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## THE TECHNICAL METHODOLOGY UNDERLYING CBPP'S LONG-TERM BUDGET PROJECTIONS

By Richard Kogan and Matt Fiedler

On January 29, 2007, the Center on Budget and Policy Priorities issued new projections for the federal budget through 2050. Like other analysts who have developed long-term projections, we find that the nation's current fiscal policies are unsustainable and that returning to a sustainable path will require difficult policy changes affecting both revenues and expenditures.<sup>1</sup> Successful fiscal reform will also require substantial changes to the U.S. health care system.

This paper provides a detailed description and explanation of the methodological choices made in constructing our projections. The appendices to this paper examine the methodological differences between our projections and those made by others and quantify the size of those differences.

### Our Projection Methodology

Our projections are estimates of the effects of continuing current government policies through 2050. They draw on three main data sources: CBO's January 2007 baseline, CBO's December 2005 long-term projections, and CBO's June 2006 Social Security projections.<sup>2</sup>

Through 2017, our expenditure projections are identical to CBO's January 2007 estimates, except that we assume that expenditures for operations in Iraq and Afghanistan will phase down, following one of CBO's two alternative expenditure paths for Iraq and Afghanistan costs, and we assume that funding for other defense activities will grow as requested in the President's 2007 budget.

After 2017, we follow CBO's long-term projections of the growth in Social Security, Medicare, and Medicaid as a share of the economy and assume that overall costs for other entitlements, domestic appropriations, and defense grow at the rate of inflation plus population growth. We base

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<sup>1</sup> For a more detailed description of our results and our conclusions, see Richard Kogan, Matt Fiedler, Aviva Aron-Dine, and James Horney, "The Long-Term Outlook is Bleak," Center on Budget and Policy Priorities, January 29, 2007.

<sup>2</sup> "The Budget and Economic Outlook: Fiscal Years 2008 to 2017," Congressional Budget Office, January 2007; "The Long-Term Budget Outlook," Congressional Budget Office, December 2005; "Updated Long-Term Projections for Social Security," Congressional Budget Office, June 2006.

our revenue estimates on CBO’s estimate of revenues if the tax cuts are extended and the Alternative Minimum Tax is indexed for inflation.

Below, we explain our projections in more detail.

*Medicare and Medicaid:* Through 2017, we use CBO’s January baseline projections for Medicare and Medicaid. Thereafter, we project that these programs grow as a share of GDP as CBO projects in its December 2005 “high growth scenario,” which assumes that the growth rate per-beneficiary in health care spending is 2.5 percentage points higher than the growth rate per-person in GDP. This is identical to the average level of “excess cost growth” seen economy-wide since 1960.<sup>3</sup>

We project Medicare costs net of the premiums that beneficiaries pay and the clawback payments that states make to the federal government under Medicare Part D. We project Part D and non-income-related Part B premiums on the basis of additional backup data provided by CBO. We assume that Part A premiums, income-related Part B premiums, and Part D state clawback payments grow at the same rate as gross Medicare outlays.

*Social Security:* We follow CBO’s January baseline projections for Social Security expenditures through 2017. Thereafter, we use the “scheduled benefits” scenario from CBO’s June 2006 Social Security projections to project Social Security as a share of GDP.<sup>4</sup>

*Other Mandatory:* Through 2017, we follow CBO’s January baseline projections of non-interest mandatory spending for programs other than Medicare, Medicaid, and Social Security. Thereafter, we assume that this category grows at the rate of consumer price inflation (as measured by the CPI-U) plus the growth rate of the U.S. population.

*Defense Discretionary:* Through 2017, we project defense discretionary spending in two pieces: the underlying defense budget and the additional expenses related to operations in Iraq and Afghanistan. We assume that the underlying defense budget will follow the path requested in the President’s 2007

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<sup>3</sup> Splicing together CBO’s baseline path and its long-term path is complicated by the fact that in CBO’s long-term report, the “high” path and the “intermediate” path, which approximates CBO’s baseline over the first 10 years, diverge immediately. In contrast, we do not diverge from the baseline path until after 2017. Consequently, Medicare costs are somewhat lower in 2017 in our projections than in CBO’s high path.

Our projections diverge from the CBO intermediate path starting in 2018 in the same way that CBO’s high path diverges from its intermediate path starting in 2007. More formally, we project Medicare and Medicaid according to the formula below:

$$M_t = M_{t-1} + \Delta_{I,t} + (\Delta_{H,t+1} - \Delta_{I,t+1}),$$

where  $M_t$  denotes our projected level of Medicare (or Medicaid) in year  $t$ ,  $\Delta_{H,t}$  denotes the change in the share of GDP consumed by Medicare (or Medicaid) in CBO’s high path from year  $t-1$  to year  $t$ , and  $\Delta_{I,t}$  denotes the corresponding change in CBO’s intermediate path.

<sup>4</sup> We splice the Social Security long-term projections onto the January baseline by growing the 2017 level of Social Security from CBO’s January 2007 baseline according to the percentage-point changes in Social Security’s share of GDP reflected in CBO’s June 2006 long-term projections.

budget, growing at a rate somewhat faster than inflation.<sup>5</sup> We project that expenditures for operations in Iraq and Afghanistan will phase down over time in accordance with the path specified in Table 1-5 of CBO's January 2007 report that assumes that the number of troops deployed in Iraq and Afghanistan will decline to 30,000 by 2010 and remain at that level thereafter.<sup>6</sup>

After 2017, we grow all defense expenditures at the rate of consumer price inflation (as measured by the CPI-U) plus the growth rate of the population.

*Non-Defense Discretionary:* Through 2017, we project non-defense discretionary spending by following CBO's January 2007 baseline, adjusted to remove the extension of a small amount of one-time supplemental funding enacted in the fiscal year 2007 homeland security appropriations bill. After 2017, we assume domestic discretionary expenditures will grow at the rate of inflation (as measured by the CPI-U) plus population growth.

*Revenues:* For our 2007-2017 projections, we use CBO's January baseline, which we adjust to reflect the effects of both making the 2001 and 2003 tax cuts and the so-called "tax extenders" (such as the research and experimentation tax credit) permanent and of indexing the parameters of the Alternative Minimum Tax to inflation.<sup>7</sup> After 2017, we base our projections on data from CBO's December 2005 long-term projections, which show revenues rising slowly over time, due primarily to real bracket creep.<sup>8,9</sup>

*Net Interest:* Through 2017, we base our projections on the net interest projections in CBO's January baseline, adjusted using CBO's debt service matrix to reflect our adjustments, described

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<sup>5</sup> To construct this path, we start with CBO's January 2007 defense discretionary baseline, adjusted to remove supplemental funding projected forward in the baseline. We add to that the increase in defense spending requested in the President's 2007 budget, as estimated by CBO in its March 2006 re-estimate of the President's budget.

<sup>6</sup> CBO's January report also presents a path under which the number of troops deployed in Iraq and Afghanistan stabilizes at the much higher level of 75,000 and does not reach that level until 2013. We did not adopt that path because we project defense spending after 2017 on the basis of its level in 2017. Hence, using the higher path would, in essence, lead us to project that the United States will keep 75,000 troops in Iraq and Afghanistan through 2050, which seems implausible. In any event, using this higher alternative path would change our estimate of the long-term fiscal gap only slightly.

<sup>7</sup> We make these adjustments using data shown in the policy alternatives table (Table 1-5) included in CBO's January 2007 report.

<sup>8</sup> Specifically, to project non-personal income tax revenues after 2017, we use data from CBO's "higher revenues" scenario, which assumes current tax law. To project personal income tax revenues, we follow the CBO projection path entitled "with permanent extension of EGTRRA and JGTRRA and AMT modification," which is shown in figure 5-5 of CBO's long-term report. CBO provided us additional backup data for this path. As with our projections of Social Security, we splice CBO's ten-year and long-run projections by applying the percentage-point changes in revenues as a percent of GDP from the long-term projections to the final year of the January 2007 baseline projections.

<sup>9</sup> Continued rapid growth in health care costs could have significant ramifications for revenues. For example, rapid health cost growth could cause employees to receive a greater share of their compensation in the form of health benefits. Since such benefits are excluded from taxation, this would tend to reduce the amount collected in payroll and income taxes. Conversely, rapidly rising health costs could induce more employers to stop providing health benefits altogether, raising the share of employee compensation that is subject to taxation. In any case, the CBO data on which we base our projections do not attempt to account for these effects, and so our projections do not attempt to do so either.

above, to the baseline outlay and revenue projections. After 2017, we calculate interest on the debt using the assumed long-term interest rates that are described below.

*Economic Assumptions:* For GDP, we adopt CBO’s January 2007 projections for years through 2017 and its June 2006 Social Security projections, which are the most recent long-term economic projections issued by CBO, for years after that. (Note that CBO’s long-term economic projections do not incorporate the economic effects of fiscal policies.<sup>10</sup>)

We derive nominal interest rates (which we use to calculate interest payments after 2017 and net present values) from the real interest rates and consumer price inflation (CPI-U) rates specified in CBO’s June Social Security projections. For the purposes of projecting discretionary spending and entitlements other than Medicare, Medicaid, and Social Security after 2017, we use the projected CPI-U from the CBO June 2006 Social Security projections and projected growth rates for the U.S. population and its territories constructed with data from Census Bureau’s March 2004 Interim Projections and its International Data Base.

