



Long-Term Measures of Fiscal Imbalance

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Summary

Short-term budget estimates, while critical for program administration and congressional spending decisions, provide a partial and potentially misleading impression of the federal government's fiscal situation. On the other hand, long-term measures have their own limitations. On the positive side, they indicate the magnitude of long-term budget imbalances resulting from the gap between future federal tax revenues and the costs of providing retirement and health care for the baby-boom generation. However, long-term projections are subject to substantial uncertainties for two reasons. First, statistical theory implies that expected forecasting error is larger for more-distant events because errors accumulate over each period into the future. Second, the structure of the economy changes over time, so that assumptions based on the past behavior of the economy may not hold in the future. Thus short-term measures, which are relatively certain but which ignore future imbalances, must be used in conjunction with long-term measures, which indicate the size of future imbalances, but with more variability, in order to gain an accurate picture of the fiscal challenges facing the federal government. Long-run fiscal projections depend on determinants of economic growth—such as productivity, and increases in capital stock and labor force—and the growth of health care costs.

This report describes and analyzes several measures of the long-term fiscal condition of the federal government. The strengths and limitations of long-term, short-term, and medium-term fiscal measures are discussed. The report then provides an overview of the federal government's long-term fiscal situation.

Most independent analysts believe the federal government's fiscal position is more accurately summarized by projections that modify the Congressional Budget Office baseline by assuming the reach of the alternative minimum tax (AMT) will be capped at present levels, that tax cuts slated to expire in 2010 will in fact be extended, and that discretionary spending will keep pace with overall economic growth. Seventy-five-year projections employing these alternative assumptions put the long-term fiscal gap between revenues and spending at 7%-8% of gross domestic product (GDP). Fiscal gap is defined as the size of the immediate and permanent increase in tax revenues or decrease in non-interest expenditures needed to ensure that the public debt to GDP ratio at the end of the budget window is the same as the initial public debt to GDP ratio. These modified-baseline projections indicate that putting federal fiscal policy on a sustainable path for the next 75 years requires substantial increases in taxes, decreases in spending, or both. Changes needed to maintain a permanently sustainable fiscal stance would be even greater.

This report will be updated as events warrant.

Contents

The Long View of Fiscal Policy	1
Why 10 Years is Not Enough	1
Problems with Short- and Medium-Term Projections.....	2
The CBO Baseline.....	2
Manipulation and Budget Measures.....	5
The “Moving Window” Problem	6
Short- Versus Long-Term Budget Projections.....	8
How Long-term Projections Are Made	10
Economic Growth	10
Capital	11
Labor Supply	13
Productivity	13
Health Care Trends.....	14
Health Care Prices.....	14
Quantity of Health Care	15
Projecting Growth in Health Care Costs.....	16
Other Factors.....	17
Long-Term Measures of Federal Fiscal Condition.....	18
Graphical Presentations of Year-by-Year Projections	18
Summary Measures.....	18
Choice of Discount Rate	19
The Cost Approach	19
The Benefit Approach	19
Risk Adjustments	20
Rationality and Social Discounting	20
Information Requirements	21
Open- and Closed-Group Measures	21
Cash Flow Versus Accrual Accounting	22
Generational Accounting.....	23
Fiscal Gap and Fiscal Imbalance.....	24
One Measure is Not Enough for All Purposes	25
How Big Are Federal Fiscal Imbalances?	25
Year-by-Year Projections of Future Deficits	25
Generational Accounts	27
Fiscal Gap Estimates	27
Other Approaches.....	29
Social Security, Medicare, and Other Federal Liabilities.....	30
The Long-Term Fiscal Situation.....	33
Will The Economy Outgrow the Deficits?.....	33
What is the Cost of Delay?.....	34
Concluding Observations	35

Figures

Figure 1. Discretionary Spending As a Percentage of GDP: Historical Data and Projections for 2006-2016	4
Figure 2. Increase in 10-Year Deficit Totals Due to Shifts in Budget Window	7
Figure 3. Components of Federal Spending	15
Figure 4. Proportion of U.S. Population Aged 65 and Older and 85 and Older	17
Figure 5. Projected Annual Federal Deficits as a Percentage of GDP	26

Tables

Table 1. Historical Rates of Change for Economic Growth and its Components	11
Table 2. U.S. Generational Accounts	28
Table 3. Fiscal Gap Estimates Using CBO Baseline or Similar Assumptions	29
Table 4. Fiscal Gap Estimates Using Alternative Assumptions	30
Table 5. Present Value Estimates of Fiscal Shortfalls due to Social Security, Medicare and Other Federal Liabilities	31
Table 6. Present Values of OASDI Cost Less Tax Revenue and Unfunded Obligations for Program Participants	32

Contacts

Author Contact Information	36
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The Long View of Fiscal Policy

Federal government programs and policies have financial effects that stretch far into the future. Nevertheless, the overwhelming focus of federal fiscal policy is short term in nature. Discussions of federal fiscal policy typically center on deficits in the current fiscal year or 10-year budget windows. Short-term accounting or budget measures, however, provide only a partial view of the costs of federal programs and policies, and they frequently offer a potentially misleading view of the federal government's ability to pay its bills in the long term. Short-term measures, such as annual budget estimates, or medium-term measures, such as the Congressional Budget Office (CBO) 10-year baseline estimates, do not reflect long-term fiscal imbalances, and in particular they do not reflect the large anticipated costs needed to finance the baby-boom generation's retirement. Therefore, if short- and medium-term measures are not used in conjunction with long-term fiscal measures, then long-term fiscal effects of current policy will be understated or hidden.

Budget measures are useful to the extent they permit governments and their citizens to make better decisions. Economic theory suggests that budget deficits can be a useful tool to smooth out short-run fluctuations, so that households are not subjected to sharp fluctuations in taxes and program benefits. In the long run, however, budgets must balance. Furthermore, deficits that persist beyond the short run will redistribute wealth among generations, and will thus have important distributional consequences. In addition, most economists believe long-term deficits have important negative effects on capital accumulation and economic growth. Therefore long-term budget measures provide valuable information about intergenerational equity and about prospects for long-term economic growth.

Investors use both income statements, which show cash flows in a given year, and balance sheets, which show assets and liabilities, to understand a business's financial condition. Similarly, understanding a government's fiscal position requires more than one set of accounts.¹ Long-term projections or measures are particularly important for understanding the growth of entitlement programs, where the full consequences of policy decisions take decades to emerge. Government programs and tax law provisions often have effects that stretch well beyond the end of standard budget windows. That being said, it is also true that short-run budget estimates have the advantage of providing far more detail. Furthermore, short-term forecasting, which exploits momentum in economic activity to predict future economic indicators, gives more reliable estimates than long-run forecasting, which depends on the presumption that key economic parameters will match historical values or values considered "reasonable" by analysts.

Why 10 Years is Not Enough

Discussions of fiscal policy usually start with the annual budget deficit or medium-term estimates such as the 10-year CBO budget outlook projections. Another approach has been to develop forward-looking summary measures of federal fiscal policy. While the federal debt is the sum total of all deficits, net of surpluses, from the beginning of the U.S. government to the present, these forward-looking summary measures reflect aggregate deficits over the next 50 or 75 years, or even over the infinite future.

¹ For an overview of federal government accounting see Government Accountability Office, *Understanding the Primary Components of the Annual Financial Report of the U.S. Government*, GAO-05-958SP, Sept. 2005.

Problems with Short- and Medium-Term Projections

Traditional macroeconomic analysis has focused on the annual budget deficit as the measure of the government's fiscal stance. However, the annual budget deficit estimates provide limited and potentially misleading information for several reasons. First, while the consequences of government spending and tax policies extend well into the future, annual deficit numbers only give information about cash flows for a single year. For example, a government sale of an income-producing asset reduces the deficit in one year and increases deficits in future years. Deciding whether the sale is penny wise in the short run but pound foolish in the long term (or not) requires multiyear budget information. Medium-term budget estimates, such as 5-year and 10-year budget projections, can provide more information about future taxes and spending and give a better guide to the total effects of changes in fiscal policy than annual deficit estimates.² However, if the effects of a policy change extend beyond the end of a medium-term budget window, then a longer-term measure will be needed.

Medium-term projections provide an accurate picture of fiscal policy only when conditions in the years beyond the medium term resemble years within the medium term. For this reason medium-term budget estimates currently provide a misleadingly optimistic impression of the financial condition of entitlement programs such as Social Security and Medicare. The baby-boom generation's retirement and rising costs of medical care signal the federal government's fiscal position will worsen substantially after the next decade unless significant changes are made. This deterioration in the federal government's finances does not show up in 10-year budget projections, such as the CBO baseline projections.

The CBO Baseline

The CBO baseline projections, by law (Section 257 of the Balanced Budget and Emergency Deficit Control Act of 1985), estimate the fiscal consequences of current laws and policies and are meant to serve as a neutral benchmark to assess the probable fiscal consequences of new laws or changes in programs. The CBO baseline projects a 10-year trajectory of the future fiscal effects of current law. It is not intended to anticipate future policy or legislative responses.³

Current law is not the same as the current situation. Current law may include provisions that take effect many years in the future and which may bring about conditions far different from the current situation. Current law specifies that some future policies that some analysts consider implausible will be implemented. In particular, independent analysts focus on three assumptions widely considered to be unrealistic. First, discretionary spending is assumed to continue at a constant inflation-adjusted level that does not reflect growth in population and per capita income. Projected discretionary spending as a proportion of GDP falls by the end of the baseline's 10-year window to levels unprecedented in modern times.⁴ According to the CBO baseline, defense spending will fall from 4% in 2005 to 3% of GDP in 2016, the same as the historical minimum reached in 1999. The baseline non-defense discretionary spending total drops from 3.8% to 2.9%

² Many would argue that the rules governing CBO baseline forecasts reduce their usefulness as a realistic guide to federal fiscal policy. This point is discussed in the next section.

³ In the words of a 19th century English accountant, governments' fiscal "courses will foreshadow certain ends, to which, if persevered in, they must lead, ... but if the courses be departed from, the ends will change."

⁴ For details, see the CBO Brief *What Is a Current-Law Economic Baseline?*, June 2005.

of GDP over the same period, below the 3.2% level reached in 1998 and 1999, which was the lowest level in the past four decades.⁵ **Figure 1** shows historical data for 1987 through 2005 and CBO baseline projections for 2006 through 2016 for defense and non-defense discretionary spending. Non-defense discretionary spending has risen as a share of GDP in the years leading up to 2006. Defense spending has risen even more sharply. According to the CBO baseline, discretionary spending will decline after 2006. While the CBO baseline assumption of constant discretionary spending in real terms provides a reasonable benchmark for determining what is or what is not a spending increase, it is not a plausible basis for predicting the actual path of spending. Most independent analysts assume discretionary spending will grow at the same rate as GDP.

Second, the current law CBO baseline projects that individual income tax revenues will rise sharply in coming years due to the effects of the alternative minimum tax. Most independent analysts believe that changes will be enacted to limit revenues collected by the AMT to levels far below CBO baseline projections. The number of taxpayers subject to the AMT has grown in recent years because the AMT is not indexed to keep pace with inflation.⁶ In addition, the 2001 Economic Growth and Tax Relief Reconciliation Act (EGTRRA, P.L. 107-16) and the 2003 Jobs and Growth Tax Relief Reconciliation Act (JGTRRA, P.L. 108-27) reduced taxes under the regular income tax so that many upper-middle-class households were suddenly subject to AMT provisions. Congress has enacted a series of one-year “fixes” of the AMT that increased exemptions and changed treatment of certain tax credits.⁷ However, the CBO baseline assumes that the AMT fix will expire at the end of 2006, so if Congress does not act the proportion of taxpayers subject to AMT provisions will continue to grow. The CBO estimates that about 2 million taxpayers paid higher taxes due to the AMT in fiscal year (FY) 2002, and around 30 million taxpayers will pay more in FY2010 under current law.⁸ Further, under current law, which assumes the 2001 and 2003 tax cuts expire, more than 22% of filers in 2016 will be subject to the AMT, according to projections.⁹ If the 2001 and 2003 tax cuts are extended, about 32% of filers in 2016 will be subject to the AMT.¹⁰ This implies that political pressure to extend AMT fixes will be substantial.

⁵ Projections were taken from the CBO report *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*, Jan. 2006.

⁶ For a more detailed discussion of the AMT, see CRS Report RL30149, *The Alternative Minimum Tax for Individuals*, by (name redacted).

