

## Perspectives on Long-Term Budget Deficits

Testimony submitted to  
United States House of Representatives  
Committee on the Budget

July 24, 2003

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Chairman Nussle, Mr. Spratt, and Members of the Committee:

Thank you for inviting me to testify today. It is always an honor to appear before this committee. My testimony focuses on five main points.

First, the conventional wisdom is accurate: The United States faces substantial projected fiscal deficits in the coming decades. A big part of the reason why is that increasing life spans, the retirement of the baby boom generation, and changes in health care technology will generate persistent increases in spending on social security, medicare and medicaid that far outstrip the rate of growth of the economy.

Second, there is another big part of the problem: namely, the sunsets that are in the tax code. If all of those sunsets were removed, revenue would fall by 2.4 percent of GDP on a permanent basis. If, in addition, the alternative minimum tax is reduced so that only 3 percent of taxpayers stayed on it--about the current level--revenues would fall by about 2.7 percent of GDP.

These prospective revenue losses are huge. They are more than three times as large as the 75-year actuarial deficit in social security, expressed as a share of GDP. They exceed the 75-year actuarial deficit in the Social Security and Medicare Trust Funds. They are larger than the permanent deficit in Social Security.

These facts imply that the aggressive tax-cutting agenda that the Administration has pursued the last few years deserves equal billing with Social Security and Medicare as "the real fiscal danger." They also imply that the decisions you make about extending the tax cuts, about removing the sunsets, have long-term fiscal implications that are greater than those that arise from fixing the entire social security problem.

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Third, there is no hidden pot of gold waiting for us in future revenue from tax-deferred retirement accounts. Recent press reports have grossly overstated the impact of research undertaken by Stanford University Professor Michael Boskin. The press reports and some aspects of Boskin's paper suggest that future revenues from tax-deferred saving plans are (i) omitted in fiscal gap calculations, (ii) large enough to eliminate most or all of the fiscal gap, and (iii) likely to raise \$12 trillion in revenues through 2040.

These suggestions are flawed. In fact, the underlying fiscal gap calculations already contain almost all of the projected revenues. As a result, adjusting the conventional estimates for the difference between Boskin's projections and the projections that are built in to the fiscal gap estimates has trivial effects on the estimated long-term fiscal gap and on estimated future budget deficits. Nor are we ever likely to see \$12 trillion in net revenues from tax-deferred retirement accounts. After adjusting Boskin's estimates for reasonable parameter values, an error in the computer code, and proper treatment of interest payments, the revenue effect will be either close to zero or possibly negative.

Fourth, the economic effects of persistent budget deficits are gradual but they are debilitating nonetheless. The real problem created by budget deficits is that they reduce national saving, which in turn reduces the assets owned by Americans and hence reduces future national income. These effects can be sizable, especially in the long-term. Conventional estimates, based on models developed by the CEA Chair Gregory Mankiw, indicate that the decline in the fiscal outlook since January 2001 has reduced GDP by at least 1 percent in 2012 and national income per household by \$2,300 in 2012. These effects will persist over time. To put it differently, controlling the deficit is a pro-growth policy.

Much of the public debate focuses on how deficits affect interest rates. The impact on interest rates can be an important channel through which deficits matter. But the debate about interest rates is--or should be--considered a sideshow. Persistent deficits reduce national saving and therefore hurt the economy even if they do not affect interest rates, regardless of whether interest rates rise. Nor does it matter if the deficit is completely financed by capital inflows. For example, even if capital flows in to offset the deficit, that only implies that domestic production does not fall. But since Americans would own fewer claims on that production, since they borrowed from abroad, their income would still fall.

Fifth, the fiscal problems the country faces are unlike any other the country has faced in their origin and nature. We will likely have to find a new way of dealing with them. The notion that federal spending can be held to its post-WW II norm of about 18 or 19 percent of GDP seems virtually impossible to maintain without severely cutting the major entitlement programs or eliminating the rest of government. In future years, spending on Social Security, Medicare, and Medicaid alone is anticipated to exceed 19 percent of GDP. The unpleasant implication is that a long-term resolution of these issues that does not destroy the role of the federal government in American society will have to include significant increases in tax revenues as a share of the economy.

The comments above are documented and elaborated in several recent papers, which are attached to this testimony. The papers include:

Alan J. Auerbach, William G. Gale, and Peter R. Orszag. "Reassessing the Fiscal Gap: Why Tax-Deferred Saving Will Not Solve the Problem." Tax Notes. July 28, 2003. Forthcoming.

William G. Gale and Peter R. Orszag. "Fiscal Policy and Economic Growth: A Simple Framework." Tax Notes. February 3, 2003.

William G. Gale and Peter R. Orszag. "The Real Fiscal Danger." Tax Notes. April 21, 2003.

William G. Gale and Peter R. Orszag. "Sunsets in the Tax Code." Tax Notes. June 9, 2003.



# tax break

by William G. Gale and Peter R. Orszag

## Fiscal Policy and Economic Growth: A Simple Framework

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The effect of fiscal policy on economic growth is a controversial and long-standing topic in economic theory, empirical research, and economic policy-making. It is at the heart of the policy debate surrounding the sharp increases in official federal budget surpluses in the 1990s, the equally sharp decline in the fiscal outlook since January 2001, and the increasingly imminent retirement of the baby boom generation. The issue will receive further attention in the wake of recent calls for new tax cuts and increased spending on defense, homeland security, Medicare, and other programs.

In this article, we provide a brief overview of the macroeconomic relations between budget surpluses and deficits, the tax and spending policies that influence those budget outcomes, and economic growth. The article is intended to provide a framework for thinking about the role of deficits, tax, and spending policies in affecting medium- and longer-term economic growth.<sup>1</sup>

In the first section, we use national income accounting identities to explore the relation between budget outcomes, national saving, and future national income. We show that, holding other factors constant, an increase in budget deficits (or a reduction in surpluses) will reduce future national income under conventional views of how the economy operates. This occurs because the deficit reduces national saving, which in turn

reduces national investment. The reduction in national investment can take the form of lower domestic investment and/or lower net foreign investment by Americans. In either case, the expected future income received by Americans falls.

The first section provides only a partial analysis: It focuses on the effects of budget surpluses or deficits per se, ignoring the effects of the policies that generate those budget outcomes. By focusing on the effect of the deficit in isolation of other changes, the section establishes two key results. One is that a bigger deficit or smaller surplus creates a drag on future national income and does so by reducing national saving and national investment. The other key result is that this chain of events occurs *regardless of whether deficits affect interest rates*. Although the popular debate (on which we will comment more extensively in a future column) focuses on the relation between deficits and interest rates, the much more important economic relation is the one emphasized in this section: Holding other factors constant, bigger deficits imply lower future national income regardless of whether deficits influence interest rates. The potential effect of deficits on interest rates is one channel through which deficits can reduce future growth, but the negative effect on growth will occur regardless of whether interest rates are affected or not.

In the second section, we distinguish between the effects of surpluses or deficits per se and the full effects of the policies that create those budget outcomes. For example, a cut in marginal tax rates will generally have two sets of effects on future national income. First, the tax cut will affect labor supply, human capital accumulation, saving, investment, entrepreneurship and so on. Second, the reduction in revenues will raise the deficit and reduce national saving. The net effect of the tax cut on economic growth is the sum of the two effects, and will depend on the difference between the (generally positive) effects created by more favorable economic incentives and the (negative) effects created by the increase in the deficit. That is, for the tax cut to have a net positive effect on economic growth, the effects on labor supply, saving, etc., not only must be positive, they must be larger than the drag created by the increased deficit. Similar findings apply to deficits created by spending increases.

The article does not address the short-term effects of policies that change the deficit when the economy is operating either above or below its potential output level. For example, a current short-term macroeconomic problem is inadequate aggregate demand for the goods and services that could be produced by firms, and is reflected in low rates of capacity usage

<sup>1</sup>This article is based on parts of Gale and Orszag (2002) and Elmendorf and Mankiw (1998, 1999).

by firms. Under these circumstances, policies that generate temporary increases in the budget deficit can spur aggregate demand and improve short-term economic performance (which can then have feed-back effects on the deficit itself).

The positive, short-term effects of deficits on aggregate demand in a slack economy, however, do not change the longer-term impact of deficits. Over the longer term, the key to improved living standards is an expansion in the capacity of domestic firms to produce goods and services and an increase in the net flow of income from abroad. The impact of deficits on national saving and thus national investment is a crucial component of that process.

The article closes with a short, admittedly speculative discussion of some broader ramifications of the possible effects of long-term deficits on the economy.

## I. Budget Surpluses and National Income

### A. Building Blocks

National income accounting identities go a long way toward framing the relevant issues. (For accounting details, see the Appendix.) National saving is the sum of private saving (which occurs when the private sector spends less than its after-tax income) and public saving (which occurs when the public sector runs budget surpluses). National saving is identically equal to — and is used to finance — the sum of domestic investment and net foreign investment. Domestic investment is the accumulation by Americans of assets at home. Net foreign investment is the nation's investment overseas minus borrowing from abroad (foreign investment in the United States). An increase in net foreign investment may take the form of increased U.S. investment overseas, increased U.S. lending to foreigners, reduced foreign investment in the United States, or reduced U.S. borrowing from abroad. The composition of the change in net foreign investment is of secondary importance, and we will typically refer to an increase in net foreign investment as “reduced borrowing from abroad.” We refer to the sum of domestic and net foreign investment as “national investment.”

In simplest terms, national saving must by identity equal national investment, and an increase in national saving must show up as an increase in domestic investment and/or net foreign investment. Either way, the accumulation of assets due to increased saving and investment means that the capital stock owned by Americans is increased. The returns to that additional capital — whether domestic or foreign — raise the income of Americans in the future.

These macroeconomic building blocks highlight two key points (see also Figure 1):

- *An increase in the budget deficit (a decline in public saving) reduces national saving unless it is fully offset by an increase in private saving, and*
- *A reduction in national saving must correspond to a reduction in national investment and in future national income, holding other things equal.*

### B. Budget Deficits and National Saving

Barro (1974) demonstrates that if households are fully rational and take the well-being of their descendants into account in formulating their consumption and savings patterns, reductions in taxes today would be balanced by offsetting increases in private saving today. In particular, households would recognize that the reduction in taxes today would increase future tax liabilities and thus save the entire tax cut. Numerous tests of household saving behavior, however, conclude that households do not follow the dictates of this model (Bernheim 1987). The implication is that increased budget deficits are not fully offset by increases in private saving, and therefore result in a reduction in national saving.

### C. National Saving and Future National Income

A decline in national saving must reduce private domestic investment, net foreign investment, or some combination thereof. The reduction in investment reduces the capital stock owned by Americans, and therefore reduces the flow of future capital income. Either the domestic capital stock is reduced (if the reduction in national saving crowds out private domestic investment) or the nation is forced to mortgage its future capital income by borrowing from abroad (if the reduction in national saving generates a decline in net foreign investment). In either case, future national income is lower than it otherwise would have been.

The only issue is how the elements of the identity between national saving and national investment come back into alignment following a decline in national saving. There are two possibilities:

- First, the decline in national saving may cause interest rates to rise. At a given interest rate, a reduction in national saving relative to current domestic and net foreign investment implies a shortage of funds to finance such investments. That imbalance puts upward pressure on interest rates as firms compete for the limited pool of funds to finance their investment projects. An increase in interest rates may serve to raise private saving and to reduce domestic and net foreign investment and thus bring national saving and investment back into equality.
- Second, the decline in national saving may cause capital inflows to rise. Capital inflows would dampen (and under certain conditions eliminate) any increase in domestic interest rates. The potential absence of an effect on interest rates in this case does not imply, however, that the reduction in national saving entails no economic cost: The capital inflows represent a reduction in net foreign investment and therefore a reduction in the capital owned by Americans and a reduction in future national income.

Figure 1 illustrates this logic: The junction marked A highlights the relation between deficits and national saving. It shows that as long as private saving rises by less than 100 percent of the decline in public saving, national saving falls in response to a budget deficit, which in turn reduces future national income, other

things being equal. The extent to which the decline in national saving generates a response from capital inflows (junction B) or interest rates (junction C) or both may also be of interest in its own right, but it does not alter the basic conclusion that larger deficits reduce future national income, other things equal.

#### D. An Example

These findings can be used to illustrate the potential longer-term consequences of the recent deterioration in fiscal prospects:

- From January 2001 to August 2002, the CBO's cumulative projected surplus for fiscal years 2002 to 2011 fell by about \$5.3 trillion.<sup>2</sup> That reduction reflects the cumulative deterioration in government saving between 2002 and 2011 under the official forecasts.
- We assume that private saving would rise by about 25 percent of the decline in public saving.<sup>3</sup> This implies that the net capital stock owned by Americans will be \$4 trillion  $(=(1-.25)*5.3 \text{ trillion})$  lower in 2011 than if the fiscal deterioration had not occurred.
- To translate this change in the capital stock into a change in income, it is necessary to assume a rate of return to the capital. We use an estimate of 6 percent.<sup>4</sup> This implies a decline of real national income in 2012 of about \$240 billion  $(=.06*\$4 \text{ trillion})$ .
- The implied decline in national income equals about 1.4 percent of projected gross national product in 2012 or almost \$800 for each person in the United States.<sup>5</sup>

It is also possible to estimate the impact on gross domestic product, as opposed to gross national product. Gross national product depends on the capital stock owned by Americans, which is financed by national saving. Gross domestic product depends on the capital stock employed in the United States, which is financed by national saving plus net capital inflows. The implied \$4 trillion reduction in national saving

above would generate some change in interest rates and some change in capital inflows. We assume that 33 percent of the decline in national saving is offset by capital inflows.<sup>6</sup> This implies that the domestic capital stock would fall by \$2.67 trillion  $(=(1-.33)*\$4 \text{ trillion})$  and that GDP would therefore fall by about \$160 billion (again assuming a 6 percent rate of return on capital). This decline is smaller in dollar terms than the GNP decline because the capital inflows mitigate the adverse impact on GDP (even though the repayment of those inflows in the future creates a mortgage against future national income).

## II. Effects of Policies That Raise Deficits

The analysis above considers only the effects of reduced budget surpluses or increased budget deficits per se. It establishes the crucial observation that, other things equal, larger budget deficits reduce future national income relative to what it would otherwise be, and do so regardless of how they affect interest rates.

In this section, we point out that a full analysis of policies that raise deficits or reduce surpluses needs to take into account (1) the direct effects of the policy in question, ignoring any change in the deficit, and (2) the change in the deficit. The most recent prominent example of this issue is the 2001 tax cut. The net effect of the 2001 tax cut on growth is the sum of its direct effect on changes in incentives and after-tax income and its indirect effect through changes in the budget deficits. The improved economic incentives from provisions of the 2001 tax cut, analyzed in isolation, tend to raise labor supply, human capital accumulation, and private saving. But these changes in incentives are financed by reductions in public saving. Thus, to gauge the full effect on growth, one needs to factor in the effect of lower public saving on economic growth.

Given the structure of the 2001 tax cut, researchers have generally found that the positive effects on future output from the impact of reduced marginal tax rates on labor supply, human capital accumulation, private saving and investment are either substantially offset or even outweighed by the negative effects of the tax cuts via reduced public and national saving (see Auerbach 2002, CBO 2001, Elmendorf and Reifschneider 2002, Gale and Potter 2002).<sup>7</sup> The main point here is not the effect of this particular tax cut, but rather that analysis of tax cuts needs to account for both the direct, positive effects on growth-inducing behavior and the indirect

<sup>2</sup>CBO (2001) projected a surplus of \$5.6 trillion. By August 2002, the figure had fallen to \$336 billion (CBO 2002).

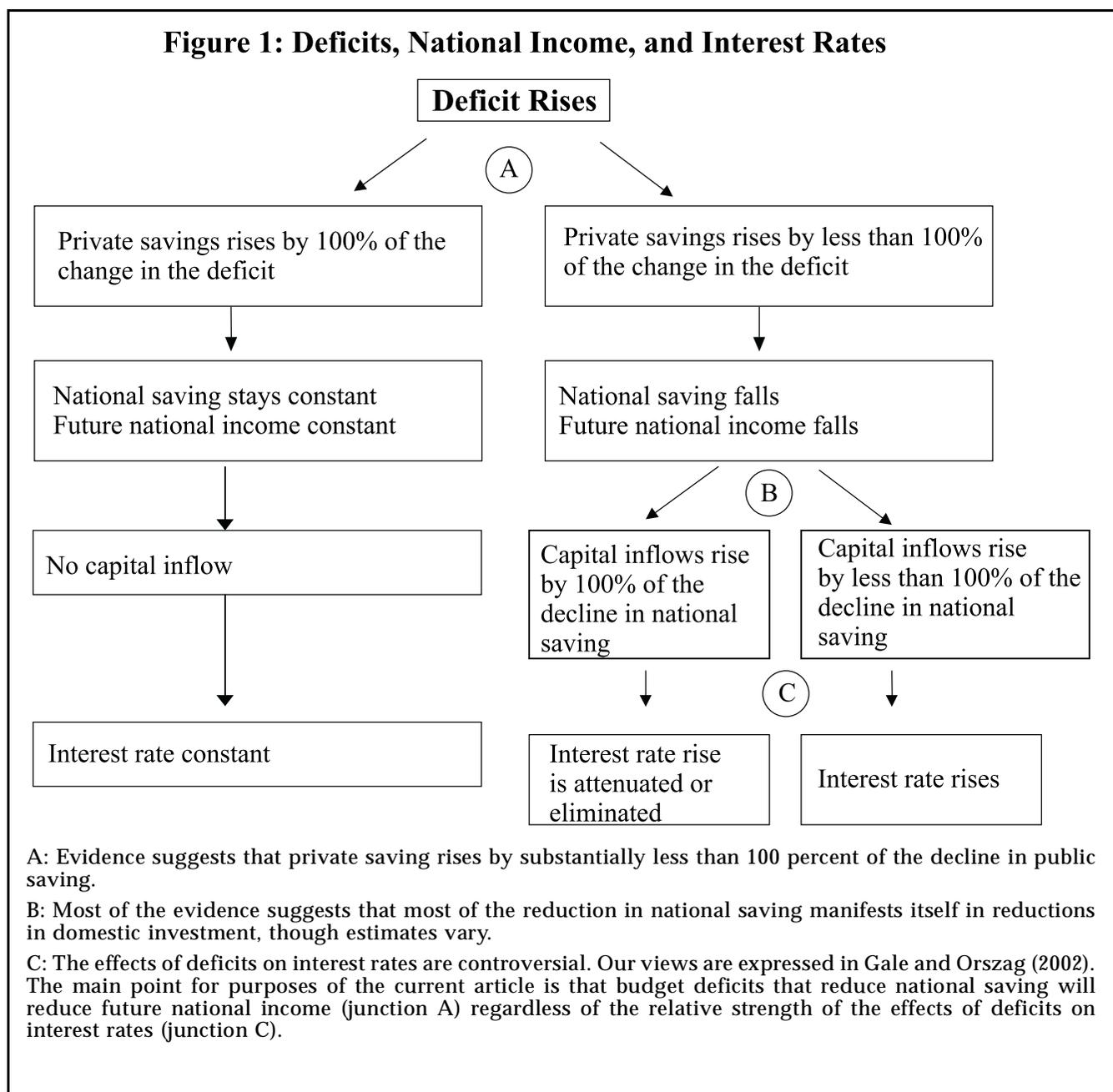
<sup>3</sup>The empirical evidence suggests only limited offsets from private savings in response to budget shifts. Although the precise amount of offset will depend on the specific policy that leads to the deficit, very few articles suggest that the offset will be complete or even close to complete. CBO (1998) concludes that private saving may offset 20 percent to 50 percent of a shift in the deficit. Elmendorf and Liebman (2000) suggest that private saving would offset about 25 percent of an increase in the deficit. Gale and Potter (2002) estimate that private saving will offset 31 percent of the decline in public saving caused by the 2001 tax cut, but the tax cut is only one of several reasons why the fiscal outlook deteriorated.

<sup>4</sup>Poterba (1998) estimates the pre-tax marginal product of capital to be 8.5 percent for nonfinancial corporate capital. Elmendorf and Mankiw (1999) suggest a more conservative estimate, 6 percent, for the return on aggregate capital.

<sup>5</sup>The projected U.S. population in 2012 is 304.8 million. (See [www.census.gov/population/www/projections/natsum-T1.html](http://www.census.gov/population/www/projections/natsum-T1.html)).

<sup>6</sup>Over the long-term, changes in net foreign investment flows are estimated to account for between 25 percent and 40 percent of changes in national saving, though that percent may be rising over time and may be higher for economically integrated European countries than for the United States. For specific studies, see, among others, Feldstein and Bacchetta (1991), Feldstein and Horioka (1980), Obstfeld and Rogoff (2000), and Blanchard and Giavazzi (2002). For an overview of such studies, see CBO (1997).

<sup>7</sup>One reason for the tepid estimated response to the 2001 tax cut is that 64 percent of filers, accounting for 38 percent of taxable income, will receive no reduction in marginal tax rates, according to Treasury estimates (Kiefer *et al.* 2002).



negative effects on growth that occur through expansions of the deficit.

### III. Broader Ramifications

All of the analysis above holds constant factors like investor confidence in the United States. It is worth noting, however, that high and persistent budget deficits, and the resulting effects on interest rates or capital inflows or both, may create broader problems. Truman (2001) notes that a substantial fiscal deterioration over the longer term may cause “a loss of confidence in the orientation of US economic policies and a further widening of the current account deficit . . . [and] . . . will undermine the strength of the US econ-

omy and confidence in US economic and financial policies.” Such a loss in confidence could then put upward pressure on domestic interest rates, as investors demand a higher “risk premium” on U.S. assets. Likewise, Friedman (1988) notes that “World power and influence have historically accrued to creditor countries. It is not coincidental that America emerged as a world power simultaneously with our transition from a debtor nation . . . to a creditor supplying investment capital to the rest of the world.” These insights reinforce the notion that fiscal policy matters in a variety of ways, and that long-term deterioration in a country’s fiscal position can create difficult and lasting economic problems.

### Appendix: National Income Accounting Identities

We follow Mankiw and Elmendorf (1998) in the derivations below. The private sector's budget constraint is given by

$$(1) \quad Y = C + S + T,$$

where Y is national income, C is private consumption, S is private saving, and T is taxes paid less transfer payments received. National income is also equal to national output, which is given by:

$$(2) \quad Y = C + I + G + NX,$$

where G is government purchases of goods and services, I is domestic investment, and NX is net exports of goods and services (exports minus imports). Substituting (2) into (1) yields:

$$(3) \quad S + (T-G) = I + NX.$$

Another identity implies that

$$(4) \quad NX = NFI$$

where NFI is net foreign investment, the difference between what Americans invest overseas and what foreigners invest here. Equation (4) simply says that the international flow of goods and services has to be matched by an international flow of funds. Substituting (4) into (3) yields:

$$(5) \quad S + (T-G) = I + NFI.$$

The left-hand side of (5) is national saving, the sum of private saving and public saving. The right-hand side is the sum of domestic investment and net foreign investment, which we will call national investment. Thus, equation (5) is the key relation equating national saving and national investment.

Equation (5) can also be used to demonstrate the basic points of section I in the paper. If government saving falls, three things can happen. Private saving may rise to re-establish the equality in (5) at the original level of national saving and national investment. If it does not, however, then domestic investment falls, and/or net foreign investment falls. As long as less than 100 percent of the adjustment occurs via changes in private saving, both national saving and national investment will fall as the deficit rises.