*Summary Measure.* To summarize the government’s fiscal situation over the projection window, we use the measure known as the “fiscal gap”.<sup>11</sup> The fiscal gap over a period is defined to be the total increase in primary surpluses, in present value terms, needed to ensure that the debt-to-GDP ratio at the end of the period is the same as at the beginning of the period. In calculating the fiscal gap, we take the value of the initial debt to be equal to the current debt held by the public at the end of fiscal year 2007, and we calculate the primary deficit by considering primary outlays to be the sum of all outlays except net interest.<sup>12</sup>

In making our projections, we assume that the government receives all receipts and makes all outlays in a lump sum at the middle of the fiscal year. We discount streams and calculate interest costs accordingly. Results under this approach are extremely similar to the results achieved if one assumes that revenue and outlays occur as continuous streams through the year. Because the lump-sum approach is simpler to model, we use it here.

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<sup>10</sup> Of course, if the large deficits we project did actually occur, interest rates would undoubtedly rise, and GDP growth would likely slow dramatically. However, the main goal of analyses like ours (and those produced by CBO and others) is to determine the magnitude of the policy changes that would be necessary to solve the nation’s fiscal problems, not to determine what would happen if the nation’s fiscal problems were never solved. By definition, if policy changes are made that solve the long-term problem, the fiscal calamity we project here would never come to pass and therefore the negative economic effects of fiscal collapse would never materialize. Hence, when considering possible policy solutions and quantifying their effects, one should do so under economic assumptions like ours, not under economic assumptions that presume fiscal collapse.

<sup>11</sup> For the original presentation of the concept, see Alan J. Auerbach. “The U.S. Fiscal Problem: Where We Are, How We Got Here And Where We’re Going,” National Bureau of Economic Research Working Paper 4709, April 1994.

<sup>12</sup> Though both these choices reflect standard practice, they gloss over a couple of thorny technical issues: the existence of government assets that are not netted against the initial debt, but for which interest flows are recorded in the budget; and complications resulting from accounting practices put in place as part of the Federal Credit Reform Act of 1990. Accounting for these factors, were it possible to do so precisely, would change our projections by only a trivial amount.

## The Basis for Our Approach

Our approach differs in several important respects from projections issued by others, for example by Auerbach, Gale, and Orszag,<sup>13</sup> the Government Accountability Office,<sup>14</sup> and Gokhale and Smetters.<sup>15</sup> The four most significant differences relate to:

- 1) The appropriate growth rate for economy-wide health spending and, therefore, Medicare and Medicaid.
- 2) The appropriate growth rate over the long term for discretionary spending and mandatory spending other than for the “big three” domestic programs (Medicare, Medicaid, and Social Security).
- 3) Whether to project revenues under the assumption that current tax policies continue or under the assumption that Congress acts to maintain revenues at some fixed percentage of GDP over the long term.
- 4) The length of the projection window and, in particular, whether that window should extend to the infinite horizon.

(We differ from CBO in a fifth way. Namely, we choose a single base case for our primary analysis, while CBO offers multiple scenarios that mix and match alternative growth paths for spending and revenues. Although our analysis depends heavily on CBO’s projections, our base case does not correspond to any one specific CBO scenario, because of the choices we make among alternative paths of spending and revenue growth provided by CBO, our assumption that other mandatory and discretionary spending will grow at the rate of inflation and population growth after 2017 — which generally falls between CBO’s highest and lowest growth paths but was not explicitly modeled by CBO — and our decision to follow CBO’s January 2007 baseline projections for years through 2017.)

### Long-Run Growth Rate for Health Spending

By far, the most consequential of these four choices is our choice regarding the long-term growth rate for health spending. The CBO report on which we base our projections includes three scenarios for health cost growth. Each scenario assumes a different level of “excess cost growth,” which is the differential between the growth rate of per-beneficiary health costs and the growth rate of per-person GDP.<sup>16</sup> CBO’s “high growth” scenario assumes excess cost growth of 2.5 percent per

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<sup>13</sup> 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,” *Tax Notes*, April 17, 2006, pp. 349-270.

<sup>14</sup> “The Nation’s Long-Term Fiscal Outlook,” Government Accountability Office, revised September 2006, <http://www.gao.gov/new.items/d061077r.pdf>.

<sup>15</sup> Jagadeesh Gokhale and Kent Smetters. “Fiscal and Generational Imbalances: An Update,” August 2005, [http://www.phil.frb.org/econ/conf/forum2005/Smetters-Assessing\\_the\\_Federal\\_Government.pdf](http://www.phil.frb.org/econ/conf/forum2005/Smetters-Assessing_the_Federal_Government.pdf).

<sup>16</sup> For each of the three scenarios, CBO’s projected excess cost growth rate reflects growth prior to accounting for demographic changes. Since CBO’s projections also account for these demographic factors, their final projections show substantially faster growth than that implied by the rate of excess cost growth alone.

year, the same average rate of excess cost growth seen for economy-wide health care spending over the period 1960-2005. CBO's "intermediate" scenario follows the recent Medicare trustees' reports in assuming that excess cost growth proceeds at 1 percent in the long run. CBO's "low growth" scenario assumes no excess cost growth at all.

We choose among the three scenarios on the basis of the following rationale. First, we take a broad view of current policy and so attempt to construct projections that reflect not only the continuation of current federal policies, but also continuation of current state policies with respect to Medicaid and a basically unchanged private health care system.<sup>17</sup> Second, we assume that, after adjusting for differing demographic trends, per-beneficiary health costs will rise at similar rates in the public and private sector, as they have over the past several decades. Hence, we project health costs in Medicare and Medicaid based on the growth in economy-wide health costs that we expect would occur in the absence of changes in government policies and under a health care system similar in structure to the current system.

On this basis, we quickly discarded the zero excess cost growth scenario. A zero excess cost growth assumption implies that even as incomes grow markedly over the next several decades, people will continue to devote the current share of their incomes to health care. It seems much more likely that, as income rises, the value of longer and higher-quality life will rise relative to the value of other goods, with the implication that the share of income devoted to health will continue to rise over time. This appears to have been the case in past decades.<sup>18</sup>

Choosing between projected excess cost growth rates of 1 percent and 2.5 percent is more difficult. In the absence of other information, the historical experience of 2.5 percent excess cost growth would seem to provide a natural benchmark for projecting future growth. Some analysts have argued, however, that a large fraction of the historical growth in health spending resulted from factors that will not recur in coming years. For example, the 2000 Technical Review Panel on the Medicare Trustees Report identified three such non-recurring factors: the spread of health insurance, increases in the prices of medical services relative to other services, and avoidable increases in administrative costs.<sup>19</sup> Based on an analysis that adjusted for these factors, the Review Panel recommended that health costs be projected to rise 1 percentage point faster than per-person GDP

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<sup>17</sup> It is certainly unrealistic to assume state Medicaid policies and the structure of the private health care system will remain unchanged even if federal health care policies are not changed, but no more unrealistic than assuming that federal policies will not change over the next four decades as deficits explode. In reality, federal, state, and private sector policies all will necessarily change, given the cost pressures involved, and the changes in each will affect the changes in the others. For purposes of considering what changes should be made in federal (and other) policies, it seemed to be most useful to start with a base case in which all policies are assumed to remain unchanged.

<sup>18</sup> See Charles I. Jones, "More Life vs. More Goods: Explaining Rising Health Expenditures," *Federal Reserve Bank of San Francisco Economic Letter*, May 27, 2005.

<sup>19</sup> "Review of Assumptions and Methods of the Medicare Trustees' Financial Projections," Technical Review Panel on the Medicare Trustees Reports, December 2000.

Note that the aging of the population also tended to increase health costs over the last several decades since older people tend to require more health care. Since most projections separately adjust for increases in health spending due to aging, one would ideally adjust for these effects when forecasting a future growth rate. However, analyses generally conclude that the effects of an aging population were small over the last several decades. See, for example, Jason D. Brown and Ralph M. Monaco, "Possible Alternatives to the Medicare Trustees' Long-Term Projections of Health Spending," US Department of the Treasury, Technical Working Paper, September 2004.

in the future. This assumption was subsequently adopted by the Medicare trustees and, hence, the technical panel's argument indirectly provides the basis for CBO's 1 percentage point excess cost growth scenario.

It is unclear, however, that all of the factors identified by the panel actually will cease to contribute to health cost growth in future years. While it does seem reasonable to assume that the spread of health insurance will not contribute to cost increases in the future, there seems little reason to assume that the other factors identified by the panel will contribute less to future growth than they did to past growth, particularly given our underlying assumption that the structure of the health care system will remain unchanged. Further, some analysts argue that progress in medical technology may accelerate in coming decades and make available many costly but worthwhile new treatments, the adoption of which could cause health spending to grow even more rapidly than in the past.

