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The U.S. Fiscal Problem: Where We Are, How We Got Here, and Where We're Going

1. Introduction

In fiscal year 1992 the U.S. federal budget deficit was $290 billion dollars, equal to nearly 5% of gross domestic product (GDP) and contributing to the continued rapid growth in the national debt. By the end of that fiscal year (on September 30 of the calendar year), the ratio of publicly held national debt to GDP had risen from a low of 24.5% in 1974 to 51.1%.

To attack the deficit, President Clinton proposed, and each house of Congress barely passed in August, the Omnibus Reconciliation Act of 1993 (OBRA 1993), an act that, according to executive branch estimates, will raise revenues and reduce spending by a total of roughly $500 billion over the five fiscal years from 1994 through 1998.[1]

Was this action necessary? Was it enough? Among the questions addressed in this chapter are:

- What is the current path of U.S. fiscal policy?
- How has this path been altered (thus far) by the Clinton economic program?

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1. According to the Office of Management and Budget's 1993 Midsession Review (OMB 1993), the total is $504.8 billion, while the Congressional Budget Office's estimate is $432.9 billion (CBO, 1993b).

- Is the current fiscal policy trajectory sustainable, and, if not, what is the magnitude of necessary changes?

These questions are central to the fiscal policy debate but difficult to answer. To identify fiscal policy's current trajectory, we must make long-range economic projections as well as assumptions regarding what current policy actually is. Moreover, we must know how to interpret this information. The budget deficit can be defined in a variety of ways and there is nothing to ensure that one year's budget deficit will be comparable with the next, or what a short-term trend in the budget deficit signifies about the long-run viability of fiscal policy. Conclusions about the state of fiscal policy should not depend on arbitrary accounting conventions or budget "scoring" rules. Finally, to consider the magnitude of necessary policy changes, we must be able to gauge how different policies will change the economy's fiscal path.

As discussed later, the uncertainties involved in each of these stages are considerable. Fiscal performance has proved difficult to project with any degree of accuracy; budget measures are rife with ambiguous concepts, making them difficult to interpret, and the measurement of economic responses to fiscal policies has been a source of controversy. This leaves those who would design policy with a daunting task, the nature of which is amply illustrated by recent events.

The politically difficult deficit reduction effort of 1993 follows an equally painful OBRA 1990, signed after a protracted "budget summit" by a president who had made a campaign commitment to "no new taxes" but who nevertheless agreed to significant revenue increases along with spending cuts, again estimated at the time to total about $500 billion over a five-year budget period.

With recent federal budget deficits running in the neighborhood of $200–300 billion per year, one might think that these two acts, each apparently reducing the deficit by about $100 billion per year, would have led us close to budget balance in the ensuing years. Yet the near-term outlook is for continued budget deficits of nearly $200 billion dollars, even assuming that the 1990 Act's very tight caps on discretionary spending, which keep discretionary spending essentially fixed in nominal terms, are followed through fiscal year 1998.

What's going on? Another of this chapter's goals is to find out, to address the question, "Why have large deficit reduction policies apparently resulted in so little deficit reduction?"

Each of the difficulties cited earlier might have played a role. First, economic responses to tax increases may have blunted the force of these deficit-reducing policies. Second, "deficit reduction" doesn't nec-

essarily mean deficit *reduction*. Budget scoring rules measure the effects of legislation on the deficit relative to some hypothetical "baseline," which is intended to indicate what the deficit in some future year would have been had no policy changes been adopted. If the baseline forecasts project sharply increasing deficits, then even significant "deficit reduction" would not necessarily result in reduced deficits. Third, we may simply have been the victims of forecasting errors, expecting deficits to be lower than they turned out to be.

Identifying the reasons for the recent Sisyphean fiscal ordeal has implications for future policy design. Most importantly, the recent success or failure in forecasting budget trends should help inform our judgment about the accuracy of current forecasts and the extent to which additional policies are needed to achieve long-run fiscal viability. Studying recent fiscal performance can also help us understand the effects of budget accounting rules and procedures. Much of the federal government's effort at budget control during the past decade, beginning with the Gramm–Rudman–Hollings Emergency Deficit Control Act of 1985, has taken the form of procedural changes intended to place obstacles in the way of deficit spending. In light of recent events, I will consider the following question, "How have budget control rules affected fiscal policy, and how is the effectiveness of such rules influenced by our ability to forecast future fiscal performance?"

After a brief review of recent current budget trends, I turn in Section 2 to a review of the past decade of budget forecasts and results, in order to sort out the causes of these trends. Section 3 considers the impact of deficit control measures on fiscal policy, in light of recent history. Section 4 describes the recent changes in fiscal policy brought about by the 1993 legislation. In Section 5, I'll return to the paper's initial question of sustainability and, in light of all the difficulties recognized, discuss the magnitude of the current fiscal imbalance and the changes potentially needed to produce a sustainable fiscal policy. Section 6 offers some conclusions.

1.1 RECENT FISCAL PERFORMANCE

Figure 1 presents annual U.S. federal budget deficits since fiscal year 1983, and deficits projected through 2004 by the Congressional Budget Office (CBO).[2] As the figure indicates, the deficit has ranged between $150 billion and $290 billion throughout the historical period, and

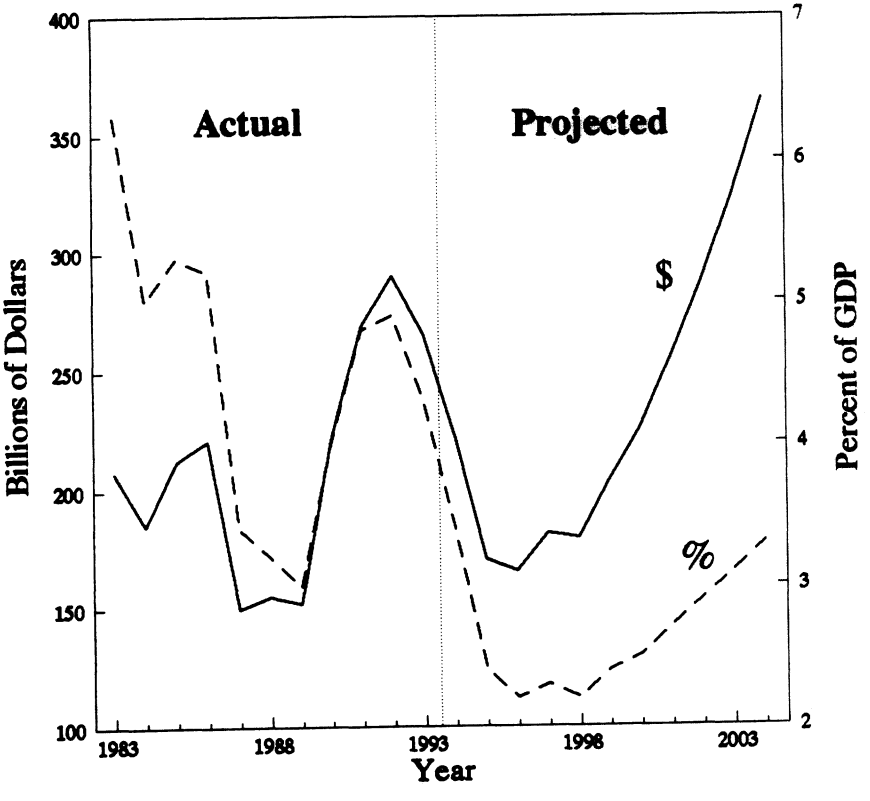
2. Throughout the rest of this paper, I will use CBO forecasts except as noted otherwise. These projections do not incorporate CBO's recent estimates of the impact of the Clinton health proposals.

between 3% and 6% of GDP. Current projections are for the deficit to fall over the next couple of years, both in nominal dollars and as a share of GDP, then begin rising again by both measures. I'll discuss later why the deficit is projected to rise and the extent to which deficit trends accurately represent the path of fiscal policy. First, however, it is useful to consider the factors that have contributed to the deficits, measured as they are, experienced over the past decade.

2. *Identifying the Sources of Recent Deficits*

As indicated earlier, there are three potential explanations for the persistence of deficits of $200 billion or more in the face of the large

Figure 1 U.S. FEDERAL BUDGET DEFICITS (ACTUAL AND PROJECTED)



Source: CBO.

deficit reduction packages passed in 1990 and 1993: high "baselines," unanticipated behavioral responses, and other forecast errors. I'll consider each of these explanations. Much of my analysis will be based on the historical record of CBO deficit forecast revisions.

For several years, CBO has published forecasts of deficits, revenues, and expenditures for the current and five subsequent fiscal years. Typically twice a year, CBO has provided revised estimates, dividing the revisions from one forecast to the next for a particular future fiscal year into three categories, according to whether they could be attributed to changes in policy, changes in projected macroeconomic behavior, or those residual, or "technical," changes in revenues and spending that could not be explained either by policy changes or macroeconomic changes. Within each category, revisions are broken into spending and revenue forecast revisions, and sometimes further.

For example, a reduction in projected tax collections due to an unexpected recession would be classified as an economic change, while a reduction in income taxes caused by a shift in the distribution of taxable income toward lower marginal tax brackets would count as a technical error, because the income distribution is not part of the macroeconomic forecast. Policy projections, and changes in them, reflect not simply actual legislation, but a professional judgment of what is likely to occur. This revision process may be expressed as:

$$_{t-i}D_t = {}_{t-i-1}D_t + {}_{t-i}P_t + {}_{t-i}E_t + {}_{t-i}T_t, \qquad (1)$$

for $i = 0$ to 5, where $_{t-i}D_t$ is the deficit forecast for year t at the end of year $t - i$ (equal to the actual deficit D_t for $i = 0$) and $_{t-i}P_t$, $_{t-i}E_t$, and $_{t-i}T_t$ are the policy, economic, and technical revisions to the year t deficit forecast in year $t - i$ (denoted P_t, T_t, and E_t when $i = 0$).

A similar procedure has been followed by the Office of Management and Budget (OMB), with similar results, at least in recent years. I use CBO figures for two reasons. First, the CBO methodology is likely to have been more consistent over the past decade than the corresponding OMB projections of three different presidential administrations. Second, the CBO projections are likely to have been closer to true forecasts than the OMB projections, because the latter were often distorted by budget rules *requiring* that projected budget deficits meet certain targets.[3] My

3. Reischauer (1990) provides evidence that the gap between OMB budget projections and CBO reestimates of these budgets rose after the enactment of the Gramm–Rudman–Hollings Act, which required that budgets meet specified deficit targets.

comments should not be taken as a critique of CBO methods or competence.[4]

2.1 INITIAL BASELINES AND THE EFFECTS OF POLICY

To understand why deficits remain so large, it is helpful to begin by applying expression (1) successively for a given fiscal year's deficit, cumulating all the revisions that occur during years $t - 5$ through t. This yields:

$$D_t = {}_{t-6}D_t + \sum_{i=0}^{5} (P_{t-i} + E_{t-i} + T_{t-i}). \tag{2}$$

One possible reason why deficits remain so large is that initial baseline deficits themselves—the original projections ${}_{t-6}D_t$ made five years prior to each fiscal year in question—were extremely high. This could have come about for two reasons. First, the excesses of the past simply might have set policy on a smooth trajectory that, left to its own, would have produced ever higher deficits. For example, the Reagan tax cuts of 1981 have often been blamed for subsequent deficits. Alternatively, previous policies might have included timing shifts in revenues and/or expenditures that reduced near-term deficits at the expense of deficits beyond the six-year forecasting period. For example, a policy enacted in 1983 to speed up revenue collections from 1990 to 1987 would reduce the 1987 deficit but lead to a higher baseline deficit forecast for 1990, when the initial baseline forecast for that fiscal year first appeared in 1985.