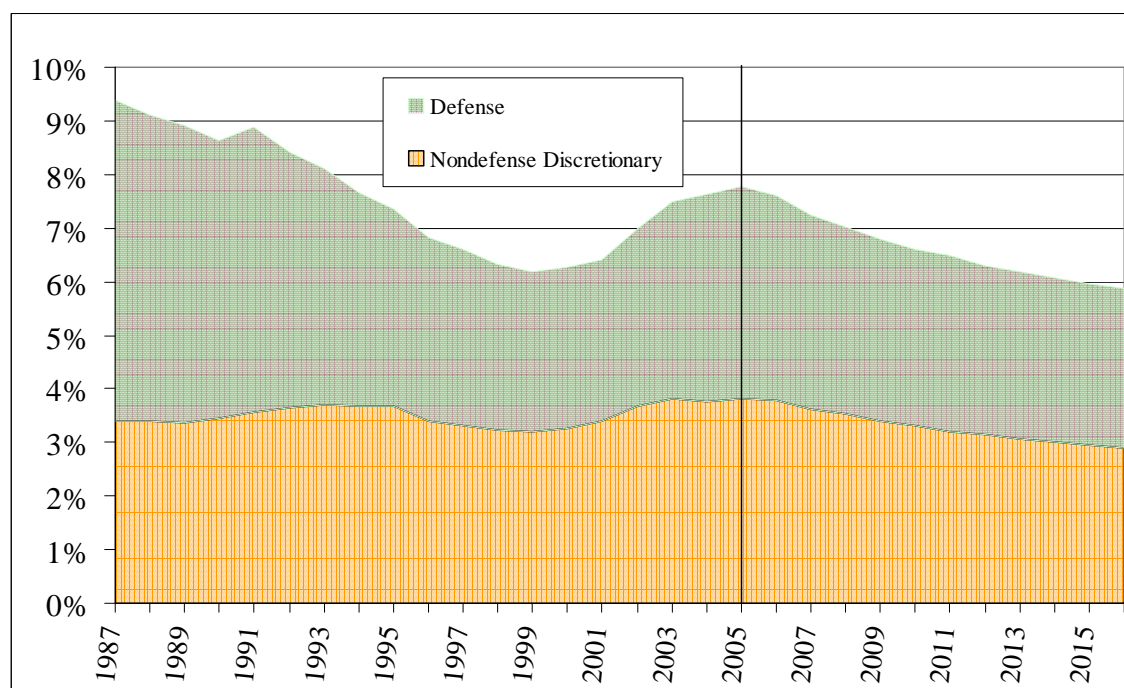
⁷ The latest one-year fix was enacted in the *Tax Increase Prevention and Reconciliation Act of 2005*, P.L. 109-222.

⁸ Testimony of CBO Director Douglas Holtz-Eakin, in U.S. Congress, Senate Committee on Finance, Subcommittee on Taxation and IRS Oversight, *The Individual Alternative Minimum Tax*, hearing, 109th Cong., 1st sess., May 23, 2005 (Washington: GPO, 2005), pp. 5-7.

⁹ AMT projections from CBO report *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*, Box 4-3. Filing projections from the IRS report *Calendar Year Projections of Individual Returns by Major Processing Categories* (Fall 2005 Update of Document 6187) were extended by assuming that the number of filers would increase 1% per year from 2013 through 2016.

¹⁰ Projection of AMT filers for 2015 taken from preliminary results of the Urban-Brookings Tax Policy Center Microsimulation Model (version 0305-3), May 9, 2006. Increase in AMT from 2015 to 2016 is assumed to be slightly less (2.1 million) than projected increase from 2014 to 2015 (2.7 million). Projections assume that all provisions of EGTRRA that sunset at the end of 2010 are extended, and that non-AMT provisions of JGTRRA and the Working Families Tax Relief Act of 2004 (P.L. 108-311) are extended.

Figure I. Discretionary Spending As a Percentage of GDP: Historical Data and Projections for 2006-2016



Source: Projections (right of vertical line) for FY2006-FY2016 are from the CBO report *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*. Historical data are from CBO's website.

Most other projections assume individual income tax revenues will be lower than CBO baseline projections. Auerbach, Gale, Orszag, and Potter (2003) assume in future years 3% of taxpayers will be subject to the AMT, which was the proportion in 2005. The CBO long-term forecasts, which are not constrained by baseline assumptions, assume that tax revenues will rise over the next eight years from current levels to 18.3% of GDP for its “lower revenues” scenarios, whereas in the “higher revenues” scenarios revenues are calculated using current law assumptions regarding individual income taxes. The Government Accountability Office (GAO) makes no explicit assumption about the AMT, but assumes tax revenues will be limited to 19.7% of GDP beginning in 2016. As a practical matter, without radical changes in the income tax system, this would be possible only with some cap on the AMT.

Third, most independent analysts have assumed the Bush tax cuts and other tax provisions, with minor exceptions, will not expire as scheduled under current law.¹¹ The 2001, 2002, 2003, and 2004 tax cuts according to current law are scheduled to expire by the beginning of 2011.¹² The Bush Administration has sought to make these provisions permanent, and many analysts therefore believe fiscal projections should reflect that intention. Several other provisions of the tax law, collectively referred to as “tax extenders,” such as the 10% income tax bracket, higher child tax credits, lower top tax rates, and repeal of the estate tax, are all slated to expire at the end of

¹¹ For details on expiring tax provisions see William Gale and Peter Orszag, “An Economic Assessment of Tax Policy in the Bush Administration, 2000-2004,” *Boston College Law Review*, vol. 45, no. 4, 2004, pp.1157-1232.

¹² See CRS Report RL34090, *Expiration of the 2001 Through 2006 Tax Cuts*, by Gregg A. Esenwein and (name redacted).

2010.¹³ Congress has repeatedly extended these provisions, and many argue that for the purposes of budgetary projections they should be considered permanent.

Manipulation and Budget Measures

Congress generally focuses most of its attention on the budgetary impact of revenue and mandatory spending during the 10-year period used for cost estimates, and pays less attention to the longer-range costs of such legislation. The budgetary impact of revenue and mandatory spending legislation considered in the House and Senate generally is assessed for a period encompassing the fiscal year in progress (the “current year”) and 10 future fiscal years—the upcoming fiscal year (the “budget year”) and the nine fiscal years after the budget year (the “outyears”). For years, CBO has provided the House and Senate with 10-year cost estimates of mandatory spending measures, and the Joint Tax Committee has provided both chambers with 10-year estimates of revenue measures.

In some cases, legislation can be crafted so that the budgetary costs of policies that Congress intends to establish over the longer term, or even permanently, may be accommodated in revenue and mandatory spending legislation, despite budget enforcement procedures. Specific revenue or spending policies in legislation may be adjusted so that the budgetary impact of the legislation complies with the applicable budget enforcement procedures. Techniques used to ensure compliance include, among others, phase-in and sunset dates and offsets. These techniques may allow Congress to include in legislation long-term revenue or spending policies that otherwise might not comply with budget enforcement procedures.

Phase-in dates (i.e., future dates when a policy first takes effect) may be used to delay the implementation of a policy beyond the effective date generally applicable to the legislation, such as the date of enactment, thereby helping to keep the overall cost of the measure within the appropriate limits. Delaying the implementation of a policy that costs \$300 million per year for four years, for example, would save \$1.2 billion over the life of a 10-year bill. Similarly, sunset dates (i.e., future dates when a policy terminates) could be used for the same purpose. Sunsetting a policy that costs \$300 million per year after eight years, for example, would save \$600 million over the life of a 10-year bill. Further, sunset dates may be used to terminate costs altogether for periods when no net costs are allowed (e.g., after the budget window applicable to reconciliation legislation).

Revenue reconciliation legislation enacted in 2001 and 2003 employed a mix of phase-in dates and sunset dates to keep the overall revenue reduction in the measures within the limits set by the budget resolutions for those years. Further, the legislation used sunset dates so that the net revenue losses would not extend beyond the 10-year window used by reconciliation in those instances.

Offsets may be used to counter costs so that the net budgetary effect of the legislation is neutral or otherwise complies with budget enforcement requirements. In 2005 and 2006, for example, Congress considered and enacted revenue reconciliation legislation that complied with the budget resolution requirement that the revenue reductions not exceed \$70 billion over a five-year window. The legislation included changes in capital gains and dividends policy (among other

¹³ For a comprehensive list see CRS Report RS22117, *List of Temporary Tax Provisions: “Extenders” Expiring in 2005*, by (name redacted).

policy changes) that was scored as incurring significant revenue losses in the remaining five years of the 10-year cost estimating period. In order to avoid violating a procedural prohibition against net revenue losses in those remaining five years, the legislation included various revenue increases that kept the net revenue reductions in the measure under \$70 billion for the full 10-year period.

Legislation allowing otherwise ineligible households to convert regular individual retirement accounts (IRAs) provides a concrete example of how offsets work. Converting traditional IRAs, which are funded with pre-tax dollars, into Roth IRAs, which are funded with post-tax dollars, generates revenue gains in the short run due to conversion penalties and fees. Unlike withdrawals from regular IRAs, withdrawals from Roth IRAs are not taxed. Therefore, allowing conversions of regular IRAs to Roth IRAs creates revenue losses in the longer run. By a careful choice of the year in which IRA conversions are first allowed, most estimated revenue gains will fall within a 10-year baseline window and most of the revenue losses will fall outside. If a congressional budgetary procedure considers only costs within the 10-year window, then those revenue losses are ignored, even though they constitute a deterioration in the federal government's fiscal condition. The Tax Policy Center estimates that provisions in the Tax Increase Prevention and Reconciliation Act of 2005 (TIPRA; P.L. 109-222) allowing these conversions loses more than \$4 billion in present value, even though the provision appears to raise \$8.6 billion in the 10-year budget window.¹⁴ Gravelle discusses budget estimation of the effects of changing IRA requirements and gives other examples of changes in the tax code whose short-term costs, as measured using a five-year budget window, are only a third or a fourth as much as long-term costs beyond that window.¹⁵

Long-term budget estimates can be improved by creating tax increases or spending cuts in distant years. While future legislators may be likely to reverse those actions before they take effect, the improvements in long-term budget measures will appear now. Those measures will then provide an overly optimistic picture of the long-term fiscal situation.¹⁶

The “Moving Window” Problem

Multi-year estimates of federal deficits will increase over time when the gap between revenues and spending is widening.¹⁷ When a new fiscal year arrives, the previous year's deficit is replaced with a much larger deficit from the first fiscal year beyond the old budget window. Therefore, a 10-year or a 75-year budget deficit estimate may appear to deteriorate in each successive year even if nothing in the real economy changes. Even if the present 10-year deficit were eliminated

¹⁴ Leonard E. Burman, “Roth Conversions as Revenue Raisers: Smoke and Mirrors,” *Tax Notes*, May 22, 2006, pp. 953-956.

¹⁵ (name redacted), “Estimating Long-Run Revenue Effects of Tax Law Changes,” *Eastern Economic Journal*, vol. 19, no. 4, fall 1993, pp. 481-494.

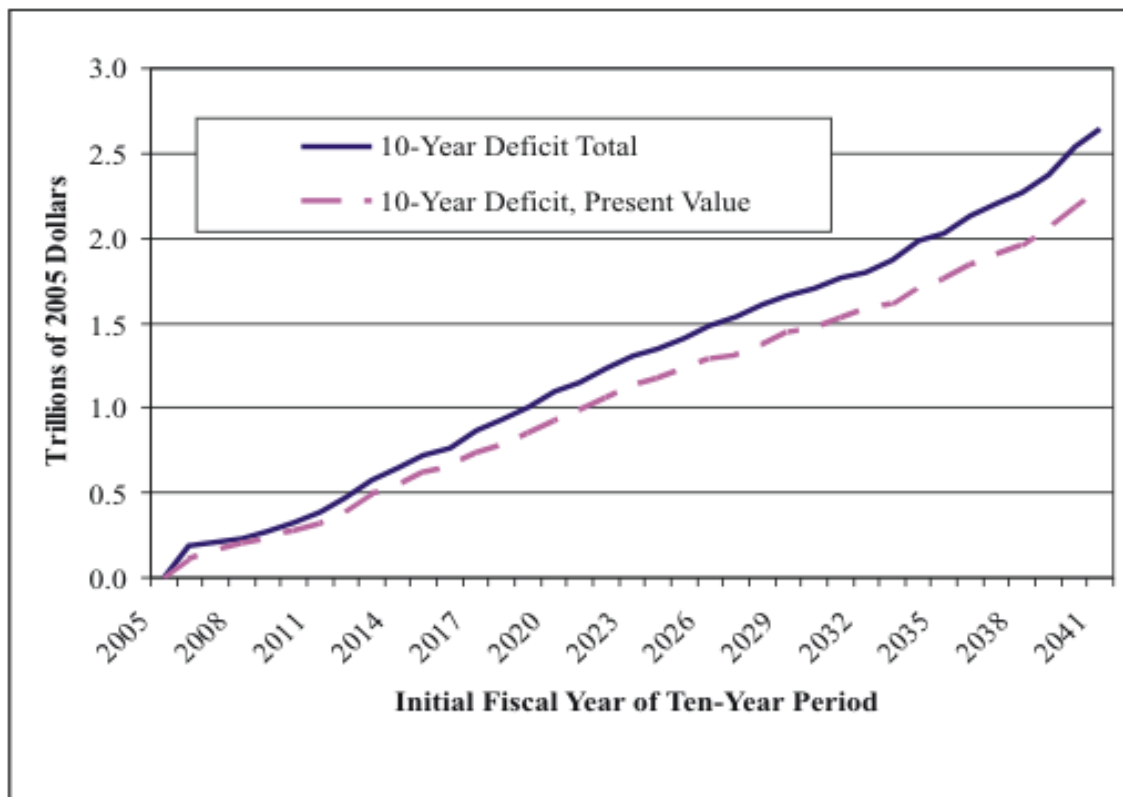
¹⁶ Alan Auerbach proposes choosing a budget window that minimizes the costs of both short- and long-term budget manipulations. See “Budget Windows, Sunsets and Fiscal Control,” University of California at Berkeley working paper, July 2004.

¹⁷ The current CBO 10-year baseline estimates show shrinking deficits and unified budget surpluses from 2012 through 2016. This effect has **reduced** CBO 10-year deficit estimates from year to year, not because of any good news but because of the moving window effect. See the CBO Report “*The Budget and Economic Outlook: Fiscal Years 2007 to 2016*,” p. xvi. However, as noted below, the CBO baseline presumes sharp, and presumably politically implausible, tax increases, as discussed below.

now, in following years 10-year deficit totals would still rise because deficits are expected to rise rapidly in what were the “out” years of the original 10-year estimate.

