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Alan J. Auerbach

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ABSTRACT

This paper begins with a review of the current fiscal situation and the causes of its recent deterioration. As a guide to possible policy actions, it provides extensive estimates of past responses of revenues and expenditures at the federal and state and local level. Estimates at the federal level suggest that policy is responsive to both economic and fiscal conditions, and that this responsiveness may have grown over time. For states, economic conditions are less important, but responses to budget gaps are swifter. Equations for federal revenues and expenditures predict tax cuts and expenditure increases given current conditions, but of a considerably smaller magnitude than those initially proposed by President Bush. However, current circumstances are difficult to evaluate because of the enormous implicit entitlement liabilities that were much less significant in the past. This difficulty is but one of the problems facing policy prediction and evaluation.

Alan J. Auerbach
Department of Economics
University of California
549 Evans Hall
Berkeley, CA 94720-3880
and NBER
auerbach@econ.berkeley.edu

Introduction

Recent events expose some of the difficulties of making timely and rational fiscal policy choices. The recession that began in early 2001 has likely been over for several quarters, but its end has not yet been dated by the NBER and economic growth has been tepid. The ideal time for countercyclical fiscal measures may have passed, but politicians remain under pressure to act.

The current economic climate, though, has many unusual attributes that may provide additional support for expansionary fiscal actions. First, despite several quarters of positive economic growth, the unemployment rate remains relatively high, in part because of the unusually rapid productivity growth during the recent recession period. Second, the vigorous use of monetary policy has left the Federal Funds rate at 1.25 percent, its lowest value in over four decades. With this primary tool of monetary policy so close to its lower bound of zero, there is concern that monetary policy will be helpless should the economy relapse. Third, the recent war in Iraq has contributed to an atmosphere of economic uncertainty. Finally, state governments face large budget deficits that, by law and practice, will require substantial tax increases and expenditure cuts in the coming months that may weaken economic activity.

But, aside from the usual problems of timing and efficacy, potential fiscal expansion in the current environment also faces the additional hurdle that it would occur during a period of fiscal stress at the federal level. The federal budget surpluses of recent years have evaporated and a major crisis of unfunded entitlement programs lies just beyond the moderate deficits projected for the near term. This significant fiscal imbalance lends an air of recklessness to expansionary policies, and also could make some policies less effective, if they are perceived as unsustainable. Thus, the long-term fiscal imbalance may have implications for attempts at stabilization policy.

What, then, is to be done? This paper provides more detail about current circumstances and considers the determinants of past policy actions. While we can gain a pretty good sense of how fiscal policy has reacted to the economy, it is more difficult to determine how policy in turn has affected the economy. Indeed, given the extent to which current circumstances differ from those in the past, there is reason to be cautious about the evidence we have about the economic effects of policy, at least as a guide for future policy decisions.

The Fiscal Climate

The NBER dates the most recent recession as beginning in March, 2001, and current BEA statistics indicate that real GDP fell for each of the first three quarters of calendar-year 2001, a period ending just after the September 11 attacks. Growth has been positive for six consecutive quarters since then, but recent growth has been weak and the unemployment rate remains near 6 percent. Fiscal policy has been active during this period, with President Bush's 2001 tax cut, a smaller round of tax cuts in the spring of 2002, and large increases in spending on defense and homeland security. The combination of economic weakness, tax cuts and increased spending has sharply altered the short-term fiscal outlook.

The high-water mark for projected surpluses was January 2001 when, after a long period of successive upward revisions, the Congressional Budget Office (CBO 2001) projected a budget surplus of $359 billion for the current fiscal year, 2003, with surpluses rising to $859 billion in fiscal year 2011. At the time, some saw a novel fiscal challenge looming with the possible disappearance of marketable government debt, but this "problem" now commands less attention. With each successive revision since January 2001, the CBO has reduced its levels of projected surpluses, with the result being that, as of March 2003, the current fiscal year's deficit is projected as $246 billion and the 2011 surplus is now projected as $231 billion.

Where did the money go? Figure 1 provides a breakdown, based on the cumulative CBO changes, into reductions in projected revenues, increases in projected expenditures, and the added debt service associated with these contributions to the national debt. As can be seen, the lion's share of the reduction in the primary surplus is attributable to reductions in revenue, rather than increases in spending. In fiscal year 2003, for example, revenue projections have fallen by $451 billion, while expenditure projections (excluding debt service) have risen by $112 billion. But only a portion of this revenue increase is directly attributable to tax legislation. The rest is due to changes in the economy.

Figure 2 provides a different breakdown, showing changes in revenue and expenditures since 2001 that are directly attributed by CBO to legislation as well as changes in the primary surplus due to "economic" (cyclical) and "technical" (non-cyclical) factors. Of the $451 billion drop in projected 2003 revenues, only $126 billion is directly attributed to legislation; the rest comes from technical and economic factors. The relative importance of the technical and economic components changes over the projection period. Cyclical factors die out over time but technical adjustments remain. These adjustments, mainly on the revenue side, reflect the decline in personal income tax collections since the boom years of the late 1990s, collections that were fueled by options, capital gains and other income at the very high end of the income distribution. As a share of GDP, individual income tax receipts rose sharply from around 8 percent in the early 1990s to 10.3 percent in fiscal year 2000, and CBO projections at the end of the decade forecast that this high share would be largely maintained throughout the budget period.[1]

Given the relatively small role that macroeconomic factors appear to have played in the change in projections, it is unsurprising that the decline in actual budget surpluses in recent years largely survives cyclical adjustment. As a share of GDP, the federal budget surplus fell from 2.4

percent in fiscal year 2000 to -1.5 percent in fiscal year 2002, and two-thirds of this swing remains after cyclical adjustment.[2]

Thus, the current ten-year budget outlook at the federal level is far less attractive than it was just over two years ago. Moreover, the situation is considerably more precarious than these projections suggest. The ten-year budget projections by CBO reflect an existing tax law under which a number of tax benefits, including the entire 2001 tax cut, expire during the budget period, and the fraction of taxpayers subject to the Alternative Minimum Tax (AMT) will grow steadily. The CBO projections also assume that discretionary spending will remain constant in real terms, contrary to recent experience. If, instead, the expiring tax provisions are preserved, the AMT is adjusted so that the share of taxpayers affected by it remains constant, and discretionary spending remains constant as a share of GDP, then the projected budget surplus for fiscal year 2011 drops by $551 billion, to a deficit larger than the surplus currently projected.[3]

Noting that, even with such adjustments, the projected deficits are smaller as a share of GDP than those of the late 1980s and early 1990s, some have argued that deficits of this size should not play a major role in current policy decisions. But an important difference from the earlier period of large deficits is that the baby boom cohort will retire soon, and the need is much greater to meet the largely unfunded liabilities associated with Medicare and Social Security

The unified federal budget surplus includes trust fund accumulations that have become substantial in recent years. In fiscal year 2002, for example, the Social Security trust fund surplus was $159 billion, a number that by its inclusion effectively halved the size of the reported deficit. The growth in such trust fund surpluses in recent years reflects the coming need to finance entitlement benefits, and has led to debates about the need for a “lock box” and recriminations about “raids” on the trust fund balances by the rest of government.

But excluding trust fund surpluses for Social Security and other programs from the estimated surplus provides only the small first step of acknowledging that these aren't "real" surpluses, for it still ignores the much larger implicit liabilities that are accumulating. In a section entitled "The Real Fiscal Danger," the President's recent *Budget for Fiscal Year 2004* provides estimates of the unfunded liabilities of these two programs that swamp the publicly held national debt of $3.6 trillion, indicating a total liability of $21.5 trillion which, as discussed below, still understates the magnitude of the problem.[4] In the face of this enormous fiscal obstacle highlighted in his own budget presentation, the President has offered a new round of substantial tax cuts, aimed primarily at the long term, and an increase in Medicare benefits. Clearly, there must be some other motives than a wish to stimulate the economy or to close the long-term fiscal gap. Two that have been mentioned are reform of the tax system and control of government spending that may grow more slowly in response to larger deficits.

One last important aspect of the current fiscal situation is the position of state and local governments, which face unprecedented budget deficits. Figure 3 shows two measures of state and local budgets, both on a NIPA basis. The current surplus, which treats the flows from capital goods (as measured by depreciation) rather than investment itself as an expenditure component, hovered in the range of 0.5 percent of potential GDP throughout calendar year 2002—roughly *twice* the size, relative to GDP, of the deficits reached during the recessions of the early '80s and '90s.[5] A simpler cash-flow measure of net lending has been consistently lower than the current balance over the period shown because investment spending has exceeded depreciation, but it shows the same trend as the current balance, reaching its lowest ratio to GDP in the past year.

As at the federal level, the sharp recent deterioration in state and local budget surpluses is not attributable primarily to the cyclical downturn. Figure 4 shows quarterly values of the

unadjusted state and local budget deficits since the late '70s, along with a comparable series of high-employment state and local surpluses, both divided by potential GDP.[6] Whereas the cyclical adjustment explains essentially all of the budget deficits of the 1990-91 recession—and more than all of the deficits of the 1980s—it accounts for very little of the recent deficits. Indeed, after cyclical adjustment, the aggregate state and local budget surplus exhibits a very sharp downward trend. From its peak in 1998:4 to the third quarter of 2002, the cyclically adjusted state and local surplus fell by 0.9 percent of potential GDP.

Considering separately the revenues and expenditures of state and local governments, the two series shown at the top of Figure 5, one can see that recent deficits are associated with sharp expenditure growth since the late '90s, as well as a leveling off of revenues. Some have seen this pattern as implicating uncontrolled spending as the root cause of the crisis. But trends in revenue and spending components suggest that the story may be more complicated. The lower two series in Figure 5 are important components of state and local revenues and spending, personal tax and nontax receipts and transfer payments to persons. Looking at personal tax receipts, one sees more clearly than in the aggregate revenue series an important factor in common with recent experience at the federal level, a decline in personal income tax revenues. As a share of GDP, these revenues had been rising steadily for decades, but the share's growth accelerated in the late '90s. Then, around the end of 2001, the growth ended and the share began falling more sharply than can be explained by simple cyclical adjustment. As at the federal level, the drop in tax payments on options and capital gains was considerable. Given the heterogeneity among states, the drop was particularly severe in some. In California, for example, the *Governor's Budget Summary for Fiscal Year 2003-04* estimates that, at their peak in fiscal year 2000-01, taxes on capital gains and options were $17.6 billion, accounting for just under 25 percent of *all* general

fund revenues in the state, and that declines in this revenue source alone represent a reduction of $12.0 billion in state revenues between that fiscal year and the current one.

While this decline in revenues at the state and local level has been accompanied by an increase in spending, an important part of this spending increase has been in transfer payments, fueled by the autonomous growth in health care costs. Figure 5 shows the rapid recent growth in transfer payments at the state and local level. Most such transfer payments are for a single program, Medicaid. In 2001, Medicaid payments (which are partially offset by federal grants) accounted for 18 percent of all current spending by state and local governments.

Whatever the cause of state and local deficits, these governments have much less capacity than the federal government for budget smoothing. Many states have balanced budget requirements, and this has resulted in a broad consideration of major state tax increases and spending cuts, policy changes that influence the desirability of fiscal action at the federal level.

In summary, there is room for disagreement about the current need for expansionary fiscal action and the form that such action should take. Recent economic growth has been weak, monetary policy may be reaching its limit as normally perceived, and state and local governments face a fiscal crisis of unusual magnitude. On the other hand, the economy appears to be out of recession and the federal government faces a looming fiscal collapse in its entitlement programs that could be worsened by further expansion of deficits. Clearly, it would be useful to know how well attempts at fiscal stimulus have succeeded in the past. It is helpful to consider first how government has responded to the economy.

Past as Prologue

Studying past fiscal policy behavior can help us understand the extent to which policy actions at least had the potential to provide countercyclical stimulus, based on their magnitude

and timing. It also provides a guide to the current political environment, in that we can identify policy actions that would be consistent with past behavior in similar economic circumstances. For example, to what extent are President Bush's recent proposals in line with past policy actions? What changes in state and local tax and expenditure policies should we anticipate?

Despite all its problems as an aggregate measure that does not account for compositional effects, the quarterly full-employment budget surplus constructed by CBO is a reasonable place to start in considering the timing of past fiscal policy.[7] The series spans a period of almost 50 years and the quarterly frequency is particularly useful in considering the timing of fiscal policy around recessions, given that the typical postwar recession has lasted less than one year.

Table 1 presents regressions relating the change in the full-employment budget surplus to the lagged measure of the budget surplus and the full-employment GDP gap, with both measures divided by the level of full-employment GDP.[8] The first column covers the full sample period from 1955:2 through 2002:4. The coefficients on both the output gap and the lagged surplus are both negative and significant. The coefficient on the output gap indicates that, at this frequency and based on this measure of activity, fiscal policy changes have been countercyclical. The coefficient on the lagged surplus suggests that fiscal expansion or tightening has also responded independently to the size of the budget surplus. This is not a new finding. Bohn (1998), for example, found that U.S. fiscal policy over the years has had the property that increased levels of national debt lead to higher subsequent budget surpluses. In first differences, this implies that a higher deficit in the past should cause a tightening of policy—an increase in the current surplus.

