Abstract - Between fiscal year 2000 and fiscal year 2003, federal revenues fell by $243 billion, putting them at their lowest level relative to GDP in over 40 years. The decline in revenues came after a period of rapidly rising revenues between 1994 and 2000. This paper looks at the sources of the decline in revenues in the last three fiscal years and contrasts them with the sources that contributed to the rise in revenues in the previous six years. Individual income tax receipts explain much of the rise and fall in the last nine years. Differences in aggregate economic growth explain some of the difference in revenue growth between the two periods. The differences in aggregate economic growth were reinforced by the fact that receipts grew more quickly than the aggregate economy in the first period and declined more quickly in the latter period. Rapid growth in tax return incomes and an increase in the share of income taxed at higher marginal tax rates explain much of the rise in personal income tax receipts relative to the economy in the first period. A reversal of these trends along with tax cuts enacted after 2000 explain much of the decline in the latter period.

INTRODUCTION

Between fiscal year 2000 and fiscal year 2003, federal revenues fell by $243 billion. Revenues declined in nominal terms three years in a row, something that has not happened since 1923. In 2003, federal revenues were 16.5 percent of gross domestic product (GDP), the lowest they have been in over 40 years. Over the last 10 years, the federal government’s fiscal position has switched from deficit to surplus and back to deficit again. The budget went from a deficit of $203 billion in 1994 to a surplus of $236 billion in 2000 and back to a deficit of $375 billion in 2003.

The big swing in revenue was not strictly a federal phenomenon. Many state governments also experienced large increases in revenues in the latter half of the 1990s and a decline beginning in 2001. Between 1991 and 1994, average quarterly revenue growth for the states was 5.7 percent. Between 1994 and 2000, revenue growth was a full percentage point higher at 6.7 percent. In 2001 and 2002 the average quarterly revenue growth was negative, declining on average by 1.5 percent per quarter.¹

¹ See Rockefeller Institute State Revenue Report Data (2004). The data are for the change in revenues with legislative effects removed. See also Jenny (2001).
CHANGES IN FEDERAL RECEIPTS AND OUTLAYS, 1994–2003

The change in federal the budget outlook over the past ten years can be accounted for on both the revenue and spending side of the budget. Figure 1 shows the revenue share of GDP, the spending share of GDP and the surplus or deficit as a share of GDP. Between 1994 and 2000, changes in spending and revenue contributed about equally to the swing from a 2.9 percent of GDP deficit to a 2.4 percent of GDP surplus. From 2000 to 2003, the budget swung from the 2.4 percent surplus to a 3.5 percent of GDP deficit. Most of the 5.9 percentage point change over the latter three years is from a 4.4 percent of GDP decline in revenues. Outlays contributed somewhat, increasing by 1.5 percentage points during this two year period. Revenue changes are a significant part of the story in the change in the overall budget outlook, and explain most of the swing in the budget relative to the economy over the last three years.

Figure 2 shows a longer time period tracking revenues relative to GDP (see U.S. Office of Management and Budget (2004)). From 1946 through 2003, federal revenues averaged just under 18 percent of GDP. The fall in receipts relative to GDP is clearly visible in the last three years as is the rise between 1994 and 2000. There have been other movements around this average since 1946, but nothing as large as the recent swings has been seen since the immediate post war period between 1946 and 1952. There was a smaller rise and fall in the revenue share of GDP at the end of the 1970s when revenues peaked.

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2 Any analysis of changes is affected by the starting point. This analysis attempts to explain the recent decline in revenues. The analysis suggests that the recent decline is best understood in the context of the rise in revenues relative to GDP which took place after 1994. This rise took place after the tax increases of 1990 and 1993 had already been in place.

3 A portion of outlays is interest on the federal debt which is related to past deficits. To the extent that the positive revenue developments of the 1990s reduced government borrowing, some of the reduction in outlays during this period could be attributed to the change in revenues.
as a share of GDP in 1981 and fell immediately after. This rise was mainly the result of high inflation combined with an unindexed rate structure that caused more income to be taxed at higher rates. This rise was offset by the 1981 tax cuts that drove down the revenue share of GDP over the next few years.