For example, according to the CBO intermediate spending/lower revenue projections, the total 10-year deficit for fiscal years 2005-2014 will be \$3.95 trillion, in constant 2005 dollars.¹⁸ Moving the 10-year deficit estimate one year forward to cover 2006-2015 period requires dropping the FY2005 deficit of \$324 billion and adding the estimated FY2015 deficit of \$516 billion, thus increasing the 10-year total deficit by \$193 billion (all amounts in constant 2005 dollars). The solid line in **Figure 2** shows the estimated increases in 10-year budget totals due to shifting the budget window, and the dashed line shows the 10-year deficit in present value terms.¹⁹ This present value estimate is a lump-sum amount in today’s dollars, having the same economic value as a stream of deficits over the 10-year period. Present value measures take into account the fact that having a dollar today is more valuable than a dollar in the future because of the time value of money.

Figure 2. Increase in 10-Year Deficit Totals Due to Shifts in Budget Window



Notes: Data are from CBO report *The Long-Term Budget Outlook*, Dec. 2005. Present values computed using interest rates assumed by the CBO.

¹⁸ Estimates are from the intermediate spending/lower revenues (Scenario 2) in the *The Long-Term Budget Outlook* CBO, Dec. 2005. This scenario is the closest to the CBO baseline assumptions.

¹⁹ CBO interest rate estimates from the Dec. 2005 report *The Long-Term Budget Outlook* are used to compute these present values.

The 75-year projections, which have been the focus of the Social Security and Medicare Trustees' report, suffer from the same moving window problem, and therefore provide an overly optimistic view of the long-term financial condition of Social Security, Medicare, and other entitlement programs. For example, the 1983 Social Security reforms instituted in the wake of the Greenspan Commission were projected to balance benefits and revenues over the next 75 years. The 2004 Trustees' report, however, projected a \$3.7 trillion shortfall. This change was largely the effect of shifting the window for projections.²⁰ The projection window in 1983 ended in 2057, while the projection window in 2004 ended in 2078. Because large deficits are forecast for the mid-21st century and beyond, shifting the projection window forward made it appear as if Social Security's financial situation had worsened over time. This is mostly the result of an insufficiently long horizon, rather than bad news.²¹

In recent years the Social Security Trustees' Reports have resumed the calculation of infinite horizon forecasts, which do not share this problem. The Social Security Administration reported infinite horizon estimates until 1965. Estimated shortfalls over the infinite horizon may change over time as a result of unexpected changes in the streams of revenues and costs or due to unexpected changes in the path of interest rates. However, infinite horizon estimates change due to bad news or good news, not because of the moving window problem.

The difference between 75-year and infinite horizon estimates of Social Security's sustainability is substantial. The 2006 Social Security Trustees' Report estimates the infinite horizon unfunded liability (3.7% of future payroll or 1.3% of future GDP) is nearly twice the 75-year estimate (1.9% of future payroll or 0.7% of future GDP). Independent analysts believe the 75-year estimates seriously understate the magnitude of the financial challenges facing Social Security.²²

Short- Versus Long-Term Budget Projections

Short- and long-term projections vary in the technical details of their construction. Short-term budget forecasts have several technical advantages. First, short-term forecasts generated by sophisticated macroeconomic models exploit the predictability of the momentum that determines most short-run economic movements to forecast growth, unemployment, and interest rates. The reliability of forecasts from these models worsens for time periods farther in the future for two reasons. First, the state of the economy in a distant year will be determined by a longer sequence of random shocks than the state of the economy in the near future, which creates more variability in forecasts that extend farther forward in time.²³ Second, the structure of the economy changes

²⁰ See Ronald Lee and Hisashi Yamagata, "Sustainable Social Security: What Would It Cost?" *National Tax Journal*, vol. 56, pp. 27-43, Mar. 2003; and Jagadeesh Gokhale, and Kent A. Smetters, "Measuring Social Security's Financial Problems," NBER Working Paper No. W11060, Jan. 2005.

²¹ Unexpected poor economic growth cannot be cited as a reason for the deterioration of Social Security's finances after the Greenspan Commission. Actual GDP growth from 1982-2006 ran slightly ahead of the 1983 Social Security Trustees' Report's II-B intermediate projections, considered at that time the most realistic set of projections. Both CBO and GAO used the II-B series for analyses in the 1980s.

²² Other long-term measures of Social Security's sustainability have been proposed. See Ronald Lee and Michael Anderson, "Stochastic Infinite Horizon Forecasts for U.S. Social Security Finances," *National Institute Economic Review*, no. 194, Oct. 2005; Ronald Lee and Hisashi Yamagata, "Sustainable Social Security: What Would It Cost?" *National Tax Journal*, vol. 56, pp. 27-43, Mar. 2003; and Jagadeesh Gokhale, and Kent A. Smetters, "Measuring Social Security's Financial Problems" (Jan. 2005). NBER Working Paper no. W11060.

²³ For a technical discussion of the effect of the length of horizon on expected forecasting error see Chris Chatfield, "Prediction Intervals," in *Principles of Forecasting: A Handbook for Researchers and Practitioners*, edited by J. Scott (continued...)

over time in unpredictable ways. The introduction of new technologies and industries, such as automobiles, the Internet, or automatic domestic appliances, affect the economy significantly and persistently in ways that are not easily foreseeable. In the short run the effects of such changes are negligible; in the long run such changes have profound effects, affecting key economic parameters such as productivity growth rates and labor participation rates.

Second, academics, private consulting firms, financial institutions, and government organizations have put considerable effort into improving short-run economic forecasting models. Less effort has gone into constructing long-term forecasting methods. Third, short-term budgetary forecasts rely on highly detailed information about government expenditures and programs, while many long-term forecasts are based on information about broad categories of spending.²⁴ Fourth, information used for short-run budget estimates is subject to a rigorous review process, and computations are based on procedures developed over many decades of experience.²⁵

Finally, short-run budget accounting using the cash accounting approach provides Congress with strong tools to control spending of government agencies and to provide incentives which reinforce oversight powers.²⁶ Keeping federal spending on a short leash requires budget numbers with a short horizon.

By contrast, long-term models lack much of the detail and sophistication of short-run models. Long-term models rely upon assumptions about long-run averages for annual growth, interest rates, and other key parameters. Long-term forecasting models are much simpler than those used for short-term forecasting. The interaction of macroeconomic variables in long-term forecasting models is much less sophisticated than that incorporated in short-term models. After-the-fact evaluation is easy for short-term forecasts and difficult for long-term forecasts. Less research has been done on long-term forecasting because it is harder and less financially rewarding than short-term forecasting.

The long-term imbalances in the federal budget complicate building of long-term models that forecast the path of the federal government's finances. Standard macroeconomic models are built on the presumption that, over time, individuals and governments balance their budgets, and so these models are not easily applied when it is not clear how a government will balance its budget. Models can be built that assume federal deficits crowd out private investment, in which case the nation's projected capital stock eventually collapses. Otherwise, models can assume that in the future the government will impose large tax increases or spending cuts or that it will reduce the real value of the debt by printing money and sparking rapid inflation. In the latter case, the model must predict or assume when and how policy makers take these actions. Models may also assume the government can borrow indefinitely from the rest of the world at a set interest rate, which

(...continued)

Armstrong, Kluwer, Apr. 2001.

²⁴ Some long-term models, such as those used by the CBO and the GAO, do include detailed information on participation in entitlement programs.

²⁵ See Robert Haveman, "Should Generational Accounts Replace Public Budgets and Deficits?," *Journal of Economic Perspectives*, vol. 8(1), 1994, pp. 95-111.

²⁶ Cash accounting principles are discussed below. Proponents of the "New Public Administration" movement argue that flexible, multi-year budgets promote efficiency if there are opportunities to evaluate and reward the performance of public managers.

implies that foreign lenders will eventually own essentially all assets of the U.S. economy. All of these approaches present technical and conceptual difficulties.²⁷

While short-term forecasts rely upon more sophisticated models and more detailed data, that does not imply long-term forecasts are less valuable. Rather, even though long-term forecasts by their nature must be simpler and less precise than short-term forecasts, they provide information about the financial implications of policy that short-term forecasts cannot provide. A comparison of several long-term forecasts (below) demonstrates that while long-term estimates vary significantly from each other in their numerical estimates, they all indicate that current government policies will result in larger and larger deficits into the foreseeable future.²⁸

How Long-term Projections Are Made

Long-term projections of federal deficits are based on component projections of revenues and expenditures. The path of future revenues and expenditures depend on many different factors, but economic growth is perhaps the most critical determinant. The determinants of economic growth are discussed below. On the expenditure side, simple rules-of-thumb are used to project discretionary spending. For example, many projections are computed assuming that discretionary spending will grow at the same rate as GDP.

Social Security and medical care costs comprise the bulk of future mandatory spending, and projecting these costs requires sophisticated techniques that incorporate economic and demographic data. Many estimates use projections computed by Social Security Administration's actuaries, while the CBO computes its own estimates of Social Security spending. Health care and Social Security costs are discussed below.

Economic Growth

Economic growth depends on the availability of inputs and on the ability to combine them efficiently to create outputs. Capital and labor are the major inputs in advanced economies. Productivity measures how efficiently inputs are combined. Economic growth results from having more inputs and from productivity growth. Economic models start with changes in capital, labor, and productivity as the basic elements which explain growth.²⁹ Models and empirical research in

²⁷ Another possibility is that households respond to tax cuts that are not offset by spending reductions by increasing their savings in order to pay the future taxes that will be needed to restore fiscal balance. This is known as Ricardian equivalence, and implies that fiscal policy has little or no effect. Empirical research rejects Ricardian equivalence in its pure form, but some researchers find evidence for partial Ricardian effects. For a review of the literature, see M. Gabriella Briotti, "Economic Reactions to Public Finance Consolidation: a Survey of the Literature," European Central Bank Occasional Paper No. 38, Oct. 2005.

²⁸ Forecasts relying on CBO baseline assumptions, which presume tax cuts will expire by the beginning of 2010, show federal surpluses starting in 2012 when Social Security surpluses and other off-budget items are included. All long-term CBO projections that assume prices for medical care rise faster than general inflation or some limitation on the AMT show sharply rising deficits.

²⁹ Models and empirical research in the endogenous growth literature consider a wide range of other determinants of economic growth including education, incentives for technological change, political environment, market structure, specialization, and international trade. For a detailed overview of modern growth theory see Philippe Aghion and Peter Howitt, *Endogenous Growth Theory*, (Cambridge, Mass.: MIT Press, 1998). Because predicting how these factors will change in the long run is largely speculative, and because no consensus exists on how much these other factors affect growth, long-term projections do not incorporate these effects.

economic growth literature consider a wide range of other determinants of economic growth including education, incentives for technological change, political environment, market structure, specialization, and international trade.

Small differences in economic growth rates lead to large differences in the size of the economy in the long term, so assumptions that affect growth rates will have significant effects on long-term forecasts.

Faster growth rates would lead to higher tax revenues, but would also increase spending for two reasons. First, higher labor earnings eventually lead to higher Social Security benefits. Second, as incomes grow people increase their consumption of most goods, and most economists believe higher incomes lead to demands for higher levels of goods and services provided by governments. Economists often assume growth in non-defense discretionary government spending will grow at the same rate as incomes. On balance, higher growth rates improve the federal government's fiscal situation as increased revenues will tend to outpace spending.

Table 1 presents historical averages for growth of GDP and its key components.

Table 1. Historical Rates of Change for Economic Growth and its Components

		1962-1973	1974-1990	1991-2005	1962-2005
GDP	Total	4.36%	3.17%	3.33%	3.36%
	Per Capita	3.16%	2.18%	2.15%	2.25%
Capital Investment	Total	10.12%	8.47%	5.87%	7.78%
	Per Capita	8.85%	7.43%	4.66%	6.62%
Labor Hours	Total	-2.29%	1.71%	1.56%	1.58%
	Per Capita	-1.21%	0.74%	0.39%	0.56%
Population		1.11%	0.97%	1.16%	1.02%
Total Factor Productivity		2.01%	0.75%	1.27	1.25%^a

Sources: CRS calculations based on CBO and Census Bureau data. Capital Investment is here defined as private nonresidential fixed investment and is taken from the Bureau of Economic Analysis. Labor is defined as Aggregate Weekly Hours from the Bureau of Labor Statistics series CEU0500000040. Population data are taken from the Census Bureau. Productivity data are taken from the Bureau of Labor Statistics Net Multifactor Productivity and Costs series (MPU750051 K).

a. Final year for total factor productivity data is 2004.

Capital

The projected changes in the quantity of capital depend to a large extent on a few key modeling assumptions about access to international capital, interest rates, and saving behavior. One modeling approach treats the United States as a “small open economy,” which implies that the United States can borrow on world markets at a fixed market rate of interest, regardless of how much is borrowed. At the other extreme, the United States is viewed as a closed economy, so that interest rates are determined by the domestic capital markets. The international position of the U.S. economy lies between these extremes, being integrated into world goods and capital markets and being large enough to influence markets. However, modeling this intermediate and more

realistic case is technically more difficult. Therefore most long-term models assume real interest rates will follow historical long-term averages.

For small changes in borrowing, the small open economy assumption that interest rates are constant is reasonable. Recent research suggests that a 10% increase in the ratio of federal debt to GDP raises long-term interest rates by 0.3-0.6%.³⁰ Although this effect is small and imprecisely estimated, small changes in the interest rate can have large effects on the capital stock and long-term economic growth.³¹

The United States is currently borrowing heavily from the rest of the world, and all projections show that this borrowing will increase unless major changes are made. In 2006 borrowing by the federal government will absorb slightly more than 3% of the global flow of new investment funds.³² By 2050, however, this proportion is projected to more than triple, so that new federal borrowing could soak up a ninth of the entire global capital market. The International Monetary Fund's *2006 World Economic Outlook* estimates the size of the global economy at \$46 trillion.³³ Assuming world economic growth runs at 4% per year, a rate slower than the experience of the last few years (but slightly above the 1970-2007 average of 3.8%), the inflation-adjusted size of the global economy will quintuple by 2050. If the investment ratio stays the same as in recent years, so that about 22% of GDP is invested, then the flow of new funds into global capital markets would be \$55 trillion (2005 dollars). Of this, the federal government would need to borrow \$6.4 trillion (according to CBO's intermediate spending/lower revenues projections), or over one-ninth of all new capital flowing into the world market. At that scale of federal borrowing, it is hard to imagine that capital markets would not react by raising interest rates, and thus further increase federal interest payments.