A decline in either domestic investment or net foreign investment will reduce future national income. As Elmendorf and Mankiw (1998, page 17) note: "Reduced domestic investment over a period of time will result in a smaller domestic capital stock, which in turn implies lower output and income. . . . Reduced net foreign investment over a period of time means that domestic residents will own less capital abroad (or that foreign residents will own more domestic capital). In either case, the capital income of domestic residents will fall."

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# tax break

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## The Real Fiscal Danger

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### I. Introduction

The Bush administration's budget includes a chapter entitled "The Real Fiscal Danger," which highlights the projected imbalances in Social Security and Medicare. Ironically, the budget does not include any specific steps to eliminate or even reduce those imbalances. It does, however, propose substantial tax cuts that exacerbate the long-term budget deficits it so vividly displays. Especially since the tax cuts divert revenue that could have instead been used to grease the wheels of Social Security or Medicare reforms, the administration's attitude that tax cuts are the solution to every social and economic problem is itself a significant contributor to the real fiscal danger.

The administration's dogmatic stance on long-term tax cuts regardless of circumstances is at odds with history. Over the past 20 years, when projections of budget deficits grew significantly, policymakers often responded in a fiscally responsible manner, legislating combinations of tax increases, spending cuts, and stringent budget rules. In 2001, official projections of ever-growing surpluses generated bipartisan support for tax cuts. Currently, however, despite projections of increasing and substantial short- and long-term budget deficits, the Bush administration has proposed tax cuts that are large, permanent, and regressive. In economic terms, this strategy represents a substantial fiscal gamble.

A key question is the likelihood that this policy would succeed if it were implemented. For current purposes, we define success to mean that the policy at least (a) restores economic growth; (b) does not increase burdens placed on future generations; and (c) is at worst distributionally neutral. President Bush has

enunciated similar goals. In the 2003 State of the Union address, the president said that "lower taxes and greater investment will help this economy expand. . . . The best way to address the deficit and move toward a balanced budget is to encourage economic growth." He also emphasized that ". . . we will not pass along our problems to other Congresses, to other presidents, and other generations." In 1999, as a presidential candidate, then-Governor Bush criticized congressional Republicans for attempting to "balance their budget on the backs of the poor."<sup>1</sup> The combination of these statements suggests that by the president's own standards, the administration's budget strategy would be a success only if it generated significant economic growth and significant spending restraint, and the effects on lower- and middle-income households were neutral at worst.

This is the second in a series of columns that addresses this budget strategy. In Gale and Orszag (2003), we provide estimates of the budget outlook under the administration's proposals. Future columns will address the effects of the tax cuts on growth, spending levels, and distributional issues. In this column, we provide perspectives on the magnitude of the proposed tax cuts and the severity of the underlying budget situation.

Our principal conclusions include:

- The good news is that under the administration's proposals, the budget deficits and debt held by the public projected for the next 10 years (and scaled by GDP) would be well within the range experienced during the past 40 years. The bad news is that these comparisons are not particularly relevant or informative, for several reasons.
- Most importantly, the official debt and deficit figures ignore the looming problems in Social Security and Medicare. The liabilities of these programs represent implicit federal debt. The administration itself not only refers to Social Security and Medicare as "the real fiscal danger" (OMB 2003a, page 31); it also points out that current "long-run budget projections show clearly that the budget is on an unsustainable path" (OMB 2003b, page 40). In light of the mag-

<sup>1</sup>Tom DeLay responded by saying that Bush ". . . obviously doesn't understand how Congress works." Weiner (1999). See Bush (2003) for the first two quotations in the text, and Weiner (1999) and Fournier (1999) for the third.

<b>Table 1: Net Long-Term Cost of Reagan Tax Cuts</b>	
	<b>Percentage of GDP</b>
ERTA 1981	5.6%
Minus: 40 percent adjustment for impact of inflation on baseline	-2.2%
Equals: ERTA cost against indexed baseline	3.4%
Minus: TEFRA 1982 increase	-1.2%
<b>Equals: Net cost of Reagan tax cuts (as % of GDP)</b>	<b>2.1%</b>
<b>Note: Bush administration tax proposals</b>	<b>2.3%-2.7%</b>
<i>Note: See Orszag (2001a) for further details.</i>	

nitude and increasing imminence of these problems, the nation needs to be preparing for the resulting fiscal pressures. As noted, however, rather than trying to shore up revenues, the administration's strategy is to cut taxes. The administration's proposals would reduce federal revenues in 2004 to 16.9 percent of GDP, the lowest share since 1959. Over the 2004-13 decade, the administration's tax cuts (combined with an AMT reform and with extension of the expiring tax provisions) would reduce revenues to 17.5 percent of GDP, lower than any decade since the 1950s. In the absence of the 2001 and proposed 2003 tax cuts, the administration's budget would run unified surpluses in the latter half of the decade.

- Even more strikingly, the administration's revenue proposals (assuming some AMT reform) would reduce long-term revenues by 2.3 percent to 2.7 percent of GDP over the next 75 years. That is more than three times the actuarial deficit in Social Security over the same period, and significantly larger than the combined actuarial deficits in Social Security and Medicare's Hospital Insurance program, over the same period. On a permanent basis, the tax cuts are substantially larger than the deficit in Social Security. By these measures, the administration's tax cuts deserve at least equal billing on the list of policies accounting for "the real fiscal danger."
- Against comparable baselines, the proposed tax cuts would roughly equal the net size of the Reagan tax cuts as a share of the economy. The nation, however, was much better prepared to deal with large tax cuts and fiscal deficits in the 1980s and early 1990s than it is now. The retirement of the baby boomers is 20 years closer now, giving the budget little time to recover before the fiscal pressures begin in earnest. Private saving was higher in the early 1980s than it is now, and the United States was an international creditor then. Marginal tax rates were also much higher in 1980, raising the economic benefit of marginal tax rate cuts relative to today. Finally, the nation was willing and able to respond to the 1981 tax cut by raising taxes in 1982, 1984, 1990, and 1993 and by restraining discretionary spending in the 1990s. Currently, however, the

administration shows no interest in considering corrective tax measures, and it is doubtful that the spending cuts that would be needed to finance the proposed tax cuts will emerge, especially since defense and mandatory spending are slated to increase as a percentage of GDP.

Section II briefly summarizes the administration's proposals and presents comparisons of historical and projected budget outcomes. Section III examines the administration's proposals relative to the long-term financing gap in government in general, and Social Security in particular. Section IV examines the administration's proposals relative to the experience in the 1980s and 1990s.

## II. The Administration's Proposals

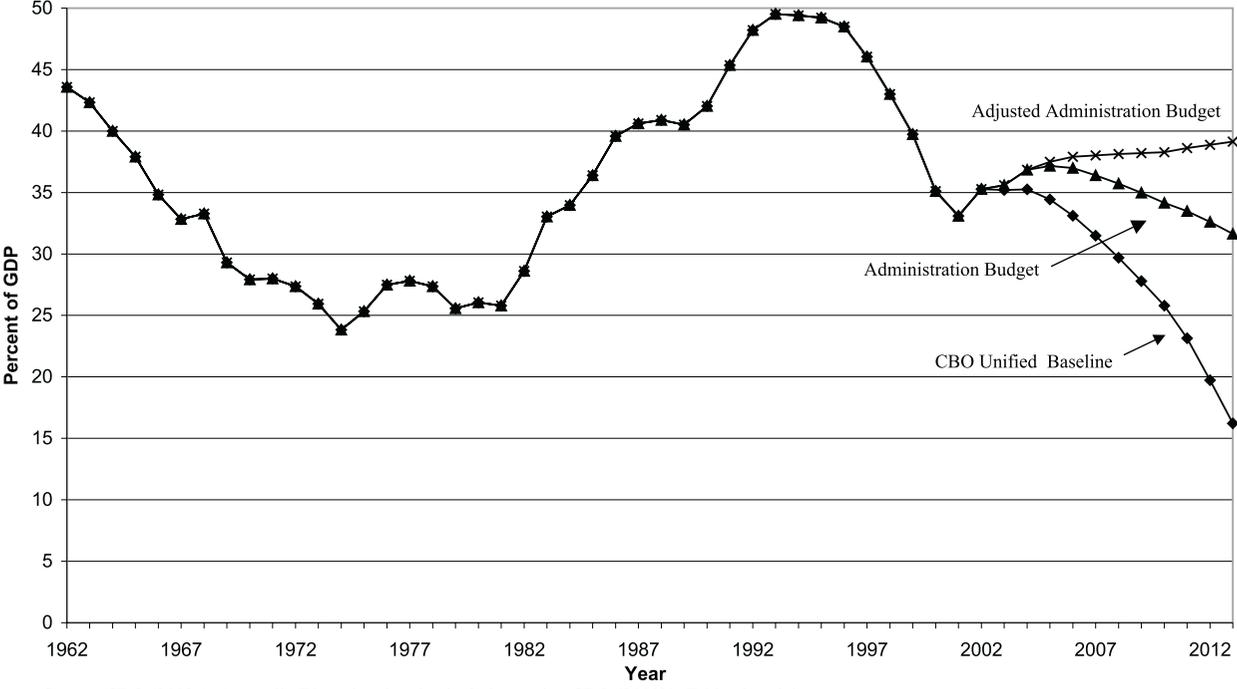
CBO (2003b) estimates that the administration's budget proposals would cost \$2.7 trillion over the next 10 years relative to the CBO baseline, and would generate unified budget deficits in every year for the next decade and an aggregate unified deficit of \$1.8 trillion over that time.<sup>2</sup> The shortfalls would represent 3 percent of GDP in 2004, decline to 0.6 percent by 2013, and average 1.4 percent of GDP over the whole period. By the administration's own estimates (OMB 2003b), the budget faces sharply increasing deficits after 2013.

The administration proposes tax cuts of \$1.6 trillion, which would reduce the surplus by \$2 trillion when the additional required interest payments on publicly held debt are included. The major provisions include making the 2001 tax cut permanent (it is currently scheduled to expire in 2010), excluding corporate dividends from double taxation, and accelerating the phase-in of certain features of the 2001 tax cut. The revenue loss would be \$39 billion in 2003 and roughly \$100 billion per year from 2004 to 2010. Revenue losses rise sharply after 2010, with the proposed extension of the 2001 tax cut, and reach almost \$340 billion (1.9

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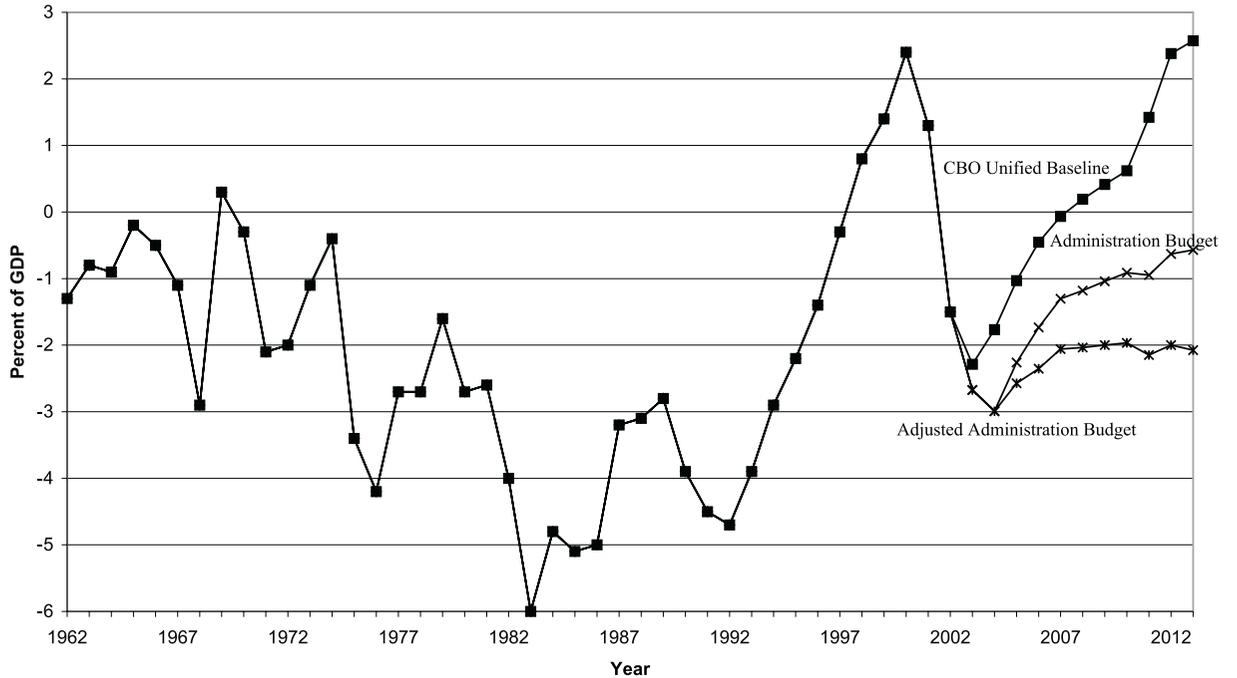
<sup>2</sup>All of the figures in this article exclude the potential costs of the military conflict and reconstruction in Iraq. The president's original budget proposals for FY 2004 contained no such requests, although a supplemental emergency spending request for \$75 billion was submitted in March. With interest costs, \$75 billion in expenditures in FY 2003 and FY 2004 would raise the 10-year deficit by about \$120 billion. (In April, Congress passed a \$79 billion version of the administration's request.)

Figure 1:  
Public Debt, 1962-2013  
(as a share of GDP)

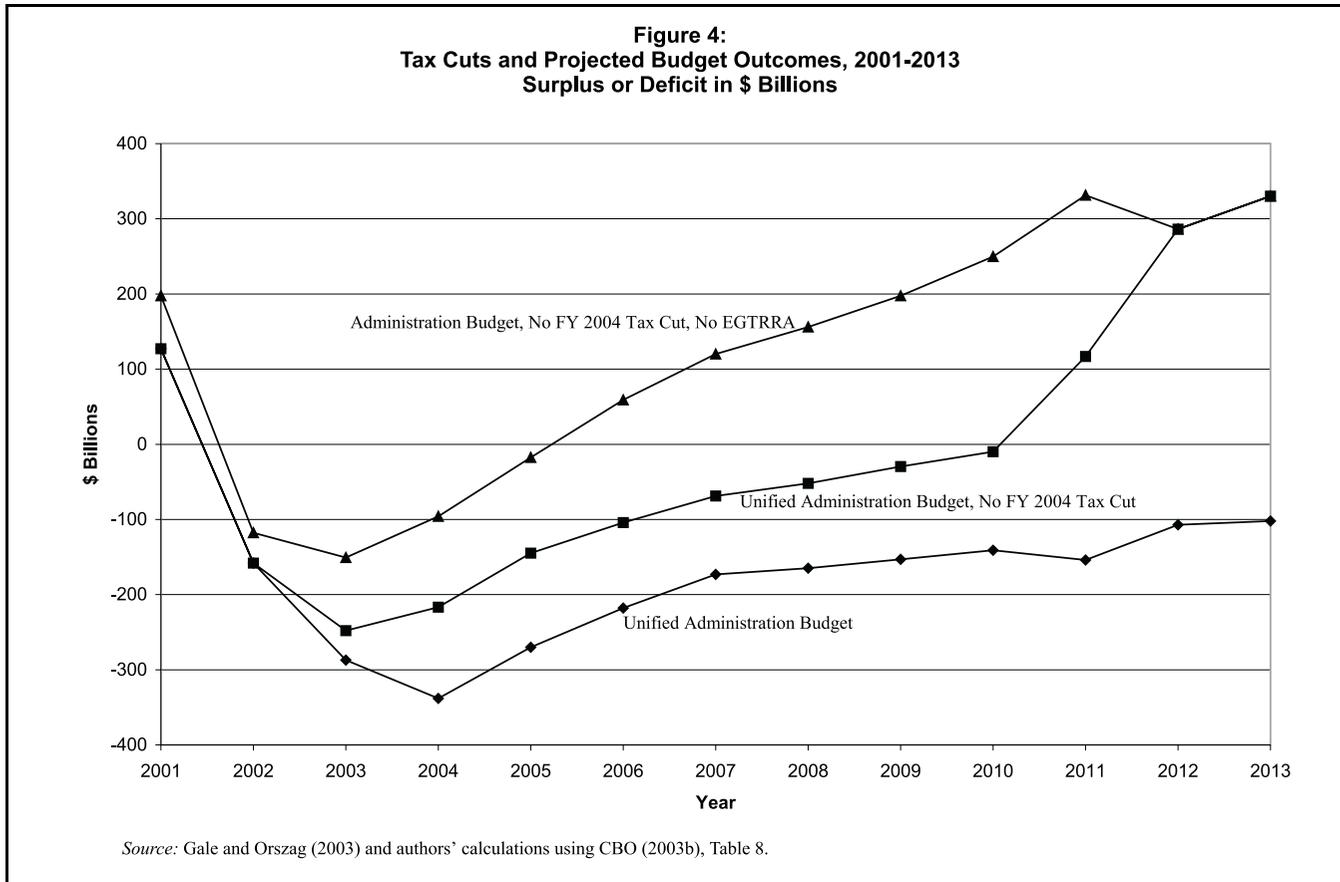
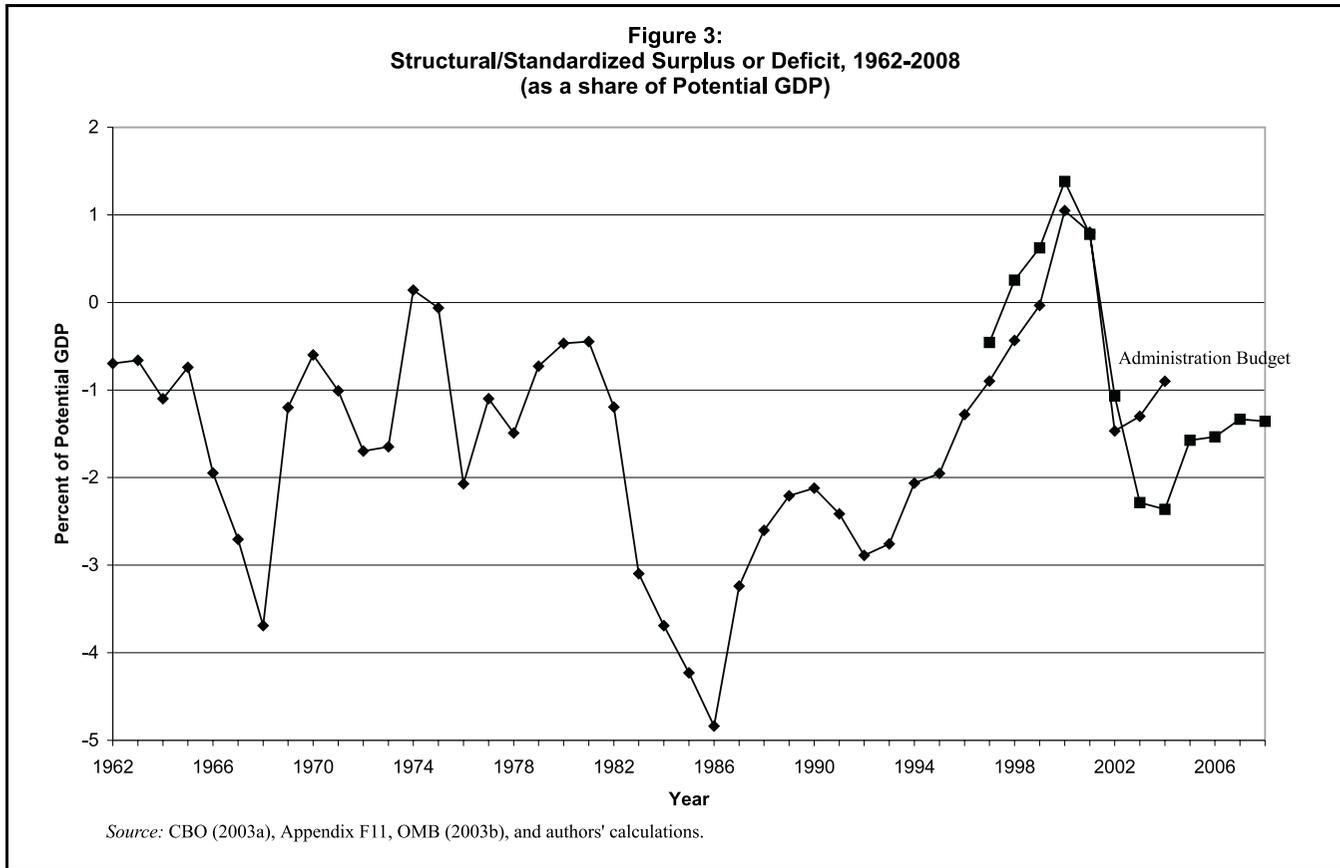


Source: CBO (2003a), Appendix F1, and authors' calculations using CBO (2003b), Tables 2 and 4.

Figure 2:  
Federal Surplus or Deficit, 1962-2013  
(as a share of GDP)



Source: CBO (2003a), Appendix F2, and authors' calculations using CBO (2003b), Tables 2 and 4.



	<b>Present Value Over the Next 75 Years, % of GDP</b>	<b>Present Value Over the Next 75 Years,* \$ trillion</b>
2001 tax cut if made permanent	1.5% to 1.9%	\$7.9 trillion to \$10.0 trillion
Dividend / capital gains proposal	0.30%	\$1.6 trillion
Tax-free savings accounts	0.30%	\$1.6 trillion
Other proposed tax cuts	0.20%	\$1.1 trillion
Total, administration tax cuts	2.3% to 2.7%	\$12.1 trillion to \$14.2 trillion
Social Security actuarial deficit*	0.73%	\$3.8 trillion
Medicare Hospital Insurance actuarial deficit*	1.11%	\$6.2 trillion
Combined Social Security and Medicare HI deficit*	1.84%	\$10.0 trillion

\* Assumes level of GDP and interest rates projected by the Social Security actuaries. For further details, see Orszag, Kogan, and Greenstein (2003).

percent of GDP) in 2013. Counting interest costs, the proposed tax cuts would be 2.4 percent of GDP in 2013.

From some historical perspectives, these outcomes do not seem particularly troubling. Figure 1 shows actual debt held by the public as a share of GDP from 1962 to the present, and projected debt through 2013 under the CBO baseline, the administration's budget proposals, and the administration's budget adjusted to include AMT reform and extension of expiring tax provisions (as explained in Gale and Orszag 2003). Figure 2 reports similar figures for the unified budget surplus or deficit. In both cases, the CBO baseline generates projected fiscal prospects that are relatively auspicious by historical standards, and the administration's budget, with or without the tax adjustments noted above, generates projected outcomes that are well within the range of historical patterns. Likewise, Figure 3 reports historical and projected standardized and structural surpluses.<sup>3</sup> The projected structural deficits are small relative to the experience in the 1980s and early to mid-1990s. These historical perspectives apparently explain the administration's views that the projected budget shortfalls are "small by historical standards," and that "the nation can clearly sustain budget deficits at the projected level" (OMB 2003a, pages 1 and 28).