The next three columns of Table 1 present estimates of the same equation over three different sample periods. Estimated for the period from 1984:3 to the present, the equation shows roughly twice the responsiveness of the full-employment surplus to both the lagged

surplus and the output gap, indicating a more active policy in the past two decades. Indeed, this responsiveness is even more evident if the recent sample period is broken down into two sub-periods of roughly equal length, with the dividing line being the beginning of the first term of the Clinton Administration. During the final period, covering the Clinton years and the current Bush administration through 2002, the influence of the budget surplus and, especially, the output gap, has been high. The coefficient on the output gap predicts that the full-employment surplus falls by nearly half of the previous quarter's output gap.[9]

What might have caused this growing sensitivity? One set of explanations relates to changes in the political climate. We might expect the major parties to differ in their preferred responses to the cycle and the budget; a divided government, with the Congressional majority being of a different party than the President, could be more susceptible to "gridlock" and muted responses. The last column of Table 1 considers the effects of presidential party and divided government (defined as the state in which at least one house of Congress is not controlled by the President's party)[10], including dummy variables for quarters of Republican presidency and split government, and interacting these dummies with the lagged GDP gap and lagged surplus.

Unfortunately, the results add little information beyond that in the earlier columns. The coefficients of the two sets of added variables are large, nearly equal in absolute value, and of opposite sign. They imply that the basic equation roughly holds when the government is split and the President is a Republican, or when the government is not split and the president is a Democrat, combined states that characterize 165 of the 191 observations—every observation except the last six years of the Clinton administration and the first two quarters of the George W. Bush administration's first two years. Hence, what the equation is telling us is that policy during

the Clinton administration was much more active than for the sample as a whole, which is essentially what we already knew from a comparison of the first and fourth columns of the table.

To put the large implied coefficients in the fourth column of Table 1 in context, consider the implied effect of an increase of one percentage point in the unemployment rate. Based on the recent Okun's law relationship, this implies a roughly 2 percent drop in output relative to its full-employment level. The coefficient of -.404 on the output gap implies a corresponding rise in the full-employment deficit of -.81 percent in the next quarter—over $85 billion on an annual basis at the current level of GDP. This seems a large response in just one quarter, and leads one to think about what changes in the full-employment surplus represent.

One concern about equating changes in the full-employment surplus and discretionary fiscal policy is that the full-employment surplus can change for several reasons, some of which we would not wish to interpret either as change in discretionary policy or, for that matter, as an automatic stabilizer that might have a similar impact on the economy. A salient illustration is the sharp drop in individual income tax revenues in recent years, already discussed above. As shown in Figure 2, this drop has been very large, holding constant legislated changes in tax rules. Yet it shows up as a cut in the full-employment surplus. This is clearly not the direct result of a policy change. Given that it reflects a changing composition of aggregate income, it is also not evident why it should be viewed as an expansionary event.

Another problem in interpreting the change in the CBO surplus as a policy response is that it may change as the result of decisions made several periods before, as in the case of a phased-in tax cut like the one enacted in 2001. Further, the underlying cyclical responsiveness of the budget might change unpredictably over time, leading to the possibility of over- or under-correction in construction of the adjusted series and hence a spurious statistical relationship to

the output gap. For example, should one view the decline in incomes and tax payments at the top of the income distribution in recent years as being unrelated to the economic cycle? For these reasons, it is useful to rely on an alternative measure based on explicit policy changes.

To construct this measure, I rely on the successive budget forecast updates provided by CBO, the recent versions of which were used in constructing Figures 1 and 2 above. CBO typically publishes two major revisions incorporating updated economic forecasts during each year, the *Economic and Budget Outlook* in late January or early February, and the *Economic and Budget Outlook Update* during the summer. By accumulating changes attributed to legislative action between each of these forecasts (including intermediate revisions, such as the one recently issued in conjunction with the release of the President's budget), one may derive a continuous, roughly semiannual series of forecast policy changes in revenues and expenditures, beginning with changes between winter and summer, 1984. Prior to 1984, there was a transition period during which observations were produced at different intervals. I will discuss this period below, but begin by analyzing the period of continuous observation from 1984 to 2003.

For each observation, I measure the policy change with respect to revenues, expenditures net of debt service, and their difference—the change in the primary surplus. As each update includes legislative changes for the current fiscal year and several subsequent years, it is not clear how these projected changes should be combined. This highlights the problem of treating annual changes in revenues or spending as measures of policy changes adopted in that year.

While much of the literature focuses on changes within the current fiscal year, perhaps distinguishing expected changes from unexpected ones, how should one deal with changes adopted in the current fiscal year that affect the future? Presumably, a permanent change would have a different effect than a temporary one, so the information about future years is useful and

should not be ignored. Initially, I put this question aside, and consider only the changes in the surplus adopted for the current fiscal year.[11] To facilitate comparison with the results in Table 1, I relate these fiscal policy changes to lagged values of the full-employment GDP gap from the prior quarter, and the previous fiscal year surplus.[12] Table 2 presents the results of this regression, in its first column. Over the full sample period, both the GDP gap and the budget surplus exhibit a significant, negative impact on surplus-enhancing policy actions. The effects are somewhat smaller than for the same period in Table 1, but of the same order of magnitude.

As mentioned, though, we should not ignore changes adopted now for future years if these changes have any credibility. While a policy change adopted for the future could certainly be amended before it takes effect, it is extreme to assume that such changes are irrelevant as indicators of future policy or as determinants of individual behavior. Thus, it is worth considering how changes for future fiscal years are affected by current conditions.

But how should present-year and future-year policy shifts adopted in the current period be aggregated? A simple approach is to let the data indicate the appropriate aggregation. I form the discounted sum of primary surplus policy changes adopted during the interval for the current and subsequent four fiscal years (relative to each year's corresponding measure of potential GDP), with the five weights normalized to sum to 1, and vary the discount factor to determine the appropriate specification[13]. Based on a simple goodness-of-fit measure (the regression's adjusted R^2), I choose a discount factor of .5, meaning that each succeeding fiscal year's policy change is accorded half the weight of the previous one. The second column of Table 2 presents estimates corresponding to this decay rate, which is used for all subsequent specifications.

Once one considers the fact that policy changes affect future years as well as current ones, it becomes obvious that current fiscal conditions shouldn't be the only ones relevant for

policy decisions. As discussed above, the looming U.S. fiscal crisis should affect both current policy decisions and the reactions to these decisions. A summary measure of future fiscal conditions, such as the unfunded implicit entitlement liabilities mentioned above, might be appropriate, but there is no single, commonly used measure comparable to the official annual budget deficit. As a modest first step, though, one can consider the budget surpluses projected over the budget period, and not simply the most recent budget surplus, as a determinant of policy changes. To be consistent with the aggregate policy measure just developed, I aggregate the projected surplus for the current and next four fiscal years, as of the beginning of the period of observation, using the same discount factor as is used in constructing the policy measure. The third column of Table 2 shows the result of adding this surplus projection to the regression. Both surplus coefficients are negative, but collinearity leads to an increase in standard errors. Given that the projected surplus has a much stronger effect, I exclude the lagged surplus from the regression to reach the specification shown in the fourth column of the table and used hereafter.

As indicated earlier, there are some data on CBO forecast revisions prior to August 1984, but not at regular intervals. Using a combination of published and unpublished data, it is possible to construct two annual observations, for the periods February, 1983—February 1984 and February, 1982—February 1983, plus one semiannual observation from August, 1981 to February, 1982. Although it is two years removed from the rest of the sample, this additional semiannual observation is a very significant one—it covers the passage of the Economic Recovery Tax Act and the initial spending changes effected by the Reagan Administration.

Inclusion of this observation leads to a strengthening of the effects of the model, as a comparison of the fourth and fifth columns of Table 2 shows.[14] The next column of the table shows the effect of including a dummy variable for this observation to measure its residual from

the model estimated using the rest of the sample. The coefficient of the dummy variable indicates that the "Reagan Revolution" produced a surplus policy residual of -0.5 percent of GDP—the expected sign, though of a smaller magnitude than one might have expected. But breaking down the policy response into revenues and expenditures (excluding debt service), we see (from the last two columns of Table 2) that this overall surplus residual is the consequence of enormous and largely offsetting residuals in the revenue and outlay equations; Reagan cut taxes a lot, but he also cut spending a lot. These equations indicate that both taxes and spending play a role in the response of the surplus to the lagged surplus and the output gap, with outlays playing a more important role over the whole sample period.

The magnitude of these initial-period residuals is evident in Figure 6, which plots them along with all the in-sample residuals. For the surplus as a whole, the new observation's residual of -0.5 percent of GDP is large in absolute value, but there are others of about the same magnitude during the period. But for spending and, especially, revenues, the magnitudes are much greater than for any other observation in the sample, even though one can see evidence of other major policy changes. Significant residuals are associated, for example, with the Clinton tax increase of 1993, the Bush tax cut of 2001, the 1990 budget summit of the first Bush administration that raised taxes and cut spending, and large spending cuts adopted in 1985-6 and 1987-8 during the period in which the Gramm-Rudman-Hollings Act was in force. Given how atypical the first observation is, I omit it from further consideration. There is clearly more to what happened in 1981 than the simple model used here can explain.

Table 3 considers fiscal policy behavior in more detail, for different components of policy and different sample periods. The first column repeats the baseline model for the surplus from Figure 2, and the second and third present the model for two sub-periods, with a break at

the beginning of the Clinton Administration. In contrast to the behavior of changes in the full-employment surplus considered in Table 1, there is no obvious increase in responsiveness since 1993. In fact, the coefficients are slightly larger for the earlier sample period, although not significantly so. Note, too, that the standard errors are much larger, and the adjusted R^2 much lower for the earlier sample period. As can be seen in Figure 6, policy actions were much more volatile prior to 1993. One final cut of the data is between Democratic and Republican presidential administrations.[15] The last six columns of Table 3 present results for the surplus and its components for, respectively, Republican and Democratic presidential administrations. What is striking about these results is how similar they are. There are no differences of any importance for any of the coefficients. While this may just be a fluke of the sample period considered, it does suggest that, except perhaps for the occasional "revolution," relatively stable behavioral rules apply across superficially different budget regimes and for different ideologies.

Given that these policy changes are organized in the same form as proposed legislation typically is, in terms of annual changes in revenues and expenditures during a multi-year budget period, it is simple to calculate what the estimates in Table 3 would predict for current policy, i.e., the legislative actions to be taken between the winter and summer of 2003. Using the estimates in Table 3 for the period since 1993:2, and assuming that any expenditure or revenue changes adopted would be permanent, would be constant as a share of GDP beginning in 2004 and half that large this year, the undiscounted net budget cost of the revenue and expenditure changes during the budget period 2004-2013—the common way of reporting these changes in the press—would be $368 billion, equal to a tax cut of $148 billion and a spending increase of $220 over the full period. The first full year would have a tax cut of $12 billion and an expenditure increase of $17 billion. These relatively small changes reflect the fact that the

estimated output gap is not large, and the budget is already in deficit and projected to be so for the next few years, at least. By contrast, the President's recent Budget (according to CBO 2003b, Table 8) would involve a ten-year reduction in tax revenues of $1,455 billion and an expenditure increase of $725 billion net of interest.[16] Of course, proposal is not enactment, so we would expect the coefficients to imply a smaller change, in expected value.[17]

One potential problem with the results based on changes in baseline expenditures is that it is not always clear when actual policy changes. Throughout the 1990s, Congress adopted successive expenditure caps, and CBO projections reflected each update. But extending existing caps should not have been treated as a change in policy, if this was expected. In the other direction, the fact that the spending caps were eventually breached in recent years, leading to continual upward revisions of projected spending, may not have been true policy changes, either.

To address this ambiguity, I consider yet another measure of policy, the actual behavior of discretionary spending over the years, starting in 1963[18]. Table 4 relates actual year-to-year changes in discretionary spending to the prior year's GDP gap and budget surplus, all relative to full-employment GDP. While this exercise has the advantage of considering actual spending changes, it also has the disadvantage of being at an annual frequency, even less appropriate for consideration of cyclical timing than the semiannual frequency just considered.[19]

The left half of the table presents estimates for all discretionary spending. For the full sample and the period since 1984, the table's first two columns, the coefficients of the GDP gap and the budget surplus both have the predicted sign, but are small and estimated imprecisely. For the period between 1984 and 1993, there is no discernable relationship at all. For the period since 1993, though, there is a sharp increase in both coefficients, indicating a much more reactive policy stance. The right half of the table presents estimates for just non-defense discretionary

spending, for which the simple model used here might be more applicable. Indeed, the results are more stable over time for non-defense spending, although there is still a stronger response in recent years. One should be cautious given the number of observations, but the findings in this table are generally consistent with those in Table 1, indicating that policy has been more responsive since 1984 and, with respect to the budget gap, particularly so since 1993. Table 3, on the other hand, shows no increase in responsiveness of actual policy changes to the budget gap since 1993, but differences in the methodologies make it difficult to identify the reason.

Overall, then, we have various pieces of evidence that U.S. fiscal policy has been responsive to both fiscal and macroeconomic conditions, with possibly increasing responsiveness in recent decades. Whatever the intellectual developments regarding the efficacy of countercyclical policy, policy makers are still Keynesians, and spending and revenues do react to the budget situation, as measured by current and projected surpluses.

Tax Policy and Investment

Thus far, I have considered changes in fiscal policy as measured by expenditures and overall tax revenues. While this aggregation of revenues is common in the literature, one wouldn't expect all current changes in tax revenues to have the same effect on output. The impact would depend on the type of tax being changed, as well as on the inferences private agents make about future tax policy. Perhaps the most important illustration of these differences in tax policy effects concerns investment incentives. For forward-looking investors, legislated changes in tax revenues—even the changes in corporate tax revenues—may be a very poor measure of changes in the incentive to invest. Provisions that impose the same tax burden on new investment, in present value, may have very different patterns of tax revenue over time and very different first-year revenue effects. Indeed, provisions that have the same impact on new

investment need not raise the same amount of revenue in present value, taking into account the taxes on existing assets. Further, expected changes in provisions can exert a powerful impact on the incentive to invest. Whereas standard models of consumption lead us to expect that temporary provisions will have muted effects, the opposite is true of investment incentives. A temporary reduction in the effective price of a durable investment good can potentially have large incentive effects, and policies may seek to take advantage of this.