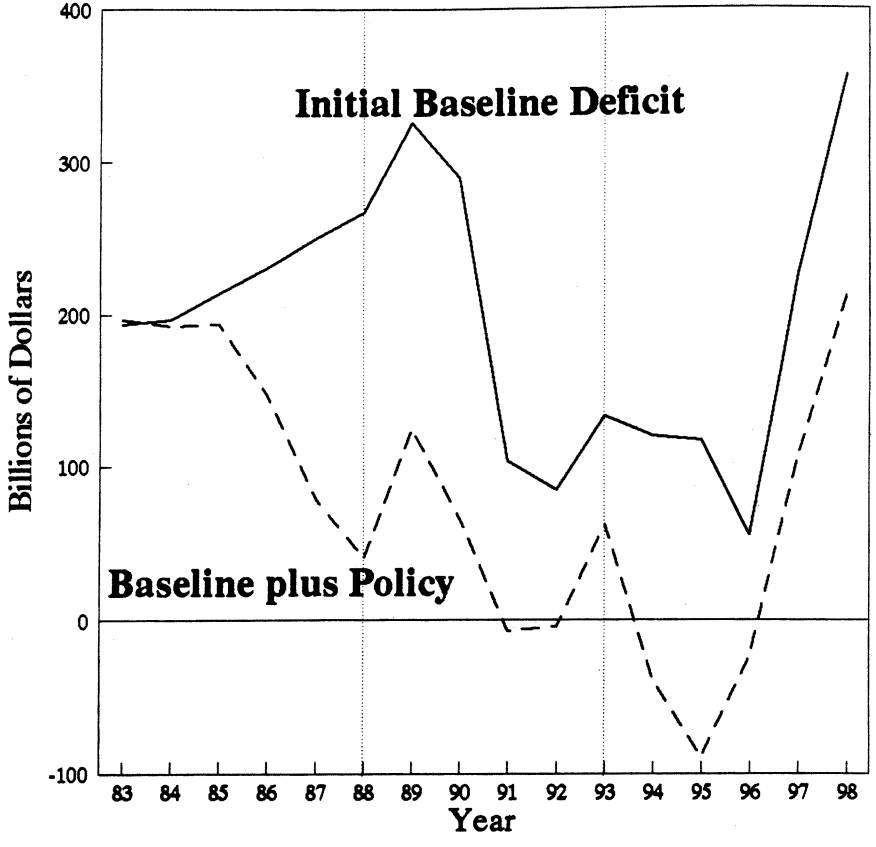
While offering different explanations for why the initial baseline for a particular fiscal year might be high, each argument suggests that policy changes enacted *during* the six-year forecasting window between the date of the initial baseline forecast and the end of the fiscal year itself simply were too small to offset the high initial baseline deficits. However, this story is not consistent with the data for recent fiscal years or for those in the immediate future.

There have been several policy changes aimed at reducing deficits since the early 1980s, in addition to the changes of 1990 and 1993 already cited. The importance of these intervening changes can be seen in Figure 2. This figure presents two series, based on data from Febru-

4. Indeed, CBO (1993b, Appendix A) provides evidence that its ex post macroeconomic forecasting record, measured in terms of root mean squared errors in the prediction of real GNP, inflation, and short-term interest rates, is comparable with that of the private sector "blue chip" consensus and somewhat better than the combined administration record.

ary 1983 to January 1994. The first, labeled "Initial Baseline Deficit," is the deficit for that year as forecast by CBO six years earlier, ${}_{t-6}D_t$, or, for fiscal years prior to 1988, the deficit forecast in February 1983, which is as far back as the data go. The second curve in Figure 2, labeled "Baseline Plus Policy," adjusts the initial deficit forecasts for the effects of all policy changes dating from the first forecast for each fiscal year through the end of the fiscal year itself or, for fiscal years after 1993, through January 1994. It corresponds to the right-hand side of expression (2), with the economic and technical revisions set to zero, cumulating the changes in deficit forecasts that CBO attributed to changes in policy, from the date at which calculations for that fiscal year began

Figure 2 INITIAL BASELINES AND POLICY



Source: CBO and author's calculations.

until the end of that fiscal year or, for current and future fiscal years, until January 1994. Thus, a full six years' estimated policy effects are presented only for fiscal years 1988–1993.

As Figure 2 indicates, fiscal policies since 1983 have, according to estimates, reduced budget deficits relative to initial baseline in every fiscal year. For the fiscal years 1988–1993, the average reduction over six years was $154 billion. Some of these reductions may simply have acted to offset the deficit increases embedded in the initial baselines by earlier policy actions. Still, had the policy effects actually measured been the only changes from initial baseline projections, the federal budget would have been in surplus in 1991 and 1992 and would be projected in surplus for fiscal years 1994 through 1996.

Of course, the policies themselves would probably have been different had there been no *other* (i.e., economic and technical) revisions from initial baseline forecasts during this period. That is, some of the policies aimed at deficit reduction resulted from the realization that things were worse than originally projected. But this argument does not alter the conclusion that the policies actually enacted were estimated to be large enough to offset the budget deficits initially projected.

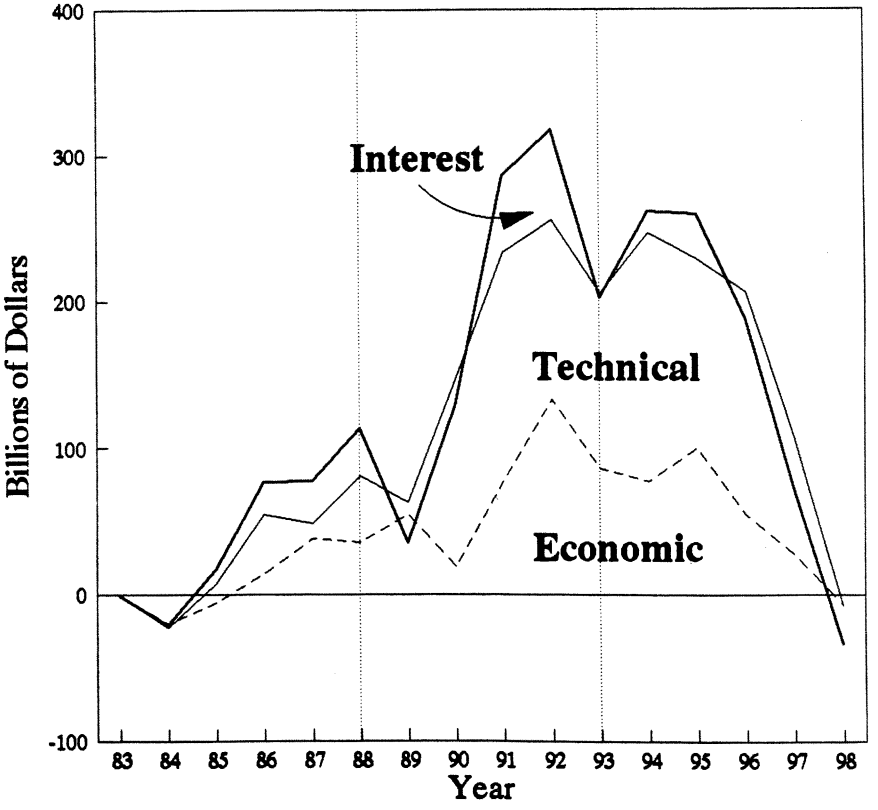
After fiscal year 1996, the initial baseline deficits rise quite sharply. For the future, then, as I'll discuss later, the devil may well be in the baselines (or at least may start there); but for recent years, we need to look elsewhere.

2.2 FORECAST ERRORS

The surpluses indicated by the lower curve in Figure 2 were exceeded by actual deficits (or those projected as of January 1994) by the sum of cumulative economic and technical forecast errors. Figure 3 presents these errors for the same period. Moving vertically, the figure shows the cumulative impact of, respectively, economic errors, technical errors, and the additional interest payments associated with these two changes. These interest costs include the effects (counted as economic changes) of revisions in nominal interest rate forecasts, as well as the cumulative debt service effects resulting from the economic and technical errors.

There are two reasons to consider these changes in interest costs separately. First, errors in the prediction of debt service costs arise only as the result of underlying errors in other projections. Second, to the extent that projected nominal interest rates and, hence, interest costs change because of changes in the expected inflation rate, the associated change in the projected deficit is a change in the nominal deficit but not

Figure 3 FORECAST ERRORS



Source: CBO and author's calculations.

the real deficit.[5] For fiscal years after 1995, declines in projected nominal interest rates have outweighed increased debt service projections, causing revisions of estimated interest costs to be slightly negative so far.

5. Presumably, there are other components of the economic forecast error attributable to changes in inflation expectations that we would also like to exclude or consider separately for the same reason. However, at least in recent years, holding nominal interest rates fixed, "changes in inflation have little impact on the deficit because they tend to push up revenues and spending by roughly equal amounts." (CBO, 1993b, p. 35). Hence, the *net* changes in the primary deficit (i.e., the deficit excluding interest) associated with changes in macroeconomic forecasts should be due mainly to changes in real economic variables, such as real growth and the unemployment rate. This will not be true, of course, for forecasts of nominal revenues and spending, each of which will be quite sensitive to rate of inflation.

In studying Figure 3, one needs to keep in mind that, as in Figure 2, only the years 1988–1993 offer a full six years of data. Hence, the small errors in the early 1980s and late 1990s simply reflect the relatively short intervals over which errors are being cumulated. Focusing again on the period from 1988 to 1993, then, we observe that both technical and economic forecast errors have been positive in every one of these fiscal years. Further, both economic and, particularly, technical errors have been very large in recent fiscal years. For fiscal years 1990–1993, technical errors alone (excluding interest) accounted for an average of $132 billion per year. Even more disturbing is the fact that for fiscal years 1994–1996, for which fewer than six years' revisions have been counted, the average technical error equals $166 billion.[6]

2.3 DECOMPOSING TECHNICAL FORECAST ERRORS

These large technical prediction errors deserve further attention for several reasons. First of all, unlike economic forecast errors, which by definition are directly attributable to changes in the forecasts of aggregate variables, these are the residuals of the forecasting process and, therefore, not directly linked to any aggregate changes. Their causes are not as easily identified and could have different implications for the future. Second, economic forecast errors may present less reason for concern or policy reaction, because they reflect, in part, the automatic stabilizers that, at least from a traditional Keynesian perspective, are desirable. On the other hand, there need be no obvious benefit associated with forecast errors, conditional on the state of the economy.

Finally, to the extent that recent deficits have been caused by inaccurate assessments of taxpayer responses to tax changes, we would expect this to show up in technical forecast errors of tax revenues. For example, suppose an increase in capital gains tax rates reduced capital gains realizations more than CBO predicted. This would reduce capital gains realizations, given the level of income and other macroeconomic aggregates and, therefore, would lead to overestimates of individual income tax collections, conditional on macroeconomic conditions, in the years following the enactment of the tax increase.

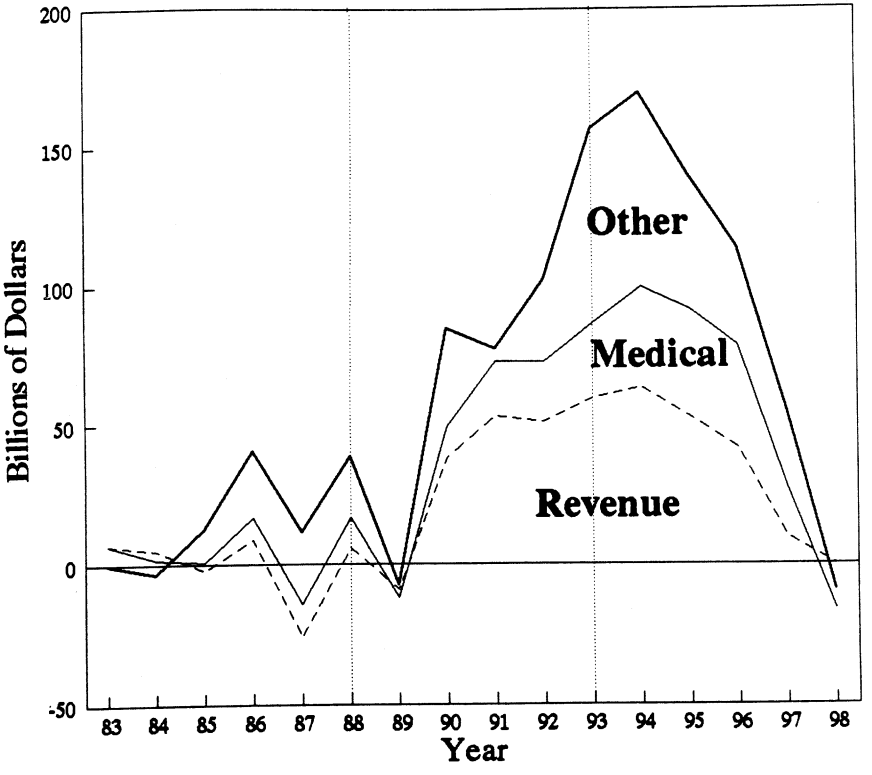
Perhaps the biggest single source of technical forecasting error during the past decade was the savings and loan (S&L) bail-out and associated problems. There was, initially, an underprediction of the cost of the

6. The cumulative forecast error for fiscal year 1998 is negative, in contrast to the general trend. This reflects one year's revision (from January 1993 to January 1994), during which technical and economic forecast errors for fiscal years 1994–1997 were negative as well. Whether these very recent revisions indicate a shift in the trends of recent years it is too early to tell.

bail-out, leading to large forecast errors in the early 1990s. Thereafter, there was uncertainty regarding when Congress would choose to provide the funds already seen as needed, essentially a timing issue that has led to both positive and negative technical forecast errors in fiscal years after 1992.