Making the interest rate sensitive to the level of borrowing creates serious technical problems. The scale of imbalances caused by projected scale of persistent federal deficits would require economic adjustments outside the range of historical experience, which are difficult to forecast.

In closed economy models, federal deficits are financed by private savings, which then become unavailable for private investment. Large persistent federal deficits therefore reduce the capital stock, which lowers economic growth.³⁴

³⁰ Eric Engen and R. Glenn Hubbard, "Federal Government Debts and Interest Rates," NBER Working Paper 10681, Aug. 2004; William G. Gale and Peter R. Orszag, "Budget Deficits, National Saving, and Interest Rates," *Brookings Papers on Economic Activity* 2004, no. 2, pp. 101-187; Thomas Laubach, "New Evidence on the Interest Rate Effects of Budget Deficits and Debt," Finance and Economics Discussion Series 2003-12, Board of Governors of the Federal Reserve System, May 2003.

³¹ See discussions by Matthew D. Shapiro and by Jonathan A. Parker of the Engen and Hubbard "Federal Government Debt and Interest Rates," presented at the NBER Macroeconomics Annual Conference, Apr. 2004, available at <http://www-personal.umich.edu/~shapiro/engen-hubbard-comment-2Apr2004-PostConfRevision.pdf> and <http://www.princeton.edu/~jparker/research/ParkerDiscussionEngenHubbard.pdf> respectively.

³² The CBO report "*The Budget and Economic Outlook: Fiscal years 2007 to 2016*" estimates the federal deficit will be \$337 billion in fiscal year 2006 (Summary Table 1). The *2006 World Economic Outlook* estimates world GDP is \$46.7 trillion in 2006 and the global investment rate at 22.8%, implying a flow of investment funds of \$10.7 trillion.

³³ International Monetary Fund, *World Economic Outlook Database*, Apr. 2006.

³⁴ This assumes Ricardian savings responses, discussed above, are insufficient to offset increased deficits.

Labor Supply

The quantity of labor available for economic activity depends on population and the proportion of the population that is active in the economy. Population is affected by demographic trends and immigration. CBO has expressed doubt that immigration would materially affect the federal government's long-term fiscal situation, unless the magnitude or composition of immigration flows changed significantly.³⁵

Labor force participation rates measure the fraction of the population that is paid to work or is looking for paid work. About two-thirds of those older than 16 years of age are in the labor force. The labor participation rate for men, typically near 75%, is higher than the rate for women, typically near 60%.³⁶ In the past 50 years labor participation rates for women have risen dramatically, and account for much of the increase in labor hours since the 1970s, as shown in **Table 1**. Future labor participation rates are expected to fall to about 60% as the baby-boom generation retires. Little change is expected in age-specific labor participation rates.

Productivity

Technological progress, as measured by changes in total factor productivity, is assumed to proceed at the same rate as in the past. CBO estimates assume total factor productivity will increase at 1.25% per year, which matches the historical average for 1950-2005.³⁷ The Office of Management and Budget (OMB) cites a different measure of productivity, growth in real GDP per hour, and assumes future rates will match the historical average of 2.2% for the periods 1948-1973 and 1995-2004. Excluding the period 1974-1994, which includes several low growth years, pushes up the OMB productivity growth number.

Productivity growth has varied widely over different time periods, as **Table 1** shows. Although productivity grew rapidly after World War II, it slowed sharply in the early 1970s. A lively scholarly debate has so far failed to pinpoint the causes of this slowdown in productivity gains. Furthermore, productivity growth has become more difficult to measure as services and information technology have become more important in the economy. Productivity growth accelerated during the 1990s and has remained high in recent years. Some scholars of investment and productivity view the productivity boost from advances in computing and networking as a spent force,³⁸ but others are optimistic that productivity will continue to grow at relatively high rates in the next decade, although not as rapidly as in the 1990s.³⁹ Predicting productivity growth beyond the next decade is a speculative endeavor.

³⁵ See CBO Report *The Long-Term Budget Outlook*, Dec. 2005, Box 1-2. Immigration may have more serious negative effects on state and local governments.

³⁶ Robert F. Szafran, "Age-Adjusted Labor Force Participation Rates, 1960—2045," *Monthly Labor Review*, vol. 125, no. 9, Sept. 2002.

³⁷ Data from Table 2-2 in the CBO report, *The Budget and Economic Outlook: Fiscal Years 2007-2016*.

³⁸ See Robert J. Gordon, "Does the 'New Economy' Measure Up to the Great Inventions of the Past?" *Journal of Economic Perspectives*, Fall 2000.

³⁹ Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "Lessons from the U.S. Growth Resurgence," paper prepared for the First International Conference on the Economic and Social Implications of Information Technology, held at the U.S. Department of Commerce, Washington, DC, on January 27-28, 2003.

All long-term budget projections assume the U.S. economy's growth will decelerate to a rate below the average over the past few decades of 3% per year because the growing number of retirees and higher life expectancy means a smaller fraction of population will work in the future. For example, long-run CBO projections assume a GDP growth rate of 2.2% per year and Smetters and Gokhale's 2003 study uses a 1.7% yearly growth rate after the initial decade.⁴⁰

According to CBO projections, Social Security spending will increase from 4.2% to 6.4% of GDP. Even though a shift of an additional 2.2% of the economy's resources to Social Security represents a significant amount of new spending, this is less than a quarter of the projected increase in Medicare and Medicaid. Thus, the cost growth in federal health programs, driven by a combination of demographic changes and health care cost inflation, is a much more serious problem than demographics-driven increase in Social Security costs.

Health Care Trends

Rising spending on federally-financed health care is the major cause for projected increases in government expenditures and accounts for the largest part of long-term fiscal imbalances. Health care costs trends therefore play a central role in fiscal analysis. **Figure 3** breaks down federal spending projections from CBO's "intermediate spending" scenario by category. These projections assume that health care costs will increase only 1% a year faster than general inflation.⁴¹ Federal spending on Medicare and Medicaid is projected to grow from 3.5% of GDP in 2006 to 12.6% of GDP in 2050. As **Figure 3** shows, even with optimistic assumptions about future growth in health costs, medical and health costs are by far the fastest growing major component of federal spending.

Health Care Prices

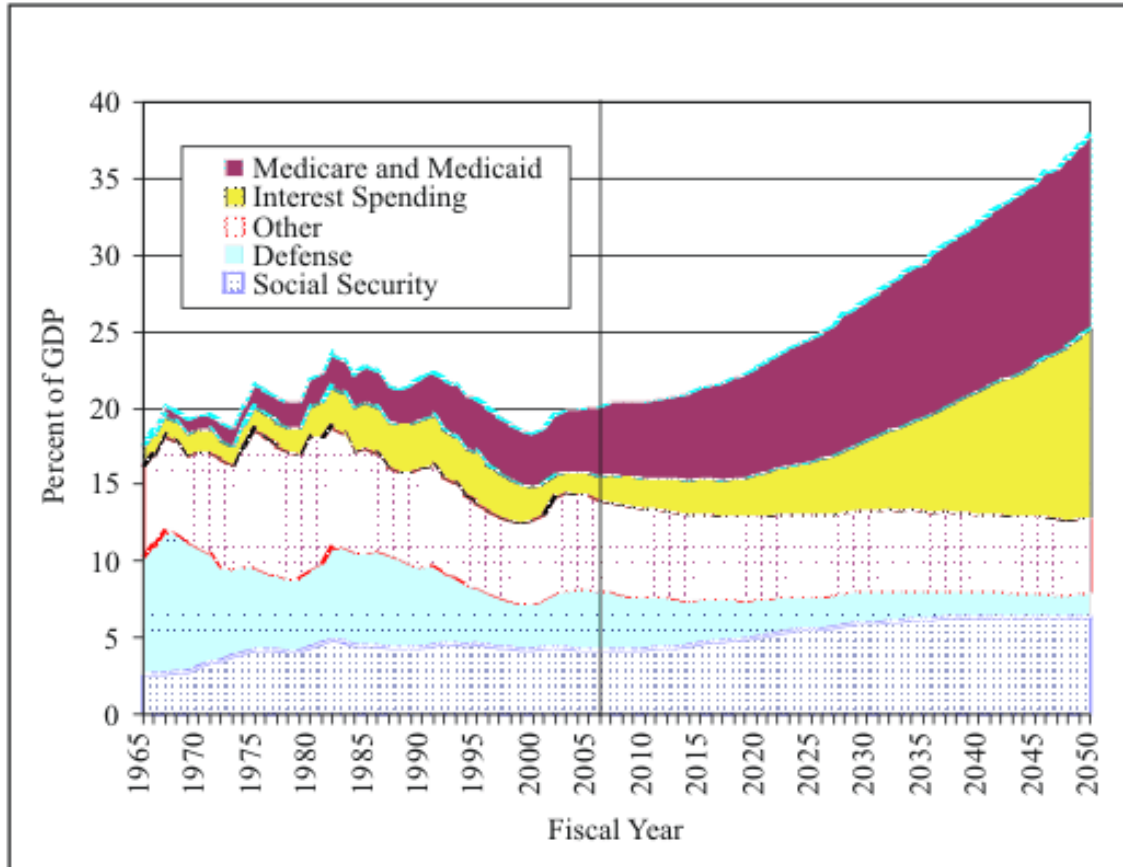
By definition, health care expenditures equal health care price times the quantity of health care consumed per head times the number of beneficiaries. In the past decades all three have increased and are expected to increase in the future. Although the number of people eligible for federal health insurance benefits in future decades can be forecast reasonably accurately using demographic methods, forecasting health care prices and the intensity of health care use is speculative.

Future health care prices play a key role in long-term budget forecasts. Prices for medical care rose on average 2.1% faster than the rate of inflation over the past four decades. At that rate real health care costs double every 33 years. Prices for medical care have increased less rapidly than general inflation only during periods when the health care system was threatened with comprehensive reform.⁴² After reform proposals died, medical care prices accelerated.

⁴⁰ Gokhale Jagadeesh and Kent Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*. Washington, DC: The AEI Press, 2003.

⁴¹ This projection also assumes Social Security benefits will not be cut, that other mandatory programs will remain at their 2005 proportion of GDP, and that non-defense discretionary spending declines to 3.6% of GDP by 2007 and remains at that level thereafter.

⁴² The two sharp drops in the growth of medical care costs in the 1970s were due to wage and price controls during the Nixon Administration and the American Hospital Association's "voluntary cost-control plan" instituted in response to the Carter Administration's plans to regulate health care costs.

Figure 3. Components of Federal Spending

Source: Projections (right of the vertical line) are from the “intermediate spending/lower revenues” scenario in the CBO Report *The Long Term Budget Outlook*, Dec. 2005. Historical data taken from CBO website.

Technological progress is often cited as a major driving force behind the rapid growth in medical and health care prices. The Bureau of Labor Statistics (BLS), which computes price and inflation estimates, attempts to construct measures which reflect “the average price change over time for a constant quality, constant quantity market basket of goods and services.” Adjusting for increases in the quality of medical and health care presents particular conceptual and technical difficulties. Medical care inflation is overstated to the extent that unmeasured increases in the quality of medical care exceed unmeasured quality increases in other goods and services.⁴³

Quantity of Health Care

The number of Medicare beneficiaries will rise sharply as the baby-boom generation retires.