The change in total federal receipts to GDP in the most recent years is driven by the personal income tax. Figure 3 decomposes the change in the ratio of receipts to GDP by source for the years between 1994 and each year through 2003. Of the 2.8 percentage point increase in total revenues to GDP from 1994 to 2000, 2.5 percentage points came from an increase in personal income tax revenues. Similarly, of the 4.4 percentage point decline in revenues from 2000 to 2003, three percentage points is from a decline in personal income tax receipts relative to GDP. Corporate receipts have shown some decline since 2000 from a declining corporate profit share and recently legislated changes in depreciation rules. The exact timing of the decline in corporate receipts is masked by the fact that legislation shifted some corporate receipts between fiscal years.4

DECOMPOSITION OF THE CHANGE IN PERSONAL INCOME TAX LIABILITIES, 1994–2002

Personal income taxes are the main driver of the changes in revenues over the past 10 years. Since fiscal year collections are reported in aggregate and are not identified with particular sources of income, this section will focus on calendar year personal income tax liabilities in order to identify the sources of change over the last 10 years. The data are from the IRS Statistics of Income (SOI) sample for each year (IRS, 1996–2004). The SOI data differ from the fiscal year collections data

in several ways. First, they are based on taxes owed for a particular liability year, not taxes paid in a fiscal year. Second, the sample is only from forms 1040 and does not include some income taxes paid by estates and trusts. Finally, the sample as constructed by IRS for each year contains some returns from prior liability years. At the time of this paper, data were available through 2002.

Personal income tax liabilities grew by $444 billion, or 83 percent, between 1994 and 2002 (see Table 1). In the two years between 2000 and 2002 liabilities declined by $215 billion, or 22 percent. This sharp increase and fall is consistent with the changes shown for personal income tax receipts on a fiscal year basis in Figure 3.

There was legislation in each of these periods affecting the change in revenues. It is difficult to separate out legislative changes when analyzing the SOI data because values reported on returns are affected by legislation. In order to avoid double counting changes from reported incomes and changes from legislation in Table 1, the legislative effects isolated in Table 1 do not include those which affect reported incomes or deductions. Instead, the isolated legislative effects shown in Table 1 are those from changes in tax rates and tax credits. (For a more comprehensive analysis of legislative effects on revenues, see the last section of the paper.) Between 1994 and 2000, almost all of the total estimated legislative effects are from credit changes. Between 2000 and 2002, changes in rates and credits represent about 70 percent of the total estimated legislative effects.

The Taxpayer Relief

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5 These income taxes paid by estates and trusts, or fiduciary income taxes, also grew rapidly between 1994 and 2002 liabilities declined by $215 billion, or 22 percent. This sharp increase and fall is consistent with the changes shown for personal income tax receipts on a fiscal year basis in Figure 3.

6 The data for 2002 are from summary tabulations of all tax returns as the IRS sample for 2002 was not yet available. This analytic approach is based on Kasten et al. (1999).

7 For example, The Economic Growth and Tax Relief Reconciliation Act of 2001 act was estimated to have reduced liabilities between 1994 and 2000 by about seven billion dollars more than is accounted for in the legislative line of
Act of 1997 is estimated to have reduced liabilities by about $25 billion between 1994 and 2000 primarily from the introduction of education and child credits. Changes in rates and credits from the Economic Growth and Tax Relief Reconciliation Act of 2001 tax cuts are estimated to have reduced liabilities by about $60 billion between 2000 and 2002. The significant changes in 2001 included a percentage point drop in the top four statutory tax rates, the introduction of the 10 percent tax bracket, and expansion of the child credit. If the accounted for effects of legislation are removed, liabilities would have grown by $469 billion between 1994 and 2000, and declined by $155 billion between 2000 and 2002.

The change in liabilities between 1994 and 2002 is explained in part by changes in the overall economy. Nominal GDP growth averaged six percent between 1994 and 2000 and about half that rate between 2000 and 2002. Had liabilities grown with GDP during the first six years, they would have risen by $208 billion or about $35 billion per year (see Table 1). In the last two years, if liabilities had grown with GDP, they would have grown by $50 billion, or about $25 billion per year.