A good illustration of this distinction is the stimulus bill passed in early 2002. The primary change was the introduction, for a period of three years, of expensing (instead of regular depreciation) for 30 percent of purchases of investment goods with tax lifetimes of 20 years or less. As a form of accelerated depreciation, this policy would have a larger revenue effect in the short run than in the long run, even if it were enacted permanently. The additional deductions for future investment would be offset by the smaller deductions on prior investment that had already been partially expensed. Thus, the annual revenue losses would not provide an accurate picture of the tax incentives for capital investment, which would remain constant after enactment. As enacted, though, the provision encourages a shift in the timing of investment to occur within the three-year window. Clearly, neither the policy change itself nor its potential impact on investment is adequately summarized by a one-year change in revenues. This is particularly important, given the volatility of investment relative to other components of GDP.[20]

Figure 7 graphs the behavior of net nonresidential investment in structures and equipment over time, as a share of GDP. The pattern of equipment investment since the early 1990s is particularly noteworthy, rising sharply from a trough during the 1990-91 recession to an historical high, then falling precipitously in 2001. The motivation for 2002's legislation is evident. But we need a model of investment behavior to measure this and other policy changes.

To begin, consider the standard Hall-Jorgenson user of cost of capital, which provides a measure of the required gross, before-tax return to capital and hence a measure of the incentive to use capital in production, under the assumption of instantaneous adjustment. For a constant tax system, the user cost is:

$$(1) \qquad c = \frac{q}{p}\left(\rho + \delta - \frac{\Delta q}{q}\right)\frac{1 - k - \tau z}{1 - \tau}$$

where p is the price of output, q is the price of new capital goods, ρ is the nominal discount rate, δ is the exponential rate at which capital actually depreciates, k is the investment tax credit, τ is the corporate tax rate, and z is the present value of depreciation allowances per dollar of capital purchased. If one modifies the assumptions to incorporate changes in tax policy, the user cost of capital becomes (see Auerbach 1983a):

$$(2) \qquad c = \frac{q}{p}\left(\rho + \delta - \frac{\Delta q}{q}\right)\frac{1 - \Gamma}{1 - \tau} + \frac{q}{p}\frac{\Delta \Gamma}{1 - \tau}$$

where Γ equals the sum of the investment tax credit and the present value of tax savings from depreciation deductions.[21] The presence of the additional term on the right-hand side of (2) means that there is now a second way in which tax policy may affect investment—through expected changes in policy, as well as through current policy. For example, an expected elimination of an investment tax credit has a powerful effect on the user cost as computed from expression (2), for it induces a huge capital gain at the time of the credit's elimination. Thus, the introduction of an investment tax credit that is expected to be temporary has two effects that encourage investment—through the tax credit itself as well as through its expected elimination—

that can be thought of as corresponding to changes in the desired level of capital as well as changes in the desired timing of capital purchases.

Expression (2) as written applies only under the assumption of instantaneous capital stock adjustment. As shown in Auerbach (1989), optimal investment behavior in the presence of convex adjustment costs may be characterized by a partial adjustment investment process in which the desired capital stock at date t varies inversely with the weighted average of the current and expected future user costs of capital based on expression (2):

$$(3) \qquad c_t^* = E_t \sum_{s \geq t} w_{s-t} c_s$$

where the weights, w_i, sum to unity and decline exponentially, at a rate that is inversely related to the size of adjustment costs; the more sluggish the investment response, the more the future matters. Based on estimates in Auerbach and Hassett (1992), it is reasonable to assume an annual decay rate of .5 for the weights.

Figure 8 provides time series for changes in the user costs of capital for equipment investment under two alternative assumptions about expected tax law changes, either that the tax law is expected to be constant (expression (1)) or that investors have perfect foresight with respect to changes (expressions (2) and (3)). These estimates, the construction of which is described in Appendix A, take into account the changing composition of the capital stock over time and assume a constant required rate of return, ρ. Therefore they do not incorporate the effects on ρ of changes in individual taxes or in interest rates. However, the most important tax provisions affecting investment have been investment tax credits and depreciation provisions, rather than changes in corporate or individual tax rates; the level of interest rates is part of the

macroeconomic environment to which we might expect tax policy to respond, and so we should construct a measure of policy that is not a function of the interest rate.

A number of patterns in Figure 8 are worth mention. First, the fluctuations in the perfect-foresight user cost are substantially larger, even though these are smoothed by averaging. Second, policy has been quiet since the Tax Reform Act of 1986 eliminated the investment tax credit and adjusted depreciation allowances. Third, the distribution of policy shocks, as measured by the user cost changes, is poorly approximated by a normal distribution. Thus, the standard linear regression model is not appropriate to explain the determinants of policy changes. Instead, I estimate an ordered probit, with the three states being a substantial reduction in the user cost, no substantial change in the user cost, and a substantial increase in the user cost. For the myopic user cost of capital, I set the cutoff at .005, so that changes in the user cost with an absolute value of less than 0.5 percentage points are treated as no change in policy. This counts all important legislation as tax changes, but leaves out minor changes in law and changes in the present value of depreciation deductions due to changes in the annual inflation rate.[22]

Table 5 gives estimation results.[23] Independent variables include, as above, the lagged annual budget surplus and GDP gap relative to potential GDP, plus the lagged GDP share of the particular type of investment and the lagged change in that share. The estimates suggest that investment incentives have responded to both the GDP gap and the budget surplus; GDP gap coefficients are significant in all specifications, while those of the surplus are less precisely estimated but still generally either significant or marginally so. For equipment investment, investment conditions also play a role, when specified as the lagged change in investment.

The modest investment incentives introduced in 2002 were consistent with the model in the second column of Table 5 which, because of the very large drop in net equipment investment,

puts the probability of a tax reduction at close to 1. For the current year, given the continuing drop in net equipment investment[24] from 2001 to 2002, the model assigns a further cut in the myopic user cost a probability of just over .5 and an increase a probability close to zero.

Thus, the myopic user cost of capital appears to respond to the same basic determinants as simple changes in revenues and expenditures and, for equipment investment, to particular investment conditions as well. But this does not necessarily imply that the *incentive* to invest behaves this way. Recall that forward-looking investors should also be concerned with future values of the user cost, and with possible changes in tax rules. If accelerated depreciation incentives are made more generous again in 2003, then an anticipation of this could have undercut the effects of the 2002 provisions.

If, in the extreme, investors had perfect foresight, then the volatile forward-looking user costs shown in Figure 8 would characterize the incentive to invest. An ordered probit model for changes in *this* user cost yields quite different results than those in Table 5. None of the coefficients are significant in any specification for a broad range of assumed cutoff values[25]. This suggests that policy actions, as they have been taken, may not have influenced the incentive to invest in a countercyclical manner, even if the changes were timed to be countercyclical.

State and Local Responses to Economic and Fiscal Conditions

As discussed above, state and local governments are facing unprecedented fiscal imbalances at present. While it is customary to focus primarily on the federal level when contemplating the interaction of fiscal policy and the economic cycle, the magnitude of the state and local problem and the large responses that this problem may induce call for a closer look.

We would expect changes in policy at the state and local level not to be heavily influenced by cyclical factors, except indirectly through the impact of these factors on the

budget. This is because of the deficit restrictions that most states face[26], not to mention the issue of whether individual states would wish to attempt countercyclical measures on their own. Indeed, a regression of the change in the state and local full-employment surplus (pictured in Figure 4) on the lagged GDP gap and lagged surplus (all divided by full-employment GDP),

$$\Delta\text{SURPLUSFE} = \underset{(0.015)}{0.002} + \underset{(0.005)}{0.007}*\text{GAP}(-1) - \underset{(0.042)}{0.100}*\text{SURPLUS}(-1)$$

Adjusted $R^2 = .105$ Number of Observations = 98

indicates that, as at the federal level, the lagged budget surplus has a negative impact on changes in the current surplus but, unlike at the federal level, there is no negative effect of the GDP gap.

As the change in the full-employment surplus has many problems as a measure of policy, I consider again a measure based on explicit policy actions. The measure comes from the National Association of State Budget Officers (NASBO), which each year publishes *The Fiscal Survey of the States*. These data were used by Poterba (1994) to analyze state responses to fiscal shocks during the period 1988-1992, and I follow a related approach for the period 1988-2002.[27] For each state in each budget year, the survey reports actual general fund revenues and expenditures, and hence the actual surplus and the associated change in general fund balance. It also reports projected revenues and surpluses for the coming year and, after the fiscal year has ended, changes in outlays adopted and implemented during the year and the revenue effects of tax legislation enacted during the year for the *next* fiscal year. That is, for year t, we have the revenues and expenditures projected at the end of the previous year, say ${}_{t-1}R_t$ and ${}_{t-1}E_t$, plus the legislated change in outlays in year t that take effect in year t, ${}_t\Delta E_{Lt}$, plus the legislated change in revenues in year t that take effect in year $t+1$, ${}_t\Delta R_{Lt+1}$. Following Poterba (1994), we can impute

revenue changes enacted and implemented in year t, ${}_t\Delta R_{Lt}$, by scaling the value of ${}_t\Delta R_{Lt+1}$ by the fraction of the year remaining in year t when each provision was enacted.

To review, we have for each fiscal year and state a measure of the projected surplus, the actual surplus, expenditure changes adopted and implemented during the year, and revenue changes adopted during the year and implemented the following year, which can also be used to impute revenue changes adopted and implemented during the year. While there may be useful independent variation across states in fiscal circumstances, I focus primarily on aggregate data, to make the analysis comparable to that for the federal government.

The first three columns of Table 6 present regressions explaining aggregate policy changes in revenue during the current year, revenue during the next year, and expenditures during the current year, as a function of three explanatory variables: the lagged value of the national GDP gap, used in previous tables, the change in the aggregate general fund balance over the course of the previous year (roughly equal to that year's aggregate state budget surplus[28]), and the projected surplus for current year made at the beginning of the year, all variables expressed as a share of potential GDP. The specification is similar to that in the third column of Table 2, except that for federal changes, the projected surplus incorporates forecasts not only for the current fiscal year, but also for several future years. As expected, the GDP gap has a very small impact; it is omitted henceforth, leading to the estimates in the middle three columns of the table, with higher values of the adjusted R^2 and little other effect. Fiscal conditions, on the other hand, have a powerful impact, particularly if one focuses on taxes next year and outlays in the current year. The lagged budget surplus has an enormous implied effect on revenues and outlays, a combined effect above 1 in point estimate. The projected surplus for the current year has an additional impact in the same direction, although not a significant one for revenues.[29]

Finally, one may consider the effects of contemporaneous budget shocks on fiscal decisions. Again following the approach taken by Poterba, we can define shocks to the surplus during the current year as changes in the surplus minus the policy changes in the surplus already measured. This approach is analogous to decomposing federal budget forecast revisions into legislative changes and non-legislative (economic + technical) changes, as done above, and then considering the impact of non-legislative changes on concurrent legislative ones. In general, there is an issue of simultaneity that must be considered; the direction of causality can run in both directions. Indeed, at the federal level, there is evidence that policy shocks have an impact on output within the same *quarter*[30], so that policy changes during the period would also influence the change in the surplus attributable to cyclical factors. In this case, regressing policy changes on non-policy changes in the surplus would not identify the impact of shocks on the policy process. I am not aware of similar evidence regarding the timing of the impact of state policy shocks on the aggregate economy, so it is difficult to know how serious a problem this is. However, for the sake of comparison with the earlier use of these data, the last three columns of Table 6 add the concurrent surplus shock as an explanatory variable. The estimated coefficients are quite consistent with those reported by Poterba (1994), despite differences in the other explanatory variables, in sample period, and in the method of estimation (panel data versus aggregate time series).[31] But the impact of this additional variable is offset by weaker estimated effects of the others, so the overall picture does not change appreciably.[32]

In summary, state governments appear very responsive to budget conditions, much more so than the federal government. This is consistent with the tighter restrictions on the typical state's budget process. The estimates in Table 6 imply enormous fiscal changes at the state level in the current fiscal year. Based on values of the explanatory variables, the equations in the

middle of the table imply tax increases of $4 billion this year and $22 billion next year, and current year spending cuts of $24 billion. The full-year response of spending cuts and tax increases is actually larger than the tax cuts and spending increases forecast for the federal level, above, indicating that the state fiscal situation, indeed, is more than a side show for macroeconomic policy in the current fiscal environment.

"The Real Fiscal Danger"

Tables 2 and 3 show that policy actions are forward-looking to some extent: future projected surpluses affect current policy decisions. But discounted short-term surpluses are a very noisy measure of long-run fiscal balance, and this is particularly true at present. As already discussed, the United States faces huge implicit liabilities due to growth in old-age entitlement programs and changing population age structure. The fiscal imbalance may be expressed in terms of the implicit liabilities cited above, or as an annual share of GDP. One recent calculation puts the annual fiscal gap at between 4.4 and 7.8 percent of GDP, depending on assumptions about what "current policy" is.[33] Another arrives at a gap of 6.5 percent of GDP.[34]

Some object to the use of such comprehensive measures that require tax and spending projections far into the future. But virtually the entire measured fiscal imbalance is attributable to age- and health-related entitlement programs for which long-term planning is already institutionalized.[35] If one is wishes to use the standard 75-year horizon for which projections are made for Social Security and Medicare, it is better to concentrate on the "closed group" liabilities of these programs, the present value of future benefits net of future contributions of existing age cohorts already participating in the programs, rather than including all taxes and benefits over the period as in the Budget calculations cited above. The 75-year truncation has little impact when

only current participants are considered, but understates liabilities of future participants, truncating their benefits—which come later in life—more than their taxes.