Our central critique of these figures and the resultant conclusions is that the comparisons are misleading, and that incorporating other relevant factors makes the projected shortfalls and proposed tax cuts look more ominous than the perspectives above indicate. Before turning to those considerations, however, it is worth noting that even in the reassuring confines of the comparisons above, there are clouds on the horizon.

<sup>3</sup>The structural deficit adjusts for the state of the business cycle. The standardized deficit also adjusts for other temporary influences on budget outcomes, including "unusually large discrepancies between tax payments and liabilities, swings in collections of capital gains taxes, changes in the inflation component of the government's net interest payments, and temporary legislative changes in the timing of revenues and outlays." See CBO 2003(c).

Figure 3, for example, shows that even after the economy returns to full employment, the administration's own estimates show that the budget will show a structural deficit under the administration's proposals — that is, a fundamental imbalance between taxes and spending. This imbalance would be even larger if AMT reform or extension of expiring tax provisions were included. The existence of such a deficit after the economy is projected to be back at full employment belies the administration's claims that the "President continues to believe that under normal circumstances, the federal budget should be in balance" and that "none of this is to accept deficits as a permanent fiscal condition" (OMB 2003a, pages 25 and 28).

The structural deficit in 2013 shown in Figure 3 is smaller than the tax cuts proposed by the administration. That underscores the effect of the tax cuts on the projected budget balance, which is highlighted in Figure 4: Without the proposed tax cuts, the administration's budget would return to surplus in 2008. Without the proposed tax cuts and EGTRRA, the budget would return to surplus even sooner and be stronger.

### III. Forward-Looking Perspectives

The most important flaw in the argument that the administration's budget is fiscally sound (because the resultant deficit or public debt figures as a share of GDP are within their historical ranges) is that such an argument ignores the costs associated with the coming retirement of the baby boomers. As one pundit has put it, it is as if a family with no accumulated savings and two children about to enter college were congratulating itself for borrowing only small amounts on its credit card.

#### A. Long-Term Fiscal Obligations

CBO projections suggest that Social Security, Medicare, and Medicaid expenditures are expected to rise from about 9 percent of GDP in 2012 to 16 percent by 2040 and 21 percent by 2075.<sup>4</sup> In the context of an aging population and rapidly rising medical care expenditures, an accurate picture of the government's

(Text continued on p. 436.)

<sup>4</sup>Congressional Budget Office (2002).

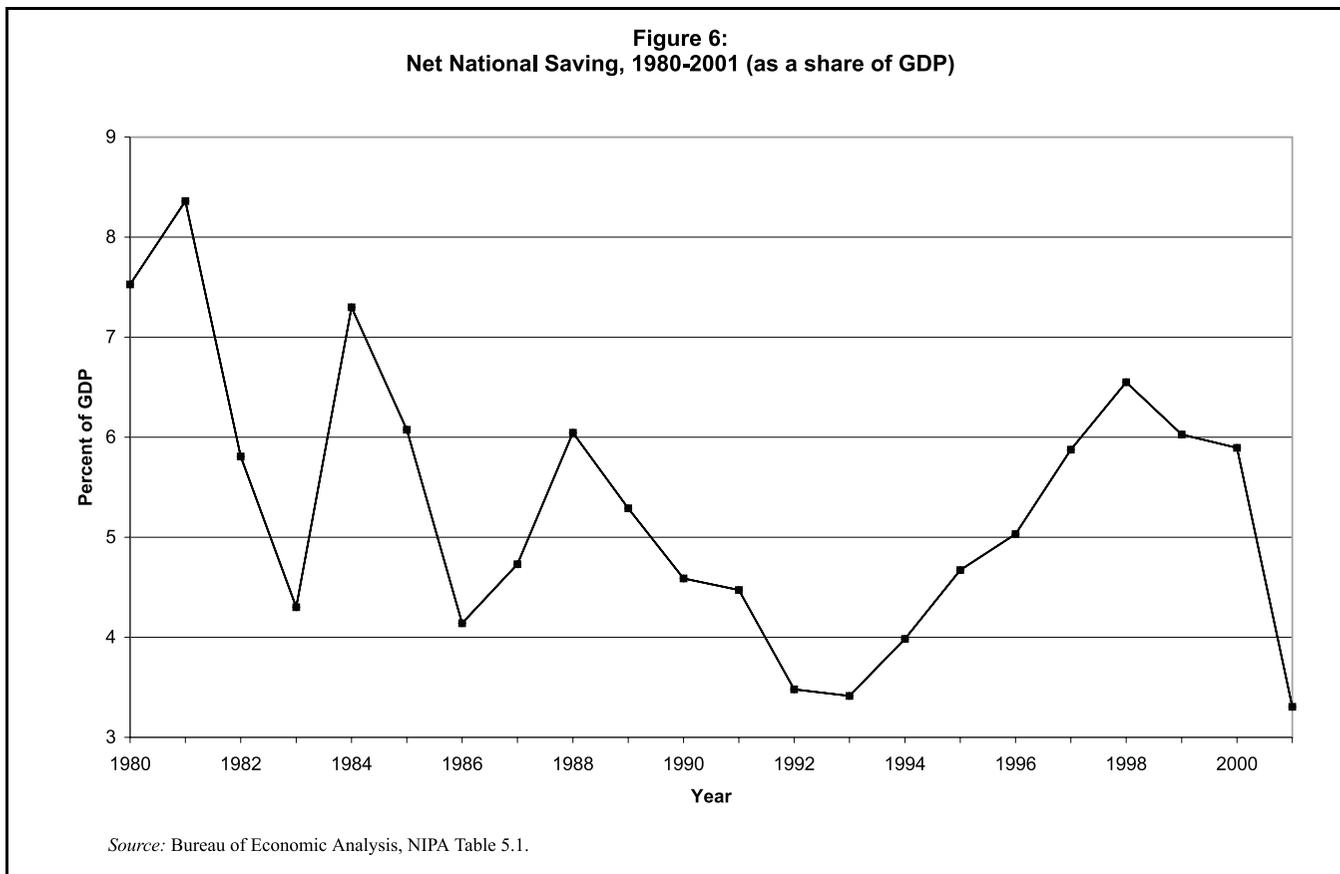
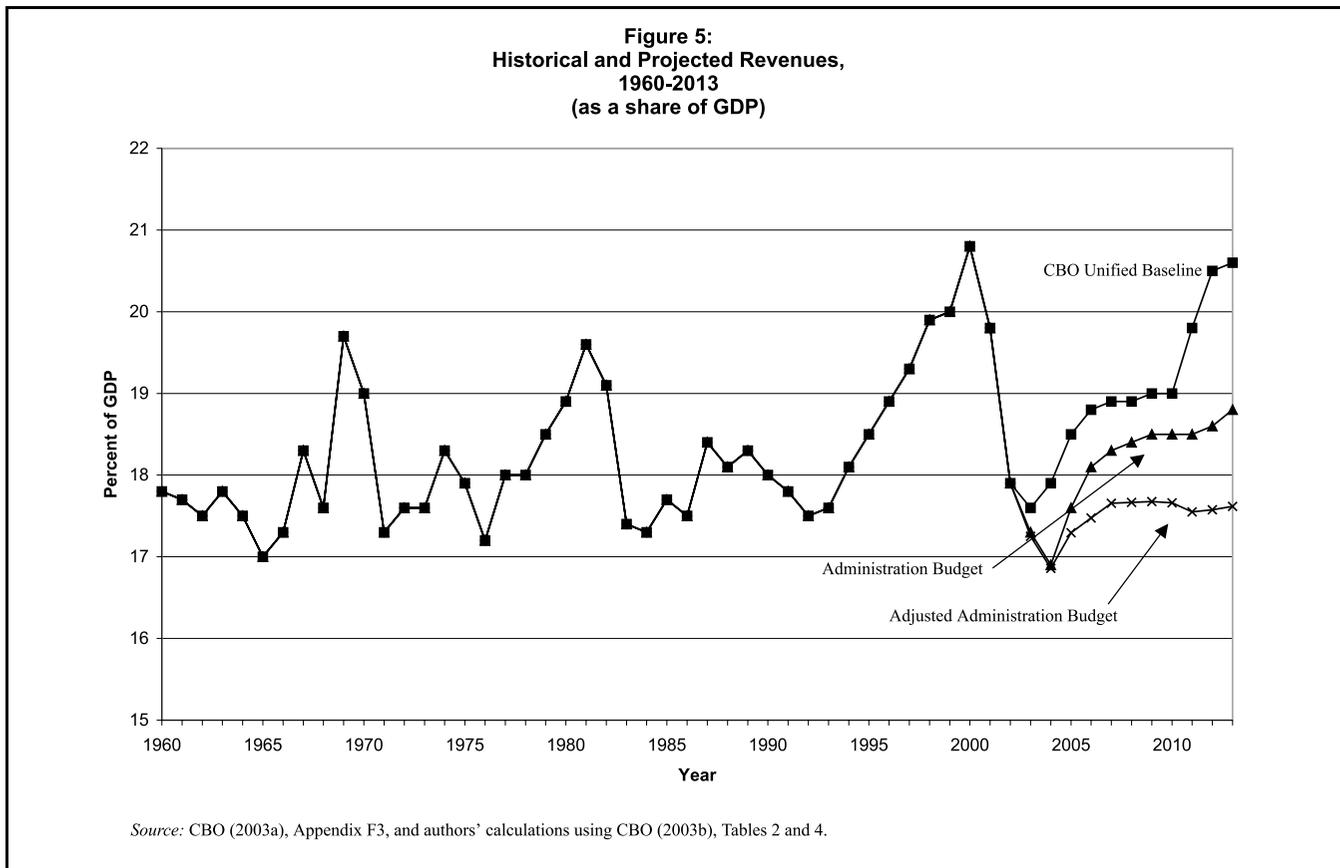
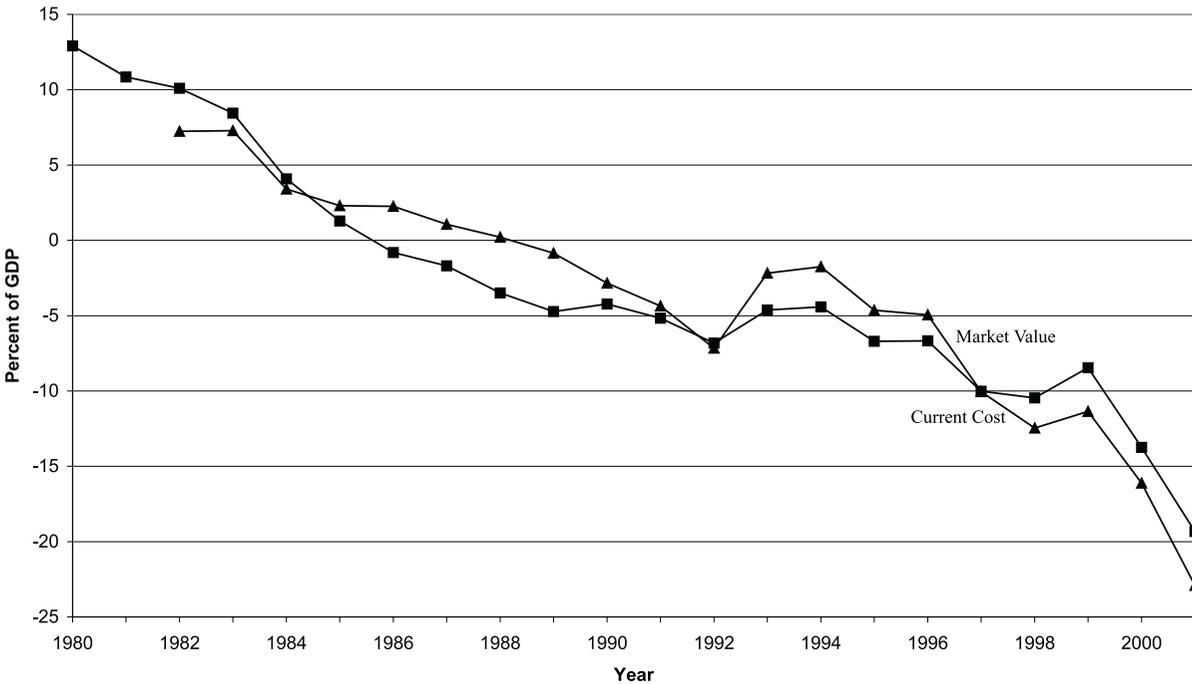


Figure 7:  
Current Account Balance, 1980-2001  
(as a share of GDP)



Source: Council of Economic Advisers (2003), Table B-103.

Figure 8:  
Net International Investment Position, 1982-2001  
(as a share of GDP)



Source: Nguyen (2002), Table 2.

long-term fiscal status is impossible without inclusion of this sharp rise in expenditures.

Auerbach, *et al.* (2003) presents estimates of the “fiscal gap,” the increase in taxes or reductions in noninterest expenditures, measured as a share of GDP, required to hold constant the ratio of government debt to GDP. They conclude that the fiscal gap over the long term amounts to between 4 percent and 8 percent of GDP. Since it seems implausible that the entire adjustment would occur on the spending side, the administration’s push for additional long-term reductions in revenue is the opposite of what would be required to address the nation’s long-term budget imbalance.

#### B. Revenues as a Share of GDP

Figure 5 shows that under the administration’s budget, revenues in 2004 would be 16.9 percent of GDP, the lowest in several decades. The official budget projections show a significant increase in revenue over the next decade, but that largely reflects unrealistic assumptions about expiring tax provisions and the alternative minimum tax. Under our adjusted revenue figures (Gale and Orszag 2003), which assume that expiring tax provisions are extended and which assumes an AMT reform that leaves 8.5 million taxpayers on the AMT in 2013 (well above current numbers but far below the 43.5 million slated to face the AMT without reform), revenues would be 17.5 percent of GDP over the next decade, the lowest decade average since the 1950s.

#### C. Tax Cuts vs. Social Security Shortfalls

In FY 2013, as noted above, the tax cuts would amount to approximately 1.9 percent of GDP.<sup>5</sup> That 1.9 percent of GDP figure understates the permanent revenue loss from the administration’s tax proposals, since it is artificially restrained by failing to address the looming alternative minimum tax problem and since it does not fully reflect the long-term revenue loss of the proposed savings accounts.

To put the long-term revenue losses from the tax cuts in perspective, it may be helpful to compare the fiscal dimensions of the projected long-term actuarial deficit in Social Security and the long-term revenue loss from the administration’s tax cuts. To compute the long-term revenue loss from the administration’s tax proposals, we assume some form of long-term fix to the individual alternative minimum tax (AMT); the range of revenue losses for the administration’s tax proposals primarily reflects the interactions between the AMT and the 2001 tax legislation. We also assume that the revenue loss from all tax cuts will remain constant as a share of GDP after 2013. For further details on the calculations, see Orszag, Kogan, and Greenstein (2003).<sup>6</sup>

As Table 1 shows, the projected 75-year cost of the administration’s tax cuts is more than three times the

projected 75-year actuarial deficit in Social Security shortfall. The administration’s tax cuts would cost between 2.3 percent and 2.7 percent of Gross Domestic Product (GDP) over the next 75 years in present value; the Social Security actuarial deficit over the next 75 years amounts to 0.7 percent of GDP in present value. (The tax cuts are also larger than the combined actuarial deficits in Social Security and Medicare’s Hospital Insurance program.)

Extending the projection horizon beyond 75 years narrows the difference between the Social Security imbalance and the cost of the tax cut, but not the conclusion: The present value of the tax cut in perpetuity remains substantially larger than the permanent actuarial deficit in Social Security deficit. In particular, the present value of the cost of the tax cut in perpetuity, estimated as above but extending the analysis beyond 75 years, amounts to between \$18 trillion and \$21 trillion. According to the Social Security actuaries, the present value of the Social Security actuarial deficit in perpetuity is \$10.5 trillion.

It is worth noting that the actuarial imbalance within Social Security is smaller than the present value of the additional future cash flow required to finance scheduled benefits, because the current value of the Trust Fund is subtracted in computing the actuarial deficit.<sup>7</sup> Some analysts prefer to ignore the value of the Trust Fund and examine only the value of the future cash flows. Altering the comparison in this manner, however, does not change the fundamental conclusion. The Social Security Trust Fund currently amounts to approximately \$1.4 trillion; increasing the Social Security deficit figures by \$1.4 trillion changes none of the implications.<sup>8</sup>

### IV. Comparisons With the 1980s and 1990s

Further insight into the administration’s budget can be obtained through other comparisons to the 1980s and 1990s.

#### A. Tax Cuts Compared to Reagan Tax Cuts

For example, the administration’s tax cuts can be compared in size to the Reagan tax cuts of the early 1980s. Such a comparison is complicated by two factors: the lack of indexation in the tax code before the 1981 tax cut and the partial reversal of the 1981 tax cuts in 1982.

First, before the Economic Recovery Tax Act of 1981, the tax code was not indexed to inflation. The result was a natural upward creep in tax collections over time, as ongoing inflation pushed individuals into higher tax brackets. Policymakers cut taxes every few

<sup>5</sup>According to the Joint Committee on Taxation, the revenue loss (including outlays associated with tax credits) in FY 2013 is \$339 billion. The CBO forecast of GDP in FY 2013 is \$17,851 billion. The tax cut is thus 1.9 percent of GDP in FY 2013. See CBO (2003b) and JCT (2003).

<sup>6</sup>Orszag, Kogan, and Greenstein (2003).

<sup>7</sup>Partially offsetting this, the actuarial deficit calculation also imposes an end-period constraint on the Trust Fund.

<sup>8</sup>Medicare’s Hospital Insurance Trust Fund amounts to approximately \$250 billion. Even ignoring the value of the Trust Funds for both Social Security and Hospital Insurance, the tax cut thus remains larger than the combined deficits in Social Security and Medicare’s Hospital Insurance program over the next 75 years, and it remains significantly larger than the present value of the permanent deficit in Social Security.

years to offset much or all of the tax increases that otherwise would occur, but CBO assumed in its revenue baseline projection that taxes would rise significantly over time, reflecting the lack of indexation in the law. In effect, the baseline against which the 1981 Reagan tax cut and other earlier tax cuts were measured thus was much different as a result of the lack of indexing in the tax code, making comparisons to current tax proposals difficult.<sup>9</sup> CBO estimates described in Orszag (2001a) suggest that by 1987, some 45 percent of the projected cost of the Reagan tax cut simply reflected the effects of inflation on the baseline.<sup>10</sup> Given the differences in the baseline for the 1981 tax cut and current tax proposals, it is difficult to compare their relative sizes. One approach, however, is simply to measure the 1981 tax cut against an indexed baseline.

The second issue is that policymakers in the Reagan administration quickly realized that the 1981 tax cut was excessive. As a result, the administration worked to scale back the tax cut one year later. The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) increased revenue by closing some loopholes broadened in the 1981 act, altering depreciation deductions, tightening safe harbor leasing rules, and making several other changes. For many purposes, the net cost of the 1981 tax cut and 1982 tax increase may be a more appropriate measure of the “Reagan tax cuts” than the cost of the 1981 tax cuts alone.

Table 2 displays these two adjustments to the revenue estimates for the Reagan tax cuts. The net result is that the adjusted cost of the Reagan tax cuts amounted to 2.1 percent of GDP — slightly lower than the 2.3 percent to 2.7 percent of GDP cost estimate for the adjusted size of the Bush administration’s overall tax cuts and slightly higher than the official revenue loss estimate for the Bush administration’s tax cuts in 2013. In other words, under reasonable interpretations of the size of the Reagan and Bush tax cuts, the long-term size of the Bush administration’s tax proposals is roughly the same (or perhaps even larger than) the net size of the 1981 and 1982 tax acts.

## B. Economic Environment Then and Now

In comparing the tax cuts now to the tax cuts of the early 1980s, it is also important to remember that the net cost of tax cuts was likely lower then. First, the boomers’ retirement was 20 years further in the future then; the nation had more time to prepare for that event. Second, as shown in Figure 1, publicly held debt was a smaller share of GDP then. Figures 6, 7, and 8

<sup>9</sup>As CBO noted when the Reagan tax cut was first proposed, “While the Administration proposal would reduce revenues by large amounts in those years, it is important to keep in mind that, without a tax cut, income taxes rise continually because of the effects of inflation on the graduated income tax rate schedule . . . a large share of the Administration’s proposed tax cut would simply offset these tax increases [emphasis added].” Congressional Budget Office, “An Analysis of President Reagan’s Budget Revisions for Fiscal Year 1982,” March 1981, page 19.

<sup>10</sup>Orszag (2001a).

also show that national saving, the current account balance, and the nation’s net international investment position were all more positive in the early 1980s than they are today. Assuming an increasing risk premium associated with government debt or with the nation’s net indebtedness to foreigners, the fact that publicly held debt is a higher share of GDP now and that the net international investment position has declined markedly since the early 1980s increases the marginal cost of a tax cut now, relative to then.

The cost of a marginal tax cut was thus arguably lower in the 1980s than today. The economic benefit, furthermore, was likely higher, because marginal tax rates were substantially higher then. A marginal tax cut of 5 percentage points has a more pronounced effect the higher is the initial marginal tax rate. A variety of economic activities are affected by the after-tax return, which depends on  $(1-t)$ . Since  $(1-t)/(1-t-0.05)$  is larger the larger is  $t$ , the effect of a 5 percentage point tax cut is larger the higher the initial tax rate. For example, reducing tax rates from 70 percent to 65 percent raises the after-tax return from 30 percent to 35 percent, or by one-sixth; reducing tax rates from 40 percent to 35 percent raises the after-tax return from 60 percent to 65 percent, or about one-twelfth. Similarly, the distortions caused by a tax are proportional to the square of the tax rate.<sup>11</sup> A given reduction in tax rates therefore produces a larger efficiency gain the higher is the initial tax rate; for example,  $(0.7)^2 - (0.65)^2$  is larger than  $(0.4)^2 - (0.35)^2$ . The implication is that even if marginal tax cuts have the potential to stimulate growth and improve economic performance, a given marginal reduction is less likely to do so now than when marginal rates were higher.

## V. Conclusion

On a comparable basis, the administration’s tax cuts are about the same size as the net reduction from the 1981 tax cut and the 1982 partial reversal. But the baby boomers are closer to retirement, private saving has fallen, the public debt is higher, and marginal tax rates are lower now — all of which raise the net cost of a tax cut now compared to the early 1980s. Furthermore, the adverse fiscal effects of the 1980s tax cuts were attenuated by the peace dividend (of the 3 percentage point decline in noninterest spending as a share of GDP from 1990 to 2000, 2.4 percentage points was due to defense) and by subsequent tax increases (in 1983, 1984, 1990, and 1993). We are unlikely to experience another substantial peace dividend, and mandatory spending is slated to rise markedly as a share of GDP over the next 20 to 30 years. Tax cuts thus appear to be an even larger gamble now than in the 1980s.

The tax cuts embraced by the administration, furthermore, are significantly larger than the long-term deficit in Social Security. Perhaps more importantly, the tax cuts undermine the political viability of entitlement reform in the near term by consuming revenue necessary for any realistic reform plan to work (Orszag

<sup>11</sup>See Rosen (2001) for a textbook exposition.

## COMMENTARY / TAX BREAK

2001b). The administration's tax cuts are thus an integral part of the real fiscal danger facing the nation.