However, much of the change in revenue during this period was not directly associated with changes in aggregate economic output. After removing the effects of legislation and accounting for GDP growth, Table 1 shows that liabilities grew by $261 billion in excess of GDP. This amount is about 2.6 percent of GDP when measured against the almost 10 trillion in GDP for 2000. Between 2000 and 2002, liabilities grew more slowly than GDP by $205 billion or about 2.1 percent of GDP.

### Table 1
**DECOMPOSITION OF THE CHANGE IN PERSONAL INCOME TAX LIABILITIES, 1994–2002**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>(1) Change in Tax Liability</td>
<td>444</td>
<td>-215</td>
<td>229</td>
</tr>
<tr>
<td>(a) Impact of Changes in Rates and Tax Credits (except capital gains)</td>
<td>-25</td>
<td>-60</td>
<td>-85</td>
</tr>
<tr>
<td>(b) Change in the Absence of Legislated Rate and Credit Changes</td>
<td>469</td>
<td>-155</td>
<td>314</td>
</tr>
<tr>
<td>(2) Expected Change if Liability Grew at the Rate of GDP</td>
<td>208</td>
<td>50</td>
<td>258</td>
</tr>
<tr>
<td>(3) Growth Of Liability in Excess of GDP (1b – 2)</td>
<td>261</td>
<td>-205</td>
<td>56</td>
</tr>
<tr>
<td>(4) Growth in Taxable Personal Inc. (TPI) in Excess of GDP</td>
<td>52</td>
<td>-25</td>
<td>28</td>
</tr>
<tr>
<td>(5) Growth of AGI in Excess of TPI</td>
<td>92</td>
<td>-98</td>
<td>-6</td>
</tr>
<tr>
<td>(a) Growth of Capital Gains Taxes in Excess of GDP</td>
<td>73</td>
<td>-82</td>
<td>-10</td>
</tr>
<tr>
<td>(b) Growth of Other AGI in Excess of TPI (5 – 5a)</td>
<td>19</td>
<td>-15</td>
<td>4</td>
</tr>
<tr>
<td>(6) Change in Effective Rate on Non–gains AGI (3 – 4 – 5)</td>
<td>118</td>
<td>-83</td>
<td>35</td>
</tr>
<tr>
<td>(a) Per–capita Growth in TPI in Excess of Inflation</td>
<td>72</td>
<td>-25</td>
<td>47</td>
</tr>
<tr>
<td>(b) Other Changes in Effective Rate (6 – 6a)</td>
<td>46</td>
<td>-58</td>
<td>-13</td>
</tr>
</tbody>
</table>

Table 1. The changes in expensing of business equipment from the Job Creation and Worker Assistance Act of 2002 would affect business income reported on individual returns and is, therefore, not included in the legislative line in Table 1. This change was estimated to have reduced liabilities by roughly $10 billion between 2000 and 2002 by reducing income reported from businesses.

8 This estimate does not include the effect of the change in the tax rate on capital gains. Changes in capital gains tax liabilities are accounted for elsewhere in the table.

9 The change in liabilities includes the rebate payment of $35 billion mailed to taxpayers between July and September of fiscal year 2001. This was advance payment for the reduction in taxes for the new 10 percent tax bracket. These estimates are based on the standard revenue estimating conventions which holds GDP constant.

10 This analysis uses estimates of GDP and personal income available in May of 2004. As data for GDP and incomes are revised, the components of the analysis relying on them will be affected.
Much but not all of the growth in excess of GDP during the first six years was offset by a decline in the last two years.

