hassett (2007).



Thus, even though one may expect to have to change policy frequently in the future as a result of uncertainty, one cannot escape the need to make decisions now based on the information available. But a planned path for debt and deficits should be accompanied by confidence interval projections as well, to provide information on the magnitude of uncertainty.

## 4.2 Government assets, implicit liabilities and deferred taxes, again

The discussion immediately preceding suggested that a planned trajectory for spending and deficits could suffice as long-term fiscal policy targets. What, then, might be the role of the various adjustments discussed above, involving the calculation of government assets, implicit liabilities, and deferred tax assets? There are at least two arguments for including these adjustments.

First, the derivation of the optimal deficit and spending trajectories presumed that the generational patterns of spending and revenues were fixed. But variations in these patterns are inevitable, in which case a given path of aggregate spending and revenue can correspond to very different underlying patterns of economic distortions and generational burdens. Incorporating the auxiliary adjustments for assets and liabilities, one can control to some extent for these variations in generational patterns.

For example, suppose that government spending consists of two components, an age-based public pension system plus general spending on public services, and that government revenues consist of an income tax to pay for general spending plus a payroll tax on workers to pay for the public pension system. In this example, an increase in spending on the public pension system would shift the distribution of government spending toward the elderly, and the pattern of government revenues toward workers. But computing the pension system's implicit liability, adding this liability to the explicit government debt, and changing revenues and spending over time to be consistent with this change in the public debt measure, would offset these changes in generational patterns by excluding payroll taxes and subsequent benefit payments from the revenue and spending measures. The same rationale would apply to an adjustment for deferred tax assets as a means for offsetting changes in the timing and generational burden of tax collections and to an adjustment for government assets as an offset to changes in the generational pattern of benefit from public spending.

A second argument for making these adjustments relates to the timing of commitments. Consider, again, the public pension system, and contrast it to a situation in which the government uses payroll taxes each year to finance expenditures that include transfer payments to the elderly. Even though the generational consequences of this tax-transfer system may be similar to that of the public pension system, the commitment of future transfers to current workers is weaker in this case. To account for generational burdens, we might wish to count implicit liabilities here, too. But to measure when commitments are made, we might distinguish this case from the previous one. In a world of

certainty and commitment, in which the government chooses a sustainable path and then stays on it, there would be no reason to treat the cases differently. But when there is both economic and political uncertainty, it would seem to matter whether a plan to make transfers to retirees in the future represents a firm commitment or just a plan. A stronger commitment may make the fiscal trajectory less sustainable and may increase the expected transfer to the elderly, and there should be some reflection of this in when liabilities are recognized.

Were we to include implicit liabilities in the national debt, and the changes in implicit liabilities in the annual deficit, the adjustments could be quite large. In the United States, for example, the unfunded liability to current participants in the public pension system was estimated to be USD 16.5 trillion as of January 1, 2007 (OASDI Trustees, 2007, Table IV.B7). The previous year, the unfunded liability was estimated to be USD 15.1 trillion (OASDI Trustees, 2006, Table IV.B7). The debt thus exceeds one-year's GDP, which was USD 13.2 trillion in 2006, and the associated 2006 deficit of USD 1.4 trillion was over 10 percent of GDP. On the other hand, such adjustments would make optimal deficit paths like the one derived in Figure 1 look much less strange to the untrained observer. The optimal policy would no longer call for huge surpluses to pay for future spending if the timing of the spending were shifted to the present.

Measures of implicit liabilities may fluctuate considerably from year to year simply because of changes in forecasts of interest rates and demographic variables. For example, Auerbach (2003) found that annual changes in economic and demographic assumptions could change the estimated implicit deficit of the OASDI system by almost as much as the deficit itself.<sup>14</sup> There is nothing wrong with such fluctuations, but they might overstate the true fluctuations in implicit liabilities to the extent that policy is flexible, e.g., if increases in measured implicit liabilities make it more likely that future benefits will be reduced.

In summary, adjusting measured liabilities and spending for implicit liabilities, government assets and deferred tax assets has some appeal as a method of making a given year's debt or deficit more meaningful, but there is no simple method for deciding precisely which adjustments to make. This is particularly useful to keep in mind when the focus shifts from fiscal targets to fiscal rules and restrictions, when simple rules may provide an advantage.<sup>15</sup>

---

<sup>14</sup> For example, the estimated deficit for 1998 would have been USD 581 billion using the 1997 economic and demographic assumptions to calculate the 1997 and 1998 implicit liabilities, but just USD 173 billion incorporating the changes in economic and demographic assumptions between the 1997 and 1998 forecasts.

<sup>15</sup> One can imagine, for instance, perverse incentives for a government seeking to exclude implicit liabilities from the national debt by introducing gratuitous uncertainty about the likelihood of future benefit receipt.