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# tax break

by William G. Gale and Peter R. Orszag

## Sunsets in the Tax Code

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### I. Introduction

Events leading up to the enactment of the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) highlighted the role of tax provisions that expire at a given date, which are commonly known as “sunsets.” In this article, we examine trends in the magnitude and nature of sunsets, and discuss some of their implications. Principal conclusions include:

- Sunsets have long been a feature of the tax code, but they have traditionally involved relatively minor provisions. The 2001 tax cut represented a dramatic departure from this history, by including a massive sunset at the end of 2010. The aggressive use of sunsets has continued since then. The potential extension of these expiring provisions should now be considered a central determinant of the fiscal and economic outlook.
- If all the temporary provisions in the conference agreement were extended, the total revenue loss through 2013 would amount to \$1.09 trillion, more than three times the official \$350 billion revenue estimate.
- Removing all the sunsets in the tax code, including those in JGTRRA, would involve a revenue loss of almost \$2 trillion over the next decade. Including the added interest payments due to increased federal debt, the implied increase in the budget deficit would be \$2.3 trillion through 2013.
- By way of comparison, the 2001, 2002, and 2003 tax cuts reduced revenues by \$1.7 trillion between 2001 and 2013, so removing the sunsets would more than double the implied revenue loss to \$3.6 trillion. Counting the additional debt

service, the three tax cuts will cost more than \$4 trillion for 2001-2013, if they are extended.

- The 10-year figures understate the implied long-term magnitude of the sunsets because the costs rise dramatically over time. The revenue loss in 2013 alone would amount to \$430 billion, or 2.4 percent of GDP. By comparison, the 75-year actuarial shortfall in the Social Security Trust Fund is 0.73 percent of GDP.
- In principle, sunsets might be justifiable under certain circumstances. Sunsets are appropriate for policies that are designed to be — and should be — temporary. They may also provide flexibility in policymaking, and be useful in focusing policymakers’ attention on fiscal issues. In practice, however, none of these potential justifications appears to be the motivation for the recent dramatic expansion in sunsets.
- Recent sunsets have been motivated by the desire to manipulate budget rules and hide the likely costs of new tax cuts. That is, in practice, the sunsets are being used to fit a larger annual tax cut within a given multiyear budget total. Sunsets that are used to increase the underlying annual size of a tax cut put fiscal policy on an increasingly unsustainable course, and leave policymakers in the future with *less* flexibility than they would otherwise have, since allowing sunsets to take effect is likely more difficult than forgoing new tax cuts in the future.
- Sunsets used to manipulate budget limits create needless uncertainty over the future structure of the tax code. It is important to recognize, however, that the fundamental source of that uncertainty is the long-term fiscal gap facing the nation (which is exacerbated when sunsets are used to enact larger annual tax cuts within a given multiyear budget total). The sunsets themselves are only the most obvious manifestation of the underlying uncertainty surrounding the tax code.
- The single most useful policy change to prevent the creation of new sunsets and the removal of existing sunsets would be to reinstate permanently the pay-as-you-go rules that required that mandatory spending increases or tax cuts be financed by other changes in taxes or spending. Policymakers could usefully consider changing the budget rules in other ways to address sunsets more aggressively.

- As sunsets have come to dominate the tax code, the official budget projections have become increasingly divorced from reality. The Congressional Budget Office should prominently include, in every major budget analysis, alternative baseline projections assuming that temporary tax provisions continue. CBO treats mandatory spending provisions that expire as though they will be granted a continuance and should do the same for tax provisions.

## II. Trends and Magnitudes

In the 1990s, sunsets applied generally only to a series of relatively minor tax provisions, and were largely limited to a set of tax credits or special provisions referred to collectively as “the extenders.” These provisions included items such as the research and experimentation tax credit, and were typically granted a continuance each time they were due to expire.

The use of sunsets changed dramatically in the 2001 tax legislation (the Economic Growth and Tax Relief Reconciliation Act of 2001, or EGTRRA), when Congress and the administration agreed to sunset the tax cut in 2010. The Byrd rule required 60 votes to enact a tax cut beyond the 10-year window, which will end in September 2011. But the tax cut sunset in December 2010, partially to allow Congress to enact more tax cuts while remaining within the 10-year budget resolution tax limit. It is important to note that the Byrd rule did not necessitate the sunset: If 60 Senators had supported a permanent version of the 2001 tax cut, the Byrd rule could have been waived. The sunset thus fundamentally reflected the relatively narrow margin of support for that tax cut.

The most recent tax cut goes even farther than the 2001 tax cut, and contains the following sunsets:

- Acceleration of the child credit increase, marriage penalty relief, and increase in the 10 percent bracket scheduled for the future under the 2001 tax legislation. These accelerations sunset at the end of 2004.
- Increase in the alternative minimum tax (AMT) exemption, which sunsets at the end of 2004.
- Increase in the bonus depreciation allowance for corporations, which sunsets at the end of 2004.
- Increase in section 179 expensing for small businesses, which sunsets after 2005.
- Reductions in capital gains and dividend tax rates, which sunsets at the end of 2008.

Sunsets are now a *de facto* element of fiscal policy. Besides the sunsets in the conference agreement, the Internal Revenue Code now contains numerous other expiring provisions. Table 1 reports information on the cost of removing the sunsets:

- Extending the provisions of EGTRRA that expire in 2010 would reduce revenue by \$610 billion over the FY 2003-2013 window.
- Extending two provisions regarding the AMT (the increase in the AMT exemption through 2004 legislated by EGTRRA and the temporary

use of nonrefundable credits in the AMT legislated in the 2002 stimulus legislation) would reduce revenue by \$191 billion, given the extension of EGTRRA.

- Extending the 30 percent bonus depreciation provision from the 2002 stimulus legislation would reduce revenue by \$256 billion.
- Extending the provisions of JGTRRA would reduce revenue by \$736 billion. This estimate for the 2003 tax cut includes the costs of extending the *increase* in the AMT exemption above the increase enacted in EGTRRA and the *increase* in bonus depreciation above the creation of bonus depreciation in 2002.<sup>1</sup>
- Extending the other expiring provisions, including EGTRRA changes that expire before 2010, would reduce revenue by \$165 billion.

In total, the cost of extending all expiring tax provisions over the next 10 years would amount to \$1.96 trillion. With interest, the budgetary cost would exceed \$2.3 trillion. The 10-year figures understate the potential magnitude of removing the sunsets because the costs rise dramatically over time. The revenue loss in 2013 alone would amount to \$430 billion, or 2.4 percent of GDP.

Table 1 (p. 1555) underscores that sunsets are now a dominant feature of the fiscal landscape. Figure 1 (p. 1556) shows the dramatic increase in the use of sunsets since 1992. The data through January 2003 are based on Joint Committee on Taxation (JCT) figures published by the Congressional Budget Office in its Economic and Budget Outlook from various years. The figure shows, for the 5th and 10th year after the date listed, the revenue loss that would occur if all sunsetted provisions in the tax code were extended. For example, in January 1992, 13 revenue-reducing provisions of the tax code (including the low-income housing credit, the research and experimentation tax credit, and the targeted jobs tax credit) were scheduled to sunset within the next five years, along with eight revenue-increasing provisions. The JCT estimated that the revenue effect in the 5th year, fiscal year 1997, from extending those provisions would be a *gain* of \$9 billion. By January 2002, the revenue effect in the fifth year (2007) from all sunsetted provisions in the tax code had deteriorated to a revenue loss of \$38 billion. The revenue loss in the 10th year (2012) was projected at \$297 billion, which largely reflects the effects of the 2010 sunset in the 2001 tax cut. Figure 2 (p. 1558) shows these figures as a share of projected GDP.

The final bars in Figures 1 and 2 represent an estimate of all the sunsets in the tax code following enactment of JGTRRA. (The estimates for the cost of extending the provisions in JGTRRA are taken from Table 1.) As the figure shows, following enactment of the con-

(Text continued on p. 1556.)

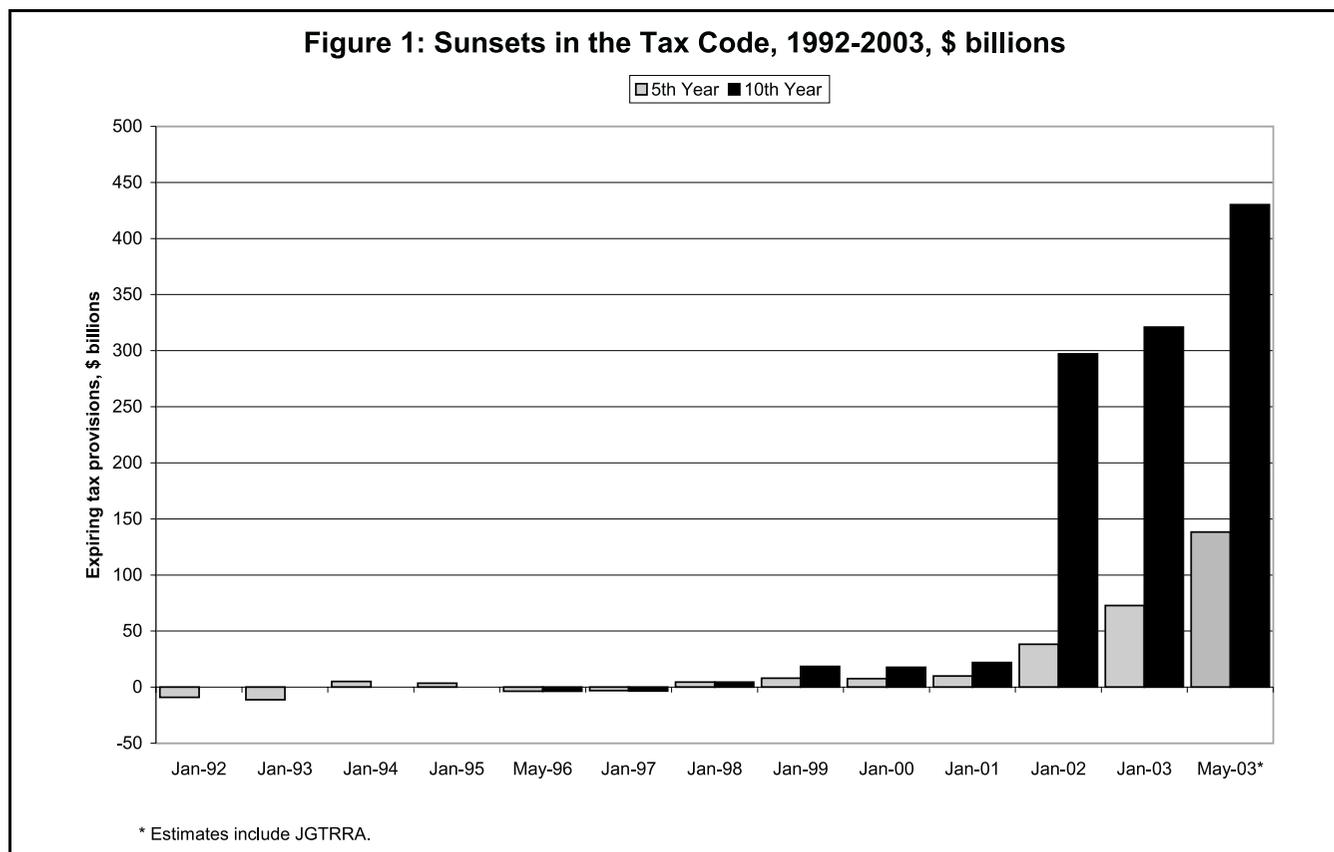
<sup>1</sup>Our figures imply that extending all the provisions of the 2003 tax cut except AMT relief would reduce revenues by \$491 billion (=735.7-244.4) through 2013. Greenstein, Kogan, and Friedman (2003), using JCT estimates and other sources, obtain a similar estimate of \$457 billion.

<b>Table 1: Budget Effects of Removing Sunsets</b>												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2003-13
<b>Extend EGTRRA Provisions that Expire in 2010<sup>1</sup> –\$ billions</b>												
Revenue	0.1	0.5	0.8	1.0	1.3	1.7	1.6	2.4	131.0	230.2	239.7	610.3
Interest <sup>2</sup>	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	4.1	14.2	27.7	47.5
Subtotal	0.1	0.5	0.8	1.1	1.5	2.0	2.0	2.9	135.1	244.4	267.4	657.8
<b>Extend AMT Provisions<sup>3</sup> –\$ billions</b>												
Increase in Exemption Under EGTRRA	0.0	0.0	3.3	10.2	14.4	18.2	22.4	25.3	21.5	14.8	17.2	147.3
Treatment of Nonrefundable Credits	0.0	0.1	1.0	2.4	3.5	4.1	4.7	5.2	6.0	7.9	8.8	43.7
Revenue	0.0	0.1	4.3	12.6	17.9	22.3	27.1	30.5	27.5	22.7	26.0	191.0
Interest	0.0	0.0	0.1	0.6	1.4	2.6	4.1	5.9	7.8	9.5	11.4	43.4
Subtotal	0.0	0.1	4.4	13.2	19.3	24.9	31.2	36.4	35.3	32.2	37.4	234.4
<b>Extend 30% Bonus Depreciation in JCWA<sup>4</sup> –\$ billions</b>												
Revenue	0.0	0.0	27.7	41.7	38.9	34.4	29.4	24.9	21.5	19.0	18.3	255.8
Interest	0.0	0.0	0.7	2.6	5.0	7.2	9.4	11.3	13.2	15.0	16.9	81.3
Subtotal	0.0	0.0	28.4	44.3	43.9	41.6	38.8	36.2	34.7	34.0	35.2	337.1
<b>Extend the 2003 Tax Cut<sup>5</sup> –\$ billions</b>												
Expansion of the 10% Bracket	0.0	0.0	5.2	7.4	8.2	5.3	4.3	4.1	4.1	4.0	3.8	46.4
Expansion of the Child Tax Credit	0.0	0.0	9.3	12.4	12.2	12.1	8.9	2.0	0.0	0.0	0.0	56.9
Increase in the AMT Exemption <sup>6</sup>	0.0	0.0	6.5	10.9	14.5	20.1	25.6	31.7	38.1	45.0	52.1	244.5
Dividend and Capital Gains Change	0.0	0.0	0.0	0.0	0.0	0.0	23.5	32.7	34.4	36.2	38.1	164.9
Marriage Penalty Relief	0.0	0.0	9.4	9.0	5.4	2.3	0.4	0.0	0.0	0.0	0.0	26.5
Interactions	0.0	0.0	2.1	2.6	2.5	1.5	1.0	0.9	1.0	1.0	1.0	13.6
179 Business Expensing <sup>7</sup>	0.0	0.0	0.0	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8	12.5
Raise Bonus Depreciation to 50% <sup>8</sup>	0.0	0.0	18.5	27.8	25.9	22.9	19.6	16.6	14.3	12.7	12.2	170.5
Revenue	0.0	0.0	51.0	71.4	70.1	65.6	84.8	89.6	93.6	100.7	109	735.8
Interest	0.0	0.0	1.3	4.7	8.8	13.0	17.8	23.5	29.7	36.6	44.2	179.6
Subtotal	0.0	0.0	52.3	76.1	78.9	78.6	102.6	113.1	123.3	137.3	153.2	915.4
<b>Extend Other Expiring Tax Provisions<sup>9</sup> –\$ billions</b>												
Revenue	0.0	-0.5	1.1	6.1	11.1	14.3	15.8	18.3	26.0	35.7	37.0	164.9
Interest	0.0	0.0	0.0	0.2	0.7	1.4	2.3	3.3	4.7	6.7	9.0	28.3
Subtotal	0.0	-0.5	1.1	6.3	11.8	15.7	18.1	21.6	30.7	42.4	46.0	193.2
<b>Extend All Expiring Tax Provisions –\$ billions</b>												
Revenue	0.1	0.1	84.8	132.8	139.3	138.3	158.6	165.7	299.6	408.2	430.1	1,957.6
Interest	0.0	0.0	2.2	8.2	16.1	24.5	33.9	44.5	59.5	82.0	109.1	380.0
Total	0.1	0.1	87.0	141.0	155.4	162.8	192.5	210.2	359.1	490.2	539.2	2,337.6

**COMMENTARY / TAX BREAK**

Extend All Expiring Tax Provisions – in percent of GDP <sup>10</sup>												
Revenue	0.0	0.0	0.7	1.1	1.1	1.0	1.1	1.1	1.8	2.4	2.4	1.4
Interest	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.3
Total	0.0	0.0	0.7	1.0	1.2	1.2	1.3	1.4	2.2	2.9	3.0	1.7

<sup>1</sup>Congressional Budget Office. "The Budget and Economic Outlook: Fiscal Years 2004-2013." January 2003. Table 3-11.  
<sup>2</sup>All interest costs are calculated using the CBO debt service matrix, March 2003.  
<sup>3</sup>Congressional Budget Office. "The Budget and Economic Outlook: Fiscal Years 2004-2013." January 2003. Table 3-11.  
<sup>4</sup>Congressional Budget Office. "The Budget and Economic Outlook: Fiscal Years 2004-2013." January 2003. Table 3-11.  
<sup>5</sup>Calculations by author using the Tax Policy Center Microsimulation Model unless otherwise noted. Uses 75-25 split to convert CY figures into fiscal year figures. Baseline is current law including the 2003 tax cut amended to include removing the sunset of EGTRRA and the AMT provisions.  
<sup>6</sup>Increase to AMT exemption includes only the increase above the exemption under EGTRRA.  
<sup>7</sup>Calculation by author based on Joint Committee on Taxation estimate of costs in fiscal year 2005 (\$3.69 billion). Assumes moving forward that the cost remains constant at 30 percent of the final year costs as a share of GDP.  
<sup>8</sup>Calculation by author based on CBO. "The Budget and Economic Outlook: Fiscal years 2004-2013." January 2003. Table 3-11. Assumes that an increase in bonus depreciation from 30 percent to 50 percent adds an additional 2/3 the published cost.  
<sup>9</sup>Calculation by author based on CBO. "The Budget and Economic Outlook: Fiscal years 2004-2013." January 2003. Table 3-11.  
 Does not include the effect of expiring provisions whose costs are already noted above.  
<sup>10</sup>Congressional Budget Office. "The Budget and Economic Outlook: Fiscal Years 2004-2013." January 2003. Table E-2.



ference agreement, extending all sunsetted tax cuts would reduce revenue by an estimated \$138 billion in 2008 and \$430 billion in 2013 (Figure 1), which represent 1 and 2.4 percent of projected GDP in those years, respectively (Figure 2). Appendix Table 1 provides the data used in Figures 1 and 2.

**III. Issues and Implications**

**A. The Fiscal Outlook**

The projected revenue losses from recent tax legislation depend importantly on how the sunsets are re-

solved. The official revenue losses for 2001-13 for the 2001, 2002, and 2003 tax cuts total about \$1.7 trillion (Joint Committee on Taxation (2001, 2002, and 2003)). If the sunsets were removed, however, the net revenue losses would more than double, to \$3.6 trillion. Including the added interest payments due to higher federal debt, the cost to the federal budget would be in excess of \$4 trillion.

Sunsets are not the only looming tax problem. Even if the temporary AMT relief included in EGTRRA, the 2002 legislation, and the conference agreement were made permanent (along with all the other expiring

provisions in the tax code), Tax Policy Center estimates indicate that more than 18 million taxpayers would be on the AMT in 2013. Avoiding a massive increase in the number of filers on the AMT will either require a significant shift in tax burdens toward high-income households, or a further reduction in income tax revenues.

The nation also faces significant long-term fiscal challenges associated with Medicare and Social Security. If all of the sunsets were removed, the long-term revenue loss of 2.4 percent would be three times the 75-year actuarial deficit in Social Security and exceeds even the permanent deficit in that program (Gale and Orszag 2003, Orszag, Kogan, and Greenstein 2003).

### B. Distributional Effects

Removing the sunsets would not only be expensive, it would be extraordinarily regressive. This is not surprising, since the original tax cuts are regressive, but the scale of the effect may be noteworthy. Table 2 (p. 1559) and Appendix Table 2 (p. 1561) show the distributional effects, in 2013, of removing all of the sunsets in the code. Households with income above \$1 million would receive *income* tax cuts of \$182,000 per year, if the sunsets were removed. This estimate does not include estate tax cuts, which would likely average tens of thousands of dollars per year or more for these households.<sup>2</sup> After-tax income would rise by almost 7 percent for households with income above \$1 million, again not including the estate tax change. Households in the middle quintile of the income distribution would receive a tax cut of about \$900, or about 2.6 percent of after-tax income. Households in the bottom quintile would receive virtually nothing.

### C. Sound Policy or Deceptive Accounting?

Whether sunsets are a good idea depends in large part on why they were enacted. Two sets of arguments could justify sunsets in principle, but neither applies in practice.

First, in cases where tax incentives *should* be temporary, sunsets represent sound policy.<sup>3</sup> But it should be clear that the massive recent increase in sunsets is not motivated by an increased desire for truly temporary tax cuts.

Second, Maggs (2003) and Murray (2003) note that even sunsets on provisions that are otherwise intended

to be permanent could be construed to have some value. Controlling for the size of an annual tax cut, a sunset may provide more future policy flexibility than a permanent tax cut, since it is presumably easier politically to allow a sunset to take effect than to explicitly reverse a tax cut. Thus, the sunsets might in principle make it easier to renegotiate the structure and level of taxes, if for no other reason than that they will focus attention on the issue. They could therefore help policymakers address in the near future the long-term fiscal gap facing the nation. But a reality check is appropriate. To the extent that policymakers in the near future will disproportionately be the same people who rushed to embrace sunsets as a way of avoiding hard budget decisions, we suspect this view may prove optimistic.

In fact, sunsets over the past few years have clearly been used to hide the true budgetary costs of intended policies and to increase the underlying size of the annual tax cut, by allowing a larger annual tax cut to fit within a given multiyear budget total. Policymakers supporting sunsets have every intention of trying to make the policies permanent.<sup>4</sup> For example, House Speaker Dennis Hastert indicated just after the House passed the 2003 tax cut that “The \$350 [billion] number takes us through the next two years, basically. . . . But also it could end up being a trillion-dollar bill, because this stuff is extendable. That’s a fight we’re going to have to have. It’s not a bad fight to have.”<sup>5</sup> Likewise, many proposals to extend part or all of EGTRRA have been introduced and at least one has been enacted (Evans 2003).