The change in the closed-group liability from one year to the next equals the sum of two terms: increases in obligations to those remaining in the system plus the difference between liabilities to those entering the system and those leaving the system. Looking at changes in the closed-group liability gives us a clear measure of the change in the implicit entitlement debt from one year to the next—the implicit deficit.[36] Table 7 provides a short time series of the closed-group liability for the Social Security OASDI system since 1997.[37] The table shows that annual deficits have been substantially larger than the accumulating "off-budget" surpluses in the OASDI trust fund. One can learn more by breaking these annual implicit deficits into changes in the implicit debt attributable to updated assumptions (about interest rates, productivity growth, etc.) and to changes in the base year for which the calculation is done. Components attributable to changes in assumptions have no clear pattern, although they are large in absolute value in some years. For example, between the 1998 and 1999 reports, there were favorable changes in assumptions regarding productivity growth, employment and fertility that reduced the growth in the implicit liability. The improvement between 2002 and 2003 appears due in part to the use of higher population numbers from the 2000 census. The components attributable to the advance of time, on the other hand, are always positive and very large. By themselves, these components would cause the implicit debt to grow much faster than GDP, reflecting the fact that as the baby boom cohort nears retirement and the collection of benefits, the present value of this bulge in benefits is becoming larger and larger.

The government's implicit long-term liabilities are more than twice as large if one considers the Medicare system as well.[38] These enormous liabilities have implications for both

policy decisions and policy evaluation. Private agents taking the liabilities into account should alter their responses to short-run policy actions. For example, as discussed below, tax cuts might have weak or even negative demand effects if they are viewed as unsustainable. If private agents behave differently in the face of long-term imbalances, then optimal government policy should adapt as well; it may be pointless, for example, to enact a tax cut in an attempt to stimulate the economy. Even if private agents have short horizons, the implicit liabilities still restrict the scope of available policy choices and could influence government actions. If they do so, then equations based on official surplus projections for an earlier period when such implicit liabilities were smaller will not perform well. On the other hand, recent actions by policy makers offer little compelling evidence of much of this type of prudence.

A quite relevant question is whether the method of calculating the deficit for official purposes affects policy decisions. It is a reasonable conjecture that a much larger "official" deficit would restrain government behavior, even though the information provided is already available. Another question is whether current asset values, which should be influenced by expectations about future policy, rationally reflect the possible fiscal and monetary policy paths that will be needed to deal with the current fiscal imbalance. Should the stock market be as high as it is, or long-term interest rates as low, given the probability of much higher taxes or inflation?

Measuring the Impact of Fiscal Policy

Armed with the knowledge of how fiscal policy has reacted to the economic and fiscal situation, what can we say about the effectiveness of policy, in the past and potentially in the future, to stabilize the economy? The answer is far from obvious and difficult to pin down. The reasons for this difficulty are not new and have been extensively discussed in the literature[39], but they deserve a quick summary review, particularly in light of the renewed discussion and

enthusiasm about the use of "dynamic scoring" of tax and expenditure proposals, which would incorporate the induced macroeconomic effects of policy changes on revenues and spending in the estimated budget costs of such proposals.[40] The Congressional Budget Office has recently taken a step in this direction, providing an evaluation of the President's Fiscal Year 2004 budget proposals that included a range of estimates of the feedback effects on the budget (CBO 2003b). Further efforts in this direction are likely and should be informed by the empirical difficulties.

Starting with some very basic points, the frequency of our observations limits what we can learn. The most convincing evidence above is based on data at annual or semiannual frequencies. A policy that reacts to the previous year's output gap need not be well-timed to smooth output fluctuations, even of a policy reaction to the previous quarter's gap could. Also, one would need to know how fiscal policy has interacted with monetary policy. But perhaps most challenging is determining how policy changes affect the economy.

The various challenges to modeling fiscal policy's impact can be illustrated in reference to a simple vector autoregression model of output, Y, and a fiscal policy aggregate, F:

$$\mathbf{X}_t = \mathbf{G}(\mathbf{X}_{t-1}) + \boldsymbol{\varepsilon}_t , \tag{4}$$

where $\mathbf{X} = [Y, F]$ and $\boldsymbol{\varepsilon}_t$ is the vector of shocks to the two variables at date t. Such models, typically including some measure of monetary policy as well, are common in the literature.[41] What can estimates of such a system tell us about the effects of fiscal policy?

Dealing with Contemporaneous Shocks

The regression results presented above relate policy changes to beginning-of-period information. As emphasized, the ability to act more quickly, to news as it develops during the period, could be crucial to stabilization attempts. But as economic and policy shocks are

contemporaneous elements of the vector ε_t, it is difficult to determine the extent to which policy is reacting to economic news, economic news is reacting to policy, or both.

With additional information, one can make assumptions about the relationship between the two variables. For example, discretionary policy changes of the kind reported in CBO revisions might not be influenced by economic changes within the period[42]; the budget surplus, purged of an automatic cyclical component that is commonly estimated, might be independent of current economic shocks.[43] In each case, one can then estimate the effects of these policy changes on contemporaneous economic outcomes. But the data may not come at a high enough frequency for such assumptions to make sense, and the assumptions are also questionable for other reasons. As discussed above, the CBO changes, particularly on the spending side, might not represent policy changes actually occurring that period—an example is an extension of budget caps—and the full-employment deficit, even conditional on its own past values and those of output, can change for reasons that have nothing to do with policy, such as a shift in the income distribution.

How Does Fiscal Policy Affect Output?

An equation that relates output to lagged values of output and fiscal policy is inadequate for identifying how different components of policy affect output For example, how can we distinguish between the impact of automatic stabilizers from that of policy surprises that could not be predicted using contemporaneous income? We might think that a predictable tax reduction would have a smaller impact on consumption that an unpredictable one, if consumption smoothing begins when the reduction is first recognized. The coefficient on lagged policy can only be identified by the existence of policy shocks; if all policy changes were predictable using income, then we could not estimate the effect of policy independently. Thus, we cannot know

how much of the coefficient on lagged income is attributable to automatic stabilizers and other predictable elements of policy (such as the decision rules estimated above) unless we make assumptions about the relationship between the effects of predictable and unpredictable policy changes or we can find instruments for the predictable policy changes that do not belong in the equation explaining output. This makes it difficult to say whether past policy actions have stabilized output, for we likely do not have a model that is invariant to changes in policy rules.

What is the Right Measure of Fiscal Policy?

Parsimonious models of the impact of government policy on output use aggregate measures of fiscal policy, such as the budget surplus, revenues and/or expenditures. Using aggregate revenues as a measure of the impact of taxes might make sense if the world corresponded closely to a representative-agent model with lump-sum taxes. But this approach does not allow us to determine whether tax cuts will have a different impact if they go to the rich or the poor, for example, nor does it tell us how the economic incentives to invest, save and engage in other activities has changed. In principle, we would need to include several measures of fiscal policy simultaneously, but one imagines that the individual effects would prove difficult to estimate precisely. This is particularly so because some of the measures, such as the incentive to invest, would depend critically on expectations about future tax parameters.

How Can We Measure the Impact of Expectations?

Perhaps the most difficult problem to deal with in estimating the impact of fiscal policy is the role of expectations. Will a tax cut be permanent? Will investment incentives be temporary? Will the government have to raise taxes in the future? These are all questions that should affect current behavior, but expectations typically are difficult to assess. Models that omit expectations

may be very unstable, a problem that has been clearly understood since the work of Lucas (1976). Estimated effects of policy "shocks," measured as unpredictable changes in current fiscal variables, can vary depending on how these current shocks influence expectations. One can attempt to deal with this by including additional variables in the regression that might proxy for expectations[44], but these proxies will be imperfect; one can estimate relationships for different sample periods based on prior beliefs about within-period stability[45], but such divisions will be arbitrary and leave us uncertain about which "regime" we are in at present.

Fiscal policy in the 1990s offers a good illustration of the difficulty of incorporating the effects of expectations. In mid-1993, the Clinton Administration pushed through a modest increase in Federal taxes[46] and extended the discretionary spending caps that had been introduced in 1990. This began a prolonged period of falling federal deficits, declining long-term interest rates, and expanding output. The decline in long-term interest rates and the vibrant economic expansion is often attributed to the Clinton policy program.[47] As Figure 9 shows, long-term interest rates did indeed trend downward throughout President Clinton's administration, from his election in November 1992 to his departure from office in January 2001.

The literature has made quite clear that the apparently paradoxical idea of budget contractions being expansionary rests on expectations.[48] If agents believe that current actions presage significant *future* fiscal tightening, then this belief may stimulate current demand while at the same time reducing long-term interest rates. One can rationalize the magnitude of the interest-rate decline and output growth during the early Clinton years by saying that the tax increase and spending cuts changed not only the levels of taxes and spending but also had important effects on their expected trajectories; one could explain the timing of the process, continuing after 1993, by saying that the Clinton Administration's commitment to budget

discipline became more credible over time. After all, the budget caps were extended again, in 1997. But this scenario's complexity and its reliance on changes in expectations help illustrate why rigorous empirical validation is so difficult and why some economists remain skeptical.

Evaluating Policy Proposals

The challenges of predicting the impact of realistic fiscal policy changes are evident if one considers the revenue proposals in the President's Budget for Fiscal Year 2004. These proposals, and their estimated revenue effects for the period 2003-2013, are presented in Table 8.

Consider the various questions one must address. First, what is the change in policy? The tax cut appears much larger in fiscal years 2011-13, because of the extension of expiring provisions in the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA). But did agents believe the original tax cut to be temporary? We cannot determine this from the CBO budget projection, nor does the change in the current year's revenues or full-employment surplus provide any information about this. A similar problem applies to the provision to temporarily increase the Alternative Minimum Tax exemption through 2005. As already discussed, the AMT will affect more and more taxpayers over time, even more so as a result of the reduction in ordinary tax liability under the 2001 legislation. It is reasonable to believe that the share of taxpayers subject to the AMT will not be allowed to rise above its current level, in which case the temporary, partial adjustment of the AMT being proposed by the President does not represent a tax cut relative to "current" policy. The same evaluation applies to the extension of the AMT treatment of nonrefundable personal credits and the extension of the experimentation credit.

Second, what is the change in incentives? Several of the President's proposals were targeted at saving and investment. For these proposals, the change in current tax payments provides a poor measure of the incentive effects. One reason is timing. For example, the

provision to increase investment expensing for small business has a larger revenue cost in the short run than in the long run, even though the proposal is for a permanent change. This is attributable to the fact that expensing entails an acceleration of depreciation deductions, so that the current tax reduction for new investment overstates the present value tax benefit. The proposal to expand tax-free savings actually shows a revenue *gain* in the short run, even though it offers a substantial tax cut, because it encourages taxpayers to shift the timing of their tax payments by withdrawing funds from accounts that have substantial deferred tax liabilities to accounts that require smaller (in present value) tax payments up-front. Another reason why tax payments offer a poor measure of incentive effects is the distinction that exists between tax payments and marginal tax rates. The small-business expensing provision would expand covered investment from $25,000 to $75,000 annually; for companies already investing more than $75,000, the provision would have no impact on the marginal tax rate on investment. The dividend exclusion proposal would possibly have little impact on the cost of capital.[49]

Except perhaps for the accelerated reduction in individual tax cuts, then, the change in fiscal policy under the President's proposals may bear little relation to any typical summary measure. Even to estimate the net effects of these rate reductions, though, one would need good estimates of the marginal propensities to consume across different tax brackets. One would also need to apply such a disaggregated model to assess the consumption impact of the dividend tax exclusion, once one figured out the impact of the exclusion on the stock market and whether consumers treat assets within pension and sheltered savings plans as if they were held directly. Only after one had dealt with the problems of measuring the legislation's impact on consumption and investment could the further macroeconomic feedback effects of the proposals be evaluated.

It is instructive to consider the types of models that CBO (2003b) actually used to predict the macroeconomic effects of the President's proposals. Six models in all were used: a "textbook" growth model, an infinite-horizon growth model, a closed-economy life-cycle growth model, an open-economy life-cycle growth model, and two traditional macroeconomic forecasting models. Only the life-cycle and infinite horizon models were forward-looking, and projections for these models were based on alternative scenarios rather than on estimates of expectations. Only the traditional forecasting models incorporated Keynesian demand-side effects. In short, the importance of several channels (including expectations, international flows, demand-side effects, and intergenerational linkages) varied sharply across the models, by assumption rather than by estimation. On the other hand, reflecting the complexity of the proposals being studied, the models typically were specified at a level of detail that allowed different tax and expenditure changes to have different types of effects, in contrast to the simple VAR models common to the recent literature on estimating policy effects.

Thus, the requirements of dynamic scoring or more general policy evaluation go far beyond what estimation alone has provided. A continuing challenge is to expand the reach of empirical estimation in the derivation of usable forecasting models, but this is no simple task—we have been at this for a long time, and many of the problems laid out above have no obvious solution. In the meantime, current policy practice addresses the wide gaps in our knowledge with assumptions and simplifications that, though they may be reasonable, can have sizable impacts on the resulting estimates. The methods by which these models have been constructed makes the presentation of formal standard errors difficult, but future policy evaluations should include some measure of the degree of uncertainty, lest uninformed readers think that this measure is already provided by the range of estimates obtained from different models.

Uncharted Waters?

What are the implications of the preceding analysis and discussion for the current policy environment? It appears that government policy at the federal level responds to fiscal and economic conditions. At the state level, the response to economic conditions is weaker, and the response to fiscal conditions is stronger. But it is very difficult to assess the impact of policy on the economy, because it is difficult to measure what policy *is*. To measure policy for the purpose of evaluating its impact, we must account for timing, expectations, and the complex effects that different provisions might have, through a process that is subject to severe empirical limitations. In the end, we rely on a variety of assumptions and modeling strategies that might work well in explaining past behavior. If there has been a regime shift, our predictions may be poor.