### 4.3 Generational accounts and related measures

As described in Auerbach, Gokhale and Kotlikoff (1992) and elsewhere, generational accounts distribute the burdens and benefits of annual taxes and spending to different generations based on assumed patterns of incidence. The standard approach is to use taxes and spending based on an assumed current-policy trajectory to calculate the present-value accounts for generations currently alive, and to adjust the accounts for future generations away from current policy to the extent that current policy does not satisfy the government's intertemporal budget constraint. That is, in the terminology of the previous discussion, if there is a fiscal gap, then the gap is assigned to future generations, and the difference between the resulting burdens on future generations and those on current newborn generations, once adjusted for trend growth, represents an alternative way of expressing the fiscal gap.<sup>16</sup> By dividing generational accounts by the present value of lifetime earnings, one obtains a path of estimated lifetime average tax rates which, for any given tax structure, conveys information about the tax distortions associated with fiscal policy.

Generational accounts provide measures that have a much closer connection to the underlying objectives of government policy than do either adjusted or unadjusted measures of deficits or spending. One potential argument against their use is the additional information required for their calculation, as it is necessary not just to calculate annual flows of spending and revenues, but to distribute these among generations. This argument may have some merit in a context where estimates must be done rapidly, for example in a legislative setting where new pieces of legislation are constantly being considered. But the argument carries less weight when applied to calculations carried out less frequently, for example on an annual basis as part of a fiscal policy evaluation. Indeed, generational accounts already have become a tool for government fiscal policy evaluation in a number of countries.

A second potential argument against the use of generational accounts relates to the previous discussion regarding whether to count implicit liabilities. Generational accounts typically allocate all future taxes and spending along the assumed policy trajectory, except where the spending is deemed difficult to assign to any particular generation. This procedure automatically gives the same weight to all components of future taxes and spending, regardless of the strength of the commitments associated with these elements of fiscal policy. A transfer payment made with certainty this year to a particular cohort is treated as equivalent to a transfer payment with equal present value that is projected to be made to that cohort twenty years hence, and two equal-size transfer payments projected to be made twenty years hence are treated the same even if one has a stronger political or legal claim than the other. A response to this criticism is to calculate generational accounts for a variety of plausible policy scenarios, taking into account variations that might take place to provide a fuller picture of the fiscal situation.

---

<sup>16</sup> Some critics of generational accounting have argued incorrectly that the methodology assumes that the fiscal gap will be borne entirely by future generations. The calculation simply expresses the fiscal gap in one particular way, as the extra burden that would be imposed on future generations if current policy held for all existing generations.

A third possible argument against using generational accounts is that they are less familiar to policy makers than traditional deficit measures, or even measures of implicit liabilities, so that they might be taken less seriously as indicators of the fiscal situation. This has led some to suggest alternative ways of summarizing the generational accounts, for example by reporting the present value of the liability being passed on to future generations (Gokhale and Smetters, 2003), but it is not clear why one would wish to reduce the amount of information conveyed, particularly if generational accounts are provided in conjunction with other fiscal policy measures such as those already discussed above.

#### 4.4 Further issues

All of the measures of fiscal policy discussed in this section are forward-looking and involve uncertainty and the need to update projections on a regular basis. They also, in principle, should be estimated using a model of the economy. That is, the behavioral responses to policy changes should be taken into account, and the full impact of these responses should be calculated using a general equilibrium model of the economy. Ultimately, this is the only way to determine whether a particular trajectory for spending and deficits is socially optimal. That is, we can evaluate the generational burdens of a particular policy and the economic distortions associated with a policy, but the only way to weigh these effects precisely is in the context of an explicit model. This being said, the specification and solution of such a model would require a massive number of simplifying assumptions, many of which undoubtedly would be controversial and would lack strong empirical foundation. This is not an argument against carrying out the general equilibrium analysis, but it suggests that the basic “static” calculations should be presented as well and that sensitivity analysis is important to shed light on the importance of different modeling assumptions.<sup>17</sup>

One final issue is how any of the long-term measures discussed here should be adjusted for short-term economic fluctuations. As discussed above, the current budget deficit is automatically affected by economic fluctuations, and short-run stabilization policy might dictate additional changes in spending, taxes and the deficit. Again, the optimal policy path, taking short-term fluctuations into account, can in principle be identified using a comprehensive general equilibrium model of the economy, but incorporating short-term fluctuations into such a model involves yet more assumptions and controversy.<sup>18</sup> Short of such a model-based determination of optimal short-run policy fluctuations, one is left with the standard approaches to deciding how much to allow budget targets to fluctuate in the short run, but recognizing, consistent with a long tradition in the economics literature largely ignored in the construction of

---

<sup>17</sup> This was the approach taken by Congressional Budget Office (2006) when it evaluated the economic and budgetary effects of proposed changes in taxes and spending.

<sup>18</sup> Indeed, the Congressional Budget Office (2006) exercise used different models to assess short-term and long-term effects of policy.

budget rules, that different components of the budget have different macroeconomic consequences.

## 5 Conclusions

Setting long-term targets for fiscal policy should start with a specification of fundamental policy objectives. This would seem an obvious point but deserves emphasis given that deficit targets often seem to appear through a process not unlike spontaneous generation. The optimal policy plan should, in theory, consist of a specified trajectory, under each possible course of the economy, of the different components of spending and taxes with specified burdens on different generations. In practice, such a complete specification is impossible, and the various summary measures discussed above can be very useful in maintaining fiscal policy on a path that is sustainable, equitable and structured to promote economic efficiency. There is no simple formula for how to compute the ideal trajectory, nor is there a single measure of the economy's fiscal situation that best addresses all issues.