**Income Growth in Excess of GDP Growth**

The growth or decline in liabilities relative to GDP can be allocated into three categories (see Table 1): differences in growth between National Income and Product (NIPA) incomes and GDP, differences between NIPA income growth and tax return income growth, and a residual category, which is labeled “changes in the effective rate on tax return incomes.” Of the $261 billion excess growth in liabilities between 1994 and 2000, about 20 percent can be explained by higher growth in NIPA personal income than in GDP. GDP grew by just under 40 percent between these two years, while the potentially taxable portions of personal income (TPY)—wages, interest, dividends, proprietors income and rental income—grew by just under 50 percent. Wage growth faster than GDP growth was the main source of the excess income growth, but there was also relatively rapid growth in personal dividend income and proprietors income. In contrast, between 2000 and 2002 GDP grew by seven percent but TPY only grew by three percent. Wage growth slower than GDP explains most of the difference between those two years. About half of the excess growth attributable to fast TPY growth in the first six years is offset by a decline in the next two years.

Some of the differential growth between wages and GDP over this period may have been from non-qualified stock options which generate wage income when the options were exercised. While income from options might explain some of the differential growth of personal income taxes and GDP, the exercise of options generates a deduction for corporations and would have resulted in an offsetting effect on corporate tax receipts. This additional income for individuals, therefore, may not have had a large impact on total receipts. For more information on the impact of stock options, see the next section on effective tax rates.

Fast income growth in the first six years was not limited to the national income accounts. Ninety–two billion dollars, or more than one third of the growth in liabilities in excess of GDP, can be accounted for by the fact that incomes reported on tax returns grew more rapidly than TPY. The vast majority of the extra income growth came from capital gains realizations which are not included by definition in the measure of current income in the national accounts. Taxes from capital gains grew by $72 billion between 1994 and 2000 and this growth occurred even with a cut in the top gains tax rate from 28 to 20 percent in 1997. At the time of enactment, the Joint Committee on Taxation estimated that the change in capital gains rates would lower receipts by $35 billion in fiscal years 1997 though 2007. From 1997 through 2001, however, the estimated cumulative revenue change was estimated to be close to zero. This period roughly corresponds with liability years through 2000 in Table 1 and implies that this legislation did not significantly affect the growth of gains liabilities between 1994 and 2000. In addition to gains, other tax return incomes were growing faster than TPY. Faster growth in partnership income, income from s–corporations, and taxable retirement distributions among other sources explain about $19 billion of the growth in excess of GDP. In contrast, between 2000 and 2002, roughly half of the $205 billion decline in taxes relative to GDP, or $98 billion, was from slower growth of tax returns incomes, with 84 percent, or $82, from a fall off in capital gains liabilities.

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1 S-corporation income is not included in personal income in the national accounts, but is included in the measure of corporate profits.
Where Did the Revenues Go? Or What Goes Up…

While not estimated to be as important through 2000, the 1997 change in capital gains rates was estimated to reduce revenues after 2002 and likely contributed some to the $82 billion decline in capital gains liabilities. Other incomes also grew more slowly than taxable personal income in the latter two year period.

Changes in the Effective Tax Rate

Over half of the rise relative to GDP between 1994 and 2000 and over half of the decline between 2000 and 2002 can be explained by income growth different from GDP growth. After accounting for all of the changes in income over this period, the residual amounts can be considered as changes in effective tax rates on tax return incomes. Table 1 isolates one piece of this residual. Many features of the personal income tax, including the tax brackets, are indexed for inflation. If incomes grow more rapidly than prices, however, real income growth will push more income into higher tax brackets raising the average tax rate. This phenomenon would not be a surprise to revenue forecasters who would capture it automatically, assuming they had an accurate forecast for real income growth. Real, per-capita income on tax returns grew by 25 percent between 1994 and 2000. The elasticity of liabilities with respect to real incomes is roughly 1.5. This 25 percent growth in real incomes, therefore, would imply an additional $72 billion as a result of “real bracket creep.”

Between 2000 and 2002, there was a decline in real per-capita income of seven percent which would be expected to lower liabilities by $25 billion. Almost two-thirds of the impact of real bracket creep in the first six years remains even after the decline in the last two years. Real bracket creep makes a permanent contribution to a higher tax share of GDP as long as periods of real growth are not offset equally by periods of real decline.