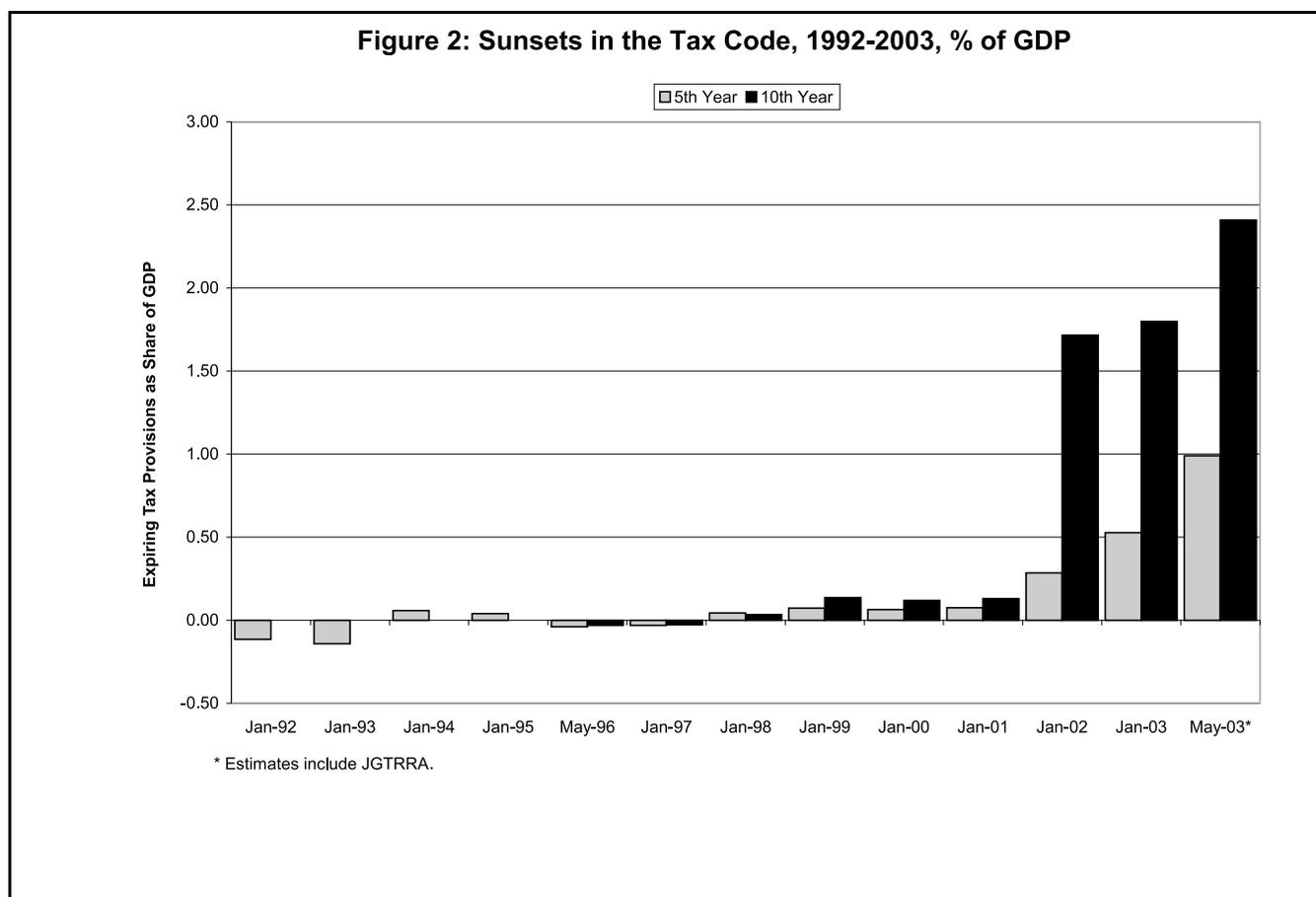
Using sunsets in this manner — to avoid the constraints imposed by the budget rules and raise the underlying annual size of a tax cut within a given multi-year budget total — is a serious problem. It pushes the

<sup>2</sup>Data in Gale and Potter (2002, table 5 and page 147) show that estate tax repeal would reduce expected taxes for households in the top 1 percent by more than \$16,000 per year. Households with income above \$1 million represent the top 0.2 percent of households.

<sup>3</sup>For example, a temporary investment incentive is likely to prove more effective in the short term than a permanent incentive, since it encourages firms to accelerate future investment into the present. The longer the “temporary” incentive is in place, however, the less credible this motivation appears and the more the sunset seems like an accounting gimmick intended to hide the longer-term cost of the provision. Moreover, removing the sunset in this case would be counterproductive, given the purpose of the original policy, and removing or extending the sunset in advance of its termination date would be particularly damaging to the original goal.

<sup>4</sup>Some policymakers argue that they were somehow forced into adopting the sunsets. After the vote on the conference agreement, for example, Senator Kay Bailey Hutchison, R-Texas, was quoted as saying, “The reason we have to sunset some of these taxes is because we had to fit within an artificial constraint of \$350 billion” (Firestone 2003). These claims are disingenuous. In recent years, the president and Republican congressional leaders have chosen to push through tax cuts under the protection of the reconciliation rules. Reconciliation legislation cannot be subject to filibuster in the Senate and therefore requires only 51 votes to enact. The cost of undertaking this expedited procedure is that policy actions that lose revenue outside the budget window require 60 votes, assuming a point of order is raised against the legislation under the Byrd rule. But the sunset in the conference agreement occurs much earlier than would be required to satisfy the Byrd rule. The president and his allies in Congress could have chosen instead to legislate tax changes outside the reconciliation process, in which case the \$350 billion cap would not have applied. Legislation outside the reconciliation process would be subject to filibuster, but requires only 51 votes even for a permanent tax cut. Put differently, tax cut advocates made a deliberate choice to use the reconciliation process to push through tax cuts with only a slim majority in support of them. (See Evans 2003 for further discussion of the Byrd rule and reconciliation.)

<sup>5</sup>“Hastert Salutes ‘Trillion-Dollar’ Tax Bill, Looks to Medicare Debate,” *CongressDaily AM*, May 23, 2003.



nation farther down an already unsustainable fiscal path. It elevates expectations that the tax cuts will indeed be continued, even if they are ultimately unaffordable given the nation's long-term fiscal gap. It is gapingly hypocritical and poorly timed, given the purported crackdown on fraudulent corporate accounting practices. And the political need to extend popular tax breaks when they are due to sunset may provide cover to enact additional tax cuts of dubious merit.

A particularly cynical tendency among some policymakers over the past few years has been to use sunsets to increase the size of the annual tax cut that fits within the multiyear budget constraint, and then subsequently to argue that the sunset must be removed because it creates uncertainty in the tax code. Frequent changes in the tax code are indeed undesirable. The sunsets, however, are just the most obvious manifestation of the underlying uncertainty surrounding the tax code. The fundamental source of that uncertainty is the long-term fiscal gap facing the nation. (As an analogy, consider a family that leases an automobile that it could not afford to purchase because its expenses already exceed its income. The option to allow the lease to expire is similar to a sunset. Purchasing the automobile when the lease is over may resolve the uncertainty over the type of automobile the family will be driving, but it does not address the underlying financial uncertainty: The family's income is insufficient to finance its overall expenditures.)

Finally, it is worth noting that sunsets of tax provisions create a classic political economy asymmetry in which one (often relatively small) group has much to gain and each member of the general public has only a little to lose. Political economy theory predicts, and evidence confirms, that in such situations, the will of the active minority often dominates that of the passive majority. Historically, the sunset provisions fit this model well. Even now, with the massive increase in sunsets, the political model probably captures important future dynamics; after all, some of the most expensive provisions to extend — repeal of the estate tax, the reductions in the top marginal income tax rates, and the bonus depreciation provisions — benefit relatively narrow segments of the population who happen to be both extremely affluent and politically connected. More broadly, the political economy consequences of the massive increase in sunsets — including the implications for campaign contributions — have not yet been adequately considered.

#### D. Policy Responses

Permanently reestablishing the pay-as-you-go (PAYGO) rules, which require tax cuts or mandatory spending increases to be offset by other policy changes, would bolster the credibility of the existing sunsets. The PAYGO rules would require that any removal of sunsets would have to be paid for either with other tax hikes or with spending cuts. Since even the Bush ad-

AGI Class (thousands of 2002 dollars) <sup>2</sup>	Tax Units <sup>3</sup>			Percent Change in After-Tax Income <sup>4</sup>	Percent of Total Income Tax Change	Average Tax Change (\$)	Average Income Tax Rate <sup>5</sup>	
	Number (thousands)	Percent of Total	Percent With Tax Cut				Current Law	Proposal
Less than 10	38,857	23.9	6.5	0.2	0.1	-9	-11.0	-11.2
10-20	25,780	15.9	88.1	2.3	3.8	-454	-2.7	-5.0
20-30	19,790	12.2	98.7	2.7	5.3	-821	5.8	3.3
30-40	15,076	9.3	99.5	2.4	4.8	-978	9.2	7.1
40-50	10,809	6.7	99.6	2.4	4.4	-1,248	11.0	8.9
50-75	18,806	11.6	99.7	3.0	12.9	-2,088	12.7	10.1
75-100	12,195	7.5	99.8	3.7	14.1	-3,539	14.8	11.6
100-200	15,291	9.4	99.9	2.8	20.3	-4,058	18.1	15.8
200-500	3,820	2.4	99.3	2.6	9.1	-7,251	24.5	22.6
500-1,000	589	0.4	99.5	5.9	7.1	-36,717	29.0	24.9
More than 1,000	301	0.2	99.6	6.9	17.9	-181,711	30.1	25.2
All	162,256	100.0	74.9	3.3	100.0	-1,881	16.7	14.0

*Source:* Urban-Brookings Tax Policy Center Microsimulation Model (version 0503-1).  
<sup>1</sup>Calendar year. Baseline is current law. Includes removing sunsets for the following individual income tax provisions in EGTRRA, the Job Creation and Worker Assistance Act of 2002 and JGTRRA: marginal tax rate reductions; the 10-percent bracket; the child tax credit; the child and dependent care credit; the AMT exemption; the allowance of personal nonrefundable credits regardless of AMT liability; the personal exemption phaseout (PEP); the limitation on itemized deductions (Pease); the standard deduction, 15 percent bracket, and EITC expansion for married couples; tax rates on long-term capital gains and dividends (15 percent; zero percent for those in the 10 and 15 percent tax brackets). Excludes pension and IRA provisions, and phaseout of the estate tax.  
<sup>2</sup>Tax units with negative AGI are excluded from the lowest income class but are included in the totals.  
<sup>3</sup>Includes both filing and nonfiling units. Tax units that are dependents of other taxpayers are excluded from the analysis.  
<sup>4</sup>After-tax income is AGI less individual income tax net of refundable credits.  
<sup>5</sup>Average income tax, net of refundable credits, as a percentage of average AGI.

ministration, which has embraced the use of sunsets, favors reestablishing the PAYGO rules, policymakers should reestablish those rules in time to apply to all of the sunsets in the 2001, 2002, and 2003 tax cuts. (The 2008 budget resolution does include a PAYGO rule, but it is quite weak. It needs to be strengthened.)

Given the prominence of sunsets, it would also be helpful for CBO to present alternative baseline figures, with temporary tax provisions assumed to continue. As sunsets have come to dominate the tax code, the official projections have become increasingly divorced from reality. The official projections assume that Congress will extend expiring mandatory spending programs but that all temporary tax provisions (other than excise taxes dedicated to trust funds) expire as scheduled, even if Congress has repeatedly renewed them. Since the assumption that all the temporary provisions will expire is unrealistic, the official projections are increasingly biased as a guide to the underlying policy stance (Auerbach, Gale, Orszag, and Potter 2003).

A variety of other measures are also worth consideration. Aaron (2003) has suggested that the JCT estimate the revenue effects of tax bills as if all provisions were fully implemented within three years and as if they remained in effect for the rest of the 10-year budget window. This requirement could be waived for provisions intended to be temporary, but removal of

the sunset could then be made to require 60 votes in the Senate.<sup>6</sup> Another possibility is that any temporary tax cut within a reconciliation bill would be subject to a 60-vote point of order in the Senate. In combination with the Byrd rule, this provision could effectively require 60 votes for any tax cut in reconciliation legislation.<sup>7</sup> Given the projected fiscal gap facing the nation, such a hurdle to further tax cuts may be warranted. A third possibility would be that removing a sunset in reconciliation legislation could be made subject to the Byrd rule. This would have the desirable feature that sunsets that were enacted specifically as a way of getting around the Byrd rule could not be removed without eventually confronting the 60-vote requirement of that rule. Each of these ideas is imperfect, but all of them suggest that it may be possible to enact rules that attenuate the potential for abusive sunsets. Ultimately, though, the only real constraint on budget gimmicks is policymakers' willingness not to stretch formal rules and common sense.

More fundamentally, the sunsets have now come to embody crucial questions about the fiscal direction of the nation. A few years ago, the extenders were almost

<sup>6</sup>Gale (2001) discusses related proposals.

<sup>7</sup>Evans (2003) describes the debate over whether the reconciliation process was ever intended to facilitate tax cuts.

a legislative afterthought. The tax cuts of the past three years, however, have made the expiring tax provisions one of the central long-term fiscal policy questions facing the nation.

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**Appendix Table 1: Revenue Effect of Expiring Tax Provisions in the Tax Code**

Projection Year	In billions of dollars		In % of GDP	
	5th Year	10th Year	5th Year	10th Year
Jan-92	-9.0		-0.11	
Jan-93	-11.2		-0.14	
Jan-94	5.0		0.06	
Jan-95	3.6		0.04	
May-96	-3.7	-3.7	-0.04	-0.03
Jan-97	-3.1	-3.4	-0.03	-0.03
Jan-98	4.5	4.4	0.04	0.03
Jan-99	7.9	18.4	0.07	0.14
Jan-00	7.6	17.7	0.06	0.12
Jan-01	9.9	22.0	0.07	0.13
Jan-02	38.3	297.1	0.28	1.72
Jan-03	72.7	321.0	0.53	1.80
May-03*	138.3	430.1	0.99	2.41

Includes tax provisions that expired recently before the projection.  
 \* Estimates include JGTRRA.  
 Source: Authors' calculations based on Congressional Budget Office, Economic and Budget Outlook, various years.  
 Note: Negative figures indicate a net revenue gain; positive figures indicate a net revenue loss.

AGI Class <sup>2</sup>	Percent of Tax Units With Tax Cut	Percent Change in After-Tax Income <sup>3</sup>	Percent of Total Income Tax Change	Average Tax Change (\$)	Average Income Tax Rate <sup>4</sup>	
					Current Law	Proposal
Lowest Quintile	0.3	0.1	*	-3	-11.8	-12.0
Second Quintile	75.5	1.9	3.8	-353	-3.9	-5.9
Middle Quintile	99.0	2.6	9.2	-868	7.2	4.8
Fourth Quintile	99.7	2.8	18.1	-1,705	12.0	9.6
Next 10 Percent	99.9	3.6	19.1	-3,593	15.1	12.1
Next 5 Percent	99.9	2.9	10.8	-4,061	17.7	15.3
Next 4 Percent	99.7	2.3	10.4	-4,906	22.2	20.5
Top 1 Percent	99.0	6.0	28.5	-53,561	29.1	24.9
All	74.9	3.3	100.0	-1,881	16.7	14.0

*Source:* Urban-Brookings Tax Policy Center Microsimulation Model (version 0503-1).  
\* Less than 0.05 percent.  
<sup>1</sup> Calendar year. Baseline is current law. Includes removing sunsets for the following individual income tax provisions in EGTRRA, the Job Creation and Worker Assistance Act of 2002, and JGTRRA: marginal tax rate reductions; the 10 percent bracket; the child tax credit; the child and dependent care credit; the AMT exemption; the allowance of personal nonrefundable credits regardless of AMT liability; the personal exemption phaseout (PEP); the limitation on itemized deductions (Pease); the standard deduction, 15 percent bracket, and EITC expansion for married couples; tax rates on long-term capital gains and dividends (15 percent; zero percent for those in the 10 and 15 percent tax brackets). Excludes pension and IRA provisions, and phaseout of the estate tax.  
<sup>2</sup> Tax units with negative AGI are excluded from the lowest quintile but are included in the totals. Includes both filing and nonfiling units. Tax units that are dependents of other taxpayers are excluded from the analysis.  
<sup>3</sup> After-tax income is AGI less individual income tax net of refundable credits.  
<sup>4</sup> Average income tax, net of refundable credits, as a percentage of average AGI.

**Reassessing the Fiscal Gap:**  
**Why Tax-Deferred Saving Will Not Solve the Problem**

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July 20, 2003

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## **ABSTRACT**

A variety of recent studies have found that the United States faces a substantial fiscal gap — that is, a sizable imbalance between projected federal outlays and receipts. A recent study by Boskin (2003) suggests these findings are overstated because they largely or entirely omit projected revenues from tax-deferred saving plans. This paper reassesses estimates of the long-term fiscal status of the United States in light of Boskin's analysis and draws three principal conclusions. First, the nation continues to face a substantial long-term fiscal gap, as conventionally estimated. Second, Boskin's projections of revenue from tax-deferred accounts have only a very modest effect on the long-term fiscal outlook because almost all of the relevant revenue is already incorporated into the revenue projections that generate sizable fiscal gaps. Third, the primary focus of Boskin's analysis is the overall effect on the budget from retirement accounts — not how much of that effect is already included in the budget projections. We also find that his estimated overall budgetary effect is substantially overstated.

## I. Introduction

It is by now conventional wisdom that the United States faces a sizable long-term fiscal gap. Under a wide range of scenarios, the projected costs of current spending programs substantially exceed projected tax revenues.<sup>1</sup> The fiscal gap has important implications for future generations and should inform current policy choices. For example, many observers believe that the size of the fiscal gap implies that the tax cuts enacted over the past few years have taken the country in the wrong fiscal direction.<sup>2</sup>

Boskin (2003) suggests the conventional wisdom regarding the long-term fiscal gap is incorrect. He claims that estimates of the long-term fiscal status largely or entirely omit revenue from tax-deferred saving plans, and that the omissions are almost as large as the projected budget shortfalls over analogous time periods. Specifically, he calculates that existing and projected tax-deferred saving will generate net revenue with a present value of \$12 trillion through 2040 and \$17 trillion through 2050. He concludes that “The total size may well rival the 75-year actuarial deficits in Social Security and Medicare HI, plus the national debt. An analysis of the underestimation of – more accurately, failure to consider – the long-run budgetary impacts of deferred taxes suggests that they will offset a sizeable share of the projected budget deficit through mid-century.”<sup>3</sup>

Boskin’s results have understandably generated substantial attention.<sup>4</sup> The implications, however, have been widely misinterpreted. This paper reassesses the long-term fiscal outlook in light of Boskin’s findings.

- Our central findings are easily summarized. First, the nation faces a substantial long-term fiscal gap, as conventionally measured. Second, even given the assumptions underlying Boskin’s analysis, his projections of revenue due to tax-deferred accounts have only a modest effect on the long-term fiscal outlook because most of the relevant revenue is already incorporated into the budget projections. Third, Boskin’s primary focus is the overall effect on the budget from tax-deferred retirement accounts, not the amount by which the budget projections understate such an effect. We find that his analysis substantially overstates the likely overall budgetary impact from tax-deferred accounts.
- Our estimates, using the same methodology as in earlier work, imply a permanent fiscal gap under current policies of 7.55 percent of long-term GDP. This result implies that

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<sup>1</sup> See, for example, Auerbach (1994, 1997), Auerbach and Gale (1999, 2000, 2001), Auerbach, Gale, and Orszag (2002), Auerbach, Gale, Orszag, and Potter (2003), Congressional Budget Office (2000), Gokhale and Smetters (2003), and Office of Management and Budget (2003).

<sup>2</sup> See, among others, Committee on Economic Development (2003), Kotlikoff and Sachs (2003), Kerrey, Nunn, Peterson, Rubin, Rudman and Volcker (2003), and Peterson (2003).

<sup>3</sup> Boskin (2003), page 108. As discussed in greater detail in section V, Boskin has indicated through a personal communication that he plans to revise these figures in a way that is likely to reduce the total net present value of revenues from tax-deferred accounts. Our paper does not take those revisions into account.

<sup>4</sup> See, for example, Allen (2003), Bartlett (2003), Coy (2003), McTague (2003), and Sloan (2003).

some combination of immediate and permanent tax increases and/or spending cuts that amount to more than \$750 billion per year and rise with the size of the economy over time is necessary to achieve long-term fiscal balance. The fiscal gap can also be calculated for particular time periods. Between now and 2040, we estimate a fiscal gap of 2.25 percent of GDP.

- Boskin's projections of substantial revenues from tax-deferred accounts do not materially affect the long-term fiscal outlook. The main reason is simple: almost all of the direct revenue effects that Boskin projects are already implicitly contained in the fiscal gap calculations. That is, Boskin's assertion that existing estimates of the long-term fiscal outlook do not include future taxes from retirement accounts is inaccurate. Given that fact, what matters for assessing the effect of tax-deferred plans on the nation's long-term fiscal gap is not the sheer magnitude of net revenues from that source (which is what Boskin estimates), but rather the extent to which that projected revenue stream is not already built into the calculations that generate the fiscal gap estimate.
- We find that the fiscal gap baseline already contains all of the contributions and about 85 percent of the withdrawals for tax-deferred accounts projected in Boskin's forecast. As a result, taking into account Boskin's projected growth in retirement accounts has only a very modest effect on the estimated long-term fiscal gap as conventionally estimated — reducing it from 7.55 percent of GDP to 7.38 percent of GDP. Between now and 2040, the adjustment reduces the fiscal gap from 2.25 percent of GDP to 2.07 percent of GDP.
- Boskin's projections include more than just the direct revenue implications of tax-deferred accounts; they also include indirect feedback effects associated with the impact of induced capital accumulation on revenues. In contrast, estimates of the nation's long-term fiscal status generally do not include feedback effects of large projected deficits. In calculating the net impact of Boskin's correction on the overall fiscal gap, one should incorporate feedback effects consistently. The approach taken in the adjusted fiscal gap estimates reported above is to exclude feedback effects. To emphasize our main point, however, that the net impact of Boskin's correction is small because most of it is already taken into account, we provide an unbalanced comparison in which we add the feedback effects from the additional revenue from withdrawals in Boskin's projections (compared to the taxes on withdrawals in the fiscal gap baseline) to the previous fiscal gap estimates. This change has little effect on the fiscal outlook. The fiscal gap through 2040, for example, falls to 2.03 percent of GDP, rather than to 2.07 percent.
- The bottom line for the long-term fiscal outlook is that plausible interpretations of Boskin's revenue calculations reduce the fiscal gap by about 0.2 percent of GDP. This adjustment is very small relative to the fiscal problems confronting the nation and it changes no significant conclusion about the nation's fiscal status.
- The primary focus of Boskin's paper, however, is the overall projected budgetary effect from retirement accounts — rather than how much of that effect is already incorporated into budget projections. We find that his base case estimates of the overall budgetary effect from tax-deferred accounts are substantially overstated.

Section II defines the fiscal gap and provides updated estimates. Section III briefly outlines Boskin's revenue model. Section IV re-estimates the fiscal gap using Boskin's estimates of contributions and withdrawals from tax-deferred saving accounts. Section V estimates feedback effects. Section VI re-examines the foundations of Boskin's \$12 trillion revenue projection. Section VII is a short conclusion.

## II. The Fiscal Gap

As developed by Auerbach (1994) and implemented in many subsequent analyses, the "fiscal gap" measures the size of the immediate and permanent increase in taxes and/or reductions in non-interest expenditures that would be required to set the present value of all future primary surpluses equal to the current value of the national debt, where the primary surplus is the difference between revenues and non-interest expenditures. Equivalently, it would establish the same debt-GDP ratio in the long run as holds currently. The gap may be expressed as a share of GDP or in dollar terms. The fiscal gap is an accounting measure that is intended to reflect the current long-term budgetary status of the government.<sup>5</sup>

To ensure that all government costs and revenues are included and to avoid problems arising from omissions of deferred taxes and liabilities requires that the fiscal gap be measured over an infinite horizon. Nevertheless, to permit comparison with other estimates, including Boskin's, we can also define a fiscal gap over a finite period. For example, the fiscal gap through 2040 measures the increase in taxes or cuts in non-interest spending that would be needed each year between now and 2040 to restore the 2040 debt-GDP ratio to the 2003 level.