It is also uncertain whether extrapolating the historical level of excess cost growth is the best way to project health costs. In the "excess cost growth" framework, the growth rate of health costs moves exactly one-for-one with the growth rate of per-person GDP. It seems plausible, however, that the rate of growth in health costs might be tied only in part to the rate of growth of per-person GDP; other causes of the historical growth of health costs might have been unrelated to the per-person GDP growth rate.<sup>20</sup> In this case, calculating a historical rate of excess cost growth and projecting it forward will tend to understate the rate of future health cost growth, that is, the *realized* differential between the growth rate of per-person health costs and the growth rate of per-person GDP. This is because CBO's projected long-term growth rate for per-person GDP is about 1 percentage point lower than the historical growth rate of per-person GDP, which means that under an "excess cost growth" framework, the absolute growth rate of health care cost will also be 1 percentage point lower than the historical growth rate of health care costs. If, as we suspect, at least part of the historical growth of health care costs is unrelated to the historical per-person GDP growth rate, we should not expect absolute health care cost growth to slow as much as absolute per-person GDP growth is projected to slow.

Hence, while we agree that some fraction of the historical growth in health costs is likely to have resulted from non-recurring factors, our best guess is that realized future excess cost growth under current policy will be closer to 2.5 percent than to 1 percent, and so our base scenario assumes a rate of excess cost growth of 2.5 percent. This also reflects the consensus of the wide range of health care and budget experts whom we consulted. Nonetheless, in recognition of the uncertainty surrounding this assumption, our analyses also examine the CBO scenario that assumes excess health care cost growth of 1 percentage point. We find that our quantitative estimates of the long-term fiscal problem change markedly under the alternative assumptions, but our qualitative conclusions about the unsustainability of current fiscal policies remain essentially the same.

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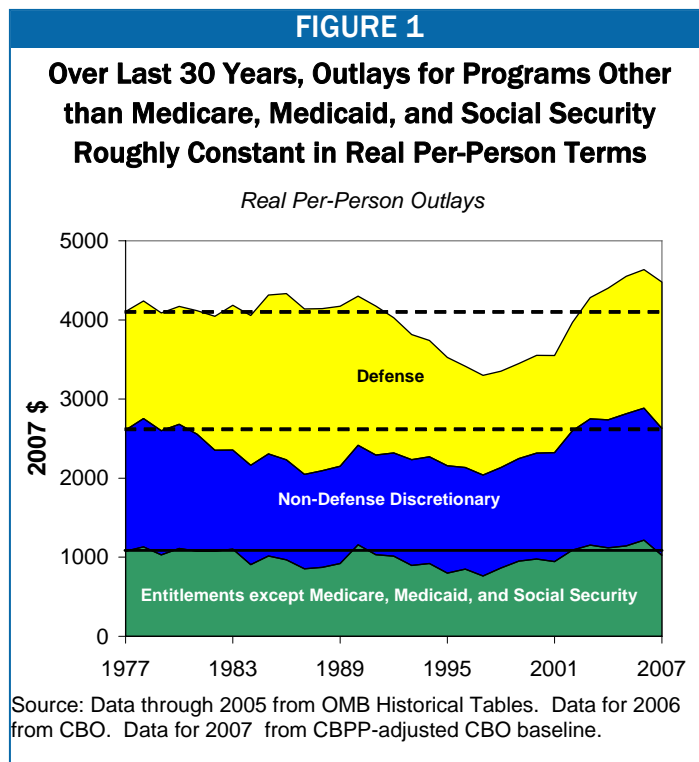
<sup>20</sup> For example, one might think that the growth rate of health costs is most strongly determined by the level of resources devoted to medical research, a factor that is probably more closely related to the level of GDP, rather than to its growth rate.

## Growth Rate for Discretionary and “Other Mandatory” Spending

The discretionary program category and the “other mandatory” program category (which includes mandatory programs *other than* Social Security, Medicare, and Medicaid) include a wide variety of program types. Since projecting these programs after 2017 on a program-by-program basis is infeasible, analysts have generally approached the problem by choosing an aggregate long-run growth rate.

There are three obvious possible growth rates that could be used: inflation, inflation plus the rate of population growth, and the rate of GDP growth. Most analysts have rejected simply using the inflation rate, as such an approach does not account for the fact that the cost of operating most government programs depends upon the number of people served, a number that generally grows as the population increases. Instead, some analysts have projected that these categories of programs will simply grow with GDP.<sup>21</sup> After careful examination, we have concluded that growing these program categories with GDP would significantly overstate the rate of spending growth needed for discretionary programs to maintain current levels of services and for “other mandatory” programs to continue operating under current law and policies. Growing the programs at the rate of inflation plus population growth more accurately approximates the growth rate necessary to maintain current services.

The trend in outlays for these programs over the last 30 years provides strong evidence in favor of this approach. As Figure 1 shows, real-per-person defense, non-defense discretionary, and other mandatory outlays have remained roughly constant over that period. (In other words, these programs have grown at approximately the rate of inflation plus the rate of population growth.) To be sure, these programs have seen some policy changes over the last 30 years, and so the historical growth rate is not a perfect measure of the growth rate needed to maintain current policies. However, there has been no evident downward trend in the level of services these programs provide. We therefore see no reason to assume that maintaining current policy into the future would require substantially more rapid growth than has occurred in the past. Such an assumption of accelerating growth rates is implicitly made by analysts who project these programs will grow at the rate of GDP.



<sup>21</sup> See, for example, projections by Auerbach, Gale, and Orszag; GAO; and Gokhale and Smetters.



For discretionary programs, it is difficult to do much further analysis. Undoubtedly, certain programs will need to grow more quickly than inflation plus population, while others can grow more slowly.<sup>22</sup> For example, a substantial portion of the discretionary budget represents the cost of fulfilling the basic administrative functions of government, like tax collection and law enforcement. The real-per-person cost of continuing these types of activities is likely to shrink over time as technological progress and institutional learning improve government efficiency. In contrast, other discretionary programs, like medical care for veterans, will need to grow more quickly, perhaps faster than GDP, to maintain current service levels. However, given the wide variety of programs in the discretionary budget, it is difficult to aggregate these expected rates into a reasonable projection of overall discretionary spending. Consequently, we believe that constant real per-person spending best represents a projection of current services, a notion that is reinforced by the historical evidence presented in Figure 1.

In the case of other mandatory programs, projections from CBO and OMB provide additional support for our approach. As shown in Table 1, CBO’s January baseline projections (which are based on detailed program-by-program projections made by CBO’s analysts) indicate that outlays for mandatory programs other than Medicare, Medicaid, and Social Security will remain roughly constant in real-per-person terms over the next ten years. (They are projected to grow in real per-capita terms only about one percent over ten years, or a little over 0.1 percent per year.)

The most recent OMB long-term figures, which project these programs based on “rules of thumb” tied to economic and demographic projections, also imply that growing these programs with inflation plus population is a much better approximation of future costs than growing them with GDP. The OMB projections show other mandatory programs shrinking from 2.9 percent of GDP in 2006 to 1.4 percent of GDP in 2040, about the same level that these programs would reach if they grew with inflation and population growth.<sup>23</sup>

That other mandatory programs will tend to grow at or slightly below the rate of inflation and population growth is also broadly consistent with the structure of the underlying programs. For example, since many of the major income security programs have benefit levels that are indexed to inflation, total benefits will tend to remain constant over time in real-per person

<b>TABLE 1</b>	
<b>Projected Growth Over Ten Years in Major Classes of “Other Mandatory” Programs, 2007-2017</b>	
<b>Program Area</b>	<b>Growth in Real-Per-Person Outlays</b>
Retirement and disability	+ 3.1 %
Income security programs	- 7.7 %
Other programs	- 10.6 %
<i>Total “other mandatory”</i>	+ 1.3 %

Source: CBPP calculations based on CBO January 2007 baseline (adjusted for extension of expiring tax provisions that affect refundable tax credits) and Census data.

Note: Since we construct the “all other mandatory” program category as a residual, the category also includes a variety of offsetting receipts. CBO forecasts that these receipts will shrink in real-per-person terms over the next 10 years. Since the offsetting receipts are negative, the decline in receipts tends to increase the overall growth of this program category. If one excludes these receipts, CBO projects that mandatory programs will *shrink* in real-per-person terms through 2017 by 1 percent.

<sup>22</sup> Projecting “current policy” defense spending is particularly difficult, given a lack of clarity in what is meant by continuing to provide the “current level of defense services.”

<sup>23</sup> More precisely, OMB projects that these programs will grow somewhat more slowly than inflation plus population growth in the medium run and somewhat more quickly in the long run. See Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2007* (Washington: GPO), 2006, p. 185.

terms assuming that eligibility rates remain constant. If anything, however, eligibility rates for these programs should tend to fall over time as real income growth pushes people above the relevant eligibility thresholds. In addition, many of these programs are not especially sensitive to the pending retirement of the baby-boom generation.

Similarly, the Congressional Research Service has concluded that the costs of civil service retirement, the largest of the other mandatory programs, will shrink from its present level of about 0.46 percent of GDP to 0.20 percent of GDP in 2050 and even less thereafter.<sup>24</sup> (One reason for this projected shrinkage is that, relative to the size of the U.S. population, the size of the federal civil service has been declining steadily for the last four decades. It is now one-third smaller as a percentage of the total population than it was in 1968.) The same relative shrinkage in the size of the military reduces the long-term costs of military retirement, the third largest of the other mandatory programs.