The present fiscal and economic situation offers a new combination of characteristics. Projected short-term annual budget surpluses and the level of explicit national debt as a share of GDP are well within the historical distribution, but the implicit liability and associated annual deficits of federal entitlement programs are not. We are in a period of severe fiscal stress, but not according to conventional measures. Thus, models predict a modest further expansion of the federal deficit, and the President proposes a much larger one, but what effects might these policies have? State and local governments face unprecedented budget deficits that will occasion much larger cuts in their budgets than the economy has experienced before. How will these cuts affect the economy? Interest rates, particularly short-term interest rates, are very low. What impact will this have on expectations about monetary policy, and how much will such low rates reduce the efficacy of fiscal policies that depend on the timing of tax payments, such as investment incentives? Our theories allow us to predict a broad range of possible outcomes that empirical evidence has done relatively little to narrow.

Appendix A – Constructing the User Cost of Capital

The basic methodology for constructing the user cost of capital closely follows that in Auerbach (1983b). I take asset-specific tax provisions, including the investment tax credit and depreciation allowances, for each year from 1953-2002 for each of the 34 asset classes used in my original paper (listed in Table 3 of that paper). To combine these asset-specific provisions into a single annual measure, I use capital stock weights for the 34 asset classes, based on capital stocks at the end of the previous year as reported by the Bureau of Economic Analysis. Because BEA's categories have expanded since my earlier study, I combine some of the current BEA categories to obtain capital stock weights for the 34 original classes. One current category, software, has only recently been treated as fixed investment by the National Income Accounts, so I omit this category in order to maintain comparability to earlier work.

I assume a relative capital goods price of 1, a required rate of return of $\rho = .04$, and add the rate of change of the GDP deflator to this to obtain the nominal discount rate applicable to depreciation deductions. In calculating the change in the user cost from one year to the next, I hold constant the capital stock weights at the prior year's value. The myopic user cost is based on expression (1) in the text, and the perfect foresight user cost is based on expression (2), summed over the current and next three years with weights decaying at a geometric rate of .5. After 2002, inflation rates are assumed to equal the 2002 rate and the tax law is assumed not to change, meaning that the partial expensing provisions enacted in 2002 expire after 2004. Thus, the estimated perfect-foresight cost of capital in 2002 incorporates this announced expiration.

In forming the user cost of capital, I use the statutory corporate tax rate for the relevant year, making no allowance for complications tax law asymmetries such as the Alternative Minimum Tax or limits on the deduction of net operating losses.

Appendix B – Calculating the OASDI Closed-Group Liability

This appendix provides a brief description of the data and methodology used to derive the implicit OASDI liability estimates reported in Table 7. For each year from 1997 through 2003, annual flows in and out of the OASDI system over a roughly 75-year projection period are taken from that year's OASDI Trustees report. (For the small components needed for years beyond the projection period, smooth growth of prices and productivity is assumed.) Projections of the male and female population at each age in each of these future years is taken from contemporaneous population projections, provided by Social Security from unpublished data.[50] Projected taxes and benefits in each future year are allocated among cohorts using the tax and benefit profiles by age and sex from Gokhale, Page and Sturrock (1999).[51] Then, to obtain an estimate of the OASDI system's "closed-group" liability—the liability to those already participating—only the taxes and benefits in each future year that have been allocated by this procedure to individuals who are at least 15 years old in the base year are counted. Finally, all of these included tax and benefit flows are discounted back to the base year using the long-term discount factors in that year's Trustees Report.

The deficit for each year from 1997 through 2002 equals the next year's estimated liability minus that of the current year. The part of this deficit that is attributable to the change in base year is obtained by re-estimating the following year's debt using current-year projections of flows and population.

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Endnotes

[1] See Auerbach and Gale (1999).

[2] See CBO (2003a).

[3] See Auerbach, Gale, Orszag and Potter (2003). Similar findings are reported by CBO (2002).

[4] The trust funds also have asset balances of $2.7 trillion to offset these unfunded liabilities, but this amount is offset by an equal liability of the general government and hence is irrelevant in calculating the overall government's net liability.

[5] The NIPA measure of the current balance excludes interfund transfers that states use to meet balanced budget requirements.

[6] I am grateful to Laura Rubin for providing this series, taken from Knight, Kusko, and Rubin (2003). The corresponding measure of the actual surplus in Figure 4 is also provided by Knight, Kusko and Rubin, and differs very slightly from that given in Figure 3 because of data revisions.

[7] These quarterly series obtained from CBO are unpublished versions of the annual series that CBO regularly publishes. I am grateful to John McMurray of CBO for supplying the data.

[8] Some of the regressions in Tables 1-4 are updates of results first presented in Auerbach (2002a).

[9] The finding of increasing cyclical responsiveness in recent years is consistent with results for other countries reported by Galí and Perotti (2003).

[10] The second quarter of the current Bush administration is counted as not having a split government because the Democrats regained control of the Sentate after the quarter's half-way point.

[11] Because policy revisions between the winter and summer take effect starting midway through the current fiscal year, I include half of the current year's change and half of the change for the next fiscal year for these observations.

[12] I use the annual surplus measure, rather than the quarterly NIPA surplus used in Table 1, to maintain consistency with the surplus, revenue and expenditure policy measures here, which are based on the actual federal budget.

[13] Projections for a ten-year budget period have been provided in recent years, but not for a long enough period for statistical analysis to be practical. As in the simpler case, I reduce the weight on the current fiscal year by one-half and increase weights on subsequent years correspondingly, for winter-to-summer revisions. That is, if β is the discount factor, the weights applied to revisions between summer and winter are x, $x\beta$, … , $x\beta^4$, while the weights applied to revisions between winter and summer are $.5y$, $.5(y+y\delta)$, … , $.5(y\beta^3+y\beta^4)$, where x and y are determined so that the weights for the five fiscal years sum to 1.

[14] Although it is not obvious how to include the two annual observations for 1983 and 1984, one approach—dividing each change by two (to reflect the period being twice as long) and using the beginning-of-period values of the explanatory variables—led to estimates closer to the results in the table's fourth column.

[15] For this sample, there are only five observations for which the Congress and President were of the same party, so the table does not present results for this additional sample split.

[16] The expenditure number equals CBO's 10-year total of $1,255 billion less $530 billion in interest. Treating all of the interest as added debt service (for which there is no separate entry) probably overstates the appropriate adjustment, as some of the increased interest expenses may result from an induced increase in interest rates.

[17] On the other hand, the most recent CBO forecast (CBO 2003b) lists increased discretionary and mandatory spending of $22 billion for fiscal year 2004 and $248 billion for the ten-year budget period 2004-13, based on policy changes already adopted since the January forecast.

[18] The CBO publishes data starting in 1962, which makes 1963 the earliest possible starting date taking lags into account.

[19] Given that the focus is on discretionary spending, one would not expect the changes in spending include automatic responses to cyclical factors.

[20] Aggregate tax shocks have been found to influence investment in VAR models by Blanchard and Perotti (2002) and Alesina and others (2002), but it is unclear the extent to which these shocks act through changes in the incentive to invest, rather than through other channels.

[21] This sum equals $k+\tau z$ if τ is constant over time. If τ is expected to change over time, then the present value of tax savings from depreciation deductions is not the simple product of the current value of τ and the present value of depreciation deductions, z.

[22] An alternative approach to estimating the effects of the economy on policy is found in Auerbach and Hines (1988), who assumed that the decision to effect a policy change was independent of economic conditions. For the period 1953-85, they estimated a linear model based only on the years in which major changes occurred, with the key variable in the user cost expression, $\Gamma/(1-\tau)$, as the dependent variable.

[23] The coefficient μ is an estimate of the cutoff between the second category (no change) and the third category (cost of capital increase), with the cutoff between the first two categories normalized to zero and the indicators ranging between 1 (decrease) and 3 (increase).

[24] As the BEA has not yet released an estimate for *net* investment for calendar year 2002, I impute a value by assuming that the difference between net and gross equipment investment, as a share of GDP, is the same for 2002 as for 2001.

[25] Values considered were .005, .01, .015, and .02.

[26] See the discussion in Poterba (1994).

[27] I am grateful to Kim Rueben and Jim Poterba for providing an updated version of their data. Another potential data source for state fiscal actions is the National Conference of State Legislatures.

[28] The general fund budget surplus is not exactly equal to the change in the general fund balance because states use budget stabilization funds to make transfers in and out of the general fund. It is not clear which measure of the change in the budget situation is more relevant. If states have substantial funds available to cover declines in the general fund, then we may wish our measure to reflect this, as the actual change in the general fund balance does. In any event, the two

measures have a correlation coefficient of .9 over the period considered. Using the actual lagged surplus instead of the change in general fund balance changes the relative magnitudes of the coefficients on the lagged and projected surplus (the projected surplus has a bigger impact, the lagged surplus a smaller one), but has little impact on the overall picture.

[29] The effect on outlays is particularly striking, given that the variable as reported includes only outlay *reductions*. This should attenuate the estimated relationship between the variable and the surplus. See Poterba (1994, footnote 10) for further discussion.

[30] See Blanchard and Perotti (2002).

[31] Reestimates of the equations in Table 6 using panel data give results that are generally consistent with the time series results, although the coefficients are typically smaller in absolute value.

[32] The fact that coefficients on the other variables change indicates that the budget shocks are not true shocks, in the sense of being unpredictable using prior information.

[33] See Auerbach and others (2003).

[34] See Gokhale and Smetters (2003).

[35] Gokhale and Smetters (2003) report that less than $1 trillion of an infinite-horizon fiscal liability of over $40 trillion is attributable to the rest of government. This may overstate the problem somewhat, and understate the surplus from the rest of government, to the extent that there may be a surge in future tax payments as the result of fully taxable distributions from tax-deferred retirement savings vehicles. Boskin (2003) has estimated that the present value of such deferred taxes was nearly $3 trillion at the end of 2002—a large number in absolute terms, but not relative to the size of the implicit entitlement liabilities being considered here.

[36] This implicit deficit measure is consistent with the nominal basis on which deficit accounting is currently done, although it could be expressed in real terms by subtracting the increase in the implicit debt due to inflation.

[37] The liabilities reported here track reasonably well those reported the U.S. Treasury (2003, p.65, calculated as the difference between future benefits and future taxes for current participants reported there) for the last three years, $9,636 billion, $10,542 billion, and $11,215 billion. The 2003 OASDI Trustees Report, issued on March 17, 2003, puts the current closed-group liability even higher, at $11.9 trillion (page 63).

[38] The U.S. Treasury (2003, p.65) estimates the combined closed-group liability of Medicare parts A (Hospital Insurance) and B (Supplementary Medical Insurance) as $12.5 trillion at the end of 2001 and $12.9 trillion at the end of 2002. This gives a combined closed-group liability for OASDI and Medicare of $24.1 trillion at the end of 2002.

[39] See Cochrane (1994), for example, for a citation of important early contributions and a discussion of many of the points raised here.

[40] For further discussion and evaluation, see Auerbach (1996).

[41] See, for example, Romer and Romer (1994) or Blanchard and Perotti (2002).

[42] This restriction is suggested by Hayashi (2002).

[43] This is the approach taken by Blanchard and Perotti (2002).

[44] For example, Canzoneri, Cumby, and Diba (2002) include the CBO budget surplus projections in equations to explain the long-term interest rate.

[45] For example, Perotti (1999) suggests that increases in the current surplus should have more expansionary effects on expectations during periods of fiscal stress, and so divides his sample according to this criterion.

[46] According to CBO (1993), the impact of the tax legislation in its first full fiscal year of implementation, 1995, was $44 billion, or 0.6 percent of GDP.

[47] See, for example, Blinder and Yellen (2001, Chapter 4), who, using a figure similar to Figure 8, point to important dates associated with the implementation of the Clinton program to bolster their argument.

[48] Some of the recent literature on this subject is reviewed in Auerbach (2002a).

[49] See Auerbach (2002b)

[50] I am grateful to Seung An and Felicitie Bell at the Social Security Administration for providing these data.

[51] If a_i is the relative benefit (or tax) profile element for each cohort i (where i ranges over age and sex) and p_{it} is cohort i's population in year t, then the fraction of year t's benefits (or taxes) allocated to a particular cohort j is $a_j p_{jt}/(\Sigma_i a_i p_{it})$.