Figure 4 shows the rise in the proportion of the population 65 and older and the proportion 85 and older over the coming decades. Almost everyone aged 65 or over is eligible for Medicare Part A, which covers hospital inpatient care, and the vast majority opt to participate in Medicare Part B, which covers outpatient care. The proportion of the population 65 or over is projected to

⁴³ For details on BLS’s methods for computing price care indices for medical care, see the webpage “Measuring Price Change for Medical Care in the CPI” available at <http://www.bls.gov/cpi/cpifact4.htm>.

increase from 12.5% in 2006 to 20% in 2033. Increased longevity will eventually significantly enlarge the pool of older Medicare beneficiaries. The proportion of the population 85 or older is expected to rise from 1.8% in 2006 to 5.0% by 2050.⁴⁴

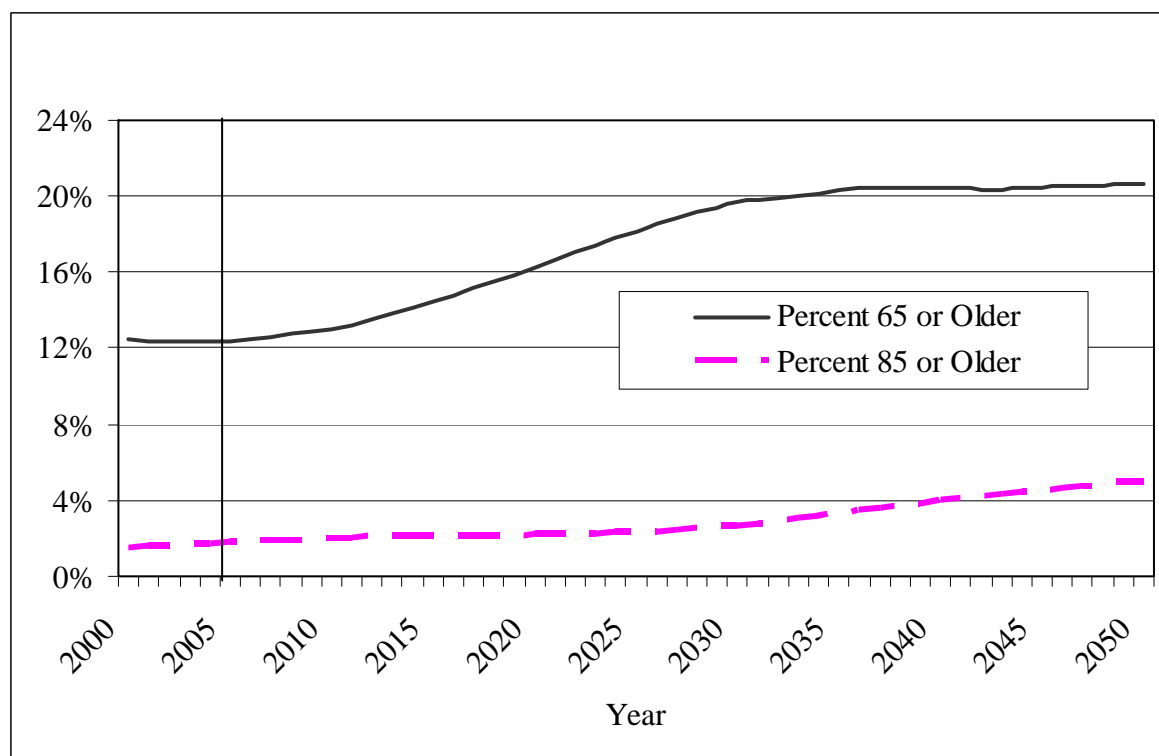
Projecting Growth in Health Care Costs

Rather than attempting to estimate the relative increase in health care prices and quantity of health care consumed per beneficiary separately, most analysts focus on growth in real costs per beneficiary. The 2000 and 2004 Medicare Technical Review Panels judged that the assumption that medical costs per beneficiary will rise 1% a year above the GDP growth rate was reasonable. Medicare Part A costs per beneficiary grew on average 4.66% a year between 1970 and 2005, and Part B costs grew on average 8.76% a year over the same period.⁴⁵ While in 2004 and 2005 prices for medical care rose only about 1% a year faster than inflation, there are few concrete reasons to think that health care prices will moderate in the future because the underlying structural causes of the rapid rise in health care costs remain. One argument in favor of the “GDP growth plus 1%” assumption was that if health costs grew at faster rates then health care spending would account for an implausibly large proportion of the economy. The 2000 Medicare Technical Review Panel estimated that if health care spending grew 2% a year faster than GDP then health care spending would reach 79% of GDP by 2075.⁴⁶ In other words, health care, which now accounts for one of every six dollars spent in the U.S. economy, would by 2075 account for four dollars of every five dollars spent.

⁴⁴ For further details, see testimony of CBO Director Douglas Holtz-Eakin, in U.S. Congress, House Committee on Ways and Means, “Implications of Demographic Changes for the Budget and the Economy,” 109th Congress, 1st sess., May 19, 2005.

⁴⁵ Author’s calculation using data from Table V.B1, “HI and SMI Average per Beneficiary Costs” in the *2006 Annual Report of the Boards of Trustees of the Federal Hospital Insurance Trust Fund and the Federal Supplementary Medical Insurance Trust Fund* and GDP deflator data from the Bureau of Economic Analysis.

⁴⁶ Technical Review Panel on the Medicare Trustees Reports, Chapter III of the “Review of Assumptions and Methods of the Medicare Trustees’ Financial Projections,” Dec. 2000. See also the 2004 Technical Review Panel on the Medicare Trustees Reports, “Review of the Assumptions and Methods of the Medicare Trustees’ Financial Projections,” Dec. 2004. Both are available at http://www.cms.hhs.gov/ReportsTrustFunds/02_TechnicalPanelReports.asp.

Figure 4. Proportion of U.S. Population Aged 65 and Older and 85 and Older

Source: Computed using the Census Bureau's *U.S. Interim Projections by Age, Sex, Race, and Hispanic Origin*, available at <http://www.census.gov/ipc/www/usinterimproj/>. Proportions for years up to 2005 represent historical data, and later years represent projections.

Other Factors

Unanticipated changes in other social, economic, or demographic patterns would also affect the long-term fiscal situation. The CBO's long-term "intermediate spending" scenarios assume defense expenditures will fall from \$493 billion in 2005 to \$406 billion (in 2005 dollars) by 2024 and then stay constant in real terms. Defense spending is projected to shrink from 3.9% of GDP to 1.5% of GDP, and all other federal spending (i.e., not including defense, Social Security, Medicare, Medicaid, or interest payments) will decline from 5.9% of GDP to 4.9% of GDP. Changes in patterns of international security and foreign relations, and international trade could all affect the government's fiscal situation. Predicting future defense expenditures is complicated by many factors, including the difficulty in forecasting the costs and extent of new weapons procurement, health care costs for active service personnel and veterans, and the costs of current and future overseas operations. However, unless future defense spending trends depart substantially from historical averages, Social Security, Medicare, and Medicaid costs will play a much larger role in determining the long-term fiscal condition of the federal government.

Long-Term Measures of Federal Fiscal Condition

Several measures of long-term fiscal conditions have been proposed. Each has some advantages and some drawbacks. These measures relate closely to one another, although each illustrates different aspects of the government's fiscal situation.

Graphical Presentations of Year-by-Year Projections

Perhaps the most direct method of showing the magnitude of future fiscal challenges is to present figures depicting the projected path of deficits or the divergence between federal spending and revenues. The wedge between federal spending and revenues or between the path of deficits and the horizontal axis gives an informal visual measure of the overall size of future deficits. The advantages of this type of graphical presentation is that audiences can quickly grasp the severity of the problem and can easily see when fiscal imbalances are expected to worsen. In addition, analysts need make no assumptions beyond those needed to generate the year-by-year projections themselves. Therefore graphical presentations are a natural starting point for discussions of fiscal imbalances.

Graphical presentations have limitations as well. The wedge between federal spending and revenues gives a striking visual impression of the scale of the problem, but is imprecise. Decision makers in financial markets typically treat future dollars as less valuable than current dollars because of the time value of money. This type of adjustment is not easily performed with deficit data in graphical form. Finally, having a single number in hand is often useful in describing the size of fiscal imbalances or in considering what measures would suffice to address those imbalances. Therefore analysts often calculate and use summary measures of fiscal imbalances.

Summary Measures

Summary measures assign a single number or set of numbers on the value of future deficits, and so provide a convenient means of discussing the scale of future fiscal challenges.

Long-term summary measures depend critically upon assumptions about how to compare future dollars with current dollars. Future dollars are typically considered less valuable than current dollars, and so are "discounted." Summary measures add up deficits in each future year within a given time horizon, after applying a discount for dollars in a particular future year. For instance, the present value of the deficit in t years into the future is:

$$PV(Deficit_t) = \frac{Spending_t - Revenues_t}{(1+r)^t}$$

where the subscript t denotes quantities t years ahead and r is a discount rate. A summary measure then adds up the present value of each future year within the budget window, along with any current assets or liabilities. Measures of long-term fiscal balance or imbalance are highly sensitive to the choice of discount rate, which reflects the relative value of buying power in the future relative to now. Higher discount rates, which imply future dollars are less valuable, will reduce the scale of fiscal imbalances, while lower discount rates, which put greater weight on the future, will increase them.

Economic theory assumes that people make choices to maximize their utility, which describes one's overall well-being. Typically economic models assume that a unit of utility enjoyed today is more valuable than a unit of utility enjoyed in the future. The relative value of current and future utility is governed by a subjective rate of discount, which depends on a person's patience or impatience. Summing discounted utilities is the basis of the benefit approach, which is described below.

Choice of Discount Rate

Choosing an appropriate discount or interest rate depends on what is being measured. Budget analysis is an example of the cost approach, which computes how much is spent to deliver government-provided services. Public finance economists usually take into account the costs of raising revenue and how public programs affect citizens' well-being, which is an example of the benefit approach or cost-benefit analysis. The benefit approach takes into account individuals' own choices and preferences in evaluating the effects of government policies.⁴⁷

The Cost Approach

Budgets and budget projections use a cost approach, looking at the level of resources needed to fund government goods and services. In the cost approach the interest rate for government borrowing is the appropriate discount rate for computing present values because that rate is the price the government faces when shifting resources available to it backward in time by issuing Treasury bonds (which lets the government have more money now and less later) or shifting resources forward by buying back bonds (which lets the government have less money now and more later).

The Benefit Approach

Traditional public finance analysis usually uses cost-benefit analysis or utility-based models, which are examples of the benefit approach. The benefit approach analyses give different answers than a cost approach when benefits of public programs exceed or fall short of their costs. For example, Social Security benefits are paid in the form of an annuity, not a lump sum. Because annuities provide protection against the risk of life spans lasting longer than resources, people are willing to pay more than the present value of an annuity. A cost-based analysis would ignore the insurance benefit of this protection while a cost-benefit analysis would include it. The same point applies on the revenue side: collecting taxes creates economic losses greater than the amount of resources collected because taxes distort price signals. These "excess burdens" also are not reflected in budget numbers. Cost-benefit analysis provides a more comprehensive picture of the costs and benefits of government programs and therefore requires collecting and processing much more information than budget analysis.

The benefit approach also calls on policymakers to make distributional choices among generations. Making distributional choices which assign costs and benefits to various competing

⁴⁷ Discussions of generational accounting, which is described below, sometimes confuse cost and benefit approach concepts. Generational accounting, which uses the budget constraint for an average member of a cohort can be tied more easily to the framework of individual maximization that is the core of economic analysis. However, published estimates of generational accounts were calculated on a cost basis.

groups is central to the political process. Long-term budgeting introduces another dimension to these choices by looking at financial effects of policy on future generations who are obviously not at the table of political discussion. In particular, policy that reduces deficits by cutting spending or raising taxes shifts buying power from older, currently living generations to younger or unborn generations. Many have said that fiscal policy should not leave the children and grandchildren of current generations worse off, a normative view that fits naturally into the benefit view, but which cannot be incorporated into the cost approach. On the other hand, a future generation may enjoy higher incomes due to economic growth and therefore can afford to pay some portion of the cost of government that benefitted previous generations. In turn, the following generation would pay some portion of the costs of government benefitting that future generation. Thus, long-term deficits shift resources to older generations, allowing each generation to enjoy a higher standard of living than if the government always balanced its budget. Of course, if deficits are too high, some generation may repudiate public debts, breaking this chain of generational transfers.

Risk Adjustments

A more sophisticated analysis would take risk into account. Future taxes and future benefits from government programs will be risky for various reasons. The proper degree of risk adjustment also depends on how risks in government programs correlate to private risks, such as uncertainty in wage growth. Determining the appropriate risk-adjusted discount factor requires matching these streams of payments or benefits with income streams, such as bond income, with similar risk characteristics. However, risks due to uncertainty in the flow of benefits from government programs or to unforeseen changes in taxes are not easy to evaluate or compare to publicly traded assets.⁴⁸

Rationality and Social Discounting

If some households are not rational and farsighted then the question of the proper discount rate becomes even more complicated. Some behavioral economists argue that consumers are biased toward current consumption because they are unable to imagine fully the benefits of future consumption, and so save too little. The English economist A.C. Pigou argued that preferring present satisfactions to future ones resulted from a defective “telescopic faculty,” which would mean that individuals would save too little for the future.⁴⁹ A large body of evidence in economics and finance suggests that many households do a poor job of financial planning, saving too little and failing to accumulate sufficient resources for retirement. Such individuals act as if they had high discount rates when young, but upon becoming old may wish they had had lower discount rates.⁵⁰ Indeed, the Social Security program was intended to counteract such financial myopia. Caplin and Leahy argue that if individuals lack consistent or coherent notions about the relative value of current versus future buying power, then an optimal social policy would use a lower social discount rate, so that the government should take measures to raise savings and to

⁴⁸ For a discussion of risk-adjustment of discount rates for public policy see Coleman Bazelon and Kent Smetters, “Discounting Inside the Washington D.C. Beltway,” *Journal of Economic Perspectives*, vol. 13, no. 4, fall 1999. Shoven and Slavov analyze the political and market risks to Social Security: John B. Shoven and Sita N. Slavov, “Political Risk Versus Market Risk in Social Security.” NBER Working Paper No. 12135, 2006.

⁴⁹ A.C. Pigou. 1920. *Economics of Welfare*. (London: Macmillan), p.25.

⁵⁰ The youthful Augustine prayed “Grant me chastity and self-control, but not right now.”

implement other policies that reflect more patience than the average person possesses.⁵¹ Using a lower social discount rate means putting greater weight on future social problems.

Information Requirements

The cost approach, which underlies all budget accounting, requires far less information than the benefit approach. In the short term the cost approach relies on “harder” numbers, which are typically auditable, whereas long-term cost estimates depend on the technical quality of the forecasting models they employ. The benefit approach is not practical as a replacement for estimates based on the cost approach. However, the benefit approach recognizes that only by improving individuals’ well-being and minimizing their burdens can good policy be made.

Open- and Closed-Group Measures

Long-term budget deficit estimates covering a given time period include tax and spending transactions that affect three distinct groups: those born before the start of the time period, those born after the start of the time period but who die before the end of the time period, and those born after the start of the time period but who live beyond the end of the time period. Also, the group of people covered at the beginning of the time period differs from the group of people at the end of the time period because of births and deaths. This is considered an “open” measure because the estimate is based on transactions occurring over only a part of the life spans of some people. “Closed-group” measures aggregate the government benefits for a specific cohort or set of cohorts, as measured on a cost basis, minus taxes they paid, to produce a net tax measure. A projection of net tax payments for all people born in one year over the course their lifetimes is a closed-group estimate. Groups can be defined broadly, such as the whole of future generations, or narrowly, such as the group of all people born in 1965. Generational accounting, discussed below, is a prominent example of closed-group accounting.