### Projection of Revenues

We project revenues under the assumption that current tax policies will continue, i.e., that the 2001 and 2003 tax cuts will be extended, as will AMT relief equivalent to indexing the AMT parameters for inflation. This assumption implies that revenues will rise slightly as a share of GDP in future years as real income growth pushes more of individuals' incomes into higher tax brackets, a phenomenon commonly referred to as "real bracket creep."

Some analysts do not include real bracket creep in their long-term projections.<sup>25</sup> Instead, they assume revenues remain constant as a percent of GDP in the long run. This amounts to assuming repeated future tax cuts, since it assumes that a household with the same real income will owe less of its income in taxes 50 years in the future than today. One argument made in favor of this approach is that it is not realistic to assume that Congress will allow revenues to rise as a percent of GDP over time because, in the past, when revenues have risen significantly as a percentage of the economy, Congress has typically acted to cut taxes.

The central purpose of budget *projections*, however, is not to issue policy *predictions*. Indeed, if the sole purpose of budget *projections* were to issue policy *predictions*, it might not make sense to project any fiscal problems at all. There is near unanimous consensus among analysts that current budget policies are not sustainable over the long run, meaning that current trends cannot continue forever. As the late Herbert Stein (Chairman of the Council of Economic Advisers under President Nixon) famously pointed out, when a trend cannot continue forever, it won't — Congress *will* eventually raise taxes, cut programs, or both. But it would be silly to assert that we have no fiscal problem because Congress will eventually have to address it.

Budget projections based on current policies are important precisely because current policies have to change. Only projections that accurately characterize the budgetary effects of these policies can provide a baseline against which to measure the effects of different possible changes. Just as it is unhelpful to assume departures from current policy that would minimize or eliminate future budget

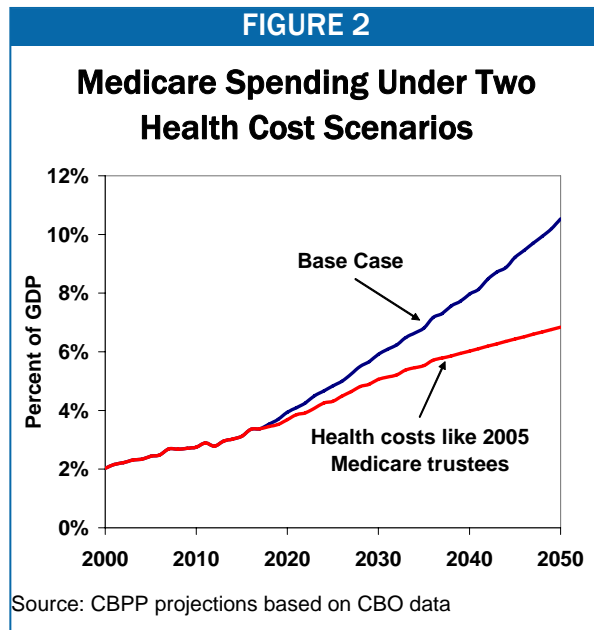
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<sup>24</sup> Patrick Purcell, "Federal Employee Retirement Programs: Budget and Trust Fund Issues," Congressional Research Service, April 6, 2006.

<sup>25</sup> See, for example, projections by Auerbach, Gale, and Orszag or the Government Accountability Office.

problems, so is it unhelpful to assume changes that magnify the problem. Assuming repeated future tax cuts misrepresents the size of the change that would be needed, relative to current policies, to deal with the nation’s fiscal problems and mischaracterizes any and all increases in revenues relative to their current percentage of the economy — including natural revenue growth — as tax increases.<sup>26</sup>

Another possible argument against the approach we adopt might be that “current tax policies” are more accurately characterized not by the particular tax system in effect but simply by the level of revenues (measured as a percent of the economy) collected by that tax system. But certainly no one would argue that Social Security or Medicare projections — or overall expenditure estimates — should be made by simply projecting all of these programs forward as a constant percent of GDP. To do so would be to ignore every aspect of current *expenditure policy* except the total spending it dictates. For the same reason, when examining the implications of current tax policy, it is inappropriate to ignore the specific policies actually embodied in the tax code (namely, that it collects 18.4 percent of GDP in revenues through a mix of income, payroll, and other taxes, rather than an 18.4 percent “output tax”). These policies have a variety of consequences, including that the current tax code will raise a modestly higher level of revenue in the coming decades than it does today.



### Choice of Horizon

Our budget projections extend through 2050. Some analysts use projection windows extending out to 2080 or all the way to the “infinite horizon.” Our decision to use a period through 2050 is, to a large extent, an artifact of our choice of data source; CBO’s long-run projections end in 2050. But even setting aside the particulars of our choice of data source, there are strong reasons to stop in 2050 or perhaps even earlier. This choice of projection window also represents the predominant view of the budget-expert reviewers we consulted.

The purpose of long-term budget projections is to portray the budget implications of long-term trends that are not captured within traditional 5- and 10-year projection windows but that should be considered in policy debates. In the current setting, the two important such trends are 1) the continued rapid growth in health costs, and 2) the demographic changes resulting from the retirement of the baby boomers and declines in fertility rates.

A projection window extending through 2050 is sufficient to capture the effects of these two major trends. The window captures the demographically induced growth in Social Security,

<sup>26</sup> Moreover, even if one did see budget projections as *predictions*, it is not clear that predicting repeated future tax cuts makes sense. As budget deficits grow, Congress may well become more willing to let revenues edge up as a share of GDP through real bracket creep.

Medicare, and Medicaid, and it captures the fact that this demographically induced growth begins to taper off after about 2040. Likewise, the window captures the fact that rapid growth in health costs will cause Medicare and Medicaid to grow rapidly. Projecting trends in health costs and demographics beyond 2050 would yield no new qualitative insights.

Moreover, the uncertainty of long-term projections grows rapidly as the projection window is extended, since small uncertainties in assumed growth rates compound over time. As a way of illustrating this uncertainty, Figure 2 shows projections of Medicare spending under two health cost growth scenarios: our base scenario, which assumes health cost growth continues at historical rates, and a CBO scenario that follows the 2005 Medicare trustees' report in assuming that health cost growth trends downward in coming decades. Although the level of uncertainty remains manageable through 2050, it begins to explode toward the end of the projection window. This means that, in addition to providing little additional *qualitative* information, extending the projections beyond 2050 would convey little meaningful new *quantitative* information, given the very high level of uncertainty inherent in very-long-run projections.

## Appendix 1: Bridges to Others' Long-Term Projections

Constructing long-term budget projections requires choosing among alternative assumptions and data sources. While the nation faces a substantial long-run budget problem under any plausible set of assumptions, methodological choices do affect the estimated magnitude of that problem.

As noted in the main text, we, like many other analysts, believe the fiscal gap is a useful way to summarize a set of budget projections, and so we, like many other authors of long-run projections, publish such a summary measure. In this appendix, we decompose the differences between our estimate of the fiscal gap and those of others into differences resulting from assumptions about revenues, differences resulting from assumptions about program costs, and differences resulting from other factors. This exercise provides a useful way to summarize the sources of differences between different sets of projections.<sup>27</sup>

We examine projections by Auerbach, Gale, and Orszag (AGO);<sup>28</sup> the Office of Management and Budget (OMB);<sup>29</sup> and Gokhale and Smetters (GS);<sup>30</sup> as well as two projection scenarios produced by the Government Accountability Office (GAO).<sup>31</sup> (We refer to GAO's "baseline extended" scenario as GAO-1 and its other scenario as GAO-2.)

One difference between our estimate of the fiscal gap and those of others is that we calculate the fiscal gap through 2050, while others provide estimates through 2080 or out to the infinite horizon. Since most projections show marked deterioration in the budget picture after 2050, adding years to the end of the projection window tends to increase the magnitude of the fiscal gap.

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<sup>27</sup> One limitation of the fiscal gap and, indeed, of any summary measure, is that it does not portray the time path of expenditures and revenues. Similarly, examining projection differences among different analysts by looking at how those differences affect the overall fiscal gaps that various analysts project does not clarify the time path of the projection differences (for example, whether the different projections are converging or diverging over time and, if so, how quickly).

<sup>28</sup> Auerbach, Gale, and Orszag present four different long-term budget scenarios. We examine scenario III, one of the authors' two preferred scenarios. Their other preferred scenario differs only in that it uses a combination of CBO and trustees data (rather than only trustees data) to project Social Security and Medicare after 2016.

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," *Tax Notes*, April 17, 2006, pp. 349-270.

<sup>29</sup> Office of Management and Budget, *Analytical Perspectives: Fiscal Year 2007* (Washington: Government Printing Office, 2006), pp. 175-201.