A fiscal gap is only defined under a set of assumptions about future policies and economic growth. These assumptions require judgment and justification. In Auerbach, Gale, Orszag and Potter (2003), we justify the assumptions reported here. Following a dichotomy employed in most previous estimates of the fiscal gap, we project future policies and economic growth using somewhat different, but linked, methods for the first 10 years of the forecast period and for subsequent years.

Between 2004 and 2013, we begin with the Congressional Budget Office baseline figures for taxes and spending.<sup>6</sup> These figures are developed according to a variety of rules and customs and are not intended to reflect current policy in any but the most mechanical manner. Unlike the CBO baseline, we adjust tax revenues to allow all expiring provisions to be made permanent. We also raise the AMT exemption so that approximately 3 percent of taxpayers remain on the AMT in each year in the future.<sup>7</sup> We adjust discretionary spending so that it grows with inflation and the population.

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<sup>5</sup> Auerbach, Gale, Orszag, and Potter (2003) discuss the relationship between the fiscal gap, generational accounting, accrual accounting and other ways of accounting for government.

<sup>6</sup> We use the March, 2003, CBO baseline for our calculations, the latest currently available. This may understate the magnitude of the fiscal gap somewhat, given the continued deterioration of the budget since March.

<sup>7</sup> Under current law, the AMT exemption for married couples filing jointly is \$58,000 in 2003 and 2004, and falls to \$45,000 in 2005. We assume that, starting in 2005, the AMT exemption for couples filing jointly is raised to \$70,000 and indexed for inflation. This maintains about 3 percent of taxpayers on the AMT through 2013.

After the first decade, we set the economy on auto-pilot. We use CBO projections of nominal GDP, with a nominal GDP growth rate that, after the initial forecast period, varies narrowly between 4.5 and 4.7 percent through 2077.<sup>8</sup> We assume that aggregate tax revenue (including taxes earmarked to pay for Social Security and Medicare) remains a constant share of GDP at its 2013 level. We also assume that discretionary spending remains constant as a share of GDP at its 2013 level. We assume that Social Security and Medicare expenditures follow the 2003 intermediate projections of the Social Security and Medicare actuaries as a share of GDP. We also assume that Medicaid spending grows at a rate determined by the growth of the population and per capita health care spending. Interest payments are determined by debt accrual and interest rates.<sup>9</sup>

Table 1 shows that the fiscal gap is 7.55 percent of GDP on a permanent basis, 4.55 percent of GDP through 2075 and 2.25 percent of GDP through 2040. This implies that, under the set of policies described above, maintaining the ratio of debt to GDP indefinitely would require that taxes be increased and/or spending cut immediately and permanently by more than 7 percent of GDP (or more than 35 percent of the overall federal budget).<sup>10</sup>

Figure 1 plots the resulting time patterns for the primary budget balance and the unified budget balance as a share of GDP.<sup>11</sup> The growing budget shortfalls over time reflect a sharp projected rise in spending on Social Security, Medicare, and Medicaid — from about 9 percent of GDP in 2012 to 15 percent by 2040 and 21 percent by 2075. Because these programs grow faster than GDP, extending the horizon increases the fiscal gap.

Notably, the economic projections underlying the fiscal gap do not contain feedback effects of the exploding deficits. Figure 1 shows that the projected unified deficit rises from less

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<sup>8</sup> Because our projections and discounting are based on nominal magnitudes, our estimates of the fiscal gap do not depend on how forecast growth of nominal GDP is decomposed into real growth and inflation. For reference, however, the long-run GDP projections adopted by the Social Security actuaries (Social Security Administration 2003, Tables V.B1 and V.B2) assume a similar nominal GDP growth rate and a GDP price index inflation rate of 2.7 percent.

<sup>9</sup> We set each year's interest rate equal to the GDP growth rate plus the gap between discount and growth rates in the Social Security Administration's long-term forecast. This leads to a nominal interest rate that ranges between 5.8 and 6.0 percent.

<sup>10</sup> For comparison purposes, Appendix Table 1 reports the overall fiscal gap in dollars as about \$59 trillion. This is larger than the \$44 trillion figure reported recently by Gokhale and Smetters (2003), but the difference is primarily due to the fact that Gokhale and Smetters use a 3.6 percent real discount rate. Their estimated fiscal gap using a 3.3 percent real discount rate, which implies a nominal discount rate close to our nominal discount rate if one adopts the Social Security Trustees' inflation projection of 2.7 percent (see footnotes 7 and 8), is \$58.6 trillion. More generally, however, fiscal gap calculations that are reported in dollars can be sensitive to the discount rate and the underlying economic projection. This sensitivity is dampened considerably when the fiscal gap is reported as a share of GDP because budget outcomes and GDP tend to move in the same direction under various scenarios. For that reason, we strongly prefer reporting the fiscal gap as a percentage of GDP. For further discussion see Auerbach, Gale, Orszag and Potter (2003) and Gokhale and Smetters (2003).

<sup>11</sup> Figure 1 helps show that the fiscal gap is different from the present value of projected budget deficits. The fiscal gap corresponds to the area below the primary budget line. The present value of expected budget shortfalls corresponds to the area below the unified budget line.

than 5 percent of GDP in 2020 to more than 40 percent by 2075. At the same time, the CBO projections on which our fiscal gap calculations are based show nominal GDP — and presumably real GDP — continuing to grow smoothly (with a range between 4.5 percent and 4.7 percent). It is implausible to us that the reduction in national saving associated with such dramatically growing fiscal imbalances would be consistent with a relatively constant real GDP growth rate.

### III. Boskin's Revenue Model<sup>12</sup>

Boskin describes several channels through which tax-deferred accounts affect the budget over time. The channels — along with Boskin's base case estimated effects on the net present value of revenue since the creation of the accounts through 2040 in parentheses — are:

- The contribution to traditional retirement accounts is tax-deductible, which reduces revenues at the time the contribution is made (-\$7.1 trillion);
- Withdrawals are taxable, which raises revenue when the withdrawal is made (+\$9.1 trillion);
- To the extent that contributions are financed by diverted saving, revenue on the taxable saving that would have occurred is reduced (-\$1.2 trillion);
- To the extent that contributions generate net additions to national saving, the capital stock increases and the associated increase in future income raises revenue (+\$6.7 trillion);
- All of these factors affect the debt held by the public, which in turn affects federal interest payments (+\$5.5 trillion); and
- The change in debt payments affects income taxes on the interest (-\$1.2 trillion).

The overall net present value of revenues from all these effects is about \$12 trillion. These effects can be divided roughly into direct effects and feedback effects. The direct revenue effects are the lost taxes on contributions and diverted saving, and the taxes collected on withdrawals, holding the overall rate of capital accumulation fixed. The feedback effects allow for changes in the size of the economy due to these policies and include the resultant effect of increases in the capital stock on revenues, changes in public debt on federal interest payments, and changes in taxes paid on those federal interest payments. Notably, almost all of Boskin's revenue projections comes from feedback effects: the purported increase in the capital stock and the effect on reducing debt held by the public (net of the income taxes paid on debt payments) amounts to at least \$11 trillion of the roughly \$12 trillion total effect.<sup>13</sup>

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<sup>12</sup> Boskin's paper extends to more than 100 pages, covers a wide variety of issues, and provides extensive sensitivity analysis. Here, we summarize what we view as the main findings, including those that have attracted the most popular attention.

<sup>13</sup> We say "at least" here because, in an estimate that kept the capital stock fixed, the revenue cost associated with diverted saving would be higher than the \$1.2 trillion reported above.

## IV. Modifying the Fiscal Gap Estimate for Retirement Plan Growth

Our goal is to understand the implications of Boskin's analysis for the nation's long-term fiscal status. For that purpose, the absolute budgetary effect from tax-deferred saving plans — which Boskin estimates at \$12 trillion — is not a relevant measure. What matters is how the estimated effect on the budget compares to what is already assumed in the fiscal gap in the first place. In other words, the key question is how much of the growth in retirement programs that drives Boskin's results is already embodied in the baseline used to estimate the fiscal gap. This question can be addressed by comparing the contributions and withdrawals in Boskin's revenue model to those implied in our fiscal gap calculations. This section carries out those comparisons and then estimates the impact of adjusting the fiscal gap calculation to include all of Boskin's projected withdrawals and contributions.

### A. Withdrawals

Figure 2 shows projected taxes on withdrawals as a share of GDP in Boskin's model and in our fiscal gap baseline. The annual figures for Boskin's model are interpolated from data he presents and are reported in Appendix Table 2. For 2004-13, our estimates of taxable withdrawals are taken directly from the Tax Policy Center tax microsimulation model, and our GDP figures are based on CBO (2003).<sup>14</sup> For purposes of comparing our withdrawal patterns to Boskin's, we use the same tax rate on withdrawals (28.7 percent) that Boskin assumes. Our fiscal gap calculation assumes that after 2013 revenue is held constant as a share of GDP at its 2013 share. A reasonable interpretation is that this assumption also implies that after 2013 taxes on withdrawals from retirement accounts remain at their 2013 levels as a share of GDP.<sup>15</sup>

As Figure 2 shows, through the next 10 years, estimated taxes on withdrawals (using Boskin's 28.7 percent tax rate) are approximately the same in Boskin's model and in our fiscal gap baseline. By 2013, both Boskin's model and the fiscal gap baseline project that taxes on withdrawals will amount to 1.7 percent of GDP. After 2013, Boskin projects taxes on withdrawals will rise to 2.3 percent of GDP in 2020, before subsequently declining to around 1.9 percent of GDP by 2030. The implied difference in taxes on withdrawals between Boskin's model and our fiscal gap calculation averages about 0.25 percent of GDP between 2003 and 2040. Over the whole period, Boskin's calculation implies taxes on withdrawals averaging slightly more than 1.9 percent of GDP, while the baseline fiscal gap estimates imply taxes on withdrawals slightly less than 1.7 percent of GDP. In short, the fiscal gap calculations reported above already capture more than 85 percent of the taxes on withdrawals in Boskin's model.

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<sup>14</sup> Burnham (2002) projects withdrawals as a share of GDP that are very similar to our and Boskin's estimates for 2004-13 period and notes explicitly that his results are included in the CBO 10-year baseline.

<sup>15</sup> A variety of other interpretations are possible. For example, under current law, overall revenues would rise, payroll taxes would decline and income taxes would increase as a fraction of GDP. Payroll taxes are levied on cash wages; because fringe benefits, which are not subject to payroll tax, are expected to increase as a share of GDP, while total labor compensation is projected to be roughly constant, the share of GDP taking the form of taxable wages is projected to fall. Income taxes would claim an increasing share of GDP over time, as bracket widths, personal exemptions, and the standard deduction are not indexed for increases in real incomes and the alternative minimum tax is not indexed for inflation or real growth. A full analysis of these various trends would involve a much broader analysis than is embodied in the Boskin paper. For the purpose of this analysis, we therefore make the simplifying assumption that the constant share of revenue assumption implies that income taxes forgone on contributions to, and collected on withdrawals from, retirement savings accounts remain a constant share of GDP.

The difference in taxes on withdrawals can also be expressed in dollar terms. Boskin (2003, table 5.4) projects that the present value of taxes on withdrawals will be \$6.9 trillion in revenues between 2004 and 2040. Our fiscal gap baseline, using Boskin's assumed tax rate of 28.7 percent and his nominal discount rate of 5.3 percent, implies revenues of \$6.1 trillion. Alternatively, both figures can be computed using the tax rate suggested by the Tax Policy Center model (20 percent) and a nominal discount rate consistent with those in our fiscal gap calculation (6 percent). Under those assumptions, Boskin's withdrawal rate generates a present value of \$4.4 trillion in taxes, while our model generates \$3.8 trillion. In either case, the fiscal gap baseline through 2040 already contains more than 85 percent of taxes on withdrawals that are in Boskin's calculations. These figures also show that, although most of the revenue is incorporated into the fiscal gap baseline, the present value of taxes on future withdrawals from these accounts is substantial. This implies that policies that reduce the taxation of such withdrawals could cause significant further deterioration in an already bleak fiscal outlook.

## B. Contributions

Boskin notes that contributions have been a fairly steady 8 percent of wages and salaries in the past and projects them forward at that rate through 2040. As a result, he projects taxes forgone on contributions at a constant 1.1 percent of GDP throughout the forecast period, as shown in Appendix Table 2. We do not have information on the implicit contribution rate embodied in the fiscal gap baseline, but it stands to reason that if contributions have been a steady share of wages and salaries, the CBO baseline would reflect this fact. Moreover, after 2013, Boskin's contributions remain at the same share of GDP as in 2013, which is exactly what the fiscal gap baseline would imply. The strong suggestion — though it is not proof — is that there are no new contributions to retirement saving plans in Boskin's model *relative to* the fiscal gap baseline.<sup>16</sup>

## C. Fiscal Gap Recalculated with New Withdrawal Series

Table 1 shows two reestimates of the fiscal gap assuming that revenues rise in the fiscal gap baseline to incorporate the difference between taxes on withdrawals in Boskin's model and in the baseline fiscal gap calculations. One set of estimates uses Boskin's assumed 28.7 percent tax rate on withdrawals. The other set uses a 20 percent tax rate on withdrawals, based on estimates from the Tax Policy Center microsimulation model. Because we believe our tax rate estimates are more accurate than Boskin's 28.7 percent assumption, we focus on the fiscal gap estimates that are based on our tax rate, but the results are almost the same under Boskin's tax rate.

The adjusted fiscal gaps in Table 1 are only very modestly different than the conventional fiscal gap estimates, with the difference hovering around 0.2 percent of GDP over all time horizons when using our estimated tax rates. For example, on a permanent basis, the adjusted

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<sup>16</sup> As noted in the previous section, another element of the direct revenue effects of tax-deferred saving plans is the revenue lost on saving diverted from taxable assets. Boskin's projections (in his Table 7.1) show that these forgone revenues are virtually constant as a share of GDP over time. Thus, the same conclusion that applies to projected contributions — that all of Boskin's projections are included in the long-term baseline that generates the fiscal gap — also applies to the taxes forgone on diverted saving.

fiscal gap falls to 7.38 percent of GDP relative to our conventionally-based estimate of 7.55 percent. Through 2040, the fiscal gap declines to 2.07 percent on an adjusted basis, relative to a conventional estimate of 2.25 percent.

Figure 3 shows the projected deficits in the unified budget in the fiscal gap baseline (the same as in Figure 1) and with an adjustment for Boskin's projected withdrawals. Figure 4 shows the projected primary deficits in the fiscal gap baseline and with an adjustment for Boskin's projected withdrawals. The two figures show clearly that the adjustment for withdrawals barely changes the level and certainly changes no important trend in projected fiscal outcomes.

All of these changes refer to how incorporating Boskin's projections would affect the fiscal gap that we calculate. In Box 1, we discuss why other approaches to measuring the fiscal gap are also unlikely to be altered significantly by incorporation of Boskin's calculations.

**Box 1: How would other fiscal gap calculations be affected by retirement plan growth?**

Gokhale and Smetters (2003) use a different base case for revenues. Rather than assuming that revenues are constant as a share of GDP after 2013, they assume that individuals' tax payments depend on their age and sex (and that this function stays constant over time). Therefore, their base case presumably accounts for some portion of Boskin's estimated growing revenues from withdrawals beyond 2013, since their population projections reflect the aging of the baby boomers. Thus, the effect of explicitly incorporating Boskin's retirement accounts calculations in the Gokhale-Smetters analysis is likely to prove even smaller than the effect in our fiscal gap calculations, which hold revenues from withdrawals constant as a share of GDP after 2013.

The Congressional Budget Office also produces estimates of the long-term fiscal gap. CBO's long-run revenue assumption is sometimes described as setting long-term revenues equal to 19 percent of GDP (CBO 2002) and sometimes described as setting the long-term revenue-GDP ratio equal to the ratio in the 10<sup>th</sup> year of the CBO economic forecast (CBO 2000).<sup>17</sup> To the extent that the CBO projections follow the latter strategy, they reflect the same approach as our fiscal gap calculations. To the extent that the CBO projections follow the former strategy — setting the long-term ratio of revenues to GDP at 19 percent regardless of the revenue share of GDP in the 10<sup>th</sup> year of the forecast — the long-term fiscal gap estimates will differ somewhat from ours, but the impact of Boskin's revenue calculation is almost exactly the same.<sup>18</sup>

<sup>17</sup> CBO (2000) notes that the “long-term projections assume that tax receipts and discretionary spending remain constant as shares of gross domestic product after the projection period's first 10 years.” CBO (2002) instead assumes that “the projections also assume for analytical purposes that aggregate federal revenues will level out at 19 percent of GDP in 2020, reflecting the higher end of the range over which they have fluctuated during the post-World War II period (18 percent was the average from 1950 through 2001).”

<sup>18</sup> Our forecast — which includes extension of expiring tax cuts and adjustment of the AMT — shows revenue equal to just over 18.0 percent of GDP in 2013, and taxes on withdrawals at 1.7 percent of GDP assuming a 28.7 percent tax rate. We assume that if long-term revenues as a share of GDP were instead set at 19 percent, all components of revenue would be increased by the same proportion. (An alternative assumption is that the allocation of revenues would be reset to correspond to historical averages, since the assumption that revenues are set at 19 percent of GDP is based on historical averages. We do not use this assumption for many reasons, most notably that it implies a return to a tax structure that would involve very large changes in 2013 in corporate revenues, payroll tax rates,

## V. Modifying the Fiscal Gap for Feedback Effects

As noted above, fiscal status calculations typically do not include feedback effects, but these effects account for virtually all of Boskin's \$12 trillion revenue calculation. Boskin explicitly acknowledges the non-comparability of the two measures due to the existence of feedback effects.<sup>19</sup> In particular, as he notes, his revenue projections include feedback effects but the underlying fiscal gap does not — meaning that it is difficult to compare them directly. To generate a consistent comparison, the most straightforward calculation would omit feedback effects not only from the underlying fiscal gap calculation, but also from the adjustment to that calculation due to Boskin's projections. The previous section provides such estimates.

In this section, we supplement those findings by providing estimates of the feedback effects from revenues from retirement plan growth that are not already captured in the fiscal gap baseline. To be clear, we do not believe that dynamic effects should generally be incorporated for one component of the fiscal gap estimates, unless the other components are adjusted for feedback effects as well. Rather, our goal in this section is merely to calibrate the impact on the fiscal gap from incorporating both the direct effects outlined in the previous section and the feedback effects that are central to Boskin's revenue estimates.

The Appendix explains our approach in detail. Generally, we follow Boskin's specification of feedback effects and parameters, except that once again we generate two estimates, one with his assumed tax rates and one with ours. We focus on the feedback effects from Boskin's projected taxes on withdrawals that are not already reflected in the fiscal gap calculation. The feedback effects include those affecting (a) federal debt and interest payments and the taxes collected on interest payments on that debt and (b) the change in national saving and therefore the resulting change in the capital stock and taxes collected on the returns to capital.<sup>20</sup>

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income tax rates, etc.) Given our assumption, the fiscal gap unadjusted for Boskin's withdrawal projections would fall to 6.71 percent of GDP on a permanent basis and to 1.62 percent of GDP through 2040, since revenues after 2013 would be permanently higher by almost 1.0 percent of GDP. In addition, the imputed taxes on withdrawals in the fiscal gap baseline would rise proportionately, to 1.8 percent of GDP. This implies that the fiscal gap adjusted for Boskin's withdrawal projections would be 6.54 percent on a permanent basis and 1.43 percent of GDP through 2040. That is, using the assumption that revenues become 19 percent of GDP starting in the 11th year implies that the adjustments associated with Boskin's revenue effects would reduce the fiscal gap by 0.17 percent of GDP on a permanent basis and 0.19 percent of GDP through 2040. These are virtually the same as the adjustments shown in Table 1 under the assumption that long-term revenues remain just over 18 percent of GDP.

<sup>19</sup> As Boskin (2003, page 108) notes: "There are (at least) two important differences in the projections reported here and those of CBO and OMB...Second, we include estimates of the effects on business income taxes and their effects on government debt. These grow noticeably relative to GDP, as reported in Table 7.1. As noted above, these effects are not explicitly separately included in the CBO and OMB figures. To the extent they were included, the deficits in the non-deferred tax part of the budget might decrease future business income taxes, raising deficits and interest outlays further. Alternatively, excluding the direct and indirect effects of business income taxes would lower our estimates considerably...."

<sup>20</sup> As above, we assume no difference between the fiscal gap baseline and Boskin's assumptions regarding the contribution rate to tax-deferred accounts or the forgone revenues on diverted saving. As explained below, we follow the assumption in Boskin (2003) that withdrawals from retirement accounts do not reduce the capital stock. Incorporating the more realistic assumption that withdrawals do reduce the capital stock would imply even smaller feedback effects than we obtain here, and quite possibly could make the sign of the effect negative.

Incorporating the feedback effects due to additional revenue from retirement account withdrawals has only quite minor implications for the fiscal outlook over the next 75 years. Figures 3 and 4 underscore how small the change in the fiscal outlook would be — the lines showing the budget deficits with feedback effects from retirement accounts included show no important deviations from the lines showing the budget deficit under the conventional fiscal gap adjustment. Including the dynamic effects from the additional revenue, the fiscal gap through 2040 would fall to 2.03 of GDP, compared to a conventional fiscal gap of 2.25 percent of GDP and a gap of 2.07 percent of GDP adjusted for taxes on withdrawals without the feedback effects. Even through 2075, the gap would fall by only 0.3 percentage points of GDP, from 4.55 percent of GDP under the conventional measure of the fiscal gap to 4.25 percent of GDP with all of the adjustments made. Appendix Table 3 provides the year-by-year estimates.

Incorporating feedback effects has a substantially larger impact on the fiscal gap over an infinite horizon. This finding says little about the overall effect of retirement saving accounts on the budget or the economy, however. Instead, it underscores that the underlying assumptions in Boskin's model generate substantial tax revenues when private capital replaces government debt in household portfolios. As discussed in the Appendix, this result occurs because the rate of return to capital is assumed to be substantially higher than the government interest rate, and the tax rate on capital is assumed to be higher than the tax rate on interest income. Thus, Boskin's estimates benefit from a sort of "tax arbitrage" that can make a range of policies look "good" but must be evaluated with great care, given the absence of an explanation for the source of such differences in tax rates and rates of return.<sup>21</sup>

## **VI. Recalculating the Net Present Value of Revenues from Tax-Deferred Accounts**

So far, the analysis has basically accepted Boskin's base case budgetary effects and examined the extent to which they affect the long-term fiscal gap. In this section, we examine the underlying assumptions more closely and conclude that the base case budget effects themselves are exaggerated, in particular because the feedback effects are exaggerated. Our critique takes the assumed differential rates of return noted above as given, and focuses on other aspects of Boskin's assumptions and model.

### A. Parameter values

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<sup>21</sup> As an illustration, note that his paper shows that current assets in tax-deferred accounts amount to about \$11 trillion. Applying to those balances the 28.7 percent tax rate he assumes suggests that if all of the assets were cashed in now, the government would receive \$3 trillion in revenue. One would think that this would also be a reasonable estimate of the present value of revenues from these accounts. Assets within the accounts should face a zero rate of tax on further accumulation (since the accounts apply the same tax treatment as a consumption tax), with additional deferral of taxes on delayed withdrawals just offsetting the higher level of taxes on the accumulated balances upon withdrawal. Unless the assumed rate of tax on withdrawals changes over time, the timing of withdrawals should not affect the present value of taxes collected from those accounts. (Allowing longer deferral of taxes, does, however, reduce the present value of the revenue that would be collected on the assets if they had been withdrawn from the tax-advantaged account earlier and deposited in a taxable account.) Yet Boskin (2003, Table 6.7) finds that the current assets in retirement accounts will generate, in present value, \$13 trillion in revenue through 2040 and presumably more thereafter.