Closed-group estimates have important advantages compared to open-group estimates. First, a closed-group estimate can indicate whether the costs of providing government benefits to a given group can be financed by the taxes paid by that group. Otherwise cross-subsidies from other groups would be necessary to finance those benefits. Second, closed-group estimates do not suffer from the moving-window problem because the size and characteristics of the group are constant.

A long-term fiscal policy in which net tax payments of each group sum to zero is not the only form of sustainable policy. In a growing economy older generations may capture some of the higher incomes of younger generations without making them poorer than their parents’ generation. Also, in an economy with a steady population growth each generation can receive more in benefits than it paid in taxes because each cohort of workers is proportionately larger than each cohort of retirees. On the other hand, if the number of retirees increases faster than the number of workers, as is happening in the United States and many other advanced economies, then financing retirement programs becomes more difficult.

⁵¹ Andrew Caplin and John Leahy, “The Social Discount Rate,” *Journal of Political Economy*, vol. 112, 2004, pp. 1257 - 1268.

Cash Flow Versus Accrual Accounting

Public budgets are generally computed on a cash flow basis, measuring revenue inflows from taxes, royalties and fees and spending outflows on goods, services, benefit checks, and salaries for a given year or other time period. Cash flow accounting records monetary transactions when they occur. However, other changes which affect the government's financial position but do not involve current payments or receipts are not recognized. For example, a budget computed according to cash accounting principles would not reflect the financial liability created if a government created a new benefit which would come into effect in the future. Only when the benefits are actually paid would the budget accounting start to recognize its cost.

The accrual accounting approach records changes in economic value or cost when they occur, whether or not they are associated with cash transactions in the current period. Accrual accounting recognizes government liabilities when they are incurred, rather than when checks are actually sent. In the previous example, accrual accounting would record the financial liabilities associated with a new government benefit when it was enacted. Pension funds must use accrual accounting to ensure that current income streams are sufficient to pay liabilities in the future.

Some analysts note that businesses with long-range liabilities such as insurers and pension funds are required by law to use accrual accounting methods and argue that, by the same logic, governments should be required to use the same methods. While wider use of accrual accounting concepts in federal budgeting would provide a more complete picture of the government's fiscal position, fundamental differences between private business and the federal government require different accounting approaches. Businesses can become bankrupt and disappear, but governments do not disappear if bankrupt. Governments can compel tax collections; businesses cannot compel sales. Furthermore, promises to pay Social Security or Medicare benefits are not contractual obligations and can be altered by legislation. Because solvency for governments is essentially different from solvency for private concerns, accounting concepts for businesses cannot be directly applied to governments.

The Federal Accounting Standards Advisory Board (FASAB) developed a set of principles for governments, including the guideline that federal financial reports should show, "whether future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due."⁵² The *FY 2005 U.S. Government Financial Statements* and the *Analytic Perspectives* volume accompanying the President's budget proposals present federal financial data intended to satisfy the FASAB principles.⁵³ Australia introduced accrual accounting into official government budgeting procedures in the 1990s.⁵⁴

Proponents of accrual accounting note that information from cash flow accounts provides little or no information about whether the government's fiscal position is sustainable or not. For example, while revenues from Social Security payroll taxes now exceed Social Security benefits,

⁵² Federal Accounting Standards Advisory Board, *Statement of Federal Financial Accounting Standards 8, Supplementary Stewardship Reporting*, issued June 11, 1996.

⁵³ See the section on "Stewardship" in *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2007* and U.S. Dept. of the Treasury, *2005 Financial Report of the U.S. Government*, Dec. 15, 2005.

⁵⁴ A full description of Australia's transition from a cash flow to an accrual accounting system can be found in the Australian Bureau of Statistics report *Implementation of Accrual Accounting in Australian Government Finance Statistics and the National Accounts*, 2002.

generating surpluses that are added to the Social Security trust funds, whether the promises made to beneficiaries can be fulfilled depends on the economic value of future Social Security revenues compared to the costs of future Social Security benefits. Cash flow accounting that focuses on the short-term and neglects long-run effects is fundamentally unsuited for analyzing such questions. Jackson provides a detailed assessment of the potential for applying accrual accounting principles to Social Security. Jackson argues accrual accounting provides a better framework for debates over the future of Social Security.⁵⁵ Policy makers, according to Jackson, would accept reforms with painful short-run consequences more willingly because accrual accounting would reveal the benefits of avoiding or mitigating even more painful long-term consequences, which cash-flow approaches hide.

One limitation of accrual accounting is that current payments and receipts are much less uncertain than payments and receipts in the remote future. Calculations of the economic value of government obligations in the long term are necessarily imprecise, and accrual accounting then aggregates items which are known and certain with other items which are speculative.

Generational Accounting

Generational accounting, which is an example of a closed-group measure, was introduced by Auerbach, Gokhale, and Kotlikoff in the early 1990s in order to highlight the imbalance between the large net benefits enjoyed by cohorts currently retired or about to retire and the large net costs which will be borne by future generations caused by the interaction of pay-as-you-go financing of entitlements, demographic changes and rising health care costs.⁵⁶ Over 16 governments have used generational accounting in official budget documents to assess the effects of government taxes and spending on different generations. Academic studies have applied generational accounting to many more countries.⁵⁷

Generational accounts are computed by imputing a stream of government transfers and a stream of tax payments for age-specific or age-and-sex specific cohorts. For living generations the present value of government transfers minus taxes is said to be that cohort's generational account, which indicates whether members of a cohort on average paid more in taxes than they received in transfer benefits. For unborn generations a pro-rata share of accumulated government liabilities and costs of non-transfer programs is added to the present value of government transfers minus taxes.⁵⁸ This approach assumes that living generations will receive benefits and pay taxes according to current law, but that future generations will enact and pay for fiscal reforms which prevent government default.

⁵⁵ Howell E. Jackson, "Accounting for Social Security and Its Reform," *Harvard Journal on Legislation*, Winter 2004. Available at <http://ssrn.com/abstract=458921>.

⁵⁶ Alan J. Auerbach, Jagadeesh Gokhale and Laurence J. Kotlikoff, "The 1995 Budget and Health Care Reform: A Generational Perspective," *Economic Review*, Federal Reserve Bank of Cleveland, issue Q1, 1994, pp. 20-30.

⁵⁷ Kotlikoff lists Argentina, Australia, Belgium, Brazil, Canada, Denmark, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Sweden, Thailand, the United Kingdom and the United States as having computed generational accounts. See Laurence J. Kotlikoff, "Reply to Diamond's and Cutler's Reviews of Generational Accounting," *National Tax Journal*, vol. 50, no. 2, June 1997, pp. 303-14 and *Generational Accounting around the World*, (Alan J. Auerbach, Laurence J. Kotlikoff, and Willi Leibfritz, editors) National Bureau of Economic Research Project Report, Univ. of Chicago Press, 1999.

⁵⁸ See Kotlikoff (1997) for details on computations.

Although generational accounting is recognized as a useful tool for understanding the effects of large deficits across generations, it has been criticized on several grounds. Most of these criticisms are matters of interpretation or improving the accuracy of generation accounts and do not dispute the basic value or validity of the generational accounting approach. However, the claim by more enthusiastic proponents that generational accounting should replace traditional budget estimates has met with skepticism. The more modest view that generational accounts or some other type of long-term estimate of the sustainability of current fiscal policy represent a useful addition to government fiscal reports is uncontroversial.⁵⁹

Some economists criticize generational accounting's assumption that future generations will bear the whole burden of adjustment away from an unsustainable fiscal path, and that living generations will bear none. This results from the traditional budgetary practice of assuming current policy will continue in order to avoid having to predict future policy, along with the presumption that future generations will act in some unspecified way to avoid government default. This approach treats the just-born cohort in a radically different way than unborn cohorts.

A more substantive concern is the allocation of the costs and benefits of government programs across cohorts. Computing transfer payments to each cohort based on demographic data from the Social Security Administration or related sources is straightforward but complicated. Portioning the benefits of other government programs presents more difficult questions. For example, educational expenditures in a given year benefit younger generations who are accumulating human capital. Those expenditures also benefit teachers and depending on how labor markets work, may also benefit employers. Most generational accounting estimates sidestep these questions by assuming non-transfer spending benefits living generations equally. Although this assumption is unlikely to be correct, it may not matter much for two reasons. First, if the pattern of non-transfer benefits is stable over time then those types of government expenditures are not likely to expand generational imbalances. Second, non-transfer government spending plays a relatively small role in the medium and long term deficits compared to the role of transfer payments such as Social Security and Medicare.

Fiscal Gap and Fiscal Imbalance

The concept of a "fiscal gap" has been put forth as convenient way of summarizing the size of long-term fiscal imbalances. Fiscal gap is defined as the size of the immediate and permanent increase in tax revenues or decrease in non-interest expenditures needed to ensure that the public debt to GDP ratio at the end of the budget window is the same as the initial public debt to GDP ratio. A fiscal gap can be calculated for a long-term budget window, such as 50 or 75 years, or for an infinite horizon, avoiding the moving window problem. The fiscal gap measures the difference between projected government revenues and spending in present value terms. Fiscal gap estimates therefore provide a single number (for each set of assumptions) which expresses long-term fiscal obligations in current dollar terms. Alternatively, fiscal gap estimates can be presented in terms of a familiar magnitude, such as a percentage of GDP. Thus, fiscal gap estimates provide a simple way of measuring fiscal imbalances, at the cost of requiring some assumptions about how to compare current and future dollars.

⁵⁹ The generational accounting approach is examined in more detail in a 1995 CBO report *Who Pays and When? An Assessment of Generational Accounting*.

One Measure is Not Enough for All Purposes

All measures of the federal government's fiscal condition have advantages and disadvantages. Short-term measures provide far more detail than long-term measures, and almost certainly will be more accurate in what they measure. However, short-term measures may provide a misleading impression of the government's fiscal condition because of the revenues and spending in the years beyond the budget window, which they do not measure. Long-term measures give a longer view of fiscal conditions, but were not designed for budgetary control and oversight.⁶⁰ Further, long-term measures are by construction subject to greater variability. However, this does not detract from long-term measures' value as early-warning signals of future fiscal problems. For instance, long-term measures indicate that entitlement spending associated with the baby-boom generation's retirement will create large fiscal problems. That the exact size of those problems is not precisely estimated is not critical. A driver need not see exactly where cracks in the bark lie to avoid hitting the tree.

The question of how best to incorporate long-term measures into congressional budgetary procedures is a thorny one. In the past decade congressional budgetary procedures have shifted to assessing legislation using 10-year estimates. In part, that shift was motivated by a desire to use a measure that would give a more accurate assessment of the economic impact of specific proposals. However, for various reasons discussed above, 10-year estimates can also provide a misleading picture of fiscal effects and conditions. Extending the budget window beyond 10 years would introduce greater variability into budgetary assessments, and would increase the importance of assumptions about key economic parameters, such as the path of future interest rates and the rate of productivity growth. Some budgetary procedures, such as the Senate's Byrd Rule and certain points of order in the House, force consideration of long-term effects.⁶¹ However, those procedures have yet to bring about solutions to the challenges presented by long-term imbalances.

How Big Are Federal Fiscal Imbalances?

The federal government faces serious fiscal imbalances in the coming decades. While each of the measures described in the previous section highlight particular aspects of the federal government's fiscal condition, together they point to the same conclusion: under any plausible scenario the misalignment of federal revenues and spending will continue before worsening as the costs of baby-boom retirement and health care fall due. Estimates of each of the fiscal measures discussed above are presented in turn.

Year-by-Year Projections of Future Deficits

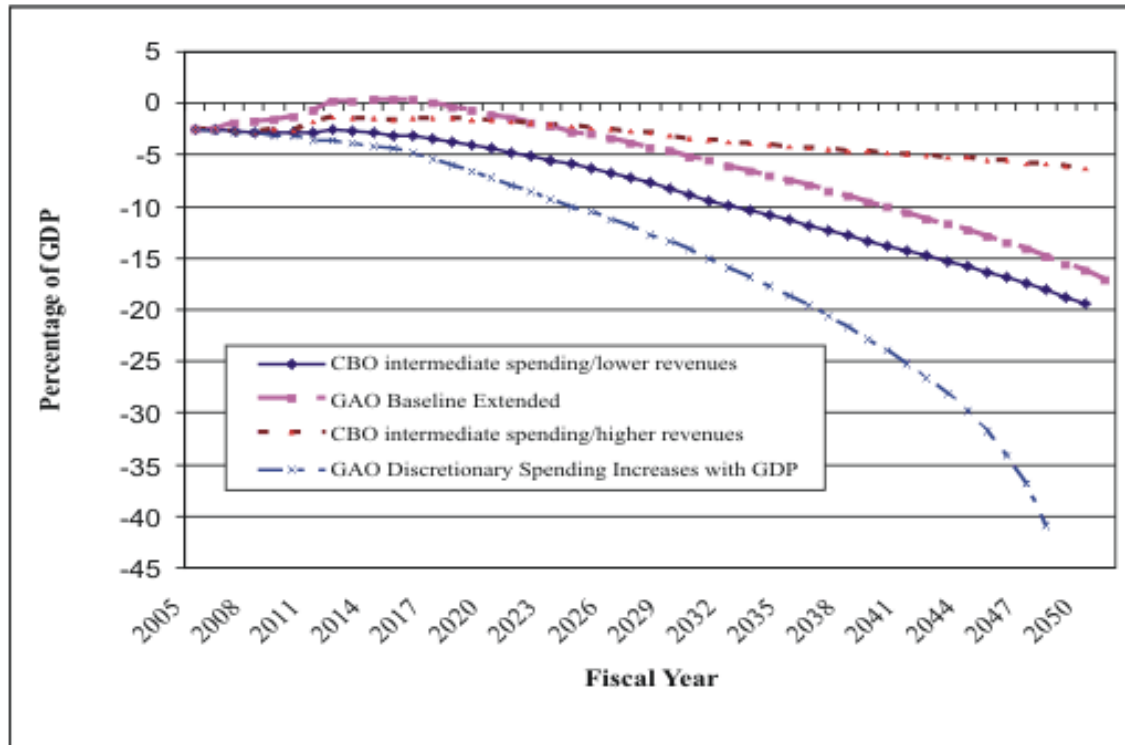
Simple graphs of federal deficits over the next half-century demonstrate that if current policies continue, deficits will reach levels never seen before in peacetime. **Figure 5** shows long-term

⁶⁰ However, House budget rules provide for a point of order regarding Social Security that incorporates the 75-year estimates in the more recent Trustees' Report and a point of order regarding long-term spending proposals. See U.S. Congress, House Committee on the Budget, *Compilation of Laws and Rules Relating to the Congressional Budget Process*, committee print, 107th Cong., 1st sess., Serial No. CP-4 (Washington: GPO, 2000), and H.Con.Res. 95.