However, the S&L bail-out explains only a small part of the overall picture. Figure 4 graphs the cumulative technical forecast errors for fiscal years 1983–1998 shown in Figure 3, but excluding both the associated debt service and the errors attributable to the S&L bail-out. Figure 4 breaks the remaining forecast errors into three components: revenue overpredictions, underpredictions in the cost of Medicare and Medicaid, and all others.

Figure 4 TECHNICAL ERRORS
(EXCLUDING INTEREST AND S&L BAIL-OUT)



Source: CBO and author's calculations.

The rapid growth of medical spending in recent years has (until calendar year 1993) been underpredicted consistently, leading to the technical errors associated with the Medicare and Medicaid programs. While these errors have been important, Figure 4 shows that revenue overpredictions have been an even more significant source of technical forecast errors in recent years. However, even with these two areas (plus those already excluded) accounted for, a significant residual—around $70 billion in fiscal years 1993 and 1994—remains.

Although a relatively short period of time is represented in Figure 4, this persistence of large positive cumulative technical errors calls into question whether these are true forecast errors in terms of being the results of an optimal forecasting process.

One possibility is that technical errors are systematically positive because baseline forecasts fail to account for the "unexpected" emergencies that always arise, in the way that a local government might not "expect" snow and, hence, fail to provide a snow removal budget. Aside from the S&L bail-out, which is already excluded from Figure 4, recent years have seen hurricanes, floods, earthquakes, Operation Desert Storm, etc. On the other hand, we have also experienced an unpredictably rapid decline in defense spending (the "peace dividend") due to the deterioration of the Soviet Union and now Russia as a military threat, which has led to negative technical forecast errors.

Moreover, unlike in the snow removal example, these are deficit forecasts. They are not the actual budgets presented by presidents who have been accused of adopting a "rosy scenario" in order to put off proposing difficult budget choices, and who have been given further incentive to do so by budget rules requiring that submitted budgets be claimed to satisfy certain criteria (see footnote 3). There undoubtedly has been political pressure not to forecast realistically large deficits, but it is difficult to know how important a role such pressure has played in producing the forecasting record observed during the past decade.

2.4 THE STATISTICAL PROPERTIES OF REVENUE FORECAST ERRORS

Whatever the importance of the "one unexpected emergency after another" hypothesis on the spending side, it is difficult to think of comparable examples on the revenue side, given that these errors are residuals after account has been taken of macroeconomic and policy effects. Further, while CBO provides a breakdown of spending forecast errors by source (defense, medical, etc.), there is usually no explicit breakdown given for revenues.

In the aggregate, though, these revenue forecast errors have typically been negative (i.e., revenues were overpredicted), not just cumulatively

Table 1 REVENUE FORECAST REVISIONS, 1983–1993

Years ahead	*Policy*	*Economic*	*Technical*
0	3.8	−11.9	−4.6
1	10.0	−15.2	−6.5
2	11.0	−15.7	−6.7
3	14.9	−17.6	−7.6
4	17.9	−20.7	−7.2
5	9.5	−7.2	−2.9
Total	67.9	−88.3	−35.5

Source: CBO and author's calculations.

for each fiscal year, but for each individual revision as well. Table 1 presents the average k-year-ahead forecast revisions during the sample period, for k ranging from 0 (the current fiscal year) to 5 (the most distant fiscal year being predicted). For each value of k, average economic and technical revisions are negative, and policy revisions are positive.[7] Presumably, the economic revisions are attributable to unexpectedly weak growth and lower inflation after the mid-1980s, while the policy revisions simply reflect the continual process of attempts at deficit reduction.

Whence the technical errors? As a first step toward answering this question, Table 2 presents the results of regressions in which each technical revision for each fiscal year is represented as an individual observation. Explanatory variables in the first specification include a constant and lagged values of the three forecast revisions for the same fiscal year.

As the first column of Table 2 shows, technical revisions are essentially unpredictable using this information—the equation's $\bar{R}^2$ is −.01, and no variable has a statistically significant impact. However, adding a simple time trend to the regression explains one-third of the variance of the technical forecast errors. In this second specification, the technical error, aside from trending sharply downward over time, relates negatively to all three components of the lagged forecast revision,

7. These calculations are based on the evidence through fiscal year 1993. The revisions are smaller, on average, for the five-year-ahead estimates because these typically reflect only a partial year's information. The first forecast for the fiscal year five years into the future is typically published in January, whereas the fiscal year begins on October 1. For example, CBO's first published estimate for fiscal year 1998 appeared in January 1993. Hence, the five-year-ahead revision for fiscal year 1998 reflects changes only from January 1993 through late September 1993. The fiscal-year-1993 revisions of projected deficits in fiscal years 1993–1997 (zero through four years ahead) include revisions from September 1992 through September 1993.

Table 2 EXPLAINING TECHNICAL REVENUE FORECAST REVISIONS

	Specification	
	(1)	(2)
Independent variable		
Constant	−4.21	10.94
	(−1.54)	(2.56)
Dependent variable, lagged	0.28	−0.61
	(1.84)	(−2.83)
Policy revision, lagged	−0.01	−0.12
	(−0.09)	(−1.39)
Economic revision, lagged	0.04	−0.13
	(0.73)	(−2.03)
Time trend	—	−4.50
(1985 = 1)		(−4.22)
$\bar{R}^2$	−.01	.31
Number of observations: 45		

Note: t statistics (incorporating the White [1980] standard error correction) are in parentheses.

suggesting that revisions are systematically too large in absolute value. Interestingly, though, the one such relationship that would have the most straightforward explanation—the overstatement of revenues attributable to policy changes because of an underprediction of the magnitude of behavioral effects—is the least significant, both statistically and quantitatively.

What can we conclude from this exercise? First, technical errors seem clearly not to be optimal forecast errors in the sense of being drawn from a distribution having zero mean and independent of available information. On average, they are significantly negative and related to past information. Second, at least in the aggregate, underprediction of behavioral responses to taxation does not seem to have played a crucial role in producing the consistent overprediction of revenues.[8] Finally, the errors themselves have been getting worse over time. While it is implausible that such a trend could continue for very long (and recent

8. This finding does not demonstrate that behavioral effects have been accurately predicted in all instances, or that potential prediction errors are not an important factor in evaluating future policy. Rather, it simply indicates that there is much more to the historical puzzle. Indeed, an important component of CBO's forecasting errors following the Tax Reform Act of 1986 can be attributed to overestimated capital gains tax realizations. Also after 1986, individual income tax revenues rose more than originally predicted, which some (e.g., Feenberg and Poterba, 1993; Feldstein, 1993) have attributed to the behavioral response of high-income taxpayers. However, this is masked in the data by the fact that corporate income tax revenues fell unexpectedly.

evidence encourages the hope that it may be ending), one still is led, pending a better understanding of the process, to be concerned about what revisions lie in store and to be skeptical of any conclusions about the sustainability of fiscal policy based on point estimates of revenues or expenditures. I will return to this issue later when evaluating the current state of policy and recent fiscal changes.

3. *Budget Rules and Their Impact on Policy*

Since the advent of large federal budget deficits in the early 1980s, the federal government has relied on a succession of budget control measures in its attempts to achieve fiscal balance. Recently, despite the 1993 extension of the provisions of the 1990 Budget Enforcement Act, there have been renewed calls for an even stronger measure, i.e., a balanced budget amendment.

Presumably, budget rules are imposed by legislators (and presidents) to force themselves to accept more fiscal austerity than they would agree to in the normal course of events. The notion is that while a majority of legislators may agree on the need for overall limits, the legislative process fails to produce a majority coalition in opposition to any particular deficit-increasing provision. While the political economy of this process is not particularly well understood and, thus, merits further attention,[9] I will confine my discussion to how well the rules have been designed to achieve their apparent objective. The persistence of significant deficits throughout the past decade suggests the absence of complete victory, to say the least.

This section describes the different budget control measures that have been used since the mid-1980s and considers the impact that they have had on fiscal policy. It also draws out the implications for the design of such measures of two important factors. One is the difficulty of making accurate budget predictions, which was discussed in the previous section. The other, which is illustrated later, is the demonstrated ability of government to alter the timing of measured deficits with minimal changes in the underlying fiscal policy itself. Each of these factors has confounded past budget control mechanisms and, indeed, led to perverse results.

3.1 BUDGET RULES

The first attempt at imposing an external mechanism to control the budget deficit was the Balanced Budget and Emergency Control Act of

9. See Gramlich (1990) for some further discussion along these lines.

1985, commonly known as Gramm–Rudman–Hollings (GRH). Enacted in December 1985, it imposed specific deficit targets for fiscal years beginning in the same fiscal year (1986), declining linearly to zero by fiscal year 1991. If, at the beginning of a fiscal year, the target for that year was judged by OMB not approximately to have been met, automatic, across-the-board budget cuts (sequestration) would follow. Once the target was declared met for a particular fiscal year, subsequent forecast revisions during the remainder of that fiscal year were ignored.

Failure to meet the original GRH targets for fiscal year 1988 led to amended targets in 1987, declining to zero by fiscal year 1993. Failure to meet the revised targets led ultimately to the supplanting of GRH by the 1990 Budget Enforcement Act (BEA). Under BEA, there are specific caps on discretionary spending that translate into real annual spending reductions, along with a Pay-as-You-Go (PAYGO) process for revenues and entitlements (excluding Social Security, which is treated separately and in similar fashion) that prohibits policy changes from increasing the estimated deficit in any year *during* the six-year period (covering the current and five subsequent fiscal years) for which official deficit forecasts are made.

Unlike GRH, BEA effectively imposes no deficit targets—only the requirement that any year's policy changes not increase the estimated current and near-term deficits *relative* to the levels forecast at the beginning of the current fiscal year. For example, policy changes enacted during fiscal year 1992 could not increase the estimated deficits in any of the fiscal years from 1992 through 1997 over the levels predicted for these deficits at the beginning of fiscal year 1992.