Boskin's feedback effects depend crucially on three parameters: the share of contributions to retirement accounts that represent net additions to national saving; the effect of an increase in national saving on domestic investment; and the tax rate on the income from increased investment. As discussed in the Appendix, economic theory and empirical evidence suggest that each of these parameters is specified in Boskin's calculations in ways that overstate the feedback effect. In particular, Boskin assumes that almost 50 percent of contributions to tax-deferred retirement accounts represent reductions in household consumption — that is, increases in national saving. We use a 30 percent or 40 percent figure, and even those may be too high based on the empirical literature to date. Boskin assumes that increases in national saving fully translate into increases in domestic investment. Based on the empirical literature, a more reasonable alternative is that about two-thirds of any increase in national saving manifests itself as an increase in domestic investment, with the other third increasing net foreign investment by Americans.<sup>22</sup> Finally, Boskin assumes that each dollar of capital income faces a marginal tax rate of 25 percent, whereas the 19 percent rate that we employ is probably an overestimate.<sup>23</sup> Other parameter values also affect Boskin's revenue estimate and appear to be mis-specified as well. For example, Boskin assumes that contributions are deducted at a marginal tax rate of 28.7 percent and withdrawals are taxed at the same rate. We use figures of 20 percent for each.

As shown in the Appendix, these adjustments make an enormous difference to the purported overall budgetary effect. Assuming that 30 percent of contributions to tax-deferred accounts represent net national saving, the adjusted parameters imply a present value of just \$1.2 trillion in revenues through 2040 — one-tenth of Boskin's base case estimate. Even assuming that 40 percent of contributions are net national saving, along with the other adjustments to the parameters, implies the net present value of revenues from retirement plans will be \$3.3 trillion through 2040, less than 30 percent of Boskin's base case estimate. In either case, the results are far smaller than the \$12 trillion figure that Boskin obtains.

Almost all of the reduction comes from changes in the perceived feedback effects. In our \$1 and \$3 trillion estimates, feedback effects account for \$2 trillion and \$3 trillion, respectively, far lower than the \$11 trillion feedback effect contained in Boskin's \$12 trillion revenue estimate.

## B. Interest payments

Boskin's analysis includes the present value of the change in interest payments over time, as well as the change in the present value of revenues and non-interest expenditures. We do the same above, but only for purposes of recalculating Boskin's budget figure with different parameters. Including the net present value of interest payments is unconventional and can lead to misleading results. In particular, standard present-value projections of budget shortfalls

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<sup>22</sup> The increase in net foreign investment by Americans can take the form of increased American investment in other countries and/or reduced foreign investment in the United States. We assume that foreign investment in the United States and American investment overseas raise less revenue for the U.S. government than American investment in the United States (see the Appendix).

<sup>23</sup> Following Boskin, we do not consider how the extra capital created by new saving within tax-deferred accounts and by increases in tax revenues is allocated within the economy, or how this allocation affects the rate of capital income taxation or the before-tax returns to capital and labor.

properly exclude associated debt service costs. Such standard projections include the fiscal gap measure we report above, generational accounting, accrual accounting, the actuarial deficit in Social Security and Medicare, and so on. Ignoring the present value of changes in interest payments (and the taxes on those payments), the net present value of revenues from tax-deferred accounts falls to between \$0.7 trillion and \$1.9 trillion through 2040 (Appendix Table 5).

To see why inclusion of interest payments in present value calculations is misleading, consider a program that generates direct outlays of \$x per year forever. If the interest rate is constant at level r, the present value of that stream of outlays is  $\$x/r$ . Including associated debt service payments, however, the cost is  $\$x(1+r)$  in the first year,  $\$x(1+r)^2$  in the second year, and so on. Discounting those costs yields a present value of  $\$x(1+r)/(1+r)$  due to first-year costs,  $\$x(1+r)^2/(1+r)^2$  due to second-year costs and so on, with the implication that the present value of the outlay stream is infinite when interest accruals are included. Now consider two different direct outlay streams, one 100 times larger than the other. The present value of the smaller outlay, including interest, will far exceed the present value of the larger outlay excluding interest. As a result, comparing the present value of budget shortfalls—which typically exclude debt service payments—to the revenue stream from tax-deferred accounts, including the change in debt payments—can be extraordinarily misleading.

### C. Feedback Effects

The feedback effects we calculate use adjusted parameters, but they are still too large because of an error in the programming of Boskin's estimates (Boskin, personal communication). In particular, the model in Boskin (2003) assumes that contributions to retirement accounts raise the capital stock but it ignores the fact that withdrawals would reduce the capital stock. Allowing withdrawals to reduce the capital stock would significantly diminish the feedback effect. In fact, since projected withdrawals exceed projected contributions in every year from 2003 forward in Boskin's model, the feedback effects taking withdrawals into account (and ignoring the interest payments) may prove negative.<sup>24</sup> If so, the overall net present value of the effect of tax-deferred accounts on the budget will prove negative (again, excluding interest from the present value calculations; see Appendix Table 5).

### D. Summary

The calculations above suggest that the net present value of revenues from tax-deferred retirement saving plans — with parameter values adjusted, interest payments removed from the calculations, and feedback effects corrected to allow withdrawals to reduce the capital stock — is close to zero and could well be negative. Even these estimates may be exaggerated because they depend on the assumption, discussed above, that different assets will generate very different returns, even after taxes.

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<sup>24</sup> Technically, the model assumes not that all contributions raise the capital stock but rather that the share of contributions that represents net additions to national saving raises the capital stock. The analogous assumption for withdrawals would be that the share of withdrawals that reduce the capital stock is equal to the share of contributions that raise the capital stock.

Notably, though, even in our estimates showing that the net present value of revenue is small, the *gross* present value of revenue due to taxes on withdrawals, taken by itself, remains substantial. As described above, the present value of revenue on withdrawals is projected to amount to almost \$4 trillion between now and 2040.

## **VII. Conclusion**

The United States faces a substantial fiscal gap. Although retirement assets are large and growing, most of the fiscal implications associated with that fact are already incorporated into the fiscal gap calculations. Policy-makers and others looking to Boskin's (2003) results for a previously hidden pot of gold are thus likely to be disappointed. We estimate that explicitly incorporating the additional taxes associated with retirement accounts would reduce the long-term fiscal gap by only 0.2 to 0.3 percent of GDP, a relatively minor change since the fiscal gap amounts to more than 7 percent of GDP under our assumptions. Over the next 40 years, adjusting the fiscal gap to account for retirement plans also alters the fiscal gap by only a small amount.

Boskin's paper is nonetheless valuable, in showing that the absolute magnitude of the revenue flows associated with withdrawals from tax-deferred accounts will be substantial. His results therefore imply that proposals to reduce the taxation of withdrawals from retirement accounts could significantly and adversely affect an already bleak fiscal outlook.

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## Appendix

The appendix (A) describes Boskin's model, (B) discusses the base case parameter choices, (C) provides the methodology to consider feedback effects, (D) discusses alternative parameter choices and (E) shows the sensitivity of Boskin's overall budget calculation to those alternative parameter choices.

### A. Overview: How Tax-Deferred Accounts Affect Fiscal Outcomes

Boskin's model incorporates six distinct effects of tax-deferred saving accounts on the federal budget:

- Contributions to traditional retirement accounts are tax-deductible, which reduces revenues at the time the contribution is made. The revenue loss depends on (a) the level of contributions, which are modeled as a share of wages and salaries, and (b) the tax rate at which contributions are deducted.
- Withdrawals are taxable, which raises revenue when the withdrawal is made. The revenue gain depends on (a) the amount of withdrawals and (b) the tax rate at which contributions are taxed.
- To the extent that contributions are financed by diverted saving, revenue on the taxable saving that would have occurred is reduced. The revenue loss depends on (a) the share of contributions to tax-deferred saving accounts that is taken from existing assets or current-period saving that would have been done anyway, (b) the effective tax rate on that saving, and (c) the rate of return on private assets.
- To the extent that contributions generate net additions to national saving, the capital stock increases and the associated increase in future income raises revenue. The extent to which this occurs depends on (a) the share of contributions to tax-deferred saving accounts that represents net national saving—that is, is neither a tax deduction for the contribution or diverted from existing assets or other saving; (b) the share of increases in national saving that show up as increases in domestic investment; (c) the rate of return on that investment, and (d) the effective tax rate on the income from the investment.
- All of these factors change the revenue received by the government, which in turn affects the level of government debt, which in turn affects federal interest payments. Federal interest payments will fall (rise) if the net effect of the factors above is to raise (reduce) revenue.
- The change in federal interest payments will change income taxes. The amount by which income tax revenues change depend on (a) the change in federal interest payments and (b) the effective income tax rate on interest payments.

## B. Base Case Parameter Values

In the base case, Boskin assumes that: contributions are a steady 8 percent share of total wages and salaries, which are fixed relative to GDP in the future; all balances are withdrawn at age 65; the nominal rates of return on equities and government bonds are 10 and 5.3 percent, respectively; the inflation rate is 3 percent; the tax rate on saving diverted from taxable forms into retirement accounts would have been 15 percent had it not been shifted; and the tax rate on interest paid by the government is 20 percent. We use these parameter values in the base case and the sensitivity analysis.

Other parameter values, which are amended in the sensitivity analysis below, include the assumptions that: each dollar of increased national saving creates a dollar of net additional domestic investment; 25 cents of each dollar of tax-deferred retirement account contribution is diverted saving; the tax rate applicable to contributions and withdrawals is 28.7 percent; and the tax on income from capital is 25 percent.

## C. Feedback Effects

To examine the feedback effects from the incremental taxes on withdrawals, i.e., taxes on withdrawals that exceed those already accounted for in the fiscal gap measure, we proceed as follows:<sup>25</sup>

Higher taxes on withdrawals generate a change in public debt and therefore taxes collected on interest payments; they also generate a change (through the budget balance) on the capital stock and therefore the taxes collected on the returns to capital. These are simply the last three effects listed in section A of this Appendix.

Consider a change to the primary budget balance in year 1 — due to higher than projected taxes on withdrawals. This causes a change in the unified budget balance and therefore in both the stock of outstanding public debt and the level of national saving. The change in outstanding public debt affects interest payments (which in turn affect future unified budget balances) and thus income taxes paid on interest payments (which we include in the primary budget measure). The change in national saving affects the capital stock and therefore the taxes paid on capital income (we assume capital taxes apply to the nominal returns to capital after depreciation), which in turn affects the primary budget balance and the unified budget balance. A series of exogenous changes to the primary budget balance — which is one way in which to imagine incorporating the additional revenue identified by Boskin into the calculations — would thus generate a series of these effects.

In particular, a change in the unified budget ( $UB$ ) is reflected in a change in debt held by the public ( $D$ ):

$$(1) \quad DD_t = -DUB_t,$$

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<sup>25</sup> As noted above, we follow Boskin in not incorporating the effect of withdrawals on private saving. Taking that effect into account would reduce the feedback effects relative to those presented here.

where an increase in  $UB$  is an increase in the unified surplus and therefore a reduction in publicly held debt.

The cumulative change in the debt causes a change in interest payments in year  $t$  equal to  $r \sum_{s=0}^{t-1} \Delta D_s$ , where  $r$  is the nominal interest rate paid on government debt. The change in interest payments then translates into a change in taxes on that interest in year  $t$  equal to  $\mathbf{m}_i r \sum_{s=0}^{t-1} \Delta D_s$ , where  $\mathbf{m}_i$  is the average effective marginal tax rate on interest receipts.

The change in the unified budget balance in year  $t$  also translates dollar-for-dollar into a change in national saving and the capital stock (since we assume that  $\mathbf{g} = 1$  here):

$$(2) \quad \mathbf{DK}_t = \mathbf{DUB}_t$$

The cumulative change in the capital stock determines the change in taxes on capital income in year  $t$ , which is equal to  $\mathbf{m}_b \mathbf{MPK} \sum_{s=0}^{t-1} \Delta K_s$  where  $\mathbf{m}_b$  is the average effective marginal tax rate on capital income and  $\mathbf{MPK}$  is the nominal marginal product of capital (net of depreciation, since we assume that nominal returns net of depreciation are subject to taxation).

The change in the unified budget balance is itself determined by four terms: the shock to the primary budget, the change in interest payments, the change in income taxes on those interest payments, and the change in capital income taxes:

$$(3) \quad \Delta \mathbf{UB}_t = \overline{\Delta \mathbf{PS}_t} - r \sum_{s=0}^{t-1} \Delta D_s + \mathbf{m}_i r \sum_{s=0}^{t-1} \Delta D_s + \mathbf{m}_b \mathbf{MPK} \sum_{s=0}^{t-1} \Delta K_s,$$

where the first term on the right-hand side of (3) is the exogenous change in the primary surplus in year  $t$  (in this case, the additional revenue on withdrawals relative to the baseline). Note that under the assumptions above,  $\mathbf{DK} = -\mathbf{DD} = \mathbf{DUB}$  in each year. Equation (3) therefore collapses to:

$$(4) \quad \Delta \mathbf{UB}_t = \left\{ \overline{\Delta \mathbf{PS}_t} + (\mathbf{m}_b \mathbf{MPK} - \mathbf{m}_i r) \sum_{s=0}^{t-1} \Delta \mathbf{UB}_s \right\} + r \sum_{s=0}^{t-1} \Delta \mathbf{UB}_s,$$

where the bracketed term on the right-hand side of (4) is the primary budget with dynamic feedback effects incorporated.

Equation (4) highlights that the “dynamic effect” on the primary budget in this simplified setting boils down to two offsetting channels. First, a positive shock to the primary budget (that is, a reduction in the primary deficit) reduces the public debt outstanding, which in turn reduces interest payments (which are excluded from the primary budget) and therefore reduces income taxes on the interest payments (the partial effect of which is to increase the primary deficit).

Second, the same positive shock to the primary budget increases national saving and therefore increases the capital stock owned by Americans, which in turn increases capital tax revenue (the partial effect of which is to reduce the primary deficit). These two effects would exactly offset each other in dollar terms (assuming no change in interest rates) if the net marginal product of capital were equal to the interest rate paid on government debt and the tax rate on interest were equal to the tax rate on other returns to capital.<sup>26</sup> In that case, the additional tax revenue collected on the returns to the increased capital stock would be exactly offset by the additional tax revenue forgone on the interest payments from the reduced public debt – and the net effect of the primary budget would be zero. The total effect of the shock to the primary budget would thus be equal to the “static” effect. (The increase in the capital stock would still increase GDP in this case, so a dynamic analysis would imply a smaller fiscal gap relative to GDP.) In (4), if  $m_t MPK = m_t r$ , the effect on the primary budget in year  $t$  would collapse to  $\overline{\Delta PS}_t$ , which is identical to the “static” effect.

Boskin’s base-case assumptions do not meet this condition, i.e., the marginal product of capital multiplied by the tax rate on the return is higher than the interest rate on the debt multiplied by the tax rate on interest. In particular, Boskin assumes that the marginal product of capital after inflation and depreciation is 7 percent, that the tax rate on income (net of depreciation) generated from increases in the capital stock is 25 percent, that the tax rate on interest payments on federal debt is 20 percent, that the interest rate on government debt after inflation is 2.3 percent, and that the inflation rate is 3 percent.

These parameter choices also raise a deeper question. If the marginal product of capital exceeds the government interest rate only because of the risks associated with capital returns, and if the tax rates on the returns to different types of capital were the same, the “dynamic effect” would purely reflect a risk premium rather than a change on a risk-adjusted basis. If the tax rates on the two assets differ, this could also contribute to a net “dynamic” effect. But how one should account for revenues generated by differences in tax rates (which the government can control) or risk is not at all clear. We nonetheless adopt Boskin’s parameter values (except for his tax rate on withdrawals, discussed below) for the dynamic effects shown in Figures 3 and 4 and reported in the main text.

#### D. Sensitivity Analysis: Parameter Values

##### *Tax rates on contributions and withdrawals ( $\mu_c$ and $\mu_w$ )*

Boskin assumes that the marginal tax rate applying to both contributions and withdrawals is 28.7 percent. These figures are weighted averages of tax rates in the 2001 Survey of Consumer Finances, where the weights are based on households’ retirement account balances and the tax rates are defined relative to adjusted gross income. We believe that this assumed tax rate on withdrawals is significantly too high. Data from the Tax Policy Center micro-simulation model indicate that the average marginal income tax rate on taxable pension and IRA income is

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<sup>26</sup> This invariance holds in the spreadsheet that generates the figures shown in Appendix Table 3. The results shown there would thus display no dynamic effect if these conditions obtained.

only about 17 percent in 2003, and will rise to about 19.5 percent by 2013. We set the rate at 20 percent in our alternative scenario.

We believe the assumed tax rate on contributions is too high as well. Because most households have higher income when working than in retirement, one might expect marginal tax rates to be higher during the working years, when contributions are made, than during retirement, when withdrawals are made. Boskin (page 21), for example, notes that the effective tax rate on tax-deferred plans for working-age people is higher than for retirees. Nonetheless, we set the tax rate on contributions equal to the rate on withdrawals. Setting  $\mu_c$  higher than  $\mu_w$  would reduce the revenue effect of tax-deferred plans.

#### *Tax rate on capital income ( $\mu_b$ )*

Boskin assumes that extra each dollar of domestic capital income bears an effective tax rate of 25 percent. Domestic capital is allocated to corporate, noncorporate business, and residential housing uses. Auerbach (2002, Table 3) estimated an overall effective tax rate on capital income of 19 percent, with the 2001 Bush tax cut fully phased in. We use this rate in our calculations below, even though it is probably an overestimate at this stage. Since the 2001 legislation, tax rates on capital gains and dividends have been reduced, accelerated depreciation provisions have been added, and rules regarding the tax treatment of intangibles have become more generous, all of which would reduce the effective tax rate. In addition, the calculations do not take account of tax sheltering activity. Finally, Auerbach's figure is an average economy-wide estimate, but the extra capital inside IRAs and \$401(k)s would not be subject to the same personal-level taxes as funds in taxable accounts.

#### *The share of increased national saving that becomes increased domestic investment ( $g$ )*

Boskin assumes that every dollar of increased national saving is invested in the United States. A more plausible assumption is that some of it flows overseas and is invested there. Over the long-term, changes in net foreign investment flows are estimated to account for between 25 and 40 percent of changes in national saving. For specific studies, see, among others, Feldstein and Bacchetta (1991), Feldstein and Horioka (1980), and Obstfeld and Rogoff (2000). For an overview of such studies, see CBO (1997).

If we assume that one-third of the added national saving flows out of the country, and that it faces a U.S. tax at one-fourth of the rate of domestic capital income (which does not seem implausible given the existence of the foreign tax credit and the ability to defer some taxes until the funds are repatriated), then  $\gamma = .75$  would be appropriate.

#### *The share of contributions that is diverted from other saving ( $a$ )*

Contributions to tax-deferred saving plans come from three sources: the tax deduction, saving that would have been done anyway, and reductions in consumption. The final source represents the share of the contribution that represents new national saving. The first and final sources combined are the share of the contributions that is new private saving.

Boskin assumes that 25 percent of contributions come from diverted saving. Along with his imputed tax rate on contributions of 28.7 percent, this implies that 46.3 percent of

contributions represent net additions to national saving. With an adjusted tax on contributions of 20 percent, the assumption that 25 percent of contributions are from diverted saving implies that 55 percent of contributions represent net additions to national saving. Both the 46.3 percent figure and the 55 percent figure are larger than almost all prior research on the topic.

The literature on IRAs has estimates that span a very wide range. Venti and Wise (1986, 1987, 1988, 1990, and 1991) find that between 45 and 66 percent of IRA contributions represent net additions to national saving, but other researchers find significantly smaller effects. Gale and Scholz (1994) find that almost none of the contributions that would arise from increased contribution limits would represent net additions to saving. Joines and Manegold (1995) estimate that less than 30 percent of IRA contributions represent net additions to national saving. Attanasio and DeLeire (2002) estimate that “at most 9 percent of IRA contributions represented net additions to national saving.”

A similar divergence marks the literature on 401(k) plans. Poterba, Venti and Wise (1995) find, essentially, that all 401(k) contributions represent increases in private saving, suggesting that roughly 80 percent of contributions represents new national saving. All other studies have generated far smaller effects. Engen and Gale (2000) using a more general model that nests (and rejects) the Poterba, Venti and Wise specification, find that between 10 and 30 percent of 401(k) contributions represent net private saving, suggesting that between -10 percent and 10 percent represent net national saving. Engelhardt (1999) finds that 401(k)s have no effect on private saving and thus by implication reduce national saving. Similarly, Pence (2002) is unable to detect a positive, significant impact of 401(k)s on private saving. Benjamin (2003) finds that 25 percent of 401(k) contributions are net national saving.

Thus, the two literatures follow a common theme. Research by Venti and Wise and Poterba, Venti and Wise finds that 45 percent or more of retirement plan contributions represent net additions to national saving, but every other researcher that has explored the issue finds evidence that the correct figure is less than 30 percent, and most have obtained answers of 10 percent or less. For purposes of this calculation, then, we assume that 30 percent of contributions represent net national saving. This figure is an overstatement relative to most authors who have examined the issue and is slightly higher than the value chosen by Hubbard and Skinner (1996) in their review.<sup>27</sup>

As noted, our estimated tax rate on contributions is about 20 percent, in contrast to Boskin’s 28.7 percent. This means that just to hold the share of contributions that are net national saving constant at the level Boskin assumes would require raising  $\alpha$  by .087. To have 30 percent of contributions represent net national saving, requires setting  $\alpha$  equal to 50 percent.

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<sup>27</sup> In the long-run, the share of contributions that represents net additions to national saving should rise. A simulation model, Engen, Gale and Scholz (1994, p. 145) find that in the 70<sup>th</sup> year after implementation, about 50 percent of saving incentive contributions would represent net additions to national saving, but they also find that during the 50 years the effect on national saving is approximately zero. Thus, assuming 30 percent of contributions are net additions to national saving over the first 60 years seems like an overstatement, even relative to their simulation model.

We also examine a case with  $a$  set at 40 percent, which implies that 40 percent of contributions are net saving.

#### E. Sensitivity Analysis: Revenue Effects

The changes above have striking effects on the estimated net present value of revenues from tax-deferred saving plans. The first line of Appendix Table 5 replicates Boskin's base case results. The effects of setting  $a=0.5$  are shown in the second line. The net revenue gain falls to \$3.9 trillion. Relative to the base case, forgone revenues on diverted saving rise and feedback effects (involving more capital stock and less interest payments) decline.

The effects of setting  $g=0.75$  (leaving  $a$  at its base case value of 0.25) are shown in the third line. The overall revenue gain is \$8 trillion, including substantial declines in the feedback effect — the capital stock effect and the interest income effect — relative to the base case.