⁶¹ CRS Report RL30862, *The Budget Reconciliation Process: The Senate's "Byrd Rule"*, by (name redacted).

projections of deficits as a percentage of GDP computed by the GAO and CBO for each year until 2050. Both sets of projections show large deficits growing year by year in the mid 21st century.

Figure 5. Projected Annual Federal Deficits as a Percentage of GDP



Source: CBO projections from *The Long-Term Budget Outlook*, Dec. 2005. GAO projections downloaded from <http://www.gao.gov/special.pubs/longterm/data.html>

The two most optimistic projections among those shown in **Figure 5**, the CBO “intermediate spending/higher revenues” and the GAO Baseline Extended, presume that the proportion of taxpayers subject to the AMT will grow without limit and will eventually include most taxpayers. Most analysts consider it unlikely that the AMT, which (as noted earlier) was originally designed to prevent tax avoidance by multi-millionaires, would be allowed to expand to cover all but the poorest taxpayers by the latter part of the 21st century. Deficit projections that assume the AMT or tax revenues will be capped, such as the GAO “Discretionary Spending Increases with GDP” and the CBO “intermediate spending/lower revenues” scenarios, are more pessimistic.⁶²

These “intermediate” assumptions may be optimistic. CBO assumes that health care costs will grow at the rate of GDP growth plus 1%. However, past health care cost control efforts have failed, except for short periods of time. Defense expenditures in this scenario are well below levels proposed in the Bush Administration’s Future Years Defense Program, on which CBO’s “higher spending” projections are based. (CBO long-term projections do include adjustments

⁶² Although GAO’s “Baseline Extended” simulation does not cap the AMT, by holding revenue constant as a share of GDP beginning in 2016 major changes in current tax law are implicitly assumed. Revenue in the GAO “Baseline Extended” simulation is held constant at 19.7 % of GDP beginning in 2016. In contrast, revenue reaches 23.7% of GDP in 2050 in CBO’s “intermediate spending/higher revenues” simulation.

intended to reflect the costs of operations in Iraq and Afghanistan.) Furthermore, the Government Accountability Office has found that the Pentagon employed “overly optimistic” planning projections in the Future Years Defense Program. In addition, the costs of military operations in Iraq and Afghanistan are not included in the Future Years Defense Program.⁶³

Generational Accounts

Generational accounting, as discussed above, provides a measure of generational equity and of the size of federal fiscal imbalances. Generational account calculations for the U.S. show large net benefits for retirement age cohorts and very large net liabilities for young and unborn generations, suggesting that older cohorts are paying a disproportionately small share of the burden of government finances and younger cohorts will pay a disproportionately large share. Calculations from Gokhale et al. are presented in **Table 2**.⁶⁴

Generational accounting assumes that future generations will bear the full brunt of cost of adjustments needed to bring federal finances to a sustainable fiscal condition. As noted above, this creates a sharp difference between just-born and the unborn cohorts. For example, as shown in **Table 2**, Gokhale et al. estimate a newborn male faces a net liability of \$122,100, but a not-yet-born male would face a net liability of \$142,500. This difference stems from generational accounting conventions rather than any real difference in the fiscal burden each will likely bear.

These estimates do not imply that future generations will necessarily be worse off than current generations, as economic growth will continue to raise living standards. Transferring some of the gains of future economic growth to currently living generations can be a sensible public policy, although whether the current scale of transfers represents a fair balance of fiscal burdens among generations is another question.

Fiscal Gap Estimates

Many recent discussions of long-term fiscal issues have used fiscal gap or related measures. Most analysts compute two estimates, one using CBO baseline-like assumptions and a second with an alternative set of assumptions. Typically, these alternative projections assume that major tax cuts will not sunset in 2010, the number of filers subject to the AMT will be capped and that discretionary expenditures will increase at the same rate as the rest of the economy.

⁶³ See U.S. GAO, “*Future Years Defense Program: Actions Needed to Improve Transparency of DOD’s Projected Resource Needs*,” GAO-04-514, May 2004, pp.14-17.

⁶⁴ Jagadeesh Gokhale, Benjamin Page, Joan Potter, and John Sturrock “*Generational Accounts for the United States: An Update*.” CBO Technical Paper Series. 2000. For generations born after 1960, net tax payments fall as generations get younger. This occurs because of longer life expectancies and the rapid increase in the 1960s of people eligible for Social Security and government-financed health care.

Table 2. U.S. Generational Accounts

Age in 1998	Net Tax Payment	
	Male	Female
unborn generations	\$142,500	\$71,300
0	\$122,100	\$61,100
10	\$169,400	\$82,000
20	\$238,200	\$109,400
30	\$268,100	\$111,400
40	\$236,900	\$77,800
50	\$152,900	\$10,500
60	\$10,800	\$-95,600
70	\$-92,400	\$-135,900
80	\$-83,600	\$-112,300
90	\$-61,500	\$-74,300

Source: Gokhale et alia (2000). Interest rate assumed to be 6% per year, GDP assumed to grow at 2.2% per year. All amounts are present values in 1998 dollars.

Four sets of fiscal gap estimates computed using CBO baseline or similar assumptions are presented in **Table 3**. Auerbach, Gale, and Orszag compute one set of estimates using the Social Security Trustees' intermediate cost projections for Social Security and Medicare, which are denoted SST, and another set using the CBO intermediate spending/lower revenues scenario projections for Social Security and Medicare, which are denoted CBO.⁶⁵

The Auerbach, Gale, and Orszag and the GAO estimates of the fiscal gap for the 2006-2080 budget window are very close, and are also close to the Treasury estimate of fiscal gap for 2005-2064. The fiscal gap calculated using CBO estimates is much smaller because it extends only until 2050, and thus excludes extremely high deficits in the following years.

Estimates using alternative assumptions are presented in **Table 4**. These estimates are not directly comparable because they cover different time periods and used different economic assumptions. Nonetheless, the estimates agree in several important ways. First, the magnitudes are large, implying that achieving fiscal sustainability will require some combination of major increases in revenues or cuts in spending. Second, the 75-year estimates computed by GAO and Auerbach, Gale and Orszag are fairly close, even though the technical modeling methods are different. Gokhale and Smetters's 2003 study computed estimates of the fiscal gap as well as an estimate of "generational imbalance" between living and future generations, which is a variant of generational accounts.⁶⁶ The Gokhale and Smetters fiscal gap estimate does not include the costs of the Medicare Part D drug benefit and is therefore lower than other infinite horizon fiscal gap estimates. The estimate computed using CBO data is lower because the budget window is

⁶⁵ See Alan J. Auerbach, William G. Gale and Peter R. Orszag, "New Estimates of the Budget Outlook: Plus Ça Change, Plus C'est la Même Chose," *Issues in Economic Policy*, no.3, 2006.

⁶⁶ Gokhale Jagadeesh and Kent Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*. (Washington, DC: The AEI Press 2003).

narrower, which excludes 30 years which are projected to have large deficits, and because the CBO Social Security projections are more optimistic than the Social Security Trustees' intermediate projections.

Table 3. Fiscal Gap Estimates Using CBO Baseline or Similar Assumptions

Author	Budget Window	Estimated Fiscal Gap as % of GDP	Long-Term Real Annual Growth Rate Assumption
Auerbach, Gale, and Orszag	2006-2080	4.57 (SST)	1.9%
		4.12(CBO)	
	Infinite Horizon	7.97 (SST)	
		7.38 (CBO)	
Congressional Budget Office			
Long-Term Budget Outlook, Dec. 2005 Intermediate Spending/High Revenue (Scenario 5)	2005-2050	1.50%	2.2%
Government Accountability Office	2006-2080	4.30%	1.9% ^a

Sources: Table 8 from Alan J. Auerbach, William G. Gale, and Peter R. Orszag, "New Estimates of the Budget Outlook: Plus Ça Change, Plus C'est la Même Chose," *Issues in Economic Policy*, no.3, 2006; CBO report *The Long-Term Budget Outlook*, Dec. 2005; GAO and *Fiscal Year 2005 U.S. Government Financial Statements*. Fiscal gap for CBO computed by author using CBO data.

a. Average growth rate for 2005-2045. GDP growth rates are endogenous in the GAO simulations.

These long-term projections, which present an ominous view of future federal finances, still may be overly optimistic. First, as noted above, the historic rate of medical inflation above general inflation far exceeds the 1% per year growth assumed in the models. Second, these models assume that as new federal borrowing marches into multi-trillion dollar territory, also noted above, interest rates will not respond. If interest rates rise as federal borrowing takes up a larger and larger share of world flows of capital, then economic growth will slow and federal interest costs will rise.

Other Approaches

Another modeling approach focuses on sustainable policies that match spending and revenues to avoid the issue of forecasting interest rate responses due to large future deficits. CBO ran two such simulations, one high-revenue scenario and one a low-revenue scenario. The high-revenue/high-spending scenario, like the CBO baseline, assumes that provisions of the tax law such as the 10% income tax bracket, higher child tax credits, lower top tax rates, and repeal of the estate tax all expire at the end of 2010 and that the alternative minimum tax remains unaltered. Marginal labor taxes in the high-revenue/high spending scenario increase from 30.6% in 2006 to 38.8% in 2050. The size of the federal government would increase by 6.2% of GDP in the same period, bringing the US tax/GDP ratio up to a Canadian level, but still well below the tax/GDP ratios of the major European economies.

Table 4. Fiscal Gap Estimates Using Alternative Assumptions

Author	Budget Window	Estimated Fiscal Gap as % of GDP	Long-Term Real Annual Growth Rate Assumption
Auerbach, Gale and Orszag	2002-2080	7.26 (SST)	1.9%
		6.81 (CBO)	
	Infinite Horizon	10.76 (SST)	
		10.17 (CBO)	
Congressional Budget Office			
Long-Term Budget Outlook, Dec. 2005 Intermediate Spending/Low Revenue (Scenario 2)	2005-2050	4.1%	2.2%
Government Accountability Office	2006-2080	8.1%	1.2% ^a
Gokhale and Smetters	Infinite Horizon	6.5%	2.0 % ^b

Notes: See notes for **Table 4** for sources. Fiscal Gap calculations for CBO computed by author using CBO projected real interest rates and projected real GDP. Calculations by Gokhale and Smetters do not include the cost of Medicare Part D.

- Average GDP growth rate for 2005-2045. Growth rates are endogenous in the GAO simulation.
- Gokhale and Smetters (2003) assume the long term real growth rate will be 1.7% per capita. The 2003 *Social Security Trustees' Report* projects an average growth rate of total population of 0.3% per year between 2020 and 2080.
- Nearly four-fifths of the long-term costs in the Treasury estimate of unfunded liabilities are due to Social Security and Medicare. The Social Security Trustees' 2005 intermediate cost scenario assumes GDP grows 2.7% a year until 2014, and then declines gradually to the assumed rate of productivity growth of 1.6% per year.

In the low-spending/lower taxes scenario tax revenues are held to a fixed share of GDP and spending is matched to available revenues by cutting benefits to the elderly.⁶⁷ The economy grows more quickly in this scenario, with higher rates of employment and savings. The extent of the difference between the high-revenue/high-spending and the low-spending/lower taxes depends on whether the economy can draw funds from the rest of the world to finance deficits. International borrowing reduces the crowding-out of capital in the high-revenue/high-spending scenario, reducing the negative effects on economic growth.

Social Security, Medicare, and Other Federal Liabilities

The sustainability of Social Security has been a major focus of public attention because of the large number of beneficiaries, the importance of Social Security and Medicare in the retirement plans of most Americans, and the precarious nature of the pay-as-you-go financing of the Old Age, Survivors', and Disability Insurance (OASDI) program as well as the Health Insurance (HI) program (also known as Medicare Part A, which covers hospital-based health care). Diamond

⁶⁷ See the CBO report *The Long-Term Budget Outlook*, Dec. 2005, pp.16-18, for details.

surveys the economic issues surrounding the social security program; however that analysis is beyond the scope of this report.⁶⁸

Table 5 shows estimates of the financial shortfalls for Social Security and Medicare as well as estimates of other federal liabilities.⁶⁹ Social Security and Medicare liabilities are computed as the present value of expenditures net of tax, premium and state transfer revenue from the intermediate cost projections from the 2005 Social Security and Medicare Trustees' Report.