3.2 THE IMPACT OF FORECAST ERRORS

The large forecast errors discussed in the previous section clearly have confounded the operation of GRH and BEA in reducing deficits. Consider first the impact under GRH. The GRH budget rule can be written

$$P_t \leq D_t^* - {}_{t-1}D_t, \tag{3}$$

where D_t^* is the deficit target for year t. Given that the actual deficit in year t, D_t, equals the previous year's estimate plus economic, technical, and policy revisions,

$$D_t = {}_{t-1}D_t + P_t + T_t + E_t, \tag{4}$$

it follows that, if Equation (3) is just satisfied, then

$$D_t = D_t^* + T_t + E_t. \tag{5}$$

That is, the GRH target for year t is missed by the extent of technical and economic forecast errors.[10]

Under BEA, the deficit policy rule is much simpler, i.e.,

$$_{t-i}P_t \leq 0, \tag{6}$$

for $i = 0$ to 5. If this condition is satisfied by equality, then expression (2) becomes:

$$D_t = {}_{t-6}D_t + \sum_{i=0}^{5} (E_{t-i} + T_{t-i}) \tag{7}$$

Thus, the BEA rule incorporates the cumulative effect of the full six years' prediction errors of a fiscal year's deficit, rather than just those occurring in the fiscal year itself. Even if each individual prediction error were unbiased, this cumulation would increase the magnitude of deviations.[11] But the sample mean of $123.8 billion in cumulative economic and technical forecast errors for a typical fiscal year (see Table 1) implies that the rule also systematically has led to a deficit exceeding the initial baseline forecast by this amount. Moreover, in comparing Equations (5) and (7), it is important to realize that there is nothing to suggest that the initial baseline forecast bears any relation to an optimal deficit target. Thus, in practice, the BEA validates deficits substantially higher than those initially forecast, which may themselves be viewed as far too high. Indeed, one reason for their being too high is that policy actions prior to the date of initial forecast may have shifted the timing of deficits from earlier years.

3.3 THE TIMING OF DEFICIT REDUCTIONS

In addition to impounding forecast errors in the eventual deficits, both GRH and BEA provided policymakers seeking to avoid the austerity of "permanent" deficit reduction with the incentive and the opportunity

10. While there might be stabilization arguments for not offsetting some components of the economic forecast errors, the same argument presumably would call for a simultaneous adjustment to future years' targets as their economic forecasts were revised in year t.

11. This follows directly from the fact that the optimal forecast errors of the year t deficit made in years $t - 5$ through t should be temporally uncorrelated.

to alter the timing of revenues and expenditures without necessarily affecting their long-run levels or even their present values.

Under GRH, a particular fiscal year's deficit target could be met by increasing deficits in subsequent years. The classic mechanism for doing so was the sale of government assets that, in the most straightforward case, would reduce a current year's deficit and increase the deficits of remaining years by an amount equal in present value. According to Reischauer (1990), fully half of the deficit reduction under GRH fell into the "one-time savings" category including asset sales and moving agencies off budget.

Some have argued that this use of "smoke and mirrors" could have been curtailed through better budget rule design. For example, a capital budget would have eliminated the deficit impact of pure asset sale transactions. However, there were many "legitimate" fiscal changes during this period, not generally criticized as "budget gimmicks," which had the same timing effects. An example is the provisions of the Tax Reform Act of 1986 that repealed the investment tax credit immediately and retroactively and partially compensated for this tax increase by reducing the corporate tax rate.[12] This illustrates the futility of trying to distinguish between "good" and "bad" budget changes in an annual context.

The experience under GRH led to the BEA's use of a multiyear approach. However, even under the BEA, incentives for shifting remain. Now, they simply must occur from fiscal years beyond the six-year budget window over which the restrictions on policy apply. However, because the shifting of deficits would be made only to those budget years for which an official deficit forecast has yet to be made, it is impossible to identify such shifting from the policy changes actually recorded. These shifts of deficits to "outside the budget window" would ultimately show up indirectly through unusually high initial deficit forecasts for those future fiscal years.

The fact that the restrictions that the BEA places in the future are then based on these initial baseline deficits leads to the perverse result (not present under GRH, which relied on predetermined deficit targets) that policies that decrease current deficits at the expense of future ones

12. Since the investment tax credit (ITC) reduces taxes on investments when they occur, while a corporate tax cut reduces taxes on investments over time, a policy of reducing the ITC and the corporate tax at the same time, keeping the present value of taxes collected from each new investment constant, accelerates the tax collections from new investment. The provisions of the 1986 Act were somewhat more complicated in that they repealed the ITC retroactively and extended the corporate tax reduction to existing assets.

are then sustained by the budget rules once those future years enter the budget window.

For example, the current budget window includes fiscal years 1994–1999. A tax speedup enacted this year from fiscal year 2000 to fiscal year 1999 might be used to raise enough revenue in 1999 to offset some other deficit-increasing policy of equal magnitude in the same fiscal year. As a result, the combined policy would cause no net change in the estimated fiscal year 1999 deficit and an increase in the baseline deficit for fiscal year 2000, when initially reported. The BEA rules would then be based on this initial forecast and thereby would sustain the previous year's deficit-increasing policy. Indeed, if the collection of all the income taxes from fiscal year 2000 were speeded up to fiscal year 1999, the initial baseline deficit for fiscal year 2000 would reflect the absence of any income tax collections.

How much shifting has occurred under the different budget rules? We cannot observe the magnitude of shifts under BEA, for they would occur from future years for which estimates have not generally been available. Within the six-year budget window, we can only observe the shifts induced by GRH, which would take the form of deficit reductions in the current fiscal year achieved at the cost of increased deficits in subsequent fiscal years.

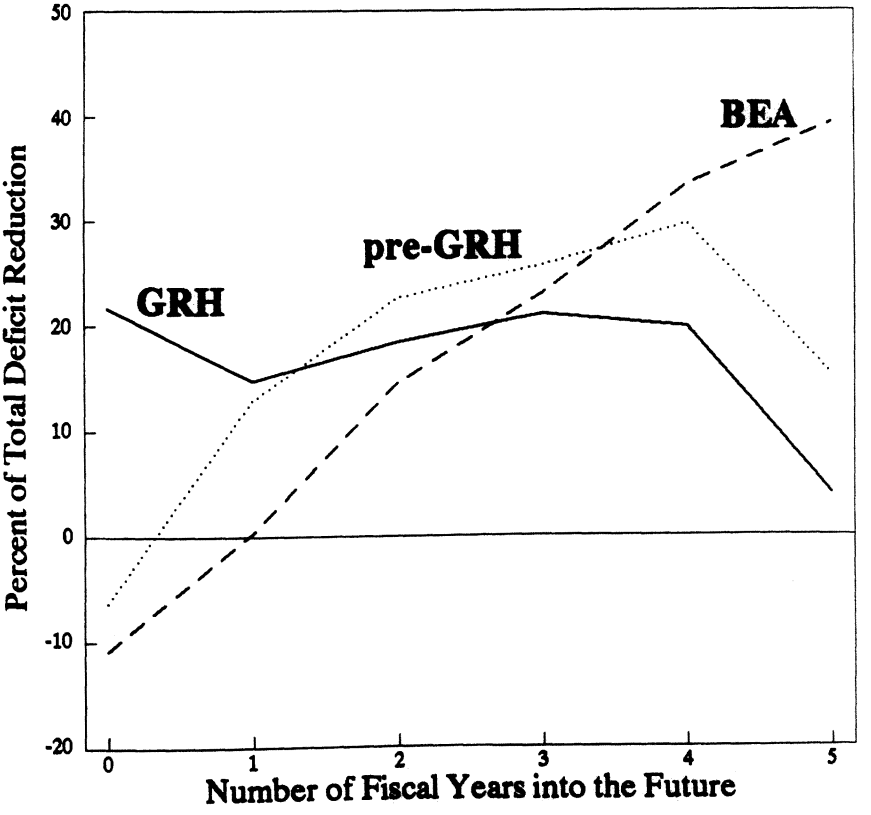
Figure 5 presents the pattern of deficit reduction (excluding interest) during three regimes: pre-GRH, GRH, and BEA. For each of these eras, I have aggregated the policy changes, in each case recording the impact of the change on the current year's deficit and those of the five subsequent fiscal years. In terms of the notation introduced earlier, the policy changes along each curve are the average values of P_t, ${}_tP_{t+1}$, ${}_tP_{t+2}$, ${}_tP_{t+3}$, ${}_tP_{t+4}$, and ${}_tP_{t+5}$ during the regime, expressed in terms of deficit *reduction* (i.e., in negative terms) and as a percentage of the total.[13]

The incentives under GRH for shifting into the current fiscal year suggest that a greater share of such deficit reduction would occur during the current fiscal year under GRH than before GRH. On the other hand, BEA's restrictions on shifting from any of the next five years would, if anything, make shifting from these fiscal years less likely even than before GRH, when no explicit restrictions on shifting existed.

Indeed, Figure 5 bears these predictions out. Before GRH, the average policy change involved an increase in the current year's deficit and reductions in the deficits of the next five years. Under GRH, enacted

13. Because of the difficulty of classification, I have omitted the changes that occurred contemporaneously with the enactment of both GRH and BEA.

Figure 5 DEFICIT REDUCTION PATTERNS
(UNDER DIFFERENT BUDGET REGIMES)



Source: CBO and author's calculations.

policies had little effect on the deficit five years out but a considerable impact on the current year's deficit. Under BEA, we have reverted to a situation in which the average impact of policy is to increase the current year's deficit,[14] but the pattern of deficit reduction is shifted even more toward the later years of the sample than before GRH. In a sense, the adoption of the BEA has succeeded in eliminating timing shifts *within* the budget window. But this change does not indicate the

14. These deficit increases are possible, given the restrictions against enacting a policy to increase the deficit, because of various loopholes in the rules, such as the ability to suspend the rules in cases of "emergency."

absence of shifts from fiscal years more than five years into the future, and it could be one explanation for why the initial baselines jumped suddenly in fiscal year 1997, the first initial baseline to appear after the adoption of the new budget rules (see Figure 2).

3.4 SUMMARY

The budget rules of the past decade have not succeeded in achieving sustained deficit reduction. The "budget gimmicks" and unrealistic deficit targets of GRH gave way to the less ambitious but longer-horizon constraints of the BEA. However, the BEA still permits policies that shift deficits "outside the budget window" and sustains these policies by relying on initial baseline estimates rather than budget targets. Moreover, it provides no error-correction mechanism to deal with the six years of forecast errors that occur after a fiscal year's deficit is first officially forecast.

These incentives to shift deficits from one year to another have translated into policy actions, as measured by patterns of deficit reduction within the six-year budget window. Much of these shifts resulted from "legitimate" budget changes not viewed as budget "gimmicks," illustrating one of the weaknesses of budget control measures based on annual or multiyear deficits rather than on long-run fiscal consequences. Under BEA, though, the full impact is difficult to ascertain precisely because the increased deficits are beyond the official forecast horizon.

4. *OBRA 1993 and its Medium-Run Effects*

The Clinton program enacted in OBRA 1993 was the first important change in fiscal policy since the 1990 budget agreement. As the introduction indicated, the legislation was estimated to have provided as much as $500 billion in deficit reduction over the five fiscal years between 1994 and 1998. It includes a variety of tax increases, reductions in the level of discretionary spending, and reductions in spending on entitlements, particularly Medicare.

4.1 SOURCES OF SHORT-TERM DEFICIT REDUCTION

Before one considers the long-run impact of the Clinton plan, it is important to ask how realistic its projected savings are, even in the short run. Put another way, how likely is it that the recent pattern of upward forecast revisions of deficits continue.

On the revenue side, there has been the critique, already cited earlier, of the projected revenues from the legislation's large increases in the

top individual marginal tax rates. For example, Feldstein (1993) argues that virtually no net revenue will be collected as a result of the tax increase, representing a gap of over $20 billion per year at 1993 income levels relative to estimates ignoring any behavioral effects.[15] His estimates are based on the responsiveness of taxpayers to the marginal tax rate reductions of the Tax Reform Act of 1986.

Given the relatively small overall labor supply and savings elasticities typically found in the empirical literature, how can Feldstein's estimated revenue effects be justified? There are two main arguments, both based on the fact that the 1993 tax changes are highly progressive.

First, absent any behavioral effects, a progressive tax change will raise less revenue from affected taxpayers than would a proportional tax change on the same group that produced the same increase in their marginal tax rate, since the average tax rate will rise less than the marginal tax rate. But the policies will have the same substitution effect on behavior. Hence, if the two policies lead to the same behavioral reduction in before-tax income, the associated percentage reduction in the revenue gain will be larger under the progressive tax increase. This is just another way of saying that the deadweight loss of progressive taxation is greater than that of proportional taxation.