The fourth line shows that combining the assumptions  $a=.50$  and  $g=.75$  generates an estimated net present value of revenues of \$2.4 trillion. This represents our own calculations, rather than explicit results from Boskin's paper, and so it should be clarified. The taxes lost on contributions and taxes received on withdrawals do not change from the base case. Lost taxes on diverted saving rise to \$2.4 trillion, as shown in the second line (where  $a=0.5$ ). To estimate the impact on the capital stock and associated revenue, we note that raising  $a$  from .25 in the base case to .50 in the second line reduces the capital stock effect by about 34 percent (to \$4.4 trillion from \$6.7 trillion) and reduces the interest effect by 36 percent (to \$3.5 trillion from \$5.5 trillion). To estimate the combined effect of raising  $a$  and reducing  $g$  we make similar percentage adjustments starting from the  $g=0.75$  case. That is, we reduce the capital stock effect by 34 percent (to \$2.3 trillion from \$3.5 trillion) and reduce the interest effect by 36 percent (to \$0.6 trillion from \$1 trillion). Taxes on interest income are 20 percent of the interest itself, and so fall to \$0.1 trillion.

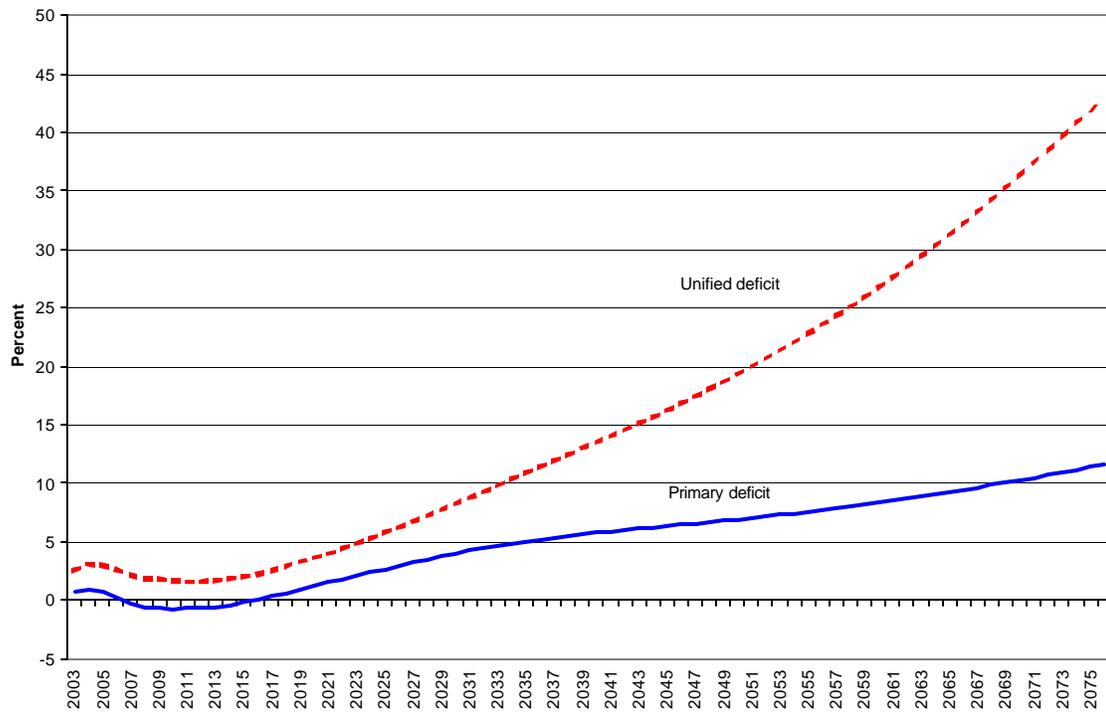
The final row shows that the effect of adjusting the assumed tax rates on contributions, withdrawals, and capital income to our preferred values is to reduce the net present value of revenue to \$1.1 trillion. Setting  $\mu_c$  and  $\mu_w$  at 20 percent implies lost taxes on contributions of \$5 trillion and taxes on withdrawals of \$6.4 trillion. Reducing the tax on business income to 19 percent reduces the revenue from business income to \$1.7 trillion. Note that the reduction in the capital stock effect should also reduce the interest income effect, but we do not make that adjustment because there is no obvious way to calibrate the adjustment without access to the underlying model.

A similar set of calculations, in the bottom panel of Appendix Table 5, shows that with the same set of adjusted assumptions but with  $a=40$  percent rather than 50 percent, the estimated net present value of revenues from tax-deferred accounts is just \$3.3 trillion.

**Table 1: Effect of Retirement Plan Growth on Fiscal Gap Calculation**  
(% of GDP)

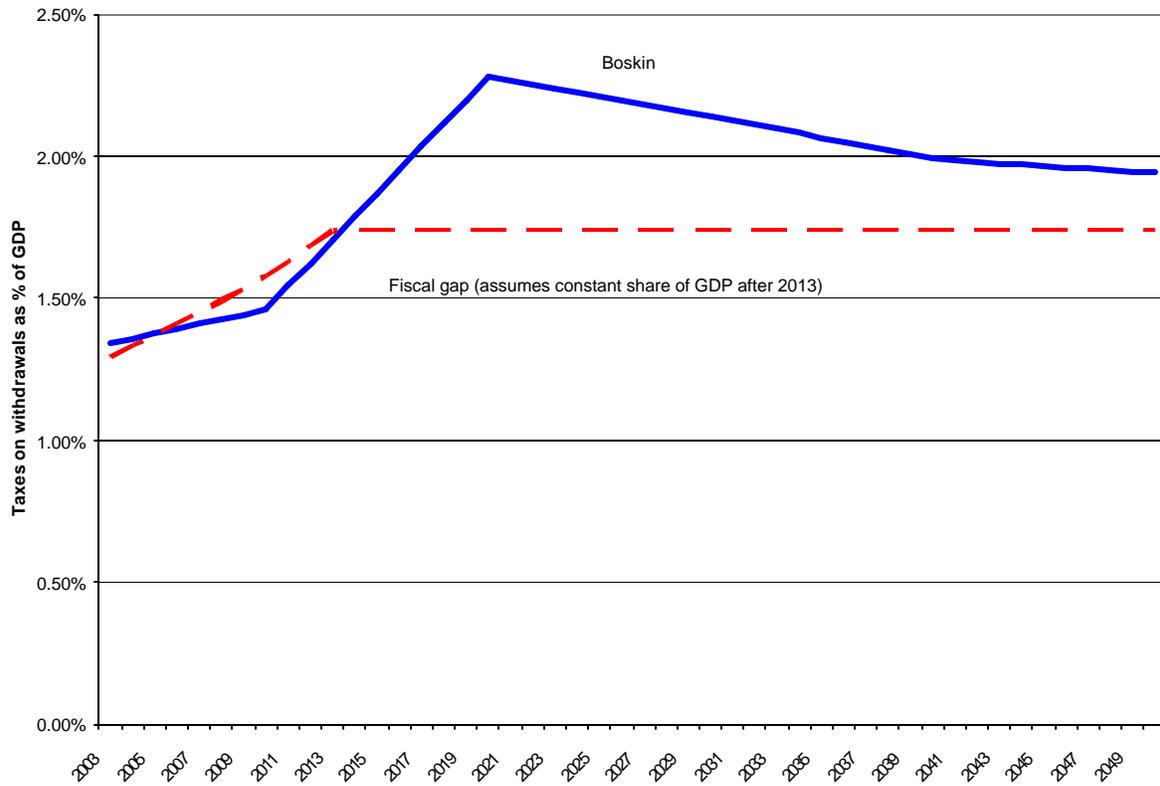
	<u>Permanent</u>	<u>Through 2075</u>	<u>Through 2050</u>	<u>Through 2040</u>
<b>Fiscal gap</b>	<b>7.55</b>	<b>4.55</b>	<b>2.99</b>	<b>2.25</b>
<b>Adjusted for retirement plan growth</b>				
At 20% tax rate	7.38	4.38	2.81	2.07
At 28.7% tax rate	7.31	4.30	2.74	2.00

**Figure 1: Projected Primary and Unified Budget Deficits**

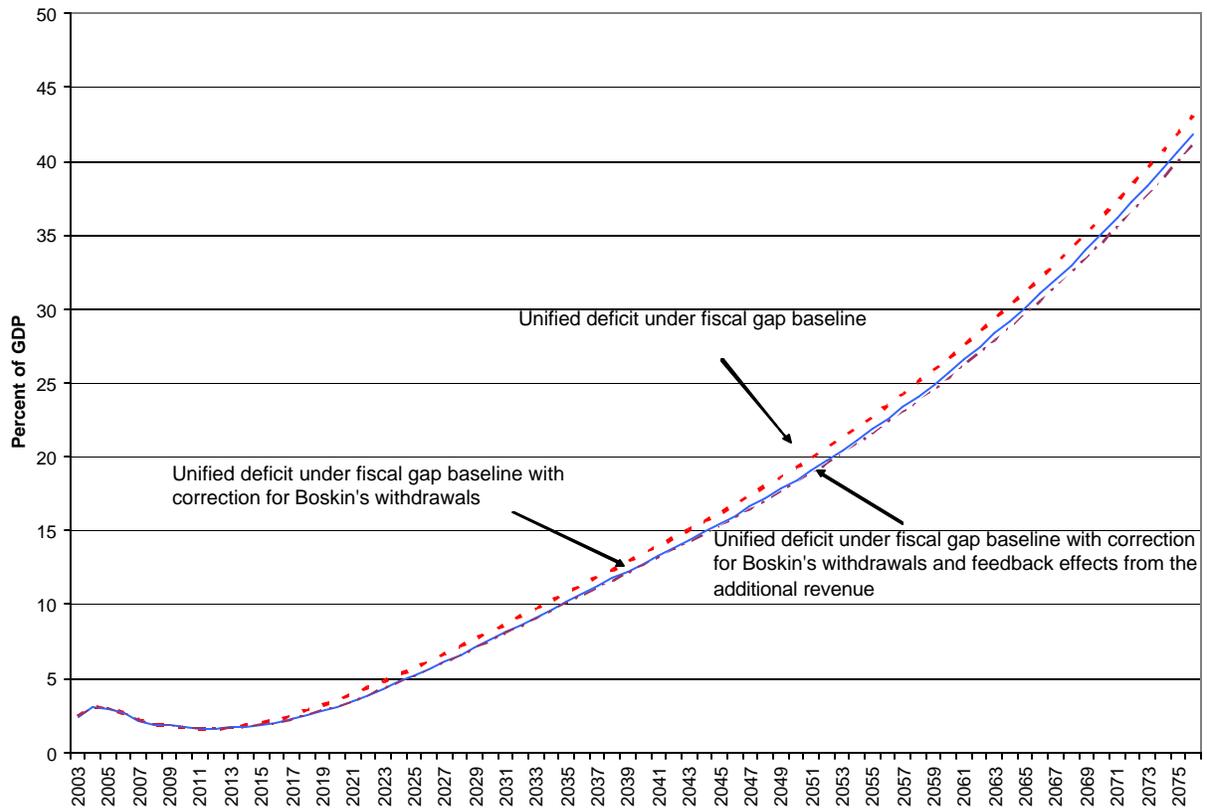


Note: Budget deficits are reported on a NIPA basis.

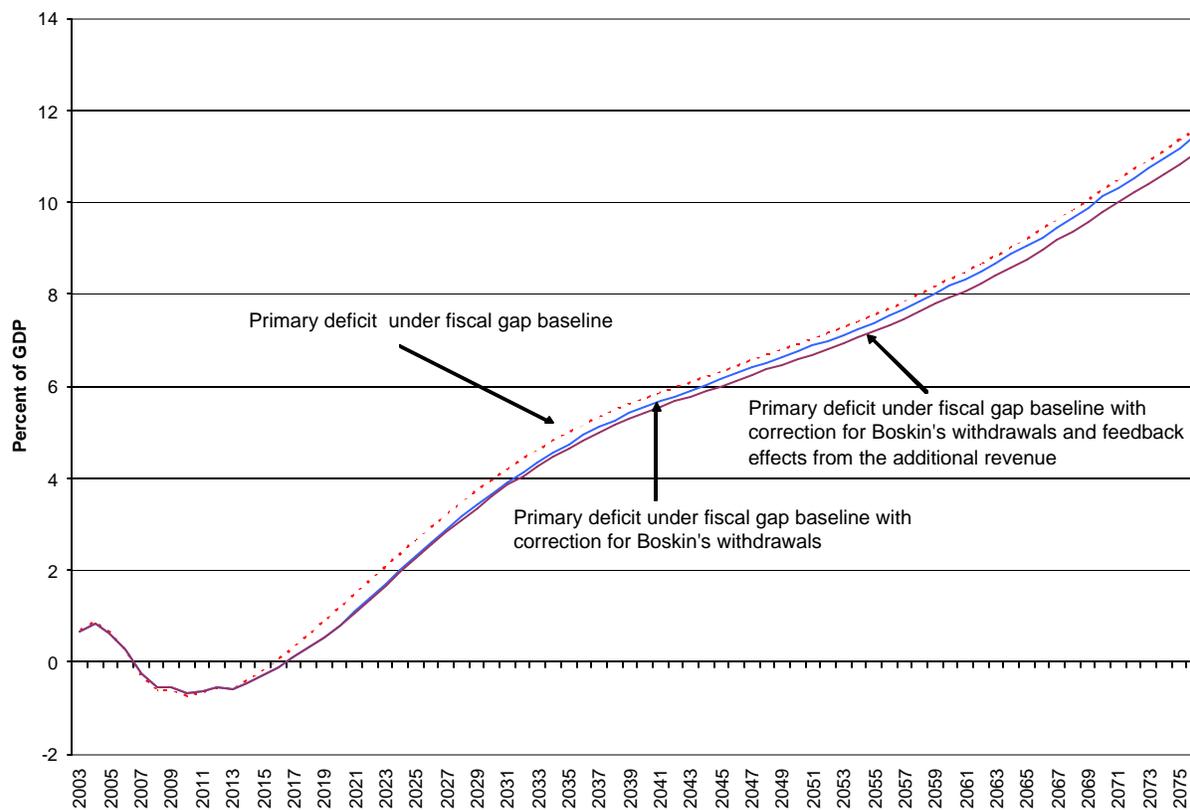
**Figure 2: Taxes on Withdrawals from Retirement Accounts  
Assuming 28.7 Percent Tax Rate**



**Figure 3: Unified Deficits With and Without Adjustments for Additional Revenue from Retirement Account Withdrawals**



**Figure 4: Primary Deficits With and Without Adjustments for Additional Revenue from Retirement Account Withdrawals**



**Appendix Table 1: Effect of Retirement Plan Growth on Fiscal Gap Calculation**  
(\$ billion, present value)

	<u>Permanent</u>	<u>Through 2075</u>	<u>Through 2050</u>	<u>Through 2040</u>
<b>Fiscal gap</b>	59,720	21,512	10,662	6,716
<b>Adjusted for retirement plan growth</b>				
At 20% tax rate	58,421	20,710	10,041	6,195
At 28.7% tax rate	57,857	20,361	9,771	5,968

**Appendix Table 2: Boskin's Assumed Revenue on Contributions and Withdrawals**  
(percent of GDP)

Year	Forgone revenue on contributions	Taxes on withdrawals assuming:	
		28.7 percent tax rate	20 percent tax rate
<b>2000</b>	<b>1.17</b>	<b>1.29</b>	0.90
2001	1.16	1.31	0.91
2002	1.16	1.32	0.92
2003	1.15	1.34	0.93
2004	1.14	1.36	0.95
2005	1.14	1.38	0.96
2006	1.13	1.39	0.97
2007	1.12	1.41	0.98
2008	1.11	1.43	0.99
2009	1.11	1.44	1.01
<b>2010</b>	<b>1.10</b>	<b>1.46</b>	1.02
2011	1.10	1.54	1.07
2012	1.10	1.62	1.13
2013	1.10	1.71	1.19
2014	1.10	1.79	1.25
2015	1.10	1.87	1.30
2016	1.10	1.95	1.36
2017	1.10	2.03	1.42
2018	1.10	2.12	1.47
2019	1.10	2.20	1.53
<b>2020</b>	<b>1.10</b>	<b>2.28</b>	1.59
2021	1.10	2.27	1.58
2022	1.10	2.25	1.57
2023	1.10	2.24	1.56
2024	1.10	2.22	1.55
2025	1.10	2.21	1.54
2026	1.10	2.20	1.53
2027	1.10	2.18	1.52
2028	1.10	2.17	1.51
2029	1.10	2.15	1.50
<b>2030</b>	<b>1.10</b>	<b>2.14</b>	1.49
2031	1.10	2.13	1.48
2032	1.10	2.11	1.47
2033	1.10	2.10	1.46
2034	1.10	2.08	1.45
2035	1.10	2.07	1.44
2036	1.10	2.05	1.43
2037	1.10	2.04	1.42
2038	1.10	2.02	1.41
2039	1.10	2.01	1.40
<b>2040</b>	<b>1.10</b>	<b>1.99</b>	1.39
2041	1.10	1.99	1.38
2042	1.10	1.98	1.38
2043	1.10	1.98	1.38
2044	1.10	1.97	1.37
2045	1.10	1.97	1.37
2046	1.10	1.96	1.37
2047	1.10	1.96	1.36
2048	1.10	1.95	1.36
2049	1.10	1.95	1.36
<b>2050</b>	<b>1.10</b>	<b>1.94</b>	1.35

Source for figures in bold: Boskin (2003), Table 7.1. Other figures are interpolated by authors.

**Appendix Table 3: Feedback Effects from Additional Taxes on Withdrawals**  
(\$ billion)

Year	Static change in primary budget	Feedback change in primary budget	Feedback change in unified budget	Feedback change in debt	Feedback change in capital stock	Feedback change in GDP
2003	(4.6)	(4.6)	(4.6)	(4.6)	4.6	0.6
2004	(3.3)	(3.3)	(3.6)	(8.2)	8.2	1.1
2005	(1.9)	(2.0)	(2.4)	(10.6)	10.6	1.4
2006	(0.1)	(0.2)	(0.8)	(11.4)	11.4	1.5
2007	1.9	1.7	1.1	(10.3)	10.3	1.3
2008	4.5	4.4	3.8	(6.4)	6.4	0.8
2009	7.4	7.3	6.9	0.5	(0.5)	(0.1)
2010	11.0	11.0	11.0	11.5	(11.5)	(1.5)
2011	7.7	7.9	8.5	20.0	(20.0)	(2.6)
2012	4.7	5.0	6.0	26.1	(26.1)	(3.4)
2013	1.3	1.6	3.0	29.1	(29.1)	(3.8)
2014	(9.4)	(9.0)	(7.4)	21.7	(21.7)	(2.8)
2015	(21.0)	(20.7)	(19.6)	2.1	(2.1)	(0.3)
2016	(33.7)	(33.6)	(33.5)	(31.4)	31.4	4.1
2017	(47.4)	(47.9)	(49.5)	(80.9)	80.9	10.5
2018	(62.4)	(63.6)	(67.9)	(148.8)	148.8	19.3
2019	(78.8)	(80.9)	(88.9)	(237.7)	237.7	30.9
2020	(96.4)	(99.8)	(112.6)	(350.3)	350.3	45.5
2021	(98.3)	(103.3)	(122.1)	(472.4)	472.4	61.4
2022	(100.2)	(107.0)	(132.3)	(604.7)	604.7	78.6
2023	(102.1)	(110.8)	(143.2)	(747.9)	747.9	97.2
2024	(104.0)	(114.7)	(154.8)	(902.8)	902.8	117.4
2025	(105.8)	(118.7)	(167.2)	(1,069.9)	1,069.9	139.1
2026	(107.6)	(122.8)	(180.3)	(1,250.2)	1,250.2	162.5
2027	(109.3)	(127.1)	(194.2)	(1,444.5)	1,444.5	187.8
2028	(110.9)	(131.5)	(209.1)	(1,653.6)	1,653.6	215.0
2029	(112.5)	(136.1)	(224.9)	(1,878.5)	1,878.5	244.2
2030	(114.1)	(140.8)	(241.7)	(2,120.2)	2,120.2	275.6
2031	(115.2)	(145.4)	(259.3)	(2,379.4)	2,379.4	309.3
2032	(116.2)	(150.1)	(277.9)	(2,657.3)	2,657.3	345.4
2033	(117.0)	(154.9)	(297.6)	(2,954.9)	2,954.9	384.1
2034	(117.7)	(159.8)	(318.5)	(3,273.4)	3,273.4	425.5
2035	(118.2)	(164.9)	(340.6)	(3,614.0)	3,614.0	469.8
2036	(118.4)	(170.0)	(364.0)	(3,978.0)	3,978.0	517.1
2037	(118.4)	(175.2)	(388.7)	(4,366.7)	4,366.7	567.7
2038	(118.1)	(180.4)	(414.9)	(4,781.6)	4,781.6	621.6
2039	(117.6)	(185.8)	(442.5)	(5,224.1)	5,224.1	679.1
2040	(116.7)	(191.2)	(471.7)	(5,695.8)	5,695.8	740.5

**Appendix Table 4: Key Parameter Values in Base Case and Sensitivity Analyses**

<u>Notation</u>	<u>Description</u>	<u>Base Case</u>	<u>Alternative Value</u>
$\mu_c$	MTR for contributions	0.287	0.2
$\mu_w$	MTR for withdrawals	0.287	0.2
$\mathbf{a}$	Share of contributions from diverted saving	0.25	0.5-0.4
1- $\mathbf{a}$	Share of contributions that are new national saving	0.463	0.3-0.4
$\mu_b$	Tax rate on capital income	0.25	0.19
$\mathbf{g}$	Share of new national saving that translates into increased domestic investment	1.00	0.75

**Appendix Table 5: Net Present Value of Revenues from Tax-Deferred Accounts through 2040**  
(\$ trillion)

	Total NPV revenue	Lost revenue on contributions	Lost revenue on diverted saving	Tax on withdrawals	Tax on new capital income	Reduction in interest payments	Tax on interest payments	Source
<u>Panel 1</u>								
Boskin base case	11.8	-7.1	-1.2	9.1	6.7	5.5	-1.1	Boskin, Table 5.4
Base case except $\mathbf{a} = 0.5$	3.9	-7.1	-2.4	9.1	3.5	1.0	-0.2	Boskin, Table 6.1
Base case except $\mathbf{g} = 0.75$	8.0	-7.1	-1.2	9.1	4.4	3.5	-0.7	Boskin, Table 6.3
Base case except $\mathbf{a} = 0.5$ and $\mathbf{g} = 0.75$	2.4	-7.1	-2.4	9.1	2.3	0.6	-0.1	Authors' calculations
Same but $\mu_c = .20$ , $\mu_w = .20$ , and $\mu_b = .19$	1.2	-5.0	-2.4	6.4	1.7	0.6	-0.1	Authors' calculations
<u>Panel 2</u>								
Base case except $\mathbf{a} = 0.4$	7.1	-7.1	-1.9	9.1	4.8	2.8	-0.6	Boskin, Table 6.1
Base case except $\mathbf{a} = 0.4$ and $\mathbf{g} = 0.75$	4.4	-7.1	-1.9	9.1	3.1	1.8	-0.4	Authors' calculations
Same but $\mu_c = .20$ , $\mu_w = .20$ , and $\mu_b = .19$	3.3	-5.0	-1.9	6.4	2.4	1.8	-0.4	Authors' calculations