<sup>30</sup> Jagadeesh Gokhale and Kent Smetters. "Fiscal and Generational Imbalances: An Update," August 2005, [http://www.phil.frb.org/econ/conf/forum2005/Smetters-Assessing\\_the\\_Federal\\_Government.pdf](http://www.phil.frb.org/econ/conf/forum2005/Smetters-Assessing_the_Federal_Government.pdf).

<sup>31</sup> "The Nation's Long-Term Fiscal Outlook," Government Accountability Office, revised September 2006, <http://www.gao.gov/new.items/d061077r.pdf>.

To remove differences resulting from the choice of projection window, Table A compares the fiscal gap implied by each set of projections for the period 2007-2050. Our fiscal gap falls roughly in the middle of the group, with AGO and GAO-2 showing larger gaps through 2050 and GAO-1, GS, and OMB showing smaller gaps. These remaining differences in the fiscal gap result from differing substantive assumptions about the future.

We also differ from all of the other projections considered here in our projections of Medicare and Medicaid costs. These differences arise from two key factors.

As noted in the main text, we assume that, over the long term, per-beneficiary health costs will grow roughly 2.5 percentage points faster per year than per-person GDP, which is consistent with historical experience. In contrast, all other projections considered here are based in one way or another on the Medicare trustees' forecast and thereby assume that the rate of excess health-care cost growth will decline substantially over the next two decades. As a result, our projections of Medicare and Medicaid spending are substantially higher than others'.<sup>32</sup>

The differences resulting from these different assumptions regarding long-term growth rates are partially offset by the fact that we project lower costs for Medicare and Medicaid through the first ten years, because we use CBO's January 2007 baseline projections of Medicare and Medicaid costs for 2007- 2017. This new CBO baseline includes substantial downward reestimates of Medicare and

<b>TABLE A</b>	
<b>Fiscal Gaps 2008-2050 Under Different Methodologies</b>	
<b>Methodology</b>	<b>Fiscal Gap 2008-2050 (% GDP)</b>
GAO-2	6.0
Auerbach, Gale, and Orszag	5.1
CBPP	3.2
GAO-1	2.7
Gokhale and Smetters	1.9
OMB	0.5

Note: None of the other groups above publishes a fiscal gap for the period 2008-2050. These figures reflect CBPP calculations of the fiscal gap through 2050 using the economic and programmatic assumptions underlying each group's long-term projections.

<b>TABLE B</b>	
<b>Differences Between CBPP and Others' Estimates of Fiscal Gap, Excluding Differences in Medicare and Medicaid</b>	
<b>Methodology</b>	<b>Non-Health Difference in Estimate of the Fiscal Gap 2008-2050 (% GDP)</b>
GAO-2	+ 3.2
Auerbach, Gale, and Orszag	+ 2.2
GAO-1	- 0.1
Gokhale and Smetters	- 0.7
OMB	- 1.2

Medicaid costs relative to the older ten-year baselines that were used to construct the other long-term projections discussed here.<sup>33</sup> Since most analysts project Medicare and Medicaid by splicing their long-run growth rates onto the end of a set of ten-year projections, differences over the first ten years have effects throughout the full projection period. As shown in Table B, however, even after adjusting for differences in our projections of Medicare and Medicaid, some significant projection differences remain.

<sup>32</sup> Differing health cost assumptions have a substantially larger effect on Medicare than on Medicaid. Medicare is a larger federal program than Medicaid, and Medicare also will grow much more substantially, due to demographic factors, over the next 40 years. Any change in health care cost assumptions thus makes a bigger difference for Medicare than for Medicaid.

<sup>33</sup> OMB's fiscal year 2007 long-term projections are an exception in this regard. The first ten years of those projections are similar to the new CBO baseline.

*Additional differences between our projections and AGO and GAO-2.* There are two principal additional differences between our projections and those of AGO and GAO-2. First, AGO and GAO-2 assume that income taxes remain constant as a share of the economy after 2017 instead of edging up due to real bracket creep. Second, they assume higher levels of discretionary spending through the first ten years, and they also assume that discretionary spending will rise with GDP rather than with inflation plus population growth after the first ten years. In addition to these two major differences, AGO and GAO-2's projections differ from ours because they similarly assume that mandatory spending outside of Social Security, Medicaid, and Medicare will rise with GDP rather than with inflation and population growth after the first ten years.

*Additional differences between our projections and GAO-1.* This GAO projection assumes that the recent tax cuts will expire, which substantially increases the level of revenues projected beginning in 2011. This GAO projection also assumes somewhat higher discretionary spending over the next ten years and higher discretionary spending over the long run because it assumes that discretionary spending will rise with GDP instead of with inflation plus population growth. As indicated by Table B, these two non-health differences have roughly offsetting effects on the fiscal gap.

*Additional differences between our projections and OMB and Gokhale Smetters (GS).* OMB and GS assume both higher revenues and lower expenditures than we do. They assume higher revenues because they wait until the middle of the next decade to index the parameters of the AMT to inflation. In addition, apart from assuming lower health care-cost growth, they generally assume somewhat slower growth in Social Security and in mandatory programs outside of the "big three." These higher revenues and lower spending projections are partially offset by somewhat higher projections of discretionary spending.

What follows are detailed bridges between our estimates and the estimates produced by the groups discussed above. In addition, Appendix 2 provides a detailed comparison of the methodological choices underlying the six different sets of projections.

For the most part, bridges were constructed on the basis of analysts' published materials.<sup>34</sup> Since OMB only provides projections at intervals of 10 years (or, after 2040, at intervals of 20 years), we linearly interpolated program costs and revenues as a share of GDP to obtain projections for years for which OMB does not provide data.

When shifting others' projections onto our economic assumptions, we assumed that the change in economic assumptions would not change the levels of programs or revenues as a percentage of GDP. In reality, changing economic assumptions would lead to some changes, but not significant ones.

The bridge tables decompose the differences in projections of discretionary programs, Medicare, Medicaid, and revenues into those differences that are attributable to differing assumptions regarding long-run growth rates and those differences that are attributable to differing projections of costs over the first ten years. To calculate the portion of the difference between our projections and another set of projections that is attributable to differences in long-term growth rates, we calculate the difference between our path and a path that uses our ten-year baseline but the other projection's pattern of long-term growth. Any remaining differences are attributed to the differences in the ten-

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<sup>34</sup> We thank AGO and GAO, however, for kindly providing us with additional backup data.

year baseline. This category is further split into the component attributable to the direct effect of higher outlays (or lower revenues) over the first ten years and the component that results from having a higher or lower base (or “take-off point”) for growth after 2017.

*Auerbach, Gale, and Orszag (AGO)*

AGO’s published projections show a fiscal gap of 7.3 percent of GDP through 2080 (and 10.8 percent of GDP out to the infinite horizon). As shown in Table C, the main sources of the difference between our projections and AGO’s are: choice of projection windows, assumptions regarding health costs, assumptions regarding discretionary spending, and assumptions regarding revenues.

AGO show lower spending on Medicare and Medicaid because they construct their projections from data sources that assume substantially lower long-run health cost growth rates. After 10 years, AGO follow the 2005 Trustees’ report for Medicare and the CBO long-term report’s “intermediate” path for Medicaid. Both of these sets of projections assume that excess health-care cost growth gradually declines to 1 percentage point per year and remains at that level indefinitely, while we use a CBO path that assumes long-run excess cost growth of 2.5 percentage points per year. (This difference in long-run growth rates is partially offset by the fact that we use the new CBO baseline, which projects lower spending for Medicare and Medicaid over the next ten years than the previous baselines have done, a difference that then is projected forward through the end of the projection period.)

Differences in discretionary spending projections can be decomposed into three parts. First, AGO project a higher level of discretionary spending through 2017. They adjust the CBO January 2006 baseline for population growth, and also leave the extension of \$83 billion a year in emergency supplemental spending in the baseline.

<b>TABLE C</b>	
<b>Bridge to AGO Estimates of the Fiscal Gap as a Share of GDP</b>	
<b>CBPP Fiscal Gap 2008-2050</b>	<b>3.2</b>
Discretionary (direct effect 2008-2017)	*
Discretionary (take-off point for post-2017 growth)	+ 0.5
Discretionary (growth rate after 2017)	+ 0.4
Medicare (direct effect 2008-2017)	*
Medicare (take-off point for post-2017 growth)	+ 0.3
Medicare (growth rate after 2017)	- 0.7
Medicaid (direct effect 2008-2017)	*
Medicaid (take-off point for post-2017 growth)	+ 0.1
Medicaid (growth rate after 2017)	- 0.1
Social Security	- 0.1
Other Mandatory	+ 0.2
Revenues (direct effect 2008-2017)	+ 0.1
Revenues (take-off point for post-2017 growth)	+ 0.2
Revenues (growth rate after 2017)	+ 0.8
<b>AGO Fiscal Gap 2008-2050 on CBPP economic assumptions and end-of-2007 debt</b>	<b>5.0</b>
Use AGO end-of-2007 debt	*
Use AGO GDP and discount rates	+ 0.1
<b>AGO Fiscal Gap 2008-2050</b>	<b>5.1</b>
Shift start date to 2006	- 0.3
Extend projection to 2080	+ 2.3
<b>Published AGO Fiscal Gap 2006-2080</b>	<b>7.3</b>

\* Less than 0.05 percent of GDP in absolute value.