In addition, the implied behavioral responses of taxpayers, particularly those in the highest income classes, to the 1981[16] as well as the 1986 reductions in marginal tax rates, are much larger than would be implied by labor supply and savings elasticities. The usual explanation is that much of the taxpayer response took the form of income shifting from tax-favored to fully taxable (and observed) categories, rather than changes in underlying work and saving behavior.

Is behavior after the 1986 Act a good predictor of what will happen after the 1993 Act? Given the many other provisions contained in each piece of legislation, and other economic changes that have occurred simultaneously, it is extremely hard to know. There are differences in the two pieces of legislation that could push the results in either direction. For example, some of the increase in taxable income in higher income classes after the 1986 Act undoubtedly resulted from the act's restrictions on tax shelter activity, which were not reversed by the 1993 Act. On the other hand, because the 1993 Act is very progressive, its income effects on labor supply and saving behavior are likely to be smaller relative to its substitution effects, compared with those of the

15. The CBO projections, based on revenue estimates produced by the Joint Tax Committee, presumably incorporate some assumed behavioral changes, but they are clearly smaller than those for which Feldstein argues.

16. See Lindsey (1987).

1986 Act. As long as leisure and consumption are normal goods, this would lead to greater behavioral responses, given the marginal tax rate changes, than occurred after the 1986 Act.

In summary, it is difficult to know whether we will observe large "technical" adjustments to revenue forecasts over the next few years as a result of the assumptions underlying present projections. There is also the question of whether any large behavioral changes that do occur represent permanent changes, or simply temporary ones.[17]

While OBRA 1993's projected revenue increases derive from changes in specific tax rules, some of the estimated spending reductions simply reflect the legislation's changes in the targets for future spending levels, which both CBO and OMB have chosen to incorporate into their baseline forecasts. Foremost among these—and representing about a third of the estimated noninterest deficit reduction by 1998—is the "hard freeze" in overall discretionary spending that would keep discretionary spending roughly constant in nominal terms between fiscal years 1993 and 1998—representing a drop of roughly 2% of GDP, or about a 22% cut in the level of discretionary spending relative to what would prevail if such spending remained at its 1993 share of GDP.

4.2 TIMING AND DEFICITS BEYOND 1998

The previous discussion dealt with the extent to which the estimated effects of OBRA 1993 on near-term budget deficits is plausible. Even if these estimates are accurate, a second question is the extent to which such deficit reductions help address the federal government's long-run fiscal problems, as opposed simply to reducing deficits temporarily or shifting deficits to fiscal years beyond 1998 that lie beyond the official budget forecasting horizon.

Because much of OBRA 1993's estimated deficit reduction on the spending side simply takes the form of reduced spending targets, rather than specific reductions, it is difficult to identify the longer-run effects of the legislation on spending. On the revenue side, though, it is easy to identify specific provisions of the legislation that do not increase revenues beyond 1998 as much as they do during the budget period, or lose more revenue after 1998 than they do during the budget period.

For example, both corporate and individual estimated tax provisions have been tightened, leading to a one-time speedup in the timing of tax collections as a greater share of each year's tax payments are made in

17. Feenberg and Poterba (1993) provide evidence that the surge of reported income among high-income taxpayers occurred largely in 1987 and 1988 and actually receded in 1989. This is relevant to the results Feldstein presents, which compare the behavior of taxpayers in the years 1985 and 1988.

advance. Securities dealers holding appreciated securities in inventory must move from a cash basis to an accrual basis in paying tax on these gains, again a one-time speedup of revenue collections. The tax treatment of intangible assets was altered in a way that raised more revenue during the budget period than afterward, when it may well lose several billion dollars per year.[18] These four revenue provisions alone have been estimated by the U.S. Joint Committee on Taxation (1993) to raise approximately $14.8 billion over the period 1994–1998. The small business capital gains tax cut, one of the key tax incentives of the Clinton program, loses less than a billion dollars over the five years through 1998—because stock must be held for at least five years after the effective date to qualify for the 50% capital gains tax exclusion. Presumably, once the five-year waiting period is over, the revenue loss will burgeon.[19] And, while the extension of the low-income housing credit is projected to lose $4.9 billion between 1994 and 1998, its annual cost will reach much higher levels in the years that follow because more and more vintages of housing will be receiving this multiyear credit simultaneously.

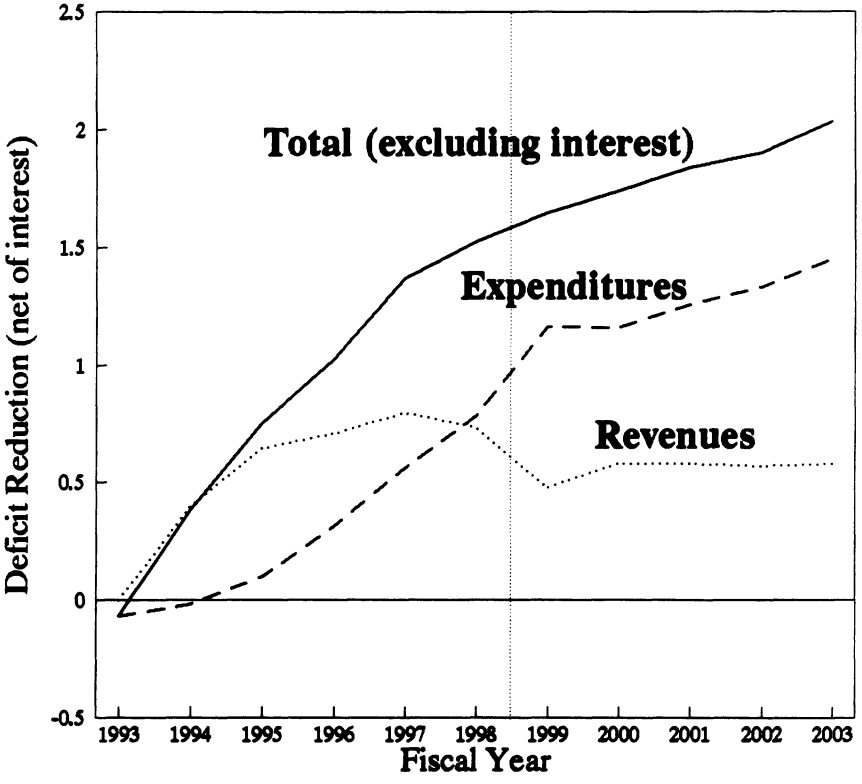
How much impact do these and other such provisions have on future deficits? As discussed earlier, official forecasts of the impact of OBRA 1993 in fiscal years beyond 1998 do not exist. However, an estimate can be made using the overall, "unofficial" 10-year budget forecasts that CBO recently has begun publishing. While CBO does not explicitly identify how much of the revisions in these forecasts over time are attributable to economic, technical, and policy changes, a rough division can be made. The Appendix describes the method used. The resulting estimates of the policy impact of OBRA 1993 for fiscal years 1999–2003, expressed as a share of GDP, are shown in Figure 6, along with CBO's official estimates for the period 1994–1998.[20]

18. There were two factors that led to this result. First, the provisions could be applied up to two years retroactively at the discretion of the taxpayer. As a result, firms whose past acquisitions of intangible assets would benefit from the new provisions were induced to settle court cases and pay the now lower taxes due on these past transactions, thereby speeding up tax payments but lowering them in present value. Second, by shifting from a system under which some intangible assets (i.e., goodwill) could not be amortized at all and others were amortized over short lifetimes to one under which most intangibles were written off over 15 years, the legislation raised more revenue in the short run than the long run. See Gravelle (1993) for further discussion.
19. The small immediate revenue loss estimated results from the assumption that some gains that otherwise would have been realized will be deferred in order to receive the tax cut.
20. The lack of smoothness in the projected revenue and expenditure patterns in 1999 presumably is attributable to the roughness of the projection technique being used.

In Figure 6, the revenue increase attributable to OBRA 1993 clearly falls after 1998. The magnitude of this drop amounts to about $15–20 billion per year in 1994 dollars, which is plausible given the magnitude of the various speedup provisions reviewed earlier and the crudeness of the calculation. However, there is no such drop on the spending side, where, remarkably, the magnitude of the projected deficit reduction continues to grow, not simply in absolute terms but as a share of GDP —from 1.53% of GDP in fiscal year 1998 to 2.04% in 2003. A large part of this comes from a projected slowing of Medicare growth after 1998.

Are these spending forecasts plausible? In addition to the slower growth of Medicare, they include the prediction (carried over from before OBRA) that discretionary spending will continue to fall after 1998 as a share of GDP, from 6.9% to 6.3%—a net reduction of 2.5% of

Figure 6 DEFICIT REDUCTION, RELATIVE TO GDP (OBRA 1993)



Source: CBO and author's calculations.

GDP over the 10-year period beginning in fiscal year 1993 and a drop of 4.2% of GDP from fiscal year 1985. Whether such continued reductions are feasible remains to be seen. However, it is clear that they cannot continue forever, even if the projections through 2003 prove to be accurate.

5. *The Sustainability of Current Fiscal Policy*

Despite the persistence of deficits in recent years, many observers find reasons for optimism about fiscal policy's long-run trajectory. After all, the federal deficit, which exceeded 5% of GDP for each year of the period 1983–1986 and neared this level again in the early 1990s, is projected to fall to 2.2% of GDP by 1998. The deficit for 2003, which before the passage of OBRA was projected to rise to 6.9% of GDP, is now forecast to rise only to 3.1%. Moreover, the primary deficit (the deficit excluding net interest paid), a key measure for empirical tests of sustainability, is now (in fiscal year 1994) only .4% of GDP and is projected to pass into surplus in fiscal year 1995 and stay there through 2003.

However, longer-run projections do not support optimistic conclusions based on such short-run measures. There are two basic reasons for this. One is the continuing rapid growth of government medical care expenditures. The other is the shift of the social security system from its recent cash flow surpluses to significant cash flow deficits. Each of these changes illustrates the difficulty of evaluating sustainability based on the behavior of current or past deficits, as empirical tests typically have tried to do.

5.1 SUSTAINABILITY AND THE INTERTEMPORAL BUDGET CONSTRAINT

Most discussion of the sustainability of fiscal policy begins with the presentation of the government's intertemporal budget constraint,

$$B_t + \sum_{s=t}^{\infty} (1 + r)^{t-s-1} DP_s = 0, \tag{8}$$

where B_t is the debt outstanding at the beginning of year t, DP_t is the primary deficit at the end of year t, and r is the discount rate. This constraint is derived simply by applying the annual budget constraint relating B_t and B_{t+1} forward successively and then imposing the terminal condition, $\lim_{T \to \infty} (1 + r)^{(t-T)} B_T = 0$.

A policy that does not satisfy this terminal condition is not sustainable, for it implies that the debt will explode at a rate faster than r. Hence, one strategy of testing for sustainability, put simply, has been to see whether the behavior of B_t over time has been consistent with the terminal condition being met—basically whether the national debt, given its past time series properties, is predicted to grow faster than the appropriate discount rate (see, e.g., Hamilton and Flavin 1986; Wilcox 1989). An intrinsic problem with such tests, however, is their reliance on past behavior of the debt as a predictor of the future. This is a particular problem now, because demographic shifts alter the level and growth rate of entitlement spending.

Moreover, these tests are very susceptible to the changes in the timing of deficits so easily accomplished by policymakers in the past. The underlying hypothesis being tested relates to the sum of the initial stock of debt and the present value of future primary deficits—the left-hand side of Equation (8). But, without changing the value of this sum, it is very easy to change B_t and each annual primary deficit and, hence, the short-run behavior of both the debt and the deficit.

The problem here is much more serious than needing to make corrections for "budget gimmicks" that distort the "true" pattern of deficits. As discussed in Section 3, there are many "legitimate" policy changes that have precisely the same time pattern of deficit effects. There really is no true pattern of deficits, only what particular policies and conventions define.