Table 1. Determinants of the Full-Employment Surplus

Dependent Variable: Quarterly Change in Full-Employment Surplus, Relative to Full-Employment GDP
(standard errors in parentheses)

Independent Variable	1955:2—2002:4	1984:3—2002:4	1984:3—1993:1	1993:2—2002:4	1955:2—2002:4
Constant	-0.105 (0.052)	-0.200 (0.094)	-0.811 (0.368)	-0.349 (0.104)	-0.112 (0.089)
GDP Gap (-1)	-0.070 (0.020)	-0.171 (0.053)	-0.149 (0.067)	-0.404 (0.086)	-0.098 (0.051)
Surplus (-1)	-0.078 (0.026)	-0.125 (0.041)	-0.263 (0.111)	-0.332 (0.069)	-0.024 (0.030)
Split Government	--	--	--	--	-0.361 (0.287)
GDP Gap (-1) x Split	--	--	--	--	-0.304 (0.170)
Surplus (-1) x Split	--	--	--	--	-0.462 (0.224)
Republican President	--	--	--	--	0.317 (0.288)
GDP Gap (-1) x RP	--	--	--	--	0.304 (0.172)
Surplus (-1) x RP	--	--	--	--	0.390 (0.224)
$\overline{R}^2$	0.059	0.112	0.118	0.367	0.078
Number of Observations	191	74	35	39	191

Data Source: Congressional Budget Office

Table 2. Determinants of Policy Changes, 1984-2003

Dependent Variables: Semiannual Legislated Change in Primary Surplus, Revenues, and Outlays Relative to Full-Employment GDP
(standard errors in parentheses)

Independent Variable	Dependent Variable:							
	Surplus[a]	Surplus	Surplus	Surplus	Surplus[b]	Surplus[b]	Revenues[b]	Outlays[b]
Constant	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)	-0.003 (0.001)	-0.002 (0.001)	-0.001 (0.000)	0.001 (0.000)
GDP Gap (-1)	-0.090 (0.033)	-0.092 (0.036)	-0.113 (0.038)	-0.115 (0.038)	-0.147 (0.034)	-0.115 (0.038)	-0.039 (0.022)	0.076 (0.027)
Budget Surplus (-1)	-0.104 (0.023)	-0.121 (0.025)	-0.034 (0.065)	--	--	--	--	--
Projected Surplus	--	--	-0.106 (0.073)	-0.141 (0.027)	-0.163 (0.025)	-0.141 (0.027)	-0.055 (0.016)	0.086 (0.020)
1982:1 dummy	--	--	--	--	--	-0.005 (0.003)	-0.018 (0.002)	-0.014 (0.002)
$\overline{R}^2$	0.354	0.402	0.421	0.433	0.529	0.553	0.857	0.565
Number of Observations	38	38	38	38	39	39	39	39

[a] Decay Rate = ∞
[b] Includes 1982:1 observation

Data Source: Congressional Budget Office

Table 3. Determinants of Policy Changes

Dependent Variables: Semiannual Legislated Change in Surplus, Revenue, and Outlays Relative to Full-Employment GDP
(standard errors in parentheses)

	Sample Period and Dependent Variable:								
	1984:2—2003:1	1984:2—1993:1	1993:2—2003:1	1984:2—1993:1, 2001:2—2003:1			1993:2—2001:1		
Independent Variable	Surplus	Surplus	Surplus	Surplus	Revenues	Outlays	Surplus	Revenues	Outlays
Constant	-0.002 (0.001)	-0.007 (0.005)	-0.002 (0.000)	-0.003 (0.001)	-0.002 (0.001)	0.002 (0.001)	-0.002 (0.001)	-0.0004 (0.001)	0.001 (0.000)
GDP Gap (-1)	-0.115 (0.038)	-0.170 (0.097)	-0.150 (0.031)	-0.104 (0.055)	-0.025 (0.028)	0.078 (0.041)	-0.117 (0.049)	-0.036 (0.049)	0.081 (0.029)
Projected Surplus	-0.141 (0.027)	-0.278 (0.161)	-0.176 (0.023)	-0.156 (0.038)	-0.069 (0.020)	0.087 (0.029)	-0.141 (0.039)	-0.045 (0.039)	0.096 (0.023)
$\overline{R}^2$	0.433	0.069	0.769	0.414	0.372	0.253	0.638	0.072	0.697
Number of Observations	38	18	20	22	22	22	16	16	16

Data Source: Congressional Budget Office

Table 4. Determinants of Discretionary Spending

Dependent Variable: Annual Fiscal-Year Change in Discretionary Spending, Relative to Full-Employment GDP
(standard errors in parentheses)

Independent Variable	Sample Period and Dependent Variable:							
	1963—2002	1984—2002	1984—1992	1993—2002	1963—2002	1984—2002	1984—1992	1993—2002
	All Discretionary Spending				Nondefense Discretionary Spending			
Constant	0.000 (0.001)	0.000 (0.001)	-0.003 (0.005)	0.002 (0.001)	0.001 (0.001)	0.001 (0.000)	0.005 (0.002)	0.001 (0.001)
GDP Gap (-1)	0.017 (0.039)	0.046 (0.044)	0.026 (0.060)	0.364 (0.083)	0.025 (0.018)	0.023 (0.019)	0.046 (0.020)	0.160 (0.067)
Budget Surplus (-1)	0.051 (0.050)	0.067 (0.037)	-0.032 (0.141)	0.357 (0.064)	0.053 (0.023)	0.033 (0.017)	0.139 (0.046)	0.137 (0.051)
$\overline{R}^2$	-0.023	0.073	-0.165	0.825	0.074	0.112	0.467	0.380
Number of Observations	40	19	9	10	40	19	9	10

Data Source: Congressional Budget Office

Table 5. Ordered Probit Analysis of Investment Policy Changes, 1954-2002

Dependent Variables: Annual Change in the Myopic User Cost of Capital for Equipment, Structures, and Both
(standard errors in parentheses)

	Dependent Variable					
Independent Variable	Equipment		Structures		Both	
Intercept	-0.068	0.890	1.818	1.488	0.640	1.212
	(0.942)	(0.410)	(1.205)	(0.588)	(1.123)	(0.434)
Budget Surplus (-1)	-29.145	-26.681	-39.994	-37.675	-31.623	-35.500
	(14.240)	(15.889)	(26.475)	(27.721)	(16.856)	(18.022)
GDP Gap (-1)	-24.678	-24.658	-51.819	-61.212	-41.952	-46.225
	(12.096)	(11.342)	(20.597)	(24.496)	(14.544)	(15.025)
Net Investment (-1)	35.942	--	-25.363	--	13.969	--
	(47.331)		(59.014)		(29.309)	
Investment Change (-1)	--	198.373	--	-133.759	--	0.637
		(66.597)		(137.007)		(0.393)
μ	2.650	3.248	4.996	5.558	3.500	3.789
	(0.412)	(0.559)	(1.197)	(1.526)	(0.613)	(0.713)
Scaled R^2	0.203	0.441	0.264	0.286	0.300	0.358
Number of Observations	42	42	42	42	42	42

Source: Author's calculations

Table 6. Determinants of State Policy Changes, 1988-2002

Dependent Variables: Legislated Change in Surplus, Revenue, Next Year's Revenue, and Outlays Relative to Full-Employment GDP
(standard errors in parentheses)

Independent Variable	Revenues	Next Year Revenues	Outlays	Revenues	Next Year Revenues	Outlays	Revenues	Next Year Revenues	Outlays
Constant	0.037 (0.076)	0.471 (0.280)	-0.478 (0.112)	0.033 (0.067)	0.426 (0.248)	-0.501 (0.100)	-0.037 (0.055)	0.154 (0.194)	-0.381 (0.069)
GDP Gap (-1)	-0.007 (0.048)	-0.071 (0.175)	-0.036 (0.070)	--	--	--	--	--	--
Budget Surplus (-1)	-0.190 (0.094)	-0.786 (0.346)	0.741 (0.139)	-0.187 (0.089)	-0.759 (0.328)	0.755 (0.132)	0.087 (0.109)	0.306 (0.384)	0.285 (0.136)
Projected Surplus	0.006 (0.146)	-0.086 (0.539)	0.475 (0.216)	-0.007 (0.110)	-0.220 (0.408)	0.405 (0.164)	0.042 (0.084)	-0.031 (0.298)	0.322 (0.106)
Surplus Shock	--	--	--	--	--	--	-0.147 (0.046)	-0.573 (0.163)	0.253 (0.058)
$\overline{R}^2$	0.077	0.137	0.690	0.152	0.197	0.708	0.519	0.587	0.884
Number of Observations	15	15	15	15	15	15	15	15	15

Data Source: National Association of State Budget Officers

Table 7. Implicit Debt and Deficits of the OASDI System

(billions of dollars)

Year	Debt	Deficit	Portion of Deficit Due to Change in	
			Base Year	Projections
1997	7724	426	523	-97
1998	8151	173	581	-408
1999	8324	765	604	161
2000	9089	878	677	201
2001	9967	704	731	-27
2002	10671	403	731	-328
2003	11074			

Source: Author's calculations, described in Appendix B

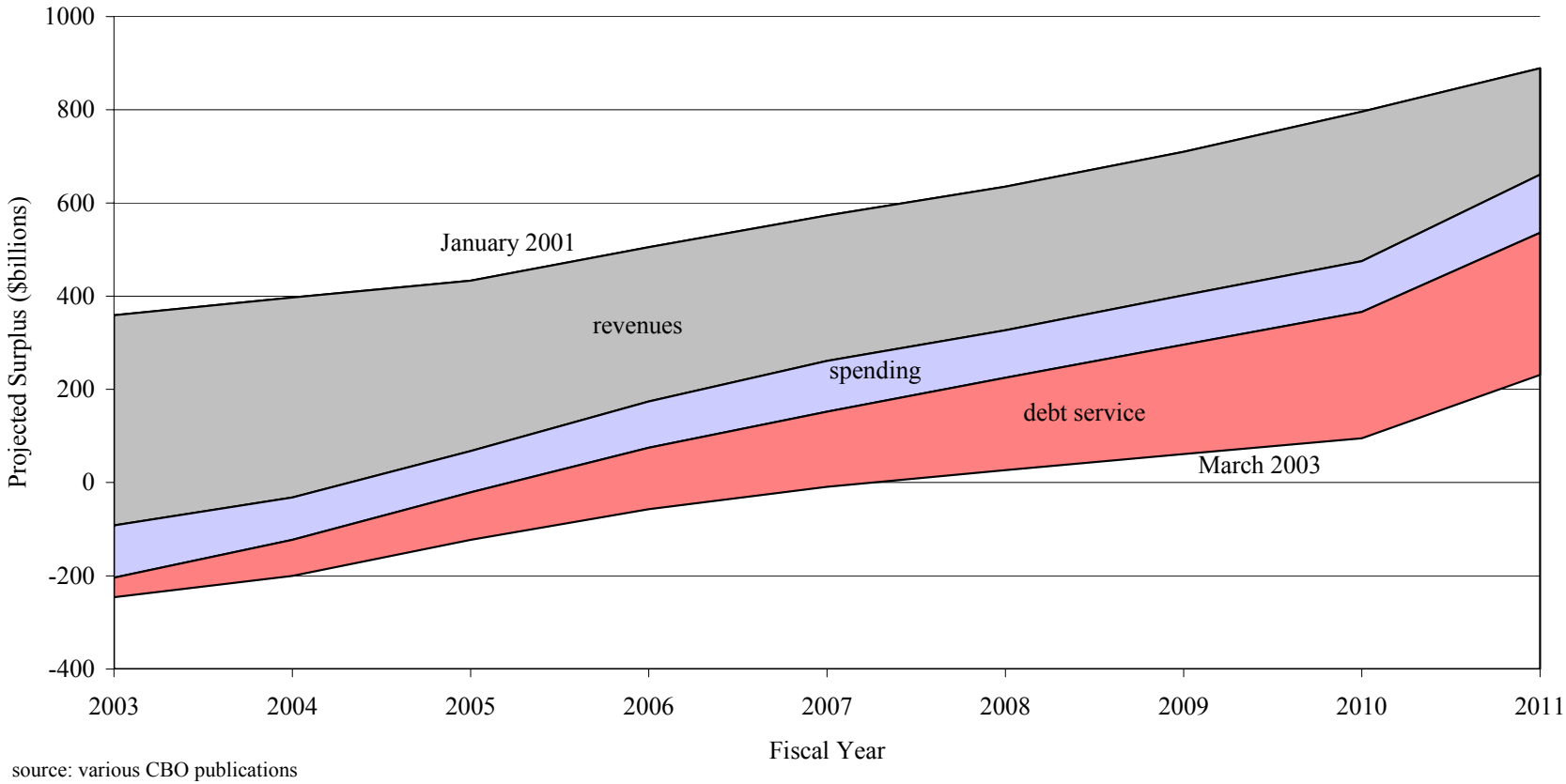
Table 8. The Effects of the Revenue Proposals in the President's 2004 Budget

(billions of dollars)

Fiscal Year:	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Baseline Deficit (-) or Surplus as Projected in March 2003 by CBO	**-246**	**-200**	**-123**	**-57**	**-9**	**27**	**61**	**96**	**231**	**405**	**459**
Effect of the President's Revenue Proposals											
Extend expiring EGTRRA provisions	0	-1	-1	-1	-1	-2	-2	-2	-134	-224	-234
Provide dividend exclusion	-8	-23	-26	-29	-32	-36	-39	-44	-48	-52	-59
Accelerate individual income tax cuts	-25	-78	-51	-27	-19	-15	-12	-8	-1	0	0
Extend experimentation credit	0	-1	-3	-4	-5	-6	-7	-7	-7	-8	-8
Increase AMT exemption	-1	-9	-14	-13	0	0	0	0	0	0	0
Increase expensing for small business	-1	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2
Provide deduction for long-term care insurance	0	0	0	-1	-1	-2	-2	-2	-3	-3	-3
Provide charitable contribution deduction for nonitemizers	0	-1	-1	-1	-1	-1	-2	-2	-2	-2	-2
Provide tax credit for affordable single-family housing	0	0	0	0	-1	-1	-2	-2	-3	-3	-3
Provide refundable health insurance credit	0	0	-1	-1	-1	-1	-1	-1	-2	-2	-2
Expand tax-free savings	2	3	3	3	1	0	-2	-3	-4	-4	-5
Extend AMT treatment of nonrefundable personal credits	0	0	0	0	0	0	0	0	0	0	0
Other proposals	-1	-5	-7	-7	-7	-7	-7	-7	-7	-6	-6
Total Revenue Effect	**-35**	**-117**	**-105**	**-87**	**-71**	**-74**	**-78**	**-81**	**-212**	**-307**	**-324**