In contrast, we do not adjust for population through the first ten years. We also assume that supplemental appropriations follow a path specified in CBO’s January 2007 report that assumes that the costs of operations in Iraq and Afghanistan gradually phase down. For these reasons, AGO’s estimate of 2017 discretionary spending is higher than ours, a difference that is then projected forward in future years. Finally, AGO grow discretionary spending with GDP after 2017, while we grow it at the slower rate of inflation plus population growth.

The difference in revenue projections arises mainly because we assume that personal income tax revenues edge up as a share of GDP over time due to real bracket creep, while AGO assume that income taxes and most other taxes remain fixed as a share of the economy after 2017 and that payroll taxes revenues fall slightly as a share of the economy.

*Government Accountability Office, Scenario 1 (GAO-1)*

In GAO’s first scenario (what it calls its “baseline extended” scenario), GAO finds a fiscal gap of 4.5 percent of GDP through 2080. As shown in Table D, the main sources of the difference between our projections and GAO’s are: choice of projection windows, assumptions regarding the growth of health costs, assumptions regarding discretionary spending, and assumptions regarding revenues.

GAO-1 shows lower spending on Medicare and Medicaid because it assumes substantially lower long-run health cost growth rates. In particular, after 10 years, GAO-1 follows the 2006 trustees’ report for Medicare, which assumes that excess cost growth gradually declines to zero by 2080 (but averages 1 percentage point over the period 2031-2080). For Medicaid, GAO-1 uses the “intermediate” path in CBO’s long-term report for

<b>TABLE D</b>		
<b>Bridge to GAO Estimates of the Fiscal Gap as a Share of GDP</b>		
	<b>GAO-1</b>	<b>GAO-2</b>
<b>CBPP Fiscal Gap 2008-2050</b>	<b>3.2</b>	<b>3.2</b>
Discretionary (direct effect 2008-2017)	+ 0.1	+ 0.3
Discretionary (take-off point for post-2017 growth)	+ 0.5	+ 1.6
Discretionary (growth rate after 2017)	+ 0.4	+ 0.4
Medicare (direct effect 2008-2017)	+ 0.1	+ 0.1
Medicare (take-off point for post-2017 growth)	+ 0.3	+ 0.3
Medicare (growth rate after 2017)	- 0.8	- 0.8
Medicaid (direct effect 2008-2017)	*	*
Medicaid (take-off point for post-2017 growth)	*	*
Medicaid (growth rate after 2017)	- 0.1	- 0.1
Social Security	- 0.1	- 0.1
Other Mandatory	+ 0.2	+ 0.2
Revenues (direct effect 2008-2017)	- 0.3	+ 0.1
Revenues (take-off point for post-2017 growth)	- 1.6	*
Revenues (growth rate after 2017)	+ 0.7	+ 0.7
<b>GAO Fiscal Gap 2008-2050 on CBPP economic assumptions and end-of-2007 debt</b>	<b>2.7</b>	<b>6.0</b>
Use GAO end-of-2007 debt	*	*
Use GAO GDP and discount rates	*	*
<b>GAO Fiscal Gap 2008-2050</b>	<b>2.7</b>	<b>6.0</b>
Shift start date to 2006	- 0.1	- 0.3
Extend projection to 2080	+ 2.0	+ 2.1
Additional technical adjustments	- 0.1	+ 0.2
<b>Published GAO Fiscal Gap 2006-2080</b>	<b>4.5</b>	<b>8.0</b>

\* Less than 0.05 percent of GDP in absolute value.

Medicaid, which assumes that excess cost growth gradually declines to 1 percentage point per year and remains at that level indefinitely. In contrast, we follow a CBO scenario that assumes a long-run excess cost growth rate of 2.5 percentage points per year. (This difference in long-run growth rates is partially offset by the fact that we use the new January 2007 CBO baseline, which projects lower spending for Medicare and Medicaid through the next ten years than the previous baselines have done, a difference that is then projected forward through the end of the projection period.)

The differences between our discretionary spending projections can be decomposed into three components. First, GAO-1 assumes that discretionary spending follows the CBO August 2006 baseline through 2016, meaning that it assumes that funding for the wars in Iraq and Afghanistan and for hurricane relief continues at the 2006 level, adjusted for inflation, in every year through 2016. In contrast, we assume that supplemental appropriations follow a path specified in CBO's January 2007 report that assumes that the costs of operations in Iraq and Afghanistan gradually phase down. As a result, GAO-1 shows a substantially higher level of discretionary spending in 2017 than we do, a difference that is projected forward into the indefinite future. Finally, GAO-1 grows discretionary spending with GDP after 2016, while we grow it at the rate of inflation plus population growth after 2017.

On the revenue side, GAO-1 projects higher revenues because it assumes that all temporary tax provisions, including the 2001 and 2003 tax cuts, expire as scheduled in 2011. This difference is partially offset by the fact that GAO-1 freezes revenues as a share of GDP after the first ten years instead of assuming (as we do) that they edge up gradually due to real bracket creep

*Government Accountability Office, Scenario 2 (GAO-2)*

GAO-2 finds a fiscal gap of 8.0 percent of GDP out to 2080. As shown in Table D, the main sources of the difference between our projections and GAO's are: choice of projection windows, assumptions regarding the growth of health costs, assumptions regarding discretionary spending, and assumptions regarding revenues.

GAO-2 uses the same data sources to project Medicare and Medicaid, so the discussion of Medicare and Medicaid given for GAO-1 applies here as well.

The differences between our discretionary spending projections and those in GAO-2 are particularly large, accounting for nearly 2.5 percent of GDP out to 2050. GAO-2 assumes that discretionary spending remains at the 2006 level as a share of GDP indefinitely. Hence, not only does GAO-2 set the growth rate of discretionary spending equal to the growth rate of GDP, but it also implicitly assumes that spending for the wars in Iraq and Afghanistan and for hurricane relief will continue indefinitely at its 2006 share of the economy.

On the revenue side, GAO-2 projects lower revenues mainly because it maintains revenues at a constant share of GDP after 2016 instead of allowing revenues to rise modestly as a share of GDP over time due to real bracket creep.

When OMB releases the President's budget each February, it also releases long-term projections of the budget over the next 75 years. Although OMB does not calculate a fiscal gap, the data it provides can be used to calculate a fiscal gap. The figures included in the President's 2007 budget imply a fiscal gap of 1.4 percent of GDP out to 2080. As shown in Table E, the two main differences between our projections and OMB's are that OMB assumes substantially higher revenues and substantially lower spending on mandatory programs.

Explaining the difference between our projections and OMB's projections of mandatory spending is somewhat difficult, since OMB does not release detailed information on its methodology.

Part of the difference, of course, is differing assumptions regarding long-run health cost growth rates. OMB says it follows the Medicare Trustees' 2005 report in assuming that excess cost growth will decline over the coming decades to approximately 1 percentage point per year, while we follow a CBO scenario that assumes that excess cost growth stays at its historical average of 2.5 percentage points per year over the long run. However, the difference between our and OMB's projections of Medicare and Medicaid seems larger than what can be explained by differing rates of excess cost growth alone.<sup>35</sup>

One possible explanation for the rest of the difference is that OMB assumes faster economic growth (relative to the assumptions of CBO and the trustees). Medicaid eligibility thresholds are generally indexed to inflation. Faster economic growth would tend to reduce the share of the population falling below these thresholds, reducing the program's projected costs.

Projections of faster economic growth may also explain the remaining differences between our Medicare projections and those of OMB. While OMB states that it bases its Medicare projections

<b>TABLE E</b>	
<b>Bridge to OMB Estimates of Fiscal Gap as a Share of GDP</b>	
<b>CBPP Fiscal Gap 2008-2050</b>	<b>3.2</b>
Discretionary (direct effect 2008-2017)	- 0.2
Discretionary (take-off point for post-2017 growth)	- 0.1
Discretionary (growth rate after 2017)	+ 0.4
Medicare (direct effect 2008-2017)	*
Medicare (take-off point for post-2017 growth)	*
Medicare (growth rate after 2017)	- 1.0
Medicaid (direct effect 2008-2017)	*
Medicaid (take-off point for post-2017 growth)	- 0.1
Medicaid (growth rate after 2017)	- 0.5
Social Security	- 0.4
Other Mandatory	- 0.1
Revenues (direct effect 2008-2017)	- 0.1
Revenues (take-off point for post-2017 growth)	- 0.7
Revenues (growth rate after 2017)	*
<b>OMB Fiscal Gap 2008-2050 on CBPP economic assumptions and end-of-2007 debt</b>	<b>0.6</b>
Use OMB end-of-2007 debt	*
Use OMB GDP and discount rates	- 0.1
<b>OMB Fiscal Gap 2008-2050</b>	<b>0.5</b>
Shift start date to 2007	*
Extend projection to 2080	+ 0.9
<b>OMB Fiscal Gap 2007-2080</b>	<b>1.4</b>
* Less than 0.05 percent of GDP in absolute value.	