These estimates are similar to comparable estimates of fiscal gap under alternative assumptions calculations in **Table 4**. In large part this is because future Social Security and Medicare liabilities and the accumulated federal debt account for nearly 90% of long-term federal fiscal shortfalls. However, estimates in **Table 4** and **Table 5** differ in their treatment of other items. The fiscal gap calculations in **Table 4** include costs of future discretionary spending, which are not included in estimates presented in **Table 5**. On the other hand, fiscal gap calculations in **Table 4** do not explicitly include "Federal Employee and Veterans' Benefits" or items comprising "Other Liabilities, Commitments and Contingencies," although such expenses are included in other ways. For instance, the December 2005 CBO long-run projections subsumes these items into a broader "other mandatory spending" category, which is then extrapolated.⁷⁰

Table 5. Present Value Estimates of Fiscal Shortfalls due to Social Security, Medicare and Other Federal Liabilities

Budget Window	Total	Present Value of Expenditures Less Tax, Premium and State Transfer Revenue				Federal Debt Held by the Public	Federal Employee and Veterans' Benefits	Other Liabilities, Commitments and Contingencies
		OASDI	HI (Medicare Part A)	Medicare Part B	Medicare Part D			
Trillions (\$ 2005)								
2005-2079	35.6	5.7	8.8	12.4	8.7	4.6	4.5	1.7
Infinite Horizon	79.3	12.8	24.3	25.8	18.3	4.6	NA	NA
As Percent of GDP								
2005-2079	7.5%	0.9%	1.4%	2.0%	1.4%	0.7%	0.7%	0.3%
Infinite Horizon	8.6%	1.4%	2.6%	2.8%	2.0%	0.5%	1.4%	NA

Sources: U.S. Treasury Department, *2005 Financial Statements of the U.S. Government*, Dec. 2005; *2005 OASDI and Medicare Trustees' Report*; Testimony of Comptroller General David M. Walker, in U.S. Congress, House Committee on Government Reform, Subcommittee on Government Management, Finance, and Accountability, *Fiscal Year 2005 U.S. Government Financial Statements: Sustained Improvement in Federal Financial Management is Crucial to Addressing Our Nation's Financial Condition and Long-term Fiscal Imbalance*, 109th Cong., 2nd sess., Mar. 1, 2006.

⁶⁸ Peter Diamond, "Social Security," *American Economic Review*, vol. 94, no.1 (Mar. 2004), pp. 1-24.

⁶⁹ Balance sheets in the *2005 Financial Statements of the U.S. Government* (p. 40) also show \$1.46 trillion in assets.

⁷⁰ CBO Report, *The Long-term Budget Outlook*, Dec. 2005, pp. 39-40.

Notes: Estimates computed at the end of FY2005. Some items do not sum to totals due to rounding. Social Security and Medicare estimates employ the “Government-wide perspective,” which is synonymous with the usual budgeting approach, rather than the “trust fund perspective,” which treats transfers of general revenue as income. Annual growth is 2.7% until 2014 and then gradually declines to 1.8%. Present value of GDP estimated at \$618.1 trillion for 2005-2079 and \$921.2 trillion for infinite horizon (Note 2 from Table IV.B6 of the 2005 Report). NA denotes “not available.” “Other Liabilities, Commitments and Contingencies” includes Accounts Payable, Environmental and disposal liabilities, Benefits due and payable, Insurance program liabilities, long guarantee liabilities, and “Other liabilities,” as well as Commitments (listed in Note 20) and Contingencies (sum of ‘probable’ amounts in Note 19) from the balance sheet data in the 2005 *Financial Statements of the U.S. Government*.

- a. Infinite horizon totals include the 75-year liabilities for federal employee and veterans’ benefits and other liabilities, commitments, and contingencies.

Social Security’s long-term financial imbalance has significant implications for intergenerational equity. Early cohorts of Social Security beneficiaries received far more in benefits than they paid in OASDI taxes, an inevitable consequence of starting a pay-as-you-go pension system. However, future generations will pay more in taxes than they will receive in benefits, which was not inevitable in the design of the Social Security program. Generational consequences of Social Security’s financial problems are shown in **Table 6**.

Table 6 indicates that the cost of benefits and taxes for future participants will essentially balance, with a discrepancy of less than one-twentieth of 1% of GDP. This simply presumes that future generations will neither receive nor pay subsidies. Past and current participants, however, enjoyed a bonus of \$13.3 trillion in present value, representing the benefits they received above and beyond the taxes they paid. Eliminating Social Security’s financial imbalance either means that living generations must reduce benefits or increase taxes, or future generations must pay this above and beyond the costs of their own retirement. The monetary magnitudes needed to solve Social Security’s financial problems are large. However, the infinite horizon estimate of the OASDI fiscal gap of 1.4% of GDP is smaller than shifts of resources associated with major policy initiatives in the past.

Table 6. Present Values of OASDI Cost Less Tax Revenue and Unfunded Obligations for Program Participants

	Present value as of 1/1/06 (\$trillions)	As percent of GDP
Present value of future cost less future taxes for current participants	\$15.1	1.4
Less current trust fund	1.9	0.2
(tax accumulations minus expenditures to date for past and current participants)		
<i>Equals</i> unfunded obligation for past and current participants ^a	13.3	1.3
<i>Plus</i> present value of cost less taxes for future participants for the infinite future	0.1	<.05% of GDP
<i>Equals</i> unfunded obligation for all participants through the infinite horizon	13.4	1.3

Source: Reproduced from Table IV.B7 of the 2006 *OASDI Trustees Report*.

- a. “Unfunded obligation for past and current participants” is also referred to as the closed group unfunded obligation.

The Long-Term Fiscal Situation

The federal government faces large fiscal imbalances. A former chair of the President's Council of Economic Advisers recently noted,

the federal government's current budget deficit is, in a sense, only the tip of the iceberg of the fiscal problems to come. The federal budget is on an unsustainable path. When the baby-boom generation retires and becomes eligible for Social Security and Medicare, all hell is going to break loose. The policy options aren't pretty—either large cuts in promised benefits or taxes vastly higher than anything ever experienced in U.S. history.⁷¹

If the yearly budget deficit is the tip of the iceberg, then finding a way to measure the iceberg itself, that is, the magnitude of the imbalance in long-term revenues and spending obligations, becomes important. As with icebergs, the largest and most dangerous parts of long-term fiscal imbalances are less visible.

Although all serious fiscal analysts acknowledge the magnitude of future fiscal imbalances, major legislative changes of the scale necessary to address these imbalances have not been enacted—or yet proposed. The political choices needed to reduce these imbalances in a significant way will be painful, which explains some of the reluctance of policy makers to tackle this issue. Other reasons for the delay in confronting the issue of fiscal imbalances include the belief that economic growth will solve these problems, avoiding the need for difficult allocational decisions, and a belief that the costs of delay are relatively small.

Will The Economy Outgrow the Deficits?

Some journalists assert that accelerated economic growth will allow the U.S. economy to outgrow fiscal imbalances.⁷² The consensus of professional economists is that the economy is unlikely to outgrow the current looming fiscal imbalance. CBO concludes there is essentially no chance that growth in total factor productivity will be high enough to avoid large future shortfalls.⁷³ Auerbach, Gale, and Orszag conduct a simulation that assumes the economy will grow 3.8% per year over 2006-2016 instead of the 2.8% pace used by the CBO in its January 2006 forecasts. The U.S. economy has not had sustained growth at that pace since the 1960s. Using assumptions outlined below, which many independent analysts consider reasonable, Auerbach, Gale, and Orszag estimate the unified budget deficit over the 2006-2016 period to be \$2.1 trillion or 1.2% of GDP. The deficits excluding Social Security and other trust funds would be \$5.1 trillion or 3.0% of GDP.⁷⁴

Large budget deficits can slow economic growth in the long term. Government borrowing will push up interest rates unless foreign investors are willing to buy enough bonds to offset the

⁷¹ "How to Increase National Saving" on Greg Mankiw's Blog, posted Apr. 9, 2006, and available at <http://gregmankiw.blogspot.com/>.

⁷² For example, see the editorial "Supply-Side Surge," *New York Sun*, July 13, 2005.

⁷³ See testimony of CBO Director Douglas Holtz-Eakin, in U.S. Congress, Committee on Ways and Means, Subcommittee on Social Security, *The Role of the Economy in the Outlook for Social Security*, 109th Cong., 1st sess., June 21, 2005.

⁷⁴ See Alan J. Auerbach, William G. Gale, and Peter R. Orszag, "New Estimates of the Budget Outlook: Plus Ça Change, Plus C'est la Même Chose," *Issues in Economic Policy*, no.3, 2006.

reduction in the domestic pool of savings. Thus deficits either reduce the capital stock or induce foreign investors to own a larger share of the capital stock, reducing the future stream of profits and interest payments to domestic investors.

Reducing large future deficits or paying off existing public debts requires either substantial cuts in entitlement benefits or higher taxes (which also reduce incentives to work). Cutting the real value of debt by rapid inflation hinders the ability of consumers and businesses to respond to price signals, thus reducing economic efficiency. Moreover, bringing inflation to heel after a large and rapid monetary expansion requires large reductions in growth for at least a few years.

What is the Cost of Delay?

Spending cuts or tax increases large enough to address future fiscal imbalances will be painful, which may provide policymakers with incentive to delay attempts to address those imbalances. Delaying policy changes that address major fiscal imbalances has four major costs. First, as time passes, the opportunity to address generational imbalances by reducing the burden on younger cohorts by increasing taxes or lowering benefits of older cohorts, is lost. Not cutting benefits or increasing taxes for older cohorts now means imposing larger benefit cuts or tax increases on younger cohorts later. Second, gradual adjustments are less costly, because individuals have more time to adapt their consumption and retirement plans. Third, delaying reform measures increases the political risk associated with Social Security and Medicare. That is, delay increases the probability that retirees' incomes will be disrupted because of major financial problems in entitlement programs. Enacting reforms now reduces the chance that promised benefits will be cut in the future.

Fourth, delay increases the average excess burden caused by federal taxes. Excess burden is the social cost of raising tax revenue minus the amount of taxes collected, and is a measure of economic distortions caused by taxes. To the extent that tax increases will be needed to reach fiscal sustainability, delaying tax increases means that the future tax increases will be higher than if those measures were enacted earlier. Having a period of low taxes followed by a period of high taxes imposes a greater burden on the economy than a tax at an intermediate level that raises the same amount of revenue. This is because marginal excess burden of taxes increases at an increasing rate with the tax rate. Marginal excess burden is the cost of economic distortions caused by raising an extra dollar of tax revenue. Maintaining a steady tax rate minimizes excess burden over time.⁷⁵ Thus, delaying reform increases the overall cost of economic distortions caused by the tax system.

In addition, having a period of low taxes followed by a period of high taxes will also have general equilibrium effects on asset markets, which will have significant distributional effects among different classes of taxpayers, as compared to a steady tax rate at an intermediate level.⁷⁶

⁷⁵ For a discussion of marginal excess burden see E.K. Browning, "On the Marginal Welfare Cost of Taxation," *American Economic Review*, vol. 77, no. 1 (Mar. 1987), pp.11-23. An extension of this concept to the incremental social cost of additional debt finance see Bev Dahlby, "The Marginal Cost of Funds from Public Sector Borrowing," *Topics in Economic Analysis & Policy*, vol. 6, no. 1.

⁷⁶ Michael Ben-Gad, "The Welfare Effects of the Reagan Deficits: A Portfolio Choice Approach," *Economic Inquiry*, vol. 42, no. 3 (July 2004), pp. 441-454.

Concluding Observations

Short- and medium-term budgetary measures, such as the current-year estimates and CBO's 10-year forecasts, are not useful tools in understanding the nature and magnitude of the federal government's long-term financial imbalances, although they are essential tools for managing federal operations and for effective congressional oversight. Several measures of long-term financial fiscal stance developed in the recent past have become increasingly influential among budgeting experts, although so far they have had limited influence on wider public debates. Any single summary indicator of the federal budgetary situation provides too little information, so a combination of short- and long-term measures is needed to understand the federal government's fiscal stance.

Recent estimates of future federal imbalances that were not constrained by CBO baseline assumptions and which were computed using different technical models, fall in a narrow range. Estimates of the 75-year imbalance run roughly from 7% to 8% of GDP, and estimates of the infinite horizon imbalance are around 10%. The similarity of these estimates does not imply a lack of substantial uncertainty about the exact size of long-run imbalances. That similarity does imply a consensus among analysts that these imbalances are not mere computational artefacts, but are real and, by historical standards, large.

The International Monetary Fund,⁷⁷ the Comptroller General, leading academics, and prominent policy analysts, among others, have stated that the U.S. government fiscal policy is proceeding on an unsustainable path. Other advanced countries such as Belgium, Italy, and Japan face fiscal problems which are even more severe than those of the United States. Many other major European countries are also running sizeable deficits and face severe demographic challenges. Citizens and policy makers in the United States and in these countries will face unpleasant choices, involving either sharp cuts in benefits or major tax increases. Wider use of long-term fiscal measures, along with more commonly used short- and medium-term measures, may help focus attention on these important issues.

The federal government has run large deficits during major wars as well as during the Reagan Administration, and past generations of policy makers have managed to steer fiscal policy back towards a sustainable path. Debts accumulated during World War II were in large part paid off in the 1950s and 1960s. More recently, large Reagan-era deficits in the 1980s were eventually tamed during the 1990s through the discipline of Gramm-Rudman-Hollings, PAYGO, and other budget processes. The 1983 Greenspan Commission introduced several important reforms which, if they did not fix Social Security's problems, at least extended its viable life by decades. Many analysts, however, conclude that financing the retirement and health care of the baby-boom generation presents financial challenges of a larger magnitude.

⁷⁷ See point 10 of the *United States of America—2006 Article IV Consultation, Concluding Statement of the IMF Mission*, May 31, 2006, available at <http://www.imf.org/external/np/ms/2006/053106.htm>.

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