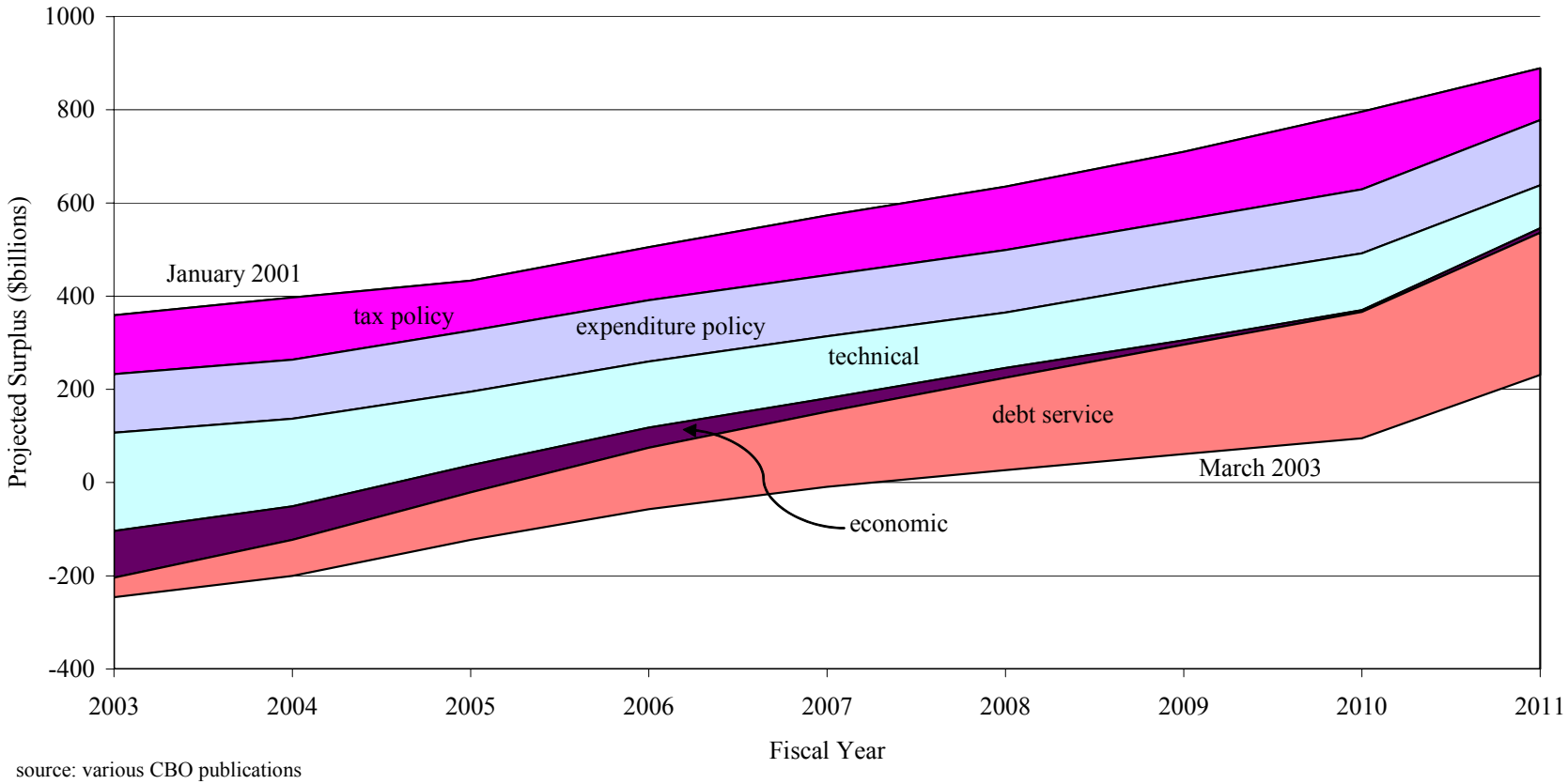
Source: Congressional Budget Office (2003b, Table 8)

Figure 1. Changes in Projected Federal Surpluses
January 2001-March 2003



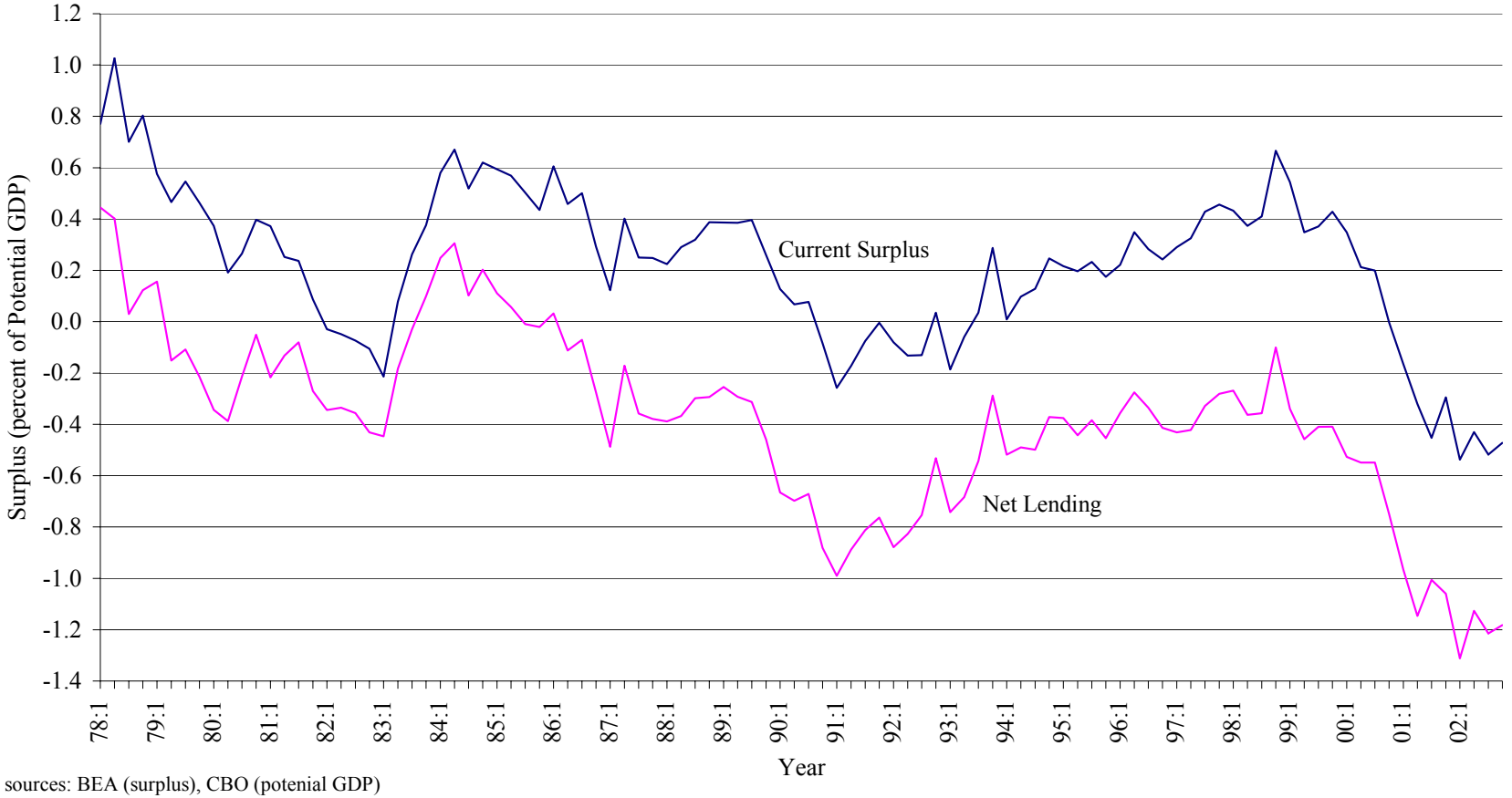
source: various CBO publications

Figure 2. Sources of Change in Projections
January 2001-March 2003



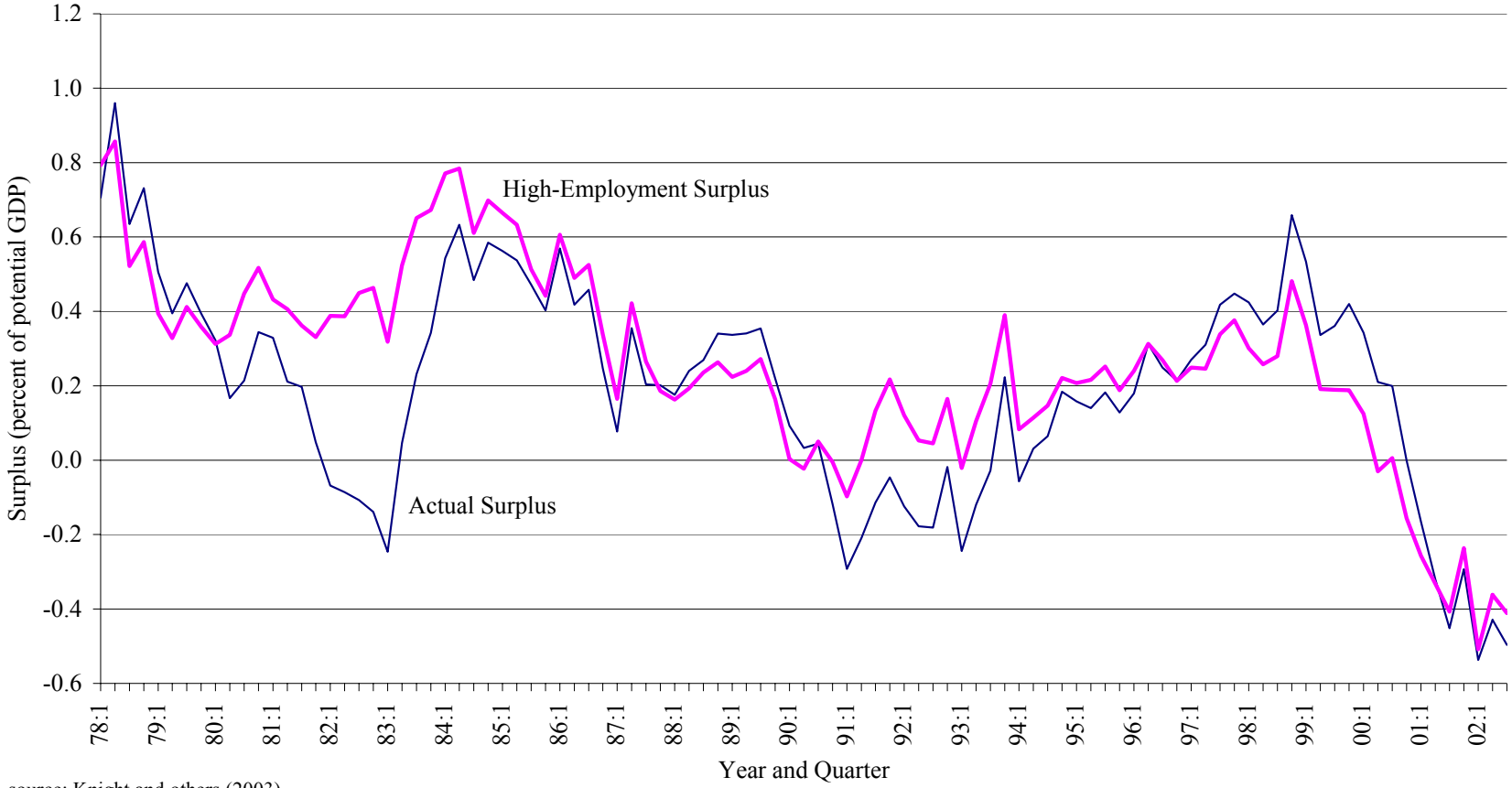
source: various CBO publications

Figure 3. State and Local Surplus



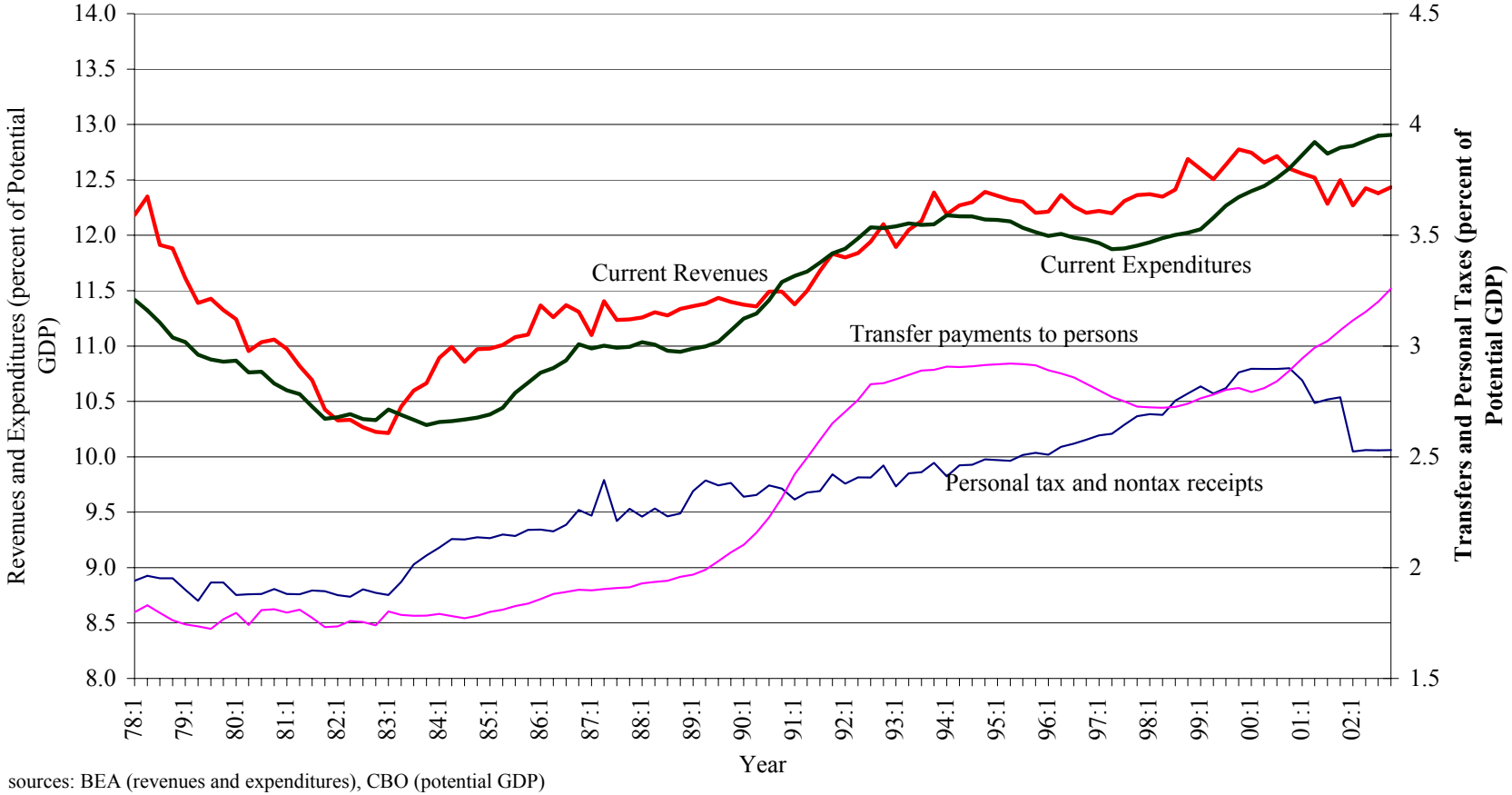
sources: BEA (surplus), CBO (potenial GDP)