The last line on Table 1 is the remaining residual not accounted for elsewhere on the table. This residual category accounts for $46 billion of the growth in excess of GDP between 1994 and 2000 and $58 billion of the decline between 2000 and 2002. It reflects a number of item including changes in the distribution of income, itemized deduction growth different from income growth, some special factors, and some other unaccounted for changes. Changes in the distribution of income explain much of this residual category. Given the graduated structure of the personal income tax, increased concentration of income at the top of the distribution contributed to the increase in this category between 1994 and 2000, and a reversal of this trend contributed to the decline in this category in the latter two years. The income distribution changes can be described as coming from two sources. Some components of income which tend to be held by higher income individuals grew more rapidly during the first six years, and more slowly during the latter two. For example, in 1994, s-corporation income was 2.6 percent of non-gains adjusted gross income (AGI). By 2000, the share had risen to 3.1 percent. Wages as a share of the same total fell from 81 to 78 percent during the same period. Since s-corporation income in 1994 was taxed on average at a rate twice as high as wages, this shift in the composition between wages and s-corporation income

12 The 1.5 elasticity is with respect to non-capital gains tax liabilities and the calculations were done on tax return incomes exclusive of capital gains. (Since most gains are taxed at the top rate, there is little bracket creep associated with them). The calculation was done using the Consumer Price Index which is relevant for constructing the tax brackets in each year. This calculation assumes that incomes grow evenly across the income distribution. It is meant to illustrate how much to expect from real income growth. The actual change in incomes was not evenly distributed because of differential growth in various sources of income, and because of changes in the distribution within sources.

13 Gains are excluded from the calculation because they are taxed under a separate rate schedule.
would be expected to raise the average tax rate on AGI.\footnote{These calculations of average tax rates were done on the 1994 Statistics of Income File. The amount of taxable income in each tax bracket was allocated to each component of income in proportion to that component’s share of total, non-capital-gains income.} Other highly taxed sources also grew more quickly during this period, raising the effective tax rate on reported incomes.

In addition to differential growth in sources of income taxed at higher rates, changes of the distribution of income within sources could also explain some of the increase in the effective tax rate. There was a shift in the distribution of wage and salary income over this period. There was a sharp rise in the share of wages going to the top one-half percent of wage earners between 1994 and 2000 (see Figure 4). Given the graduated rate structure of the income tax, this shift would explain more than half of the unexplained residual at the bottom of Table 1. Why did the wage distribution rise so rapidly? Figure 4 also illustrates the rise in income from the exercise of non-qualified stock options over this period (see Jaquette (2003)). The income from the exercise of these options is reported as wages for the personal income tax. While not all option income would have been claimed by those at the top end of the wage distribution, much of it was realized by highly compensated individuals and is one of the likely causes of the rise in the wage share over this period. While option income may explain some of the rise in personal income taxes because of the impact on the distribution of wages, the income itself may have had a minimal impact on overall receipts. As noted previously, the income claimed by individuals was simultaneously a deduction for corporations under the corporate income tax. The option income along with the previous evidence on capital gains realizations suggests that the stock market played an important role in the rise and fall in receipts over the last 10 years.\footnote{The stock market also affects receipts in other ways. Receipts based on asset levels, such as taxable retirement distributions and estate and gift tax receipts were also affected by the rise and fall in the stock market during the last 10 years. As asset levels grow differently than GDP, receipts associated with these assets will move differently than GDP. See CBO (December, 2002; August, 2002).}

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Figure 4. Wage Share of the Top 1/2 Percent of Earners and Income from Non–Qualified Stock Options as a Share of NIPA Wages, 1977–2001
Factors other than changes in the distribution of income also affected the effective tax rate between 1994 and 2002. In general, itemized deductions grow with income. Some deductions are directly linked to income. For example state and local income taxes are linked directly to income, although the deduction for these taxes is based on the payment of taxes which may occur a tax year later than the year the income is reported. Other deductions may have little connection or only an indirect connection to incomes. For example, mortgage interest deductions are linked to mortgage interest rates although some significant portion of mortgages is linked to rates from a prior period. However, as incomes rise, households may take on more mortgage debt and that reinforces a longer run link between income and interest deductions. In any case, even if deductions are linked to income, there are reasons to believe those links would take place with a lag. This would tend to cause effective tax rates to rise when incomes are rising and to fall when incomes are declining. However, as incomes rose between 1994 and 2000, itemized deductions rose more quickly, decreasing liabilities by roughly four billion dollars. This effect slightly offset the rise in the effective tax rate from other sources. From 2000 through 2002, as incomes fell, deductions as a share of income rose even more, decreasing liabilities by $31 billion as compared to a world where deductions would have risen at the same rate as AGI. This reinforced the decline in the effective tax rate during the latter two years.