A collection of forward-looking measures, presented in conjunction with an assessment of their dependence on particular assumptions, can provide far more information than short-term deficit targets alone, although care must be taken with respect to the method of presentation to ensure that the multiplicity of measures does not hinder the ability to provide a clear message regarding the desirability of particular fiscal policy paths. Whether through the provision of an overall "score" or through some other summary method, it should be possible to provide a lot of information while at the same time directing attention to the "bottom line."



## References

- Alesina, A. and Tabellini, G. (1990), A positive theory of fiscal deficits and government debt, *Review of Economic Studies* 57, 403-414.
- Altonji, J., Hayashi, F. and Kotlikoff, L. (1992), Is the extended family altruistically linked? Direct tests using micro data, *American Economic Review* 82, 1177-1198.
- Altshuler, R., Bull, N., Diamond, J., Dowd, T. and Moomau, P. (2005), The role of dynamic scoring in the federal budget process: closing the gap between theory and practice, *American Economic Review* 85, 432-436.
- Auerbach, A. (1983), Corporate taxation in the United States, *Brookings Papers on Economic Activity* 14, 1451-1505.
- Auerbach, A. (1996), Tax reform, capital allocation, efficiency and growth, in H. Aaron and W. Gale (eds.), *Economic Effects of Fundamental Tax Reform*, Brookings, Washington, D.C.
- Auerbach, A. (2003), Fiscal policy, past and present, *Brookings Papers on Economic Activity* 34, 75-138.
- Auerbach, A. (2005), Dynamic scoring: An introduction to the issues, *American Economic Review* 95, 421-425.
- Auerbach, A. (2006a), Budget windows, sunsets, and fiscal control, *Journal of Public Economics* 90, 87-100.
- Auerbach, A. (2006b), The choice between income and consumption taxes: A primer, NBER Working Paper 12307.
- Auerbach, A. and Hassett, K. (2007), Optimal long-run fiscal policy: Constraints, preferences and the resolution of uncertainty, *Journal of Economic Dynamics and Control* 31, 1451-1472.
- Auerbach, A. and Kotlikoff, L. (1987), *Dynamic Fiscal Policy*, Cambridge University Press, Cambridge.
- Auerbach, A. and Lee, R. (2006), Notional defined contribution pension systems in a stochastic context: Design and stability, NBER Working Paper 12805.
- Auerbach, A., Furman, J. and Gale, W. (2007), Still crazy after all these years: Understanding the budget outlook, *Tax Notes*, May 21, 765-778.
- Auerbach, A., Gale, W. and Orszag, P. (2004), The US fiscal gap and retirement saving, *OECD Economic Studies* 39, 9-23.
- Auerbach, A., Gokhale, J. and Kotlikoff, L. (1992), Generational accounting: A new approach to understanding the effects of fiscal policy on saving, *Scandinavian Journal of Economics* 94, 303-318.
- Barro, R. (1974), Are government bonds net wealth?, *Journal of Political Economy* 82, 1095-1117.
- Barro, R. (1979), On the determination of the public debt, *Journal of Political Economy* 87, 940-971.

- Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds (2006), Annual Report, US Government Printing Office, Washington, D.C.
- Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds (2007), Annual Report, US Government Printing Office, Washington, D.C.
- Bohn, H. and Inman, R. (1996), Balanced-budget rules and public deficits: evidence from the US states, Carnegie-Rochester Conference Series on Public Policy 45, 13-76.
- Congressional Budget Office (1998), Emergency Spending Under the Budget Enforcement Act.
- Congressional Budget Office (2006), An Analysis of the President's Budgetary Proposals for Fiscal Year 2007.
- Congressional Budget Office (2007), The Long-Term Budget Outlook.
- Eisner, R. and Pieper, P. (1984), A new view of the federal debt and budget deficits, *American Economic Review* 74, 11-29.
- Fair, R. (1978), The effect of economic events on votes for president, *Review of Economics and Statistics* 60, 159-173.
- Gokhale, J. and Smetters, K. (2003), Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities, AEI Press, Washington, D.C.
- Persson, T. and Svensson, L. (1989), Why a stubborn conservative would run a deficit: Policy with time-inconsistent preferences, *Quarterly Journal of Economics* 104, 325-345.
- Poterba, J. (1994), State responses to fiscal crises: The effects of budgetary institutions and politics, *Journal of Political Economy* 102, 799-821.
- Rogoff, K. and Sibert, A. (1988), Elections and macroeconomic policy cycles, *Review of Economic Studies* 55, 1-16.
- Sargent, T. and Wallace, N. (1981), Some unpleasant monetarist arithmetic, *Federal Reserve Bank of Minneapolis Quarterly Review* 5.
- Surrey, S. (1974), *Pathways to Tax Reform*, Harvard University Press, Cambridge, MA.
- Woodford, M. (1995), Price level determinacy without control of a monetary aggregate, *Carnegie-Rochester Conference Series on Public Policy* 43, 1-46.