<sup>35</sup> In particular, OMB's projections of Medicare and Medicaid are substantially below those of other analysts who assume long-run excess cost growth of 1 percentage point.

on the 2005 Medicare trustees' report, it alludes to adjusting those projections for differences in assumptions regarding economic growth. If (unlike the trustees) OMB assumes that the rate of health care cost growth does not rise one-for-one with the rate of economic growth, then faster economic growth would tend to reduce OMB's projection of Medicare spending as a share of GDP.

OMB also projects lower mandatory spending outside of Medicare and Medicaid. Once again, one plausible explanation for this difference is the fact that OMB assumes faster economic growth. For a number of programs in which benefits rise with inflation, such as food stamps, faster economic growth also will tend to reduce the size of those benefits relative to GDP. Social Security, in which benefits after retirement are indexed only to inflation, also would be affected in this way. Further, for many means-tested entitlements, faster economic growth could reduce the share of the population falling below the eligibility thresholds for the programs, thereby reducing the programs' projected costs.

On the revenue side, OMB shows higher revenues because it follows the President's 2007 budget and therefore does not assume a permanent AMT fix until at least 2012.<sup>36</sup> In contrast, we assume that a permanent AMT fix is put in place immediately.

The final major difference between our estimates and OMB's is the path of discretionary spending. OMB's estimates of discretionary spending through 2017 are substantially below ours, in part because they follow the President's budget through 2011 and thus assume no additional funding for operations in Iraq and Afghanistan beyond the \$70 billion in supplemental funding enacted in June 2006. Likewise, OMB assumes substantial real cuts in domestic discretionary programs through 2011. However, because OMB assumes that discretionary spending grows with GDP after 2016, OMB projects higher levels of discretionary spending than we do in the long run.

#### *Gokhale and Smetters (GS)*

Gokhale and Smetters present an infinite-horizon estimate of the fiscal gap of 8.2 percent of GDP.<sup>37</sup> The bulk of the difference between this figure and ours results from the fact that the GS figure is an infinite horizon estimate; the difference in time horizons accounts for 5.7 percent of GDP of the difference between our estimates of the fiscal gap. Through 2080, GS base their projections on the long-term projections released by OMB alongside the President's 2005 budget. Hence, through 2080, differences between our projections and GS really reflect differences between our methodology and OMB's.

Like the OMB 2007 projections, the OMB 2005 projections include substantially lower levels of mandatory spending than ours do. Differences in Medicare and Medicaid are mostly explained by the fact that we follow a CBO scenario that assumes long-term excess cost growth of 2.5 percentage points per year, while OMB follows the 2003 Medicare trustees' report in assuming long-run excess cost growth of 1 percentage point per year.

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<sup>36</sup> OMB states that its projections do not allow the AMT to grow indefinitely, but it does not specify the nature of its AMT fix or when it is implemented. An examination of OMB's revenue estimates suggests that OMB assumes AMT reform is not undertaken until the middle of the next decade.

<sup>37</sup> GS call their figure an estimate of the fiscal imbalance. However, while the fiscal gap and fiscal imbalance concepts differ over finite horizons, they are identical when taken to the infinite horizon.

The differences between our projections of Medicare and Medicaid, however, are somewhat smaller than one would expect given the differences in health cost assumptions, implying that there are some additional offsetting differences between our projections and OMB's. Additional

<b>TABLE F</b>	
<b>Bridge to GS Estimates of the Long-Term Fiscal Problem as a Share of GDP</b>	
<b>CBPP Fiscal Gap 2008-2050</b>	<b>3.2</b>
Discretionary (direct effect 2008-2017)	- 0.2
Discretionary (take-off point for post-2017 growth)	- 0.2
Discretionary (growth rate after 2017)	+ 0.4
Medicare (direct effect 2008-2017)	+ 0.1
Medicare (take-off point for post-2017 growth)	+ 0.2
Medicare (growth rate after 2017)	- 0.4
Medicaid (direct effect 2008-2017)	*
Medicaid (take-off point for post-2017 growth)	*
Medicaid (growth rate after 2017)	- 0.4
Social Security	- 0.2
Other Mandatory	- 0.1
Revenues (direct effect 2008-2017)	- 0.1
Revenues (take-off point for post-2017 growth)	- 0.6
Revenues (growth rate after 2017)	+ 0.2
<b>GS Fiscal Gap 2008-2050 on CBPP economic assumptions and end-of-2007 debt</b>	<b>1.9</b>
Use GS end-of-2007 debt	*
Use GS GDP and discount rates	*
<b>GS Fiscal Gap 2008-2050</b>	<b>1.9</b>
Shift start date to 2005	- 0.1
Extend projection to infinite horizon	+ 6.4
<b>Published GS Fiscal Gap 2005-infinite horizon</b>	<b>8.2</b>
* Less than 0.05 percent of GDP in absolute value.	

differences in Medicare likely reflect modeling differences between the 2003 Medicare trustees' report and the CBO projections we use.

The additional differences in projected costs for Medicaid (and the slightly lower spending projected for Social Security and other mandatory programs) likely result from the fact that the OMB 2005 projections assume somewhat faster economic growth than do the CBO projections we use. As discussed in the section on OMB's 2007 projections, assuming faster economic growth tends to reduce the size of these programs measured as a share of GDP.

The OMB 2005 projections show somewhat higher revenues because OMB's 2005 projections follow the President's budget proposals through 2014, and hence do not include a permanent AMT fix until 2015 at the earliest.<sup>38</sup> In contrast, we assume an immediate, ongoing AMT fix.

The path of discretionary spending under OMB's 2005 projections is similar to the path under OMB's 2007 projections. Through 2014, OMB follows the President's 2005 Budget, which called for discretionary spending levels through 2014 that are substantially

<sup>38</sup> The earliest year in which the OMB projections could assume AMT reform is a later year for the OMB 2005 projections than for the OMB 2007 projections. The 2005 projections follow the President's budget proposals through the first ten years, that is, through 2014. The earliest year in which they could assume AMT reform hence is 2015. In contrast, OMB's 2007 projections follow the President's budget proposals through the first five years, that is, through 2011. They could conceivably assume AMT reform as early as 2012.

Also note that OMB's 2005 long-term projections do not explicitly state that they include a permanent AMT fix. However, the revenue projections would be grossly inconsistent with an unaltered AMT.

below those we project. After 2014, the OMB 2005 projections grow discretionary spending with GDP, meaning that GS assume somewhat higher discretionary spending in the long run.

## Appendix 2: Detailed Comparison of Projection Assumptions

### *First Ten Years*

	<b>CBPP</b>	<b>Auerbach, Gale, Orszag</b>	<b>OMB</b>	<b>GAO</b>	<b>Gokhale and Smetters</b>
<i>Ten-year window</i>	2008-2017	2007-2016	2007-2016	2007-2016	2005-2014
<i>GDP</i>	CBO January 07 baseline economic assumptions	CBO January 06 baseline economic assumptions	OMB FY07 economic assumptions <sup>39</sup>	Based on a dynamic model of capital accumulation and output. Assumes total factor productivity growth of 1.5 percent and labor force growth rates from the 2006 Social Security trustees' report. <sup>40</sup>	OMB FY05 economic assumptions <sup>41</sup>
<i>Discount rates</i>	Derived from projections of real interest rates and the CPI-U in the 2006 CBO Social Security projections	Derived from growth rate of nominal GDP plus the difference between the steady state growth rate and interest rate in the 2005 Social Security trustees' report	OMB FY07 economic assumptions <sup>39</sup>	Rates implied by net interest projections in CBO August 06 baseline	Derived from a real interest rate of 3.65 percent and projections of the GDP deflator in OMB's FY05 economic assumptions <sup>42</sup>

<sup>39</sup> Detailed economic assumptions for the President's FY 2007 budget are only available through 2011. For the purposes of calculating a fiscal gap based on OMB assumptions, we assume that the same inflation rates, interest rates, and economic growth rates prevail in 2012-2016 as in 2011.

<sup>40</sup> For more detail regarding the economic model used by GAO, see "The Economic Model and Key Assumptions," Government Accountability Office, September 2006, <http://www.gao.gov/special.pubs/longterm/addtechnical.pdf>.

<sup>41</sup> Detailed economic assumptions from the President's FY 2005 budget are available only through 2009. For the purposes of calculating a fiscal gap based on OMB assumptions, we assume that the same inflation rates, interest rates, and economic growth rates prevail in 2010-2014 as in 2009.

<sup>42</sup> Gokhale and Smetters do not clearly specify the deflator used to transform the real interest rate into a nominal interest rate. In making our calculations, we use the GDP deflator because this method produces results similar to Gokhale and Smetters'.