For example, replacing the social security system with an actuarially fair public pension system investing in government debt plus an old-age transfer program to the elderly (to replicate the net transfers implicit in the current social security system) would have no effect on the sum of the national debt plus the present value of future primary deficits—indeed, it would have no real effects at all—but it would raise the national debt immediately by the stock of outstanding unfunded liabilities of the social security system, and offset the surpluses presently being recorded with even larger accumulating liabilities to the working population. Hence, our conclusions, not only about the level of deficits but also about their trajectory, would be strongly affected.

In short, while the intertemporal budget constraint is well defined, the level of any year's debt or deficit is not (Kotlikoff, 1986). There are many examples from actual and proposed legislation of policies that are essentially equivalent to one another, except for their consequences for the timing of measured deficits.[21] The only solution is to measure the

21. See Auerbach and Kotlikoff (1987) and Auerbach, Gokhale, and Kotlikoff (1991).

entire left-hand side of Equation (8)—to look at projected fiscal policy into the very distant future.[22]

5.2 LONG-RUN FISCAL PROJECTIONS

To evaluate the sustainability of fiscal policy, I form projections of primary federal deficits after 2004, the last fiscal year for which CBO estimates exist. To highlight the importance of entitlement spending, I assume—probably optimistically, given the low level of discretionary spending relative to GDP forecast for 2004—that all noninterest spending other than Medicare, Medicaid, and OASDI (Social Security) remain constant at their projected 2004 shares of GDP, and that all revenues except OASDI payroll taxes do so as well. Hence, I assume primary deficits as a share of GDP grow after 2004 exactly to the extent that Medicare plus Medicaid and OASDI benefits less payroll taxes do so.

For social security benefits, I use the Social Security Trustees' 1993 middle ("Alternative II") projections, which extend through the year 2070.[23] For federal Medicare and Medicaid spending,[24] I use the middle projections for real spending through the year 2030 made by the Health Care Financing Administration (HCFA) in 1991, the most recent such projections publicly available.[25] Between 2030 and 2070, I assume that Medicaid stays constant as a share of GDP and that Medicare grows at the same rate as OASDI benefits. This assumption basically means that post-2030 growth in federal medical costs comes from demographic shifts—the growing share of elderly in the population—rather than changes in the relative price of medical care. After 2070, I assume that OASDI, Medicare, and Medicaid all grow at the same rate as GDP.

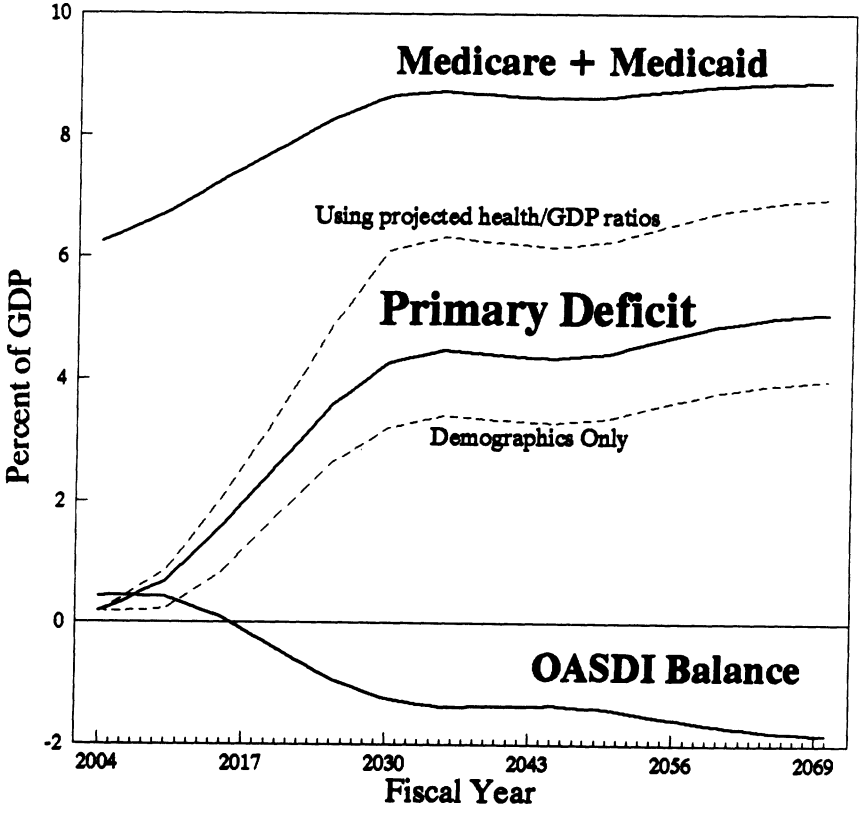
These projections, along with those resulting for the primary deficit, are shown in Figure 7. The Social Security system's current cash flow surpluses are projected to turn to deficits by 2017, which continue growing in magnitude thereafter. The swing increases the primary

22. Even this statement is true only under the assumption, which seems reasonable, that satisfaction of the terminal condition will not be influenced by changes in budget accounting conventions.
23. These projections give taxes (income), benefits (outgo) and the balance between taxes and benefits as a share of GDP every five years. I interpolate to obtain values for the years in between.
24. Medicaid spending financed by state governments is excluded from the calculations.
25. These are the same projections used in the "Generational Accounting" calculations of the federal budget during the past three fiscal years. See, e.g., OMB (1994). Because the HCFA projections for 2004, primarily for Medicaid, differ from those currently offered by CBO, I benchmark the 2004 numbers to the CBO projections and adjust all subsequent years' HCFA projections by the same fraction of real GDP as the 2004 adjustments represent. The projections for real GDP are based on CBO's assumed growth rate for the period 1998–2003 of 2.3% per year.

deficit by 1.7% of GDP by 2030 and 2.3% by 2070. At the same time, federal spending on Medicare and Medicaid is predicted to continue to grow faster than GDP through 2030, due to growth in both the real cost of health care and the ratio of beneficiaries to the total population. This growth in medical care spending increases the primary deficit by 2.3% of GDP between 2004 and 2030. After 2030, demographic shifts alone add another .2% of GDP to the primary deficit.

Together, these two factors are projected to increase the primary deficit steadily over the period from .2% of GDP in 2004 to 4.2% of GDP in 2030 and 5.0% by 2070. Indeed, the prospects may be even worse. These calculations incorporate projections for the growth of real health care spending between 2004 and 2030 that were based on a lower

Figure 7 COMPONENTS OF PRIMARY DEFICITS (RELATIVE TO GDP)



Source: See text.

assumed rate of GDP growth than the 2.3% assumed here. In a sense, I am assuming that faster GDP growth will not lead to faster growth in Medicare and Medicaid. If, instead, I incorporate the original projections of Medicare and Medicaid spending, *relative to GDP*, through 2030, the result will be faster growth in health care entitlements and primary deficits that are nearly 2% of GDP higher by 2030, as indicated by the upper dashed line in Figure 7.

Even if the relative price of medical care were completely stabilized in 2004, rather than in 2030[26] (as represented by the lower dashed line in Fig. 7), the primary deficit would still grow to 3.2% of GDP by 2030 and 3.9% by 2070.

5.3 ADDRESSING THE LONG-RUN IMBALANCE

With primary deficits projected to grow continually over the next several decades, fiscal policy is not on a sustainable path. These large projected primary deficits, in combination with the initial stock of outstanding debt, would cause the full deficit, including interest, to grow explosively relative to GDP. For example, under the base case projections in Figure 7 and a real interest rate exceeding the real GDP growth rate by one percentage point, the debt-GDP ratio would grow from .55 in 2004 to 1.31 at the end of 2030 (the beginning of 2031) and 4.1 at the end of 2070. For an inflation rate of 2.5%, this would translate into full nominal deficits rising from 3.3% of GDP in 2004 to 11.5% of GDP in 2030 and 28.5% of GDP in 2070!

One way of interpreting an imbalance of this magnitude is in terms of the immediate, permanent reduction in the primary deficit (brought about through tax increases and/or spending reductions) that, if projections prove accurate, would be needed to bring the debt–GDP ratio at some date T in the future down to its level at some initial date t, in this case 2004. This needed reduction in the primary deficit, as a share of GDP, may be shown to equal

$$\Delta = (r - g)\left[b_t + \left(\frac{1}{1+r}\right)\frac{\sum_{s=t}^{T} d_s\left(\frac{1+r}{1+g}\right)^{T-s}}{\left(\frac{1+r}{1+g}\right)^{T-t} - 1}\right], \tag{9}$$

26. For this simulation, Medicaid is held constant as a share of GDP at its projected 2004 level, and Medicare is assumed to grow at the same rate as OASDI benefits starting in 2004, rather than 2030.

where g is the growth rate of GDP and d_s is the primary deficit–GDP ratio in year s.

As discussed in Blanchard et al. (1990), a terminal date of $T = \infty$ corresponds to satisfying the intertemporal budget constraint (8). Given the projected growth of primary deficits between 2004 and 2070, hitting the target debt–GDP ratio at some intermediate date will require a lower tax increase or spending cut but still leave the job partially unfinished.

Table 3 presents the permanent reductions in the primary deficits indicated by this procedure, for terminal dates of 2031, 2071, and ∞, for different assumptions about medical care spending and different government discount rates. As a comparison of the upper and lower panels of Table 3 indicates, a lower interest rate assumption (with the interest rate exceeding the growth rate by 1% rather than 2%) reduces the needed deficit reduction for the shortest horizon but increases it over the longest horizon. This is because, in the short run, the lower cost of servicing the existing debt dominates the calculation (see Equation [9]). Over the longer run, the future primary deficits dominate the calculation, and, with a lower interest rate, those far in the future—which are larger as a share of GDP—matter relatively more.

Even under the more optimistic assumptions about the growth of Medicare and Medicaid, an immediate, permanent reduction of nearly 4

Table 3 PRIMARY DEFICIT REDUCTIONS NEEDED TO ACHIEVE 2004 DEBT-GDP RATIO (PERCENT OF GDP)

	Terminal year (%)		
	2031	2071	∞
Interest rate			
Growth rate + 2%:			
Base case	2.97	4.16	4.72
Demographics only	2.34	3.33	3.81
Health care GDP-adjusted	3.60	5.32	6.07
Growth rate + 1%:			
Base case	2.52	3.88	4.80
Demographics only	1.86	3.01	3.81
Health care GDP-adjusted	3.19	5.16	6.39

Note: Simulations labeled "base case" incorporate HCFA's 1991 projections of the levels of real health care entitlement spending from 2004 to 2030; those labeled "demographics only" exclude those increases in Medicare estimated to result from increases in the relative price of health care; those labeled "health care GDP-adjusted" base health care projections from 2004 to 2030 on HCFA's original projections of health care entitlement spending as a share of GDP. These simulations show faster health care spending growth than the base case because the original HCFA projections were based on lower real GDP growth rates than the 2.3% used in the base case simulations.

percentage points in the primary deficit–GDP ratio is needed to satisfy the intertemporal budget constraint (8) (i.e., for $T = \infty$). The magnitude of this change can be understood by noting that the federal individual income tax now raises just over 8% of GDP. Hence, individual income taxes would need to be raised permanently by nearly 50%. Alternatively, OASDI benefits would have to be cut permanently by about 60%.

5.4 WHAT POLICY CHANGES ARE NEEDED?

A natural reaction by policymakers is to dismiss pessimistic calculations based on long-term forecasts, because the forecasts involve so much uncertainty. Indeed, the bounds on long-run projections are wide. For example, the Social Security Trustees' more optimistic ("Alternative I") projections show the OASDI system in positive balance until around 2028 and back in positive balance again about 10 years later. Under such projections, even with no change in the medical projections through 2030 or any of the other assumptions made earlier, the fiscal imbalance as measured by Δ would be reduced by 1.1% to 1.6% of GDP. On the other hand, under the more pessimistic ("Alternative III") Social Security projections, Δ would rise by 1.6% to 2.3% of GDP. But the uncertainty inherent in long-run projections doesn't imply that no policy actions are necessary until the uncertainty is resolved, merely that further actions will be inevitable.