Other miscellaneous factors contributed to changes in the effective tax rate during this period. For example, the exercise of certain inventive stock options can generate additional liability under the alternative minimum tax (AMT) without generating additional AGI under the regular tax. In 2000, there was a noticeable increase in this activity that contributed to a bump in taxes collected from the AMT (see Shwartz (2001)). AMT taxes in that year rose by three billion dollars above their 1999 level. There are other factors affecting the effective tax rate on AGI not accounted for in this analysis. For example, there could be effects from changes in demographics that could impact taxpayer filing status and number of exemptions claimed, or there could be differences between the growth in tax credits and the growth in income.

Legislative Changes

Legislation also contributed to the decline in receipts in the last few years. Figure 5 shows total fiscal year receipts relative to GDP with and without effects of legislation enacted after 1994. By 2003, legislation is estimated to have reduced receipts by about two percentage points of GDP. The estimates for 2004 suggest that legislation will reduce receipts by about 2.5 percentage points of GDP. Receipts are not yet known for 2004, but the latest estimates by the Congressional Budget Office (CBO) suggest that receipts will be 16.1 percent of GDP slightly below the 16.5 percent level of 2003 (see CBO (January, 2004; May, 2004)). If the legislative effects are removed from the 2004 projection, receipts are projected to be 18.8 percent of GDP which is just above the average since 1946 and about where they were in 1994. The impact of legislation needs to be considered in light of several factors. First, these legislative estimates were done at the time the laws were enacted, and if estimates were redone today they would likely be different. Second, the 2.5 percent of GDP effect for 2004 is the largest effect of the recently enacted legislation. Under current law the amount declines after 2004 as various provisions expire. The actual impact in future years will depend upon what tax provisions might be extended beyond 2004. Finally, these standard estimates do not include any potential feedback effect of the tax changes on the economy. To get an idea of the potential
order of magnitude of such effects, one can look to CBO’s Analysis of the President’s Budgetary Proposals for Fiscal Year 2004. CBO estimated a range of feedback effects from the president’s proposals. While what has been enacted in the last few years is not identical to the president’s proposals estimated by CBO, the proposals are similar enough to provide some orders of magnitude of the potential effects on the economy. The difference between the conventional estimate and the estimate incorporating macroeconomic feedback ranged from feedback which increased the cost of the proposals by 16 percent from the conventional estimate to feedback which decreased the cost by 17 percent. The amount of feedback depends upon the time period, model, and assumptions made about future budgetary policy. Even assuming an offsetting macroeconomic effect toward the upper end of the CBO analysis—20 percent—the estimated legislative impact in 2004 would still be significant at two percent of GDP.

CONCLUSION

The decline in revenues in the last three years has mirrored the rise in revenues in the late 1990s. Most of the decline in receipts relative to GDP was in the personal income tax. Strong income growth, rising capital gains realizations, and increased concentration of income all contributed to the rise in receipts relative to GDP between 1994 and 2000, and the unwinding of those factors contributed to the fall in revenues in the last couple of years. One factor, the impact of real growth on effective tax rates, will not be completely undone unless real income declines offset the growth in the 1990s. Legislation also contributed to the decline in receipts in receipt years. Official revenue estimates suggest that the 1997, 2001, and 2003 tax

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16 CBO analyzed the impact of all of the President’s budget proposals. The CBO analysis included the effects of proposed changes in revenues and outlays. See CBO (March, 2002; March, 2003; July, 2003).
acts combined to reduce receipts by more than two percentage points of GDP in 2004 from where they would have been had the law remained unchanged from 1994.

Acknowledgments

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