Figure 4. State and Local High-Employment Surplus



source: Knight and others (2003)

Figure 5. Components of State and Local Budgets



sources: BEA (revenues and expenditures), CBO (potential GDP)

Figure 6. Policy Residuals

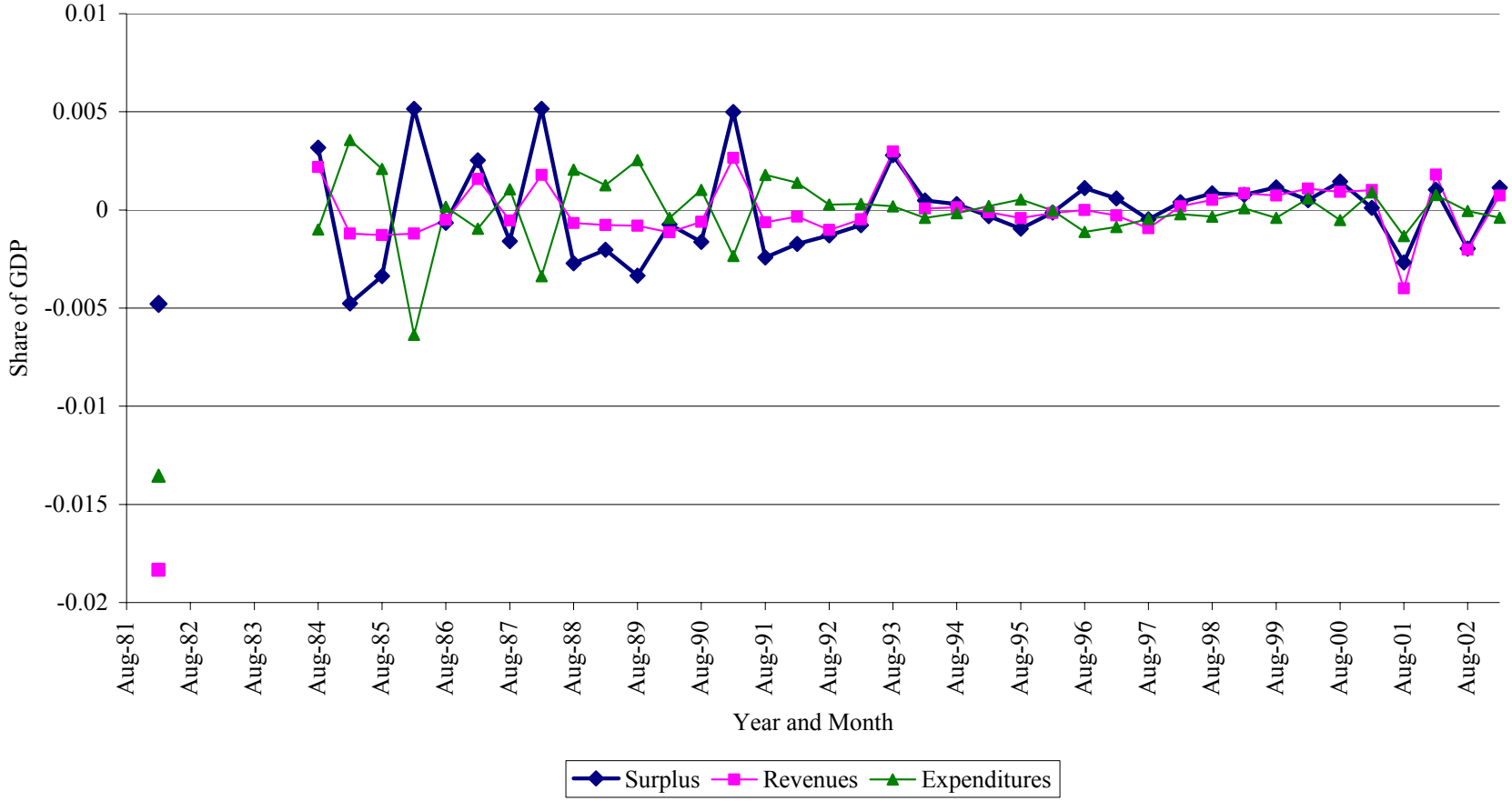
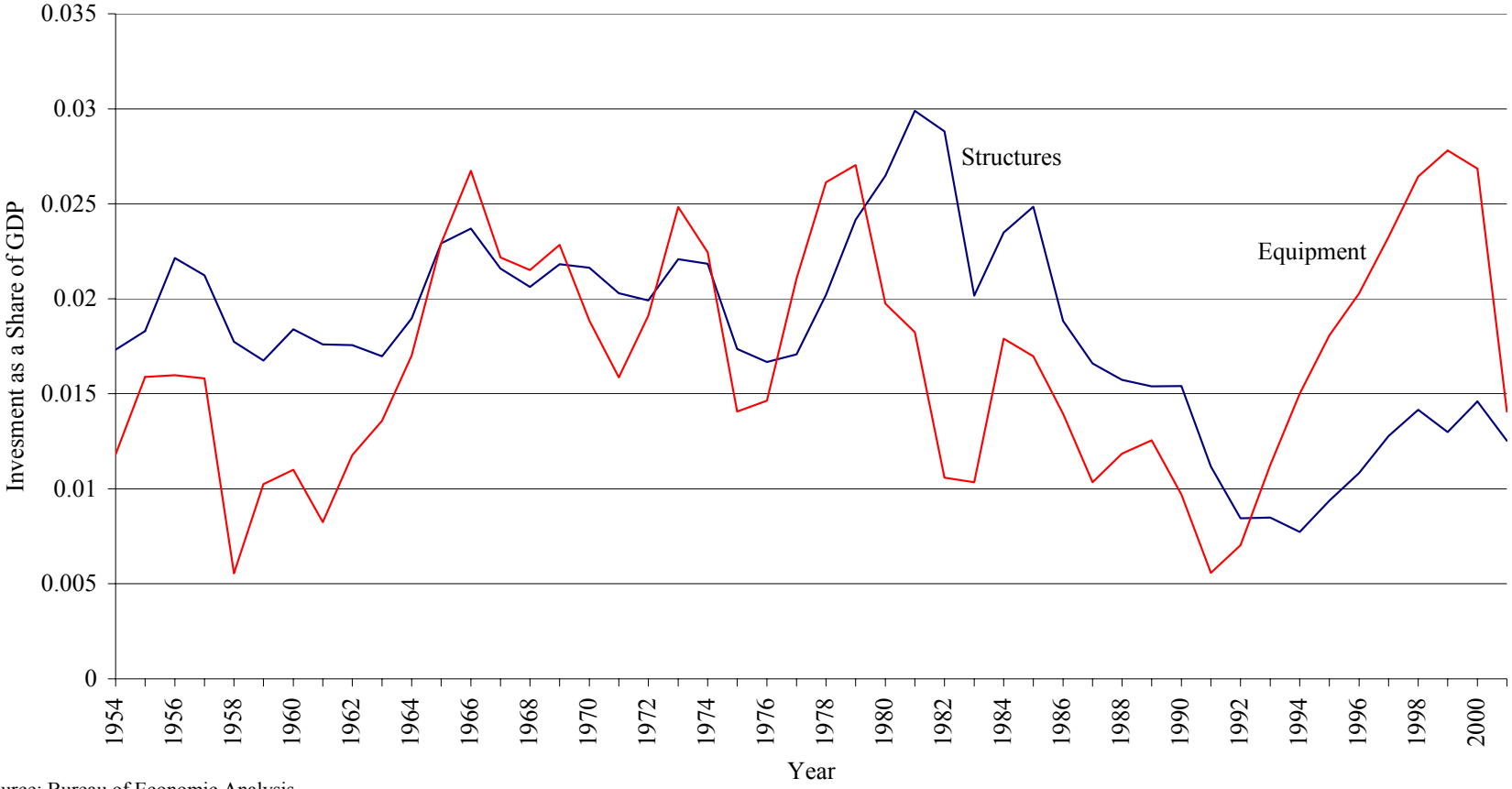


Figure 7. Net Nonresidential Investment

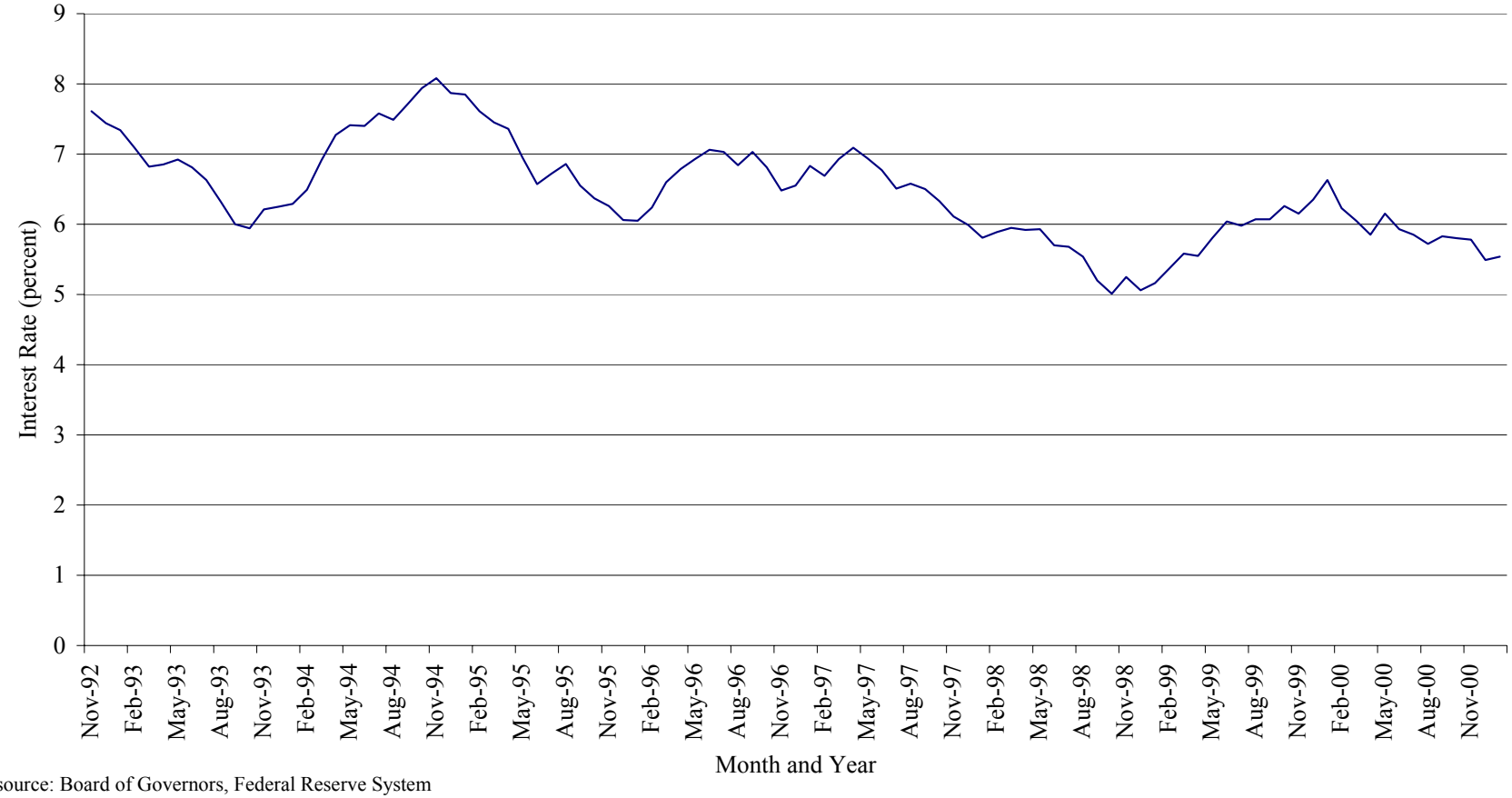


source: Bureau of Economic Analysis

Figure 8. Changes in the User Cost of Capital for Equipment

source: author's calculations

Figure 9. 30-year Treasury Bond Rate



source: Board of Governors, Federal Reserve System