The calculations for $T = \infty$ made at any particular date t indicate the magnitude of the permanent reduction in the primary deficit–GDP ratio, say Δ_t, that is needed for currently projected fiscal policy to satisfy the government's intertemporal budget constraint (8). Such a change, maintained over time, will actually satisfy Equation (8) if projections at date t prove to be accurate. In general, though, a trajectory based on Δ_t will not satisfy Equation (8) in year $t + 1$, once forecasts are revised. If one assumes that forecast revisions cannot be predicted, the process $\Delta_t, \Delta_{t+1}, \Delta_{t+2}, \ldots$ will thus equal a random walk. But the fact that Δ_t will change does not alter the fact that it represents an optimal forecast at date t. At best (given recent experience), uncertainty means that projected deficits are as likely to rise as to fall.

It is a separate issue how the fiscal imbalance as estimated at any date should be addressed over time. If tax rate changes are used to close the estimated fiscal gap, the simplest tax-smoothing arguments derived from single-agent models (e.g., Barro, 1979) might be used to support a policy of implementing each period's Δ immediately and letting the tax rate follow a random walk.

In the real world, a variety of complications too numerous to mention make the solution more difficult. It may not be feasible or even desirable

to induce large, frequent changes in tax rates. In the short run, other macroeconomic concerns may dominate decisions. Moreover, with population heterogeneity within and across generations, distributional concerns must be added to arguments based on minimizing the deadweight loss of taxation. Once this is done, annual patterns of deficit reduction will not tell us enough about the underlying policy being adopted, for we must know which generations, and which individuals within generations, are bearing each year's tax increases or spending reductions.[27] Here, the recently developed technique of generational accounting (Auerbach et al., 1991) is more appropriate, at least for evaluating changes in fiscal burdens across generations. Put simply, generational accounting considers the impact on different generations of alternative ways of satisfying the government's intertemporal budget constraint (8).

Recent calculations using generational accounting (OMB, 1994, Table 3.3) are very sobering. They suggest that, should the tax burden of meeting the intertemporal budget constraint fall entirely on future generations (representing, perhaps, an unrealistic delay given the magnitude of the imbalance), these generations will face tax burdens (net of transfers) that are more than double what current policy would indicate —an increase from 36% to 82% of the present value of lifetime labor income.[28]

6. *Conclusions*

The U.S. federal government has appeared to reduce deficits mightily over the past decade without actually doing so. Deficit forecasts during this period have proved very inaccurate and overly optimistic. There is no simple economic explanation for such errors, and, while political pressures may have played a role, the exact mechanism is not yet clear. The budget rules of the period may have hastened legislators to act but were poorly designed for the purpose of restoring fiscal balance. The Gramm–Rudman–Hollings Act and, particularly the 1990 Budget Enforcement Act, impounded forecasting errors in their rules, and both permitted the postponement of serious action.

27. Such disaggregate analysis is also important for understanding the macroeconomic effects of deficits, for the wealth effects of different policies on household consumption will vary across members of particular generations and across generations as well. One recent attempt to consider the macroeconomic effects of the large long-term deficits looming in the next century may be found in U.S. General Accounting Office (1992).

28. These calculations include state and local taxes and transfer payments as well as those at the federal level.

Even with the passage of the 1993 Omnibus Budget Reconciliation Act, the United States still faces a major fiscal imbalance, attributable to growing health care costs and changing population demographics. This imbalance, though enormous, is not easily identified using traditional methods of evaluating fiscal sustainability, because it is not apparent in the projections of current or near-term deficits. Even if the growth of health care costs were stabilized within the next decade, demographics alone would still produce large increases in the share of GDP accounted for by Social Security and Medicare. Yet, the recent CBO estimates of the impact of the Clinton health plan (CBO, 1994b), which project increased near-term deficits, suggest that health care reform may actually worsen the looming fiscal imbalances reported here.

Appendix—Estimating the Effects of OBRA 1993 for the Period 1998–2003

This appendix describes how the changes in deficits forecast by CBO for the period 1999–2003 from just before to just after the passage of OBRA 1993 are divided into economic, technical, and policy revisions. All calculations apply to the primary deficit, excluding interest.

I begin with the changes in the deficits forecast for fiscal years 1999–2003 in early 1993 (CBO, 1993a), before OBRA 1993, and late 1993 (CBO, 1993b), after OBRA. I assume that economic changes are captured entirely by changes in the forecast of nominal GDP. Specifically, I measure as changes due to economic factors those changes in revenues and noninterest spending that would have occurred had these items been held constant at their post-OBRA shares of nominal GDP. Technical changes are more difficult to guess, but, fortunately, these were quite small for the reported years 1993–1998 during this interval. Given this, I simply assume that the technical revisions over this period to estimated 1998 revenues and expenditures also apply to each of the years 1999 through 2003, as well.

Subtraction of these estimated economic and technical changes in revenues and spending yields the estimated policy effects presented in Figure 6.

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Comment

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Alan Auerbach has given us a sobering and useful paper on the outlook for the U.S. fiscal deficit. Based on a careful analysis of the past relation between budget estimates and budget outcomes, he warns us that systematic errors in budget forecasting are likely to make the medium-

term budget deficits much larger than current official projections. His explicit analysis of the Social Security and Medicare programs implies that the longer-term deficits will be an even greater problem.

The Auerbach analysis runs counter to the conventional wisdom that now prevails in both Washington and the financial community. The Congressional Budget Office (CBO), in its most recent analysis of the budget outlook (CBO, 1994), projects that the deficit will fall to 2.4% of GDP in fiscal year 1995 and will still be at that level at the end of the decade. Many private analysts in the financial community are even more optimistic. Even my old fellow warrior in the fight against budget deficits, David Stockman, has publicly predicted that the deficit will fall to about 1.5% of GDP by end of the decade (Wessel, 1994).

I nevertheless find Auerbach's analysis convincing. Without new policies, I believe that the actual deficits later in the decade will exceed the projections of the CBO and others.

One reason for this apparent difference of opinion is that those who are optimistic about future deficit levels are assuming, explicitly or implicitly, that new policies will be adopted to achieve the lower deficit levels. The CBO explicitly assumes "compliance with the discretionary spending caps," an assumption that I believe is unlikely without new legislative actions. Stockman explains that his optimism is based on the assumption that the increase in health care spending will decline because Congress will enact new limits on future health spending by the government. Although such favorable legislation may occur, they are far from a certainty. Indeed, senior administration officials have said that they believe that they have done enough to reduce the future deficits and that now any new initiatives that result in lower projected outlays will be used to finance new spending programs, a strategy that the administration has labeled "cut and spend."

There is a danger that the projections of declining deficits will induce a complacency about budget policy. Although budget analysts may understand that more must be done to achieve their optimistic projections, the public and the political process will assume the opposite. Auerbach's analysis, therefore, is a healthy reminder that the problem should not be ignored.

In my comments I will focus on the medium-term fiscal outlook and will discuss some additional reasons why the budget deficit is likely to be substantially higher than projected during the final years of this decade unless new measures are taken. Thus, these remarks are in part a supplement to what Auerbach has told us about the previous biases in deficit projections and in part an indication of additional budget problems that are likely to develop in the next several years.

1. *Economic Assumptions and the Budget Outlook*

The CBO projects that the deficit will decline from 4.9% of GDP in 1992 to 2.3% of GDP five years later. The majority of this sharp decline is due, however, to a projection that the economic recovery will take the unemployment rate from 7.4% to 5.8% (using the unemployment rate definitions that prevailed before 1994). The standardized employment deficit only falls by 1.2% of GDP. If the unemployment rate cannot be sustained at a low 5.8%, the budget deficit will be higher.

That is a doubly optimistic assumption. An unemployment rate below 6.0% may be unsustainable, resulting in a cumulatively rising rate of inflation. But even if a 5.8% unemployment rate could in principle be sustained without raising inflation, it would be very optimistic to assume that the economy would always operate at this "full employment" level. Even a relatively optimistic benchmark of 6.1% would add about $15 billion to the annual deficit.

A second source of the decline in the deficit is the assumption that the average interest rate on the outstanding government debt will decline. This reflects the CBO's explicit assumption that the interest rate on 10-year Treasury notes will be only 5.8% in 1994 and will only rise to 6.2% in 1997. In fact, however, the 10-year Treasury rate is already 7.0% and the upward sloping yield curve implies that it will rise in the future. The CBO's assumption that the three-month Treasury bill rate will only rise to 4.6% in 1997 is also contrary to market evidence that implies that short-term rates will exceed 7.0% in 1997. The impact of substituting the future interest rates indicated by today's market data for the more optimistic CBO forecasts would add about $30 billion to the 1997 deficit outlook.

In short, more plausible economic assumptions would add about $45 billion to the projected 1997 budget deficit, an increase equal to about 0.6% of GDP. This alone would raise the projected deficit from 2.3% of GDP to 2.9% of GDP.

2. *Overstated Tax Revenue*

A major source of the projected deficit reduction is the additional revenue that is supposed to result from raising tax rates on high-income individuals. The CBO projected that by 1997 the additional revenue from the higher tax rates will be $25 billion[1] (CBO, 1993).

1. Unfortunately, the CBO does not make an independent estimate of the effect of changes in tax rules but simply incorporates the estimates provided by the staff of the Joint Tax Committee.

This estimate is likely to be a great overstatement of the additional tax revenue that will actually be collected. The 1993 tax legislation raised the marginal tax rate from 31% to 38.9% for taxpayers with incomes over $140,000 and from 31% to 42.5% for those with incomes over $250,000. Such large increases in marginal tax rates, combined for most of the affected taxpayers with relatively little increase in the average tax rate, are likely to cause changes in behavior that reduce taxable income and, therefore, that cause the revenue to be substantially less than it would be with no behavioral response. These changes include not only a reduction in labor supply but also changes in the form of compensation, portfolio adjustments, and increased deductions.

Because of the structure of the tax increase, a relatively small behavioral response can eliminate much of the revenue gain that would have occurred in the absence of the behavioral response. Consider, e.g., a taxpayer with taxable income of $180,000, approximately the median level of income among those whose taxes were increased by the 1993 legislation. With no behavioral response, the higher tax rates would raise that taxpayer's liability by $3,305. But if the increase in the marginal tax rate from 31% to 38.9% caused a 5% reduction in taxable income (from $180,000 to $171,000), the Treasury would actually collect $196 less from that taxpayer at the new rates than at the previous lower rates. The official estimates of the increased revenue and resulting deficit reduction fail to make an adequate allowance for these behavioral responses.

I recently completed a very detailed analysis of the response of high-income taxpayers to the 1986 tax rate reductions. That analysis used a panel of individual tax returns provided by the Internal Revenue Service that allows following the taxable income of individuals for several years before and after the tax change (Feldstein, 1993a). The behavioral response estimated in that study implies that the 1993 increases in tax rates for high-income individuals would raise approximately $4.5 billion in 1997 instead of the $25 billion incorporated in the CBO budget deficit projections, implying an annual shortfall of $20 billion.

3. *Implausible Reductions in Spending*

On the spending side of the budget, there are no significant reductions or eliminations of domestic spending programs. Indeed, the 1993 budget includes substantial new spending for a variety of social programs.

The CBO nevertheless projects large overall spending cuts because it assumes very large reductions in defense spending and very large savings through the improved management of existing programs. In projecting these savings, however, the CBO is explicit that it does not necessarily believe that they will occur! The CBO makes very clear that its deficit projections simply assume that the overall limits on discretionary spending that Congress previously enacted will somehow be effective. This may not be a plausible assumption, but the CBO is required to estimate what the existing law implies about the future budget deficit and not to project how it thinks legislation might develop in the future.

The projected cuts in defense spending are the primary source of reduced outlays. The administration projects that real defense outlays in 1997 will be 25% lower than in 1993, an annual saving of $82 billion. This would reduce defense spending to only 3.2% of GDP, the lowest level in more than 50 years. Even the real dollar amount of spending projected for 1997 would be nearly 20% lower than real defense spending in the early 1960s.

One can only wonder whether with all of the turmoil around the world—including NATO activity in the former Yugoslavia, a nuclear threat from North Korea, fighting in the republics of the former Soviet Union, and the ongoing tension with Iraq—such dramatic reductions in defense spending are likely to occur. If real defense outlays are reduced by 15% rather than 25%, the budget deficit in 1997 would be $33 billion higher.