	<b>CBPP</b>	<b>Auerbach, Gale, Orszag</b>	<b>OMB</b>	<b>GAO</b>	<b>Gokhale and Smetters</b>
<i>Discretionary</i>	CBO January 07 baseline (without supplemental spending extended), adjusted to include the lower CBO phasedown path for operations in Iraq and Afghanistan and the increases in underlying defense spending requested in the President's FY07 budget.	2006: CBO January 06 baseline  <i>Thereafter:</i> An adjusted CBO baseline that assumes discretionary funding (i.e. budget authority) remains at the 2006 level in real per capita terms	OMB FY07 policy projections <sup>43</sup>	2006: CBO August 06 baseline  <i>Thereafter:</i> GAO-1: Unadjusted CBO August 06 baseline  GAO-2: Outlays remain at the 2006 level as a share of GDP	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>
<i>Medicare</i>	CBO January 07 baseline	CBO January 06 baseline	<i>Through 2011:</i> OMB FY07 policy projections  <i>After 2011:</i> Unpublished medium-term projections <sup>45</sup>	CBO August 06 baseline	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>
<i>Medicaid</i>	CBO January 07 baseline	CBO January 06 baseline	<i>Through 2011:</i> OMB FY07 policy projections  <i>After 2011:</i> Unpublished medium-term projections <sup>45</sup>	CBO August 06 baseline	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>
<i>Social Security</i>	CBO January 07 baseline	CBO January 06 baseline	<i>Through 2011:</i> OMB FY07 policy projections, adjusted to remove effects of the President's proposal for private accounts  <i>After 2011:</i> Unpublished medium-term projections <sup>45</sup>	CBO August 06 baseline	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>

<sup>43</sup> OMB's technical notes imply that it follows the budget's policy projections through 2011 and that it holds discretionary spending constant as a share of GDP after 2011. However, the President's budget sets discretionary spending at 5.9 percent of GDP in 2011, while the long-term level of discretionary spending in the OMB projections is 5.6 percent of GDP. Hence, we assume that OMB is, in fact, following internal budget projections for discretionary spending that extend through 2016, after which it switches over to its long-term assumptions. For the purposes of our calculations, we assume that, as a share of GDP, discretionary spending is at the same level in 2016 as in 2020, a year for which we have data from OMB's long-term projections. We then linearly interpolate between 2011 and 2016.

<sup>44</sup> OMB's FY05 policy projections are only publicly available through 2009. For 2010, we use the data in OMB's long-term projections. To project spending through the rest of the ten-year window, we linearly interpolate using data from OMB's long-term projections.

<sup>45</sup> OMB does not provide details regarding its projections between the end of the five-year budget window and the point at which it switches over to its long-term projections. To project spending for 2011 through 2016, we linearly interpolate using data from OMB's long-term projections.



	<b>CBPP</b>	<b>Auerbach, Gale, Orszag</b>	<b>OMB</b>	<b>GAO</b>	<b>Gokhale and Smetters</b>
<i>Other entitlements</i>	CBO January 07 baseline	CBO January 06 baseline	<i>Through 2011:</i> OMB FY07 policy projections  <i>After 2011:</i> Unpublished medium-term projections <sup>45</sup>	CBO August 06 baseline	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>
<i>Revenues</i>	CBO January 07 baseline, adjusted for extension of expiring tax provisions and indexation of the AMT	CBO January 06 baseline, adjusted for extension of expiring tax provisions and indexation of the AMT	<i>Through 2011:</i> OMB FY07 policy projections  <i>After 2011:</i> Unpublished medium-term projections <sup>45</sup>	GAO-1: Unadjusted CBO August 06 baseline  GAO-2: CBO August 06 baseline, adjusted for extension of expiring tax cuts and indexation of the AMT	<i>Through 2009:</i> OMB FY05 policy projections  <i>After 2009:</i> Unpublished OMB medium-term projections <sup>44</sup>

*After Ten Years*

	<b>CBPP</b>	<b>Auerbach, Gale, Orszag</b>	<b>OMB</b>	<b>GAO</b>	<b>Gokhale and Smetters</b>
<i>Terminal year</i>	2050	Infinite horizon	2080	2080	Infinite horizon
<i>GDP</i>	Growth rates from the CBO June Social Security projections	Growth rates from 2005 Social Security trustees report	Built up from labor force growth rates from the 2005 Social Security trustees report, labor productivity growth of 2.3 percent, and GDP deflator inflation of 2.0 percent	Based on a dynamic model of capital accumulation and output. Assumes total factor productivity growth of 1.5 percent and labor force growth rates from the 2006 Social Security trustees' report. <sup>46</sup>	Built up from labor force growth rates in the 2003 Social Security trustees' report <sup>47</sup> , labor productivity growth of 1.8 percent, and CPI-U inflation of 2.5 percent
<i>Discount rates</i>	Derived from real interest rates and CPI-U inflation rates in the CBO June Social Security projections	Derived from the growth rate of nominal GDP plus the difference between the steady state growth rate and interest rate in the 2005 Social Security trustees' report	5.6 percent	5.0 percent	Derived from a real discount rate of 3.65 percent and the GDP deflator inflation in OMB's long-term economic assumptions <sup>48</sup>
<i>Discretionary</i>	Remains at 2017 level in real per capita terms	Remains at 2016 level as a share of GDP	Remains at 2016 level as a share of GDP	Remains at 2016 level as a share of GDP	OMB FY05 long-term projections, which fix spending at its 2014 level as a share of GDP
<i>Medicare</i>	Based on the high spending scenario in the CBO December long-term projections, which assumes long-term excess cost growth of 2.5 percent per year, the average rate since 1960	Based on intermediate estimates of the 2005 Medicare trustees' report, which assumes long-term excess cost growth of 1 percent per year	Based on intermediate estimates of the 2005 Medicare trustees' report, which assumes long-term excess cost growth of 1 percent per year; OMB adjusts the trustees' projections for differences in economic assumptions	Based on intermediate estimates of the 2006 Medicare trustees' report, which assumes long-term excess cost growth averaging 1 percent per year	OMB FY05 long-term projections, which are based on the 2003 Medicare trustees' report, which assumes long-term excess cost growth of 1 percent; OMB adjusts the trustees' projections for the creation of Part D

<sup>46</sup> See footnote 40.

<sup>47</sup> Gokhale and Smetters are not explicit about the source of their labor force growth rates. However, they base their projections on OMB's, and OMB uses labor force growth rates from the 2003 SSA Trustees' report. Therefore, we have assumed that Gokhale and Smetters used them as well.

<sup>48</sup> As noted previously, Gokhale and Smetters are not explicit about the inflation rate used to convert real interest rates to nominal interest rates. For an explanation of why we assume they use the GDP deflator, see footnote 42.

	<b>CBPP</b>	<b>Auerbach, Gale, Orszag</b>	<b>OMB</b>	<b>GAO</b>	<b>Gokhale and Smetters</b>
<i>Medicaid</i>	Based on the high spending scenario in the CBO December long-term projections, which assumes long-term excess health cost growth of 2.5 percent, the average rate since 1960	<i>Through 2050:</i> Based on the intermediate spending scenario in the CBO December long-term projections, which assume long-term excess cost growth of 1 percent  <i>Thereafter:</i> Grows with Medicare	Internal OMB projections based on OMB economic and demographic assumptions	<i>Through 2050:</i> Based on the CBO December long-term projections, which assume long-term excess cost growth of 1 percent  <i>Thereafter:</i> Grown according to the growth rate as a share of GDP for 2040-2050	OMB FY05 long-term projections based on OMB economic and demographic assumptions
<i>Social Security</i>	Based on the CBO June Social Security projections	Based on the intermediate estimates in the 2005 Social Security trustees' report	Projected by the Social Security actuaries using OMB's economic assumptions	Based on the intermediate estimates in the 2006 Social Security trustees' report. GAO adjusts the Social Security estimates for differences in economic growth	OMB FY05 long-term projections, which use projections by the Social Security actuaries based on OMB's economic assumptions
<i>Other entitlements</i>	Remain at 2017 level in real per capita terms	Remain at 2016 level as a share of GDP	Internal OMB projections based on "rules of thumb" linked to OMB economic and demographic projections	Remain at 2016 level as a share of GDP	OMB FY05 long-term projections
<i>Revenues</i>	Projected according to current policies, including extension of the President's tax cuts and indexation of the AMT  Modeling based on unpublished backup data for figure 5-5 in the CBO December long-term projections	Payroll taxes based on 2005 Medicare and Social Security trustees' reports <sup>49</sup>  All other taxes remain at their 2016 level as a share of GDP <sup>50</sup>	Internal OMB projections, which assume continuation of the President's tax policies and indexation of the AMT <sup>51</sup>	Remain at 2016 level as a share of GDP	OMB FY05 long-term projections, which assume continuation of the President's tax policies and indexation of the AMT <sup>52</sup>

<sup>49</sup> Gleaned from additional materials provided by the authors in October 2006.

<sup>50</sup> Gleaned from additional materials provided by the authors in October 2006.

<sup>51</sup> Though OMB's description of its fiscal year 2007 long-term projections states that it eventually indexes the parameters of the AMT to inflation, OMB is not specific about when this change occurs. However, a note in the OMB documentation, as well as direct examination of the revenue projections themselves, suggest that OMB does not assume AMT reform until the middle of the next decade.

<sup>52</sup> Nowhere in its fiscal year 2005 long-term projections does OMB say that it assumes permanent changes to the AMT. However, its revenue projections would be inconsistent with a tax code that contains an unaltered AMT and imply that OMB assumes AMT reform is undertaken during the middle of the next decade.