Improvements in management efficiency are an admirable goal of every administration. They are an important part of the Clinton administration's strategy for keeping aggregate spending under the ceilings that the CBO assumes. Of course, such savings might occur. But it would be very optimistic at this time to assume that the very ambitious targets of more than $40 billion a year will be achieved. Even a 50% success rate would be a substantial achievement. But it would leave the 1997 deficit $20 billion larger than the CBO projects.

4. *Technical Errors and Policy Changes*

In his analysis of past deficit projection errors, Alan Auerbach appropriately emphasizes the distinction between technical errors and policy changes. In that terminology, the incorrect assumptions about the future state of the economy and the level of interest rates would be

classified as technical errors. So, too, would the overestimate of tax revenue caused by a failure to reflect behavioral responses adequately. My estimates suggest that these three sources of technical error would add about $65 billion to the budget deficit in 1997, approximately 1% of GDP.

Although that may seem like an implausibly large technical error, it is only about half of the average technical error during the fiscal years 1990 through 1993, the only years for which adequate data are available for making the comparison. Auerbach reports that the technical error averaged $132 billion a year for fiscal years 1990 through 1993, an average of more than 2% of GDP. If recent history is a good guide, the technical errors will be twice as large as the ones that I have identified.

A failure to cut 1997 defense spending by $75 billion and to achieve annual management savings of $40 billion would violate the previously legislated ceilings on discretionary spending. These would be classified as policy changes rather than technical errors. My judgment is that the legislation necessary to accommodate these changes will be enacted, adding perhaps an additional $50 billion to the 1997 deficit.

Other policy changes may also occur that add to the future deficits. The existing law permits spending for "emergencies" outside the discretionary spending limits, and that feature was used in connection with the government's assistance after the California earthquake. Other emergencies will no doubt occur in the future.

Many of the health care proposals would, if enacted, cause actual spending increases that far exceed their officially estimated costs and would also cause substantial revenue losses that are not reflected at all in the cost estimates for those programs (Feldstein, 1993b).

5. *Concluding Thoughts*

The combination of $65 billion a year of technical errors and $50 billion a year of "policy changes" does not seem unduly pessimistic in light of either past experience or the current analysis. A $115 billion addition to the 1997 deficit would represent a smaller forecasting error than the average of the past several years that Auerbach has calculated. But $115 billion a year of additional deficit would raise the total deficit to 3.9% of GDP. The ratio of national debt to GDP would still be rising. Unless there is a rise in private saving, the federal government would be borrowing more than 75% of all private saving, leaving the country with net savings of less than 2% of GDP with which to finance investment in plant and equipment and housing.

It is, of course, possible that different policy changes will cause reductions in spending that are not currently contemplated. Perhaps Alan Auerbach's sobering pessimism about the medium term deficit outlook and his cries of alarm about the impossible financing requirements of our social insurance programs in the longer run will cause politicians to act quickly to reduce future deficits. But this seems unlikely, especially given the administration's "cut and spend" strategy that would use any projected outlay reductions to finance new spending programs. I worry that politicians are optimists by nature and that only the experience of rising budget deficits will cause them to take the steps necessary to reverse the process. If so, things will get worse before they get better.

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Comment

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I have to say that I have decidedly mixed feelings about this paper. I love it as a reader: It is a gripping mystery story. A series of great crimes has been committed over the past 15 years, and the hunt is on for the criminals. I hate it as a discussant. How do you discuss a paper when you agree with every single thing in it? So rather than take the usual role of a discussant (which is to prove that you are smarter than the author), I think it useful to recapitulate what I learned from the paper.

The paper is organized around five questions (and five answers). These are

1. What is the current path of policy? (Disastrous.)
2. What is the likely impact of the Clinton economic program? (Who knows?)
3. Is the fiscal trajectory sustainable? (No.)
4. Why have past attempts at deficit reduction not worked? (Who knows?)
5. How have congressional rules affected policy? (As a great smoke screen.)

The questions are interesting in their own right, but the answers require a coherent intellectual framework. That is, they require us to use economic theory. Let me begin with the sense in which current policy is disastrous. There are two senses in which one can say this: Current and projected policy is unsustainable in the sense of violating the government's budget constraint, or such policy is undesirable. I think the sustainability question is overblown. As long as the market continues to buy government debt, unsustainable policy simply means that the market's expectations of future policy are different from the analysts'. This is not to say that the exercise is without merit since it is worthwhile to ask what alternative policies should be chosen if a particular policy is infeasible. The undesirability or suboptimality relative to some welfare criterion is a much more interesting issue. Here, received economic theory gives us useful guidance on the properties of good fiscal policy over time and across states of nature. For now, I will restrict myself to the implications of models with distorting taxes (as in Barro [1979], Lucas and Stokey [1983], or Chari, Christiano, and Kehoe [1993]). In thinking about how these models can guide us, start with a fundamental premise: We have not abolished war. We confidently expect that sometime in the future, large expenditures on defense will be necessary. Given this premise, models in which governments design policies to smooth tax distortions instruct us that, if state-contingent debt is available, the debt/GDP ratios should not rise in peacetime, and, indeed, they should fall in times of relative prosperity. If such state-contingent debt is not available, debt/GDP ratios should fall in peacetime. All this is, or should be, common sense. The disturbing aspect of the fiscal policy numbers that Auerbach reports is not that the debt/GDP ratio rose in the 1980s (after all, we were in the midst of a cold war); it is that it continued to rise in the early 1990s and, toward the end of the decade, is projected to rise fairly sharply under current policy. This is

clearly undesirable. Simple considerations of optimal fiscal policy tell us that policy should change and that planning for such change should begin now.

It is here that Auerbach's contribution is the greatest. For, in thinking about proposed changes, it is worth asking why large past changes have had such disappointing results. Auerbach documents the sense in which the CBO has produced forecasts of budget deficits that have proved to be consistently low. Essentially, the CBO's model for forecasting the deficit is given by two equations:

$$\mathrm{DEF}_t = \beta_0 + \beta_1(\mathrm{MACRO})_t + \beta_2(\mathrm{POLICY})_t + \epsilon_t \tag{1}$$

$$(\mathrm{MACRO})_t = \gamma_0 + \gamma_1(\mathrm{POLICY})_t + \eta_t, \tag{2}$$

where DEF denotes the deficit, MACRO is a vector of current and lagged macroeconomic variables, POLICY is a vector of current and lagged policy variables, and ϵ and η are residuals. The interesting observation from Auerbach's paper is that, even after the actual macroeconomic and policy variables that were realized are substituted into Equation (1), the residual ϵ_t was consistently large and positive. Auerbach does not tell us why there might be a bias, but let me try. Think of congressional committees and other decision makers facing a constraint on their policies: that future deficits as projected by the CBO must meet certain targets. (This constraint was either explicit or implicit during most of the last 15 years.) Assume also that the policies most preferred by Congress if the deficit is not a constraint imply large deficits over, say, a five-year horizon under the "true" model of the economy. Now think of Congress as offering the CBO several versions of policies. Say policy A implies a larger deficit than policy B under the "true" model but the same deficits under the CBO's model (due to specification error, e.g.). Clearly, Congress will choose A over B, and the CBO's forecasts will seem to be biased. Note that this argument does not require that Congress know the "true" model or that the CBO's model be systematically biased. Rather, the result comes from a reasoning similar to that in the "winner's curse" in auctions.

One implication of this argument is that Congress should recognize this sort of bias and impose stricter limits on deficit projections from the CBO's model. Imposing such stricter future limits, though, is not particularly helpful unless Congress is willing to abide by them and unwilling to engage in the kind of game playing that Auerbach documents so well. All this leaves me, as it seems to have left Auerbach, in a state of

despair. The more interesting remedy is to understand how the institutional rules of policymaking in Congress have affected outcomes. For example, congressional subcommittees have proliferated over the last 30 years. The power of the congressional leadership and the president have clearly declined relative to that of the rank and file in Congress. My guess is that when we understand the political economy of Congress we will come up with better reforms than the alphabet soup of GRH, BEA, OBRA, et al. It may seem like a cop-out to call for more research, but what else are economic theorists to do when confronted with the evidence Auerbach has so carefully gathered?

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Discussion

Olivier Blanchard remarked that the results of the paper would probably look much different for the pre-1980 period, when the deficits were much smaller and did not increase. He asked what had happened during the 1980s that would explain the size and persistence of the deficits. Blanchard suggested that one explanation might be the indexing of the tax brackets to inflation. Feldstein agreed with Blanchard, noting that the high inflation of the 1970s pushed taxpayers into higher brackets and led to higher revenues than expected. This source of revenue disappeared with the indexation of the tax system. Auerbach and Robert Gordon said that the regime shift came with Reagan and the supply-siders in 1981, who exploited the intertemporal budget constraint. They added that returning to the old regime where spending was paid for by taxes is likely to be difficult. V. V. Chari agreed that Reagan was a proximate cause but speculated that another explanation lay in congressional reforms in the mid-1970s.

James Tobin pointed out that deficit reduction may not always increase national savings and investment but could go into higher unemployment or else decrease some public investment, which might be as useful as the private investment that is potentially crowded out.

Tobin also noted that despite the high proportion of national net savings taken up by the budget deficit and the resulting low levels of net investment, productivity growth has been surprisingly high. One possible explanation is that it is *gross* investment that has improved productivity by introducing more recent vintages of capital. Robert Gordon agreed that productivity growth was surprisingly high, and he suggested that perhaps the economy is getting more productivity than before out of each dollar of investment and, therefore, doesn't need as much investment. He noted that this appears to be the case with foreign investment, where the United States is a net debtor, but has a positive net foreign investment position. Gordon also cited work by Greg Mankiw that shows that less housing investment will be needed in the future due to lower household formation.

In response, Auerbach said that an additional concern about high deficits was their intergenerational burden. Even in an open-economy setting where crowding out is less of an issue, the high debt will impose higher tax burdens or lower benefits for future generations. This is unlikely to represent an optimal fiscal policy, according to Auerbach, because of the efficiency losses from the higher future marginal tax rates or because of the intergenerational redistribution effects.

David Wilcox asked what the path of the deficit would have been without the budget rules. Presumably, some projects were dropped or cut back as a result of the rules. Auerbach agreed that the rules had some real effects, but he noted that there was also an erosion of the accounting measure of the deficit, through the strategic timing of tax collections, e.g. In addition, Auerbach pointed out that the Gramm–Rudman and the 1990 Budget Accord were both accompanied by contemporaneous deficit reduction packages, which presumably should not be attributed to the rules.

Laurence Meyer thought that it was inappropriate to group together the 1990 budget accord and Gramm–Rudman. In his view, the 1990 budget accord was an improvement in fiscal discipline, while Gramm–Rudman was unworkable because its targets were unrealistic and did not take into account cyclical movements in the deficit. Meyer also suggested that more attention could have been focused on whether the failure to meet the 1990 budget accord targets was due to an endogenous labor supply or investment response. He noted that this is a crucial question in predicting the effect of the most recent tax act.

Several people took issue with the pessimistic tone of the paper. Meyer said that the deficit was currently on a downward path and pointed out that the CBO forecasts of the deficit were generally higher than most private forecasts. He acknowledged that more adjustment

would be needed to lower the deficit after 1997–1998, but he thought that this was well understood in Washington. Nouiel Roubini thought that the adjustments required to lower the deficits after 1997–1998 were not so severe. He noted that under some scenarios discussed in the paper, it looked as though an adjustment of about 2% of GDP would be enough to stabilize the debt/GDP ratio forever. Auerbach responded by pointing out that the difference between the long-run and short-run scenarios illustrates the point that an annual or even five-year measure of the deficit was an inappropriate indicator of fiscal policy. The problem, he suggested, was more complicated than simply correcting for accounting policies that alter the timing of deficits, such as a sale of government assets. As discussed in the paper, there are many "legitimate" tax policies that have exactly the same timing effect as